FINAL ENVIRONMENTAL IMPACT REPORT

FOR THE HERCULES INTERMODAL TRANSIT CENTER

STATE CLEARINGHOUSE #2009112087

Prepared by:

CITY OF HERCULES CALIFORNIA

JUNE 2011

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

CITY OF HERCULES INTERMODAL TRANSIT CENTER

State Clearinghouse #2009112087

Final Environmental Impact Report

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June 2011

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

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1.0 Introduction

1.1 PURPOSE OF THIS DOCUMENT

The City of Hercules (City) in cooperation with the Federal Transit Administration (FTA) prepared a joint Draft Environmental Impact Report/Environmental Impact Statement (Draft EIR/EIS) to provide the public and responsible and trustee agencies with information on the potential effects of the proposed Hercules Intermodal Transit Center Project (Hercules ITC). This document includes all agency and public comments received on the Draft EIR/EIS and responses to those comments. The City and FTA have decided to process the final California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) documents separately, while NEPA required consultations with federal resource agencies continue. This document along with the Draft EIR/EIS, which is hereby incorporated by reference, constitutes the Final EIR in compliance with CEQA. At the completion of the required NEPA consultations, a Final EIS will be prepared and distributed.

Prior to the release of the Draft EIR/EIS, the City issued a Notice of Preparation for a 30-day comment period from November 16, 2009, to December 21, 2009, and then revised the comment period to end on December 30, 2009. The City held a scoping meeting on December 8, 2009, at 5:30 P.M. to receive input on the scope and content of the Draft EIR/EIS. Concerns and comments raised during the scoping process were considered in the preparation of the Draft EIR/EIS (See Appendix B of the Draft EIR/EIS). The Draft EIR/EIS was submitted to the State Clearinghouse (SCH #2009112087), noticed in the Federal Register (on September 17, 2010), and distributed to the public and agencies for a 60-day review period, which ended on November 15, 2010. The original notice of availability was published in the *West Contra Costa Times*, a newspaper of general circulation in the City of Hercules, on September 17, 2010. A revised Notice of Availability was published in the *West Contra Costa Times* on October 26, 2010, and the Federal Register on November 12, 2010. The City held two public meetings to hear comments on the Draft EIR/EIS on Monday, October 18, 2010, at 3:00 P.M. and 7:00 P.M.

This document was prepared in accordance with CEQA and the CEQA Guidelines to serve as the Final EIR for the project. As described in the CEQA Guidelines [§15121(a)], an EIR is a public information document that assesses potential environmental effects of a proposed project, as well as identifies mitigation measures and alternatives to the project that could reduce or avoid adverse environmental impacts. CEQA requires that state and local government agencies consider the environmental consequences of projects over which they have discretionary authority. The EIR is an informational document used in the planning and decision-making process. It is not the purpose of an EIR to recommend either approval or denial of a project.

1.2 SUMMARY OF PROPOSED PROJECT

The City of Hercules proposes to implement the Hercules ITC project. The Draft EIR/EIS evaluated two action alternatives and two options for realignment of the Union Pacific Railroad (UPRR) track design. The two alternatives differ in the location of the transit center and station building. Alternative 1 locates the transit center west of Refugio Creek and Alternative 2 locates the transit center east of Refugio Creek. The two Track Options (A and B) differed in the method

to relocate the existing UPRR tracks. Track Option A would utilize shoofly (temporary) tracks to allow active rail traffic to bypass work areas during construction of the Hercules ITC. Track Option B would eliminate the need for shoofly tracks and add a third dedicated station track through the Hercules ITC site, which would reduce freight and passenger train conflicts and allow freight trains to bypass the site while passenger trains are at the station.

The Draft EIR/EIS contains an executive summary table (Table ES-1) that provides a list of environmental effects, level of impact, and measures to mitigate impacts resulting from the project. To allow a clearer understanding of impacts related to each alternative as well as Track Options A and B, Table 1-1 is included in the Final EIR. Table 1-1 provides a comparison of each of four scenarios: Alternative 1, Options A and B and Alternative 2, Options A and B.

City staff recommends Alternative 1 and Track Option B as the preferred alternative. Construction of the Hercules ITC west of Refugio Creek would: satisfy engineering and design requirements; be consistent with the Waterfront District Master Plan; and provide a safe and secure location for emergency vehicle access to the future ferry terminal while minimizing potential effects to natural resources. Track Option B would eliminate the need for the temporary shoofly tracks during construction, which would simplify construction staging, shorten the construction duration, reduce the number of piles needed and the duration of pile driving, reduce construction costs, reduce freight/passenger train conflicts, and improve on-time train service. This preferred alternative has been identified as the 'preferred,' since it would provide the best location for multi-modal transit to meet the goals and objectives of the project, while minimizing overall impacts to the environment.

1.3 CEQA FINAL EIR PROCESS

The procedures required by CEQA "are intended to assist public agencies in systematically identifying both the significant effects of proposed projects and the feasible alternatives or feasible mitigation measures which will avoid or substantially lessen such significant effects (Public Resources Code §21002)." As a general rule "public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects." However, "in the event specific economic, social, or other conditions make infeasible such project alternatives or such mitigation measures, individual projects may be approved in spite of one or more effects thereof (ibid)."

This document includes comments and written responses to comments received on the Draft EIR/EIS and revisions to the Draft EIR made in response to the comments. As the lead agency under CEQA, the City must consider certification of this Final EIR as outlined under Section 15090 of the CEQA Guidelines.

Under CEQA Guidelines (§15132), a Final EIR shall consist of:

(a) The Draft EIR or a revision of the draft.

(b) Comments and recommendations received on the Draft EIR either verbatim or in summary.

(c) A list of persons, organizations, and public agencies commenting on the Draft EIR.

(d) The responses of the Lead Agency to significant environmental points raised in the review and consultation process.

(e) Any other information added by the Lead Agency.

Prior to approving the project, the City of Hercules as the CEQA lead agency must "certify" the Final EIR and find that:

(1) The final EIR has been completed in compliance with CEQA;

(2) The final EIR was presented to the decision-making body of the lead agency and that the body has reviewed and considered the information contained in the Final EIR prior to approving the project; and

(3) The final EIR reflects the lead agency's independent judgment and analysis.
[CEQA Guidelines, §15090(a); see also Public Resources Code, §21082.1 (c)(3)].

Under CEQA (§15091), a lead agency must make one or more specific written findings accompanied by a brief explanation of the rationale for each finding prior to approving or carrying out a project for which the EIR reveals that the project will result in one or more significant environmental impacts. These possible findings are:

(1) Changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect as identified in the final EIR.

(2) Such changes or alterations are within the responsibility and jurisdiction of another public agency and not the agency making the finding. Such changes have been adopted by such other agency or can and should be adopted by such other agency.

(3) Specific economic, legal, social, and technological or other considerations, including provisions of employment opportunities for highly trained workers, make infeasible the mitigation measures or project alternatives identified in the final EIR.
[CEQA Guidelines §15091(a)]

If the lead agency approves a project where significant effects remain in the final EIR even with the adoption of feasible mitigation measures or alternatives, the lead agency must adopt a 'statement of overriding considerations' before it can proceed with the project. The statement of overriding considerations must be supported by substantial evidence in the record. (CEQA Guidelines §15093)

CEQA requires the lead agency to balance benefits of the proposed project against its unavoidable environmental risks when determining whether to approve the project. If specific economic, legal, social, technological, or other benefits of a proposed project outweigh the unavoidable adverse environmental effects, the lead agency may consider the adverse environmental impacts to be "acceptable" [CEQA Guidelines §15093(a)]. These benefits should be set forth in the statement of overriding considerations, and may be based in the final EIR and/or other information in the record of the proceedings [CEQA Guidelines §15093(b)].

CEQA Statutes Section 21081.6(a)(1) requires lead agencies to "adopt a reporting or monitoring program for the changes made to the project or conditions of project approval, adopted in order to mitigate or avoid significant effects on the environment." In the EIR, mitigation measures have been clearly identified and presented in language that will facilitate establishment of a monitoring and reporting program. Any mitigation measures adopted by the City as conditions of project approval will be included in the Mitigation Monitoring and Reporting Program (MMRP) for the project. The MMRP will be considered at the same time the City considers those approvals.

If the City approves the project, a Notice of Determination (NOD) (CEQA Guidelines §15094) will be filed within 5 working days of the City's decision. The NOD would be filed with the Contra Costa County Clerk Recorder. The filing of the NOD starts a 30-day statute of limitations on court challenges to the approval of the project under CEQA.

1.4 DOCUMENT ORGANIZATION

The Final EIR is organized as follows:

Chapter 1 – Introduction. This chapter summarizes the project under consideration and describes the contents of the Final EIR and presents a table of alternatives and environmental effects.

Chapter 2 – Comments and Responses to Comments on the Draft EIR/EIS. This chapter provides a list of commenters and all comments received on the Draft EIR/EIS. Each comment is identified with brackets and numbers corresponding to individual comments within each comment letter. Each comment is numbered with a binomial with the letter number appearing first followed by the comment number. For example, comments in letter number one are numbered as 1-1, 1-2, 1-3, and so on. Responses corresponding to each comment binomial follow each comment letter.

Chapter 3 – Minor Changes and Edits to the Draft EIR/EIS. This chapter summarizes edits to the Draft EIR/EIS as a result of either comments or minor corrections. These revisions are presented by revision marks (underline for new text and ~~strikeout~~ for deleted text).

Chapter 4 – List of Preparers.

Appendices – This section includes documentation and technical information referenced in the Final EIR. They are: Appendix A – Qualitative Hot-Spot Analysis; and Appendix B – MTC Letter of Project-Level Conformity Completion.

Table 1-1. Comparison of Alternatives before Incorporation of Mitigation Measures*

Draft EIR/EIS Section	Environmental Area/Impacts	Alternative 1 with Track Option A	Alternative 2 with Track Option A	Alternative 1 with Track Option B	Alternative 2 with Track Option B
4.1	TRANS-1: The proposed Hercules ITC project would not cause a substantial increase in traffic relative to the existing traffic load and capacity of the street system under the Future Baseline conditions.	LS	LS	LS	LS
4.1	TRANS-2: The proposed Hercules ITC project would result in slight increases in transit ridership.	LS	LS	LS	LS
4.1	TRANS-3: The proposed Hercules ITC project could increase parking demand that may exceed the available parking supply.	PS	NI	PS	NI
4.1	TRANS-4: Construction of the project will introduce additional large (haul) trucks and other related traffic that could result in potentially adverse safety impacts to pedestrians, bicyclist, and/or other motorists.	PS	PS	PS	PS
4.1	TRANS-5: The proposed Hercules ITC project could result in increased hazards to pedestrians or bicyclists or conflicts with adopted policies, plans, or programs promoting walking or bicycling due to operation of the project.	PS	PS	PS	PS
4.1	TRANS-6: The internal design of the Hercules ITC project would not result in impacts on vehicle site access and circulation.	LS	LS	LS	LS
4.2	LU-1: Potential of temporary affects or displaced land uses in or near the project sites resulting from construction activities.	LS	LS	LS	LS
4.2	LU-2: Potential disruption or displacement of existing land uses or communities.	LS	LS	LS	LS
4.2	LU-3: Potential conflict with exiting plans, policies, and regulations governing the areas at and near the proposed alternatives.	NI	LS	NI	LS

* : S – Significant; PS – Potentially Significant; LS – Less than Significant; and NI – No Impact.

Draft EIR/EIS Section	Environmental Area/Impacts	Alternative 1 with Track Option A	Alternative 2 with Track Option A	Alternative 1 with Track Option B	Alternative 2 with Track Option B
4.3	SOCIO-1: The project alternatives would not result in significant adverse socioeconomics impacts.	LS	LS	LS	LS
4.3	SOCIO-2: The project alternatives would not result in disproportionately adverse impacts to minorities, ethnic groups, or low-income households.	LS	LS	LS	LS
4.4	CULT-1a: The project has the potential to adversely affect previously unidentified archeological resources during construction	PS	PS	PS	PS
4.4	CULT-1b: The project has the potential to adversely affect previously identified archaeological resources during construction.	NI	PS	NI	PS
4.4	CULT-2: The project has the potential to adversely affect previously unidentified human remains during construction.	PS	PS	PS	PS
4.4	CULT-3: Construction of the project may adversely affect unidentified paleontological resources	PS	PS	PS	PS
4.5	VAR-1: Implementation of the project could result in a substantial adverse effect on a scenic vista.	LS	LS	LS	LS
4.5	VAR-2: Implementation of the project would alter the existing visual character of the project site but would not substantially degrade the existing visual character or quality of the site and its surroundings. Construction activities could temporarily degrade the visual quality of the site and its surroundings.	PS	PS	PS	PS
4.5	VAR-3: Implementation of the project would create new sources of substantial light and glare and would result in significant adversely affected day and nighttime views in the area.	S	S	S	S
4.6	PR-1: Alternatives 1 and 2 of the proposed project would not result in substantial adverse physical impacts	LS	LS	LS	LS

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Draft EIR/EIS Section	Environmental Area/Impacts	Alternative 1 with Track Option A	Alternative 2 with Track Option A	Alternative 1 with Track Option B	Alternative 2 with Track Option B
	associated with the provision of new or physically altered park or recreational facilities.				
4.6	PR-2: The proposed project would not increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facilities would occur or be accelerated.	LS	LS	LS	LS
4.6	PR-3: The proposed project would not have the potential for direct use of Section 4(f) properties during project construction and operation.	LS	LS	LS	LS
4.6	PR-4: The proposed project would have the potential for temporary use of Section 4(f) properties during project construction.	PS	PS	PS	PS
4.6	PR-5: The proposed project would have the potential for constructive use of Section 4(f) properties during project construction.	PS	PS	PS	PS
4.6	PR-6: Alternatives 1 and 2 could result in impacts to historic sites or other cultural resources.	PS	PS	PS	PS
4.7	AIR-1: Construction of the proposed project would create emissions of fugitive dust from excavation and grading, and emissions of criteria pollutants from construction equipment exhaust.	PS	PS	PS	PS
4.7	AIR-2: Net operational emissions of ROG, NOx, CO, SOx, and PM10 could increase as a result of the implementation of the Hercules ITC.	LS	LS	LS	LS
4.7	AIR-3: Implementation of the proposed project could expose sensitive receptors to CO concentrations in excess of the federal or state ambient air quality standards.	LS	LS	LS	LS
4.7	AIR-4: Implementation of the project could cause a substantial health risk to nearby receptors from exposure	LS	LS	LS	LS

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Draft EIR/EIS Section	Environmental Area/Impacts	Alternative 1 with Track Option A	Alternative 2 with Track Option A	Alternative 1 with Track Option B	Alternative 2 with Track Option B
	to toxic air contaminants (TACs) from diesel exhaust.				
4.7	AIR-5: Implementation of the project could create objectionable odors affecting a substantial number of people.	LS	LS	LS	LS
4.7	AIR-6: Implementation of the project could result in a cumulatively considerable net increase of criteria pollutants and toxic air contaminants (TACs) compared to the No-Action Alternative.	LS	LS	LS	LS
4.7	AIR-7: Implementation of the project would generate greenhouse gases (GHGs) and could contribute to cumulative impacts of global climate change.	LS	LS	LS	LS
4.8	NOI-1: Implementation of the proposed project would add new vehicle trips to the roadway network in the project vicinity, which could increase ambient noise levels at nearby noise-sensitive receptors above acceptable levels.	LS	LS	LS	LS
4.8	NOI-2: Operation of the proposed Hercules ITC would cause increased noise levels in the project area from trains and buses.	LS	LS	LS	LS
4.8	NOI-3: Noise-generating construction activities are anticipated to exceed noise level standards and be at least 5 dBA above the ambient noise environment at adjacent noise-sensitive land uses.	S	S	S	S
4.8	NOI-4: Project construction and operation could generate groundborne vibration levels exceeding acceptable limits.	LS	LS	S	S
4.9	BIO-1: Construction of the proposed project could potentially result in “take” through harm or harassment of individual California red-legged frogs (CRLFs)	PS	PS	PS	PS
4.9	BIO-2: Construction of the proposed project could potentially result in “take” through harm or harassment of	PS	PS	PS	PS

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Draft EIR/EIS Section	Environmental Area/Impacts	Alternative 1 with Track Option A	Alternative 2 with Track Option A	Alternative 1 with Track Option B	Alternative 2 with Track Option B
	vernal pool fairy shrimp (VPFS).				
4.9	BIO-3: Construction of the proposed project could potentially result in “take” through harm or harassment of California clapper rail.	PS	PS	PS	PS
4.9	BIO-4: Construction of the proposed project could potentially result in “take” through harm or harassment of salt marsh harvest mouse.	PS	PS	PS	PS
4.9	BIO-5: Construction of the proposed project could potentially result in “take” through harm or harassment of California black rail.	PS	PS	PS	PS
4.9	BIO-6: Construction of the proposed project could potentially result in disturbance of sensitive bat species, including pallid bat and hoary bat.	PS	PS	PS	PS
4.9	BIO-7: Construction of the proposed project could potentially impact San Pablo vole and/or salt marsh wandering shrew	PS	PS	PS	PS
4.9	BIO-8: Construction of the proposed project could potentially result in disturbance to other sensitive bird species (Cooper’s hawk, tricolored blackbird, northern harrier, white-tailed kite, saltmarsh common yellowthroat, San Pablo song sparrow, burrowing owl) and migratory birds during the nesting season.	PS	PS	PS	PS
4.9	BIO-9: Construction of the proposed project would result in impacts to northern coastal salt marsh habitat, coastal brackish marsh habitat and brackish stream habitat.	PS	PS	PS	PS
4.9	BIO-10: Construction of the proposed project could potentially result in loss of eelgrass and/or widgeongrass beds.	PS	PS	PS	PS
4.9	BIO-11: Construction of the proposed project could potentially result in loss of intertidal mudflats.	PS	PS	PS	PS

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Draft EIR/EIS Section	Environmental Area/Impacts	Alternative 1 with Track Option A	Alternative 2 with Track Option A	Alternative 1 with Track Option B	Alternative 2 with Track Option B
4.9	BIO-12: Construction of the proposed project could potentially result in the spread of invasive species.	PS	PS	PS	PS
4.9	BIO-13: Dredging activities could impact marine mammals	PS	PS	PS	PS
4.9	BIO-14: Construction and dredging activities could result in the modification or disturbance of special aquatic sites including eelgrass beds, mudflats, and tidal marshes that provide fish habitat.	PS	PS	PS	PS
4.9	BIO-15: Construction and dredging activities may temporarily increase sedimentation and turbidity in Refugio Creek and San Pablo Bay.	PS	PS	PS	PS
4.9	BIO-16: Construction activities may potentially result in a chemical spill in Refugio Creek or San Pablo Bay.	PS	PS	PS	PS
4.9	BIO-17: Dredging activities could result in the entrainment of special-status fish and aquatic species.	PS	PS	PS	PS
4.9	BIO-18: Vibration and pressure waves resulting from pile driving could impact special-status fish and aquatic species and marine mammals.	PS	PS	PS	PS
4.9	BIO-19: Dredging activities could result in resuspension of contaminants.	PS	PS	PS	PS
4.9	BIO-20: Construction and dredging activities could result in increased predation risk of special-status fish and aquatic species.	PS	PS	PS	PS
4.9	BIO-21: Dredging activities could impact benthic invertebrates.	PS	PS	PS	PS
4.9	BIO-22: Dredging activities could result in the spread of non-native invertebrate species.	PS	PS	PS	PS
4.9	BIO-23: Dredging activities could impact phytoplankton production	PS	PS	PS	PS

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Draft EIR/EIS Section	Environmental Area/Impacts	Alternative 1 with Track Option A	Alternative 2 with Track Option A	Alternative 1 with Track Option B	Alternative 2 with Track Option B
4.9	BIO-24: Dredging activities could impact Pacific herring spawning.	PS	PS	PS	PS
4.9	BIO-25: Construction of the proposed project would result in impacts to wetlands and other waters of the U.S.	PS	PS	PS	PS
4.10	WR-1: Dredging of Refugio Creek and San Pablo Bay could impact water quality through mobilization of contaminated sediment.	S	S	S	S
4.10	WR-2: Construction of Hercules ITC facilities, roadways, and associated structures could potentially adversely degrade water quality.	PS	PS	PS	PS
4.10	WR-3: Implementation of the project could alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on or off-site.	PS	PS	PS	PS
4.10	WR-4: Implementation of the project could alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which could result in flooding on- or off-site.	PS	PS	PS	PS
4.10	WR-5: Operations in a floodplain could constitute hazards to human safety and property.	PS	PS	PS	PS
4.10	WR-6: Stormwater runoff from the Hercules ITC site and parking could degrade water quality.	PS	PS	PS	PS
4.10	WR-7: Operation of the Hercules ITC under either Alternative 1 or Alternative 2 could result in periodic inundation due to tsunami and/or rising sea level and other climate change effects.	LS	LS	LS	LS

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Draft EIR/EIS Section	Environmental Area/Impacts	Alternative 1 with Track Option A	Alternative 2 with Track Option A	Alternative 1 with Track Option B	Alternative 2 with Track Option B
4.11	GEO-1: Seismic activity could damage facilities and/or injure people.	PS	PS	PS	PS
4.11	GEO-2: The proposed project could result in substantial soil erosion of topsoil	PS	PS	PS	PS
4.11	GEO-3: Liquefaction, landslides, or lateral spreading could damage facilities and/or injure people and structures.	PS	PS	PS	PS
4.11	GEO-4: Subsidence could damage facilities.	PS	PS	PS	PS
4.11	GEO-5: The proposed project alternatives could potentially impact mineral resources.	LS	LS	LS	LS
4.12	HAZ-1: The proposed project could create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or through the accidental upset or release of hazardous materials.	PS	PS	PS	PS
4.12	HAZ-2: The proposed project would be located on a site that is included on a list of hazardous materials sites and could, as a result, create a significant hazard to the public or the environment.	PS	PS	PS	PS
4.14	UT-1: Construction activities have the potential to adversely impact existing underground utilities.	LS	LS	LS	LS
4.14	UT-2: The proposed project would not exceed wastewater treatment requirements from the applicable Regional Water Quality Control Board, nor would it require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities.	LS	LS	LS	LS

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Draft EIR/EIS Section	Environmental Area/Impacts	Alternative 1 with Track Option A	Alternative 2 with Track Option A	Alternative 1 with Track Option B	Alternative 2 with Track Option B
4.14	UT-3: The proposed project would not require or result in the construction of new stormwater drainage facilities or the substantial expansion of existing facilities, the construction of which could cause significance environmental effects.	LS	LS	LS	LS
4.14	UT-4: The proposed project would have sufficient water supplies to serve the project from existing entitlements and resources.	LS	LS	LS	LS
4.14	UT-5: The proposed project would comply with all federal, state, and local statutes and regulations related to solid waste. The proposed project would be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs.	LS	LS	LS	LS
4.15	PUB SVC-1: Construction traffic and other activities have the potential to adversely disrupt police and fire department emergency response times in the project area.	PS	PS	PS	PS
4.15	PUB SVC-2: The proposed Hercules ITC project is not anticipated to generate any substantial adverse impacts associated with the introduction of new or altered fire protection facilities in order to maintain acceptable service ratios, response times, or other performance objectives.	LS	LS	LS	LS
4.15	PUB SVC-3: No new police facilities would be required as a result of implementing the project. The Police Department would be able to maintain acceptable service ratios, response times, or other performance objectives, As such, construction or alteration of existing facilities would not be necessary, and impacts of the proposed project with respect to new or physically altered police protection facilities and services would be avoided.	LS	LS	LS	LS

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Draft EIR/EIS Section	Environmental Area/Impacts	Alternative 1 with Track Option A	Alternative 2 with Track Option A	Alternative 1 with Track Option B	Alternative 2 with Track Option B
4.15	PUB SVC-4: The proposed project would not result in substantial adverse physical impacts associated with the provision of new or physically altered public school facilities in order to maintain acceptable service ratios or other performance objectives, the construction of which could cause significant environmental impacts.	LS	LS	LS	LS
4.15	PUB SVC-5: The proposed project would not result in substantial adverse physical impacts associated with the provision of new or physically altered public library facilities in order to maintain acceptable service ratios or other performance objectives, the construction of which could cause significant environmental impacts, nor increase the use of existing public library facilities such that substantial physical deterioration of the facilities would occur or be accelerated.	LS	LS	LS	LS
4.15	PUB SVC-6: Cumulative impacts could occur on fire protection, enforcement services, public schools, and library facilities.	LS	LS	LS	LS

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2.0 Comments and Responses

A total of 18 written comment letters or emails were received during the written comment period for the Draft EIR/EIS (September 17, 2010 to November 15, 2010). All written comments have been assigned a letter number and comments are numbered with a binomial. For example, Comment 2-5 refers to the fifth comment in comment letter number two in the list of commenters (Table 2-1). Responses corresponding to each comment binomial follow each comment letter.

Table 2-1. Hercules ITC Draft EIR/EIS Commenters

No.	Name of Commenter	Title	Organization/Affiliation	Date Received
Federal Agencies				
1	David H. Sulouff	Chief, Bridge Section	U.S. Coast Guard 11th District	November 15, 2010
2	Connell Dunning	Transportation Team Supervisor	U.S. Environmental Protection Agency	November 15, 2010
3	Patricia Sanderson Port	Regional Environmental Officer	U.S. Department of the Interior	November 3, 2010
State Agencies				
4	Scott Wilson	Acting Regional Manager, Bay Delta Region	California Department of Fish and Game	November 3, 2010
5	Lisa Carboni	District Branch Chief, Local Development-Intergovernmental Review	California Department of Transportation	November 12, 2010
6	Cy R. Oggins	Chief, Division of Environmental Planning and Management	California State Lands Commission	October 26, 2010
Regional and Local Agencies				
7	Ian Peterson	Environmental Planner	Bay Area Air Quality Management District	November 8, 2010
8	Ming Yeung	Coastal Program Analyst	Bay Development and Conservation Commission	November 10, 2010

No.	Name of Commenter	Title	Organization/Affiliation	Date Received
9	Dean Allison	Director of Public Works	City of Pinole	October 18, 2010
10	Belinda B. Espinosa	City Manager	City of Pinole	November 5, 2010
11	Joseph G. Doser	Supervising Environmental Health Specialist	Contra Costa Health Services	October 1, 2010
12	William R. Kirkpatrick	Manager of Water Distribution Planning	East Bay Municipal Utility District	October 22, 2010
Individuals and Organizations				
13	Jeffrey Wisniewski	------	General Public	October 29, 2010
14	Myrna L deVera	------	General Public	November 14, 2010
15	Cletia Hart	------	General Public	November 15, 2010
16	Sherry McCoy	------	General Public	November 15, 2010
17	Mike Bowermaster	------	General Public	November 15, 2010
18	Steve Kirby	Hercules Project Coordinator for the West Contra Costa County Executive Committee	Sierra Club	October 11, 2010
19	Mike Bowermaster	------	General Public	October 18, 2010

Letter 1_U.S. Coast Guard
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http://yosemite.epa.gov/oeca/webeis.nsf/EIS01/BFD55C20261D36AE852577D9002109E5?opendocument
Last updated on Friday, November 12, 2010

National Environmental Policy Act (NEPA)

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EIS Data

Title	Hercules Intermodal Transit Center, Construction To Improve Access to Public Transit, Funding, Contra Costa County, CA		
EIS Number	20100369	**State**	CA
Document Type	Draft EIS	**Lead Agency**	FTA
Federal Register Date	09/17/2010	**Contact Name**	Paul Page
EIS Comment Due/ Wait Period Date	11/15/2010	**Contact Phone**	415-744-3133
Amended Notice Date	11/12/2010		
Amended Notice	Revision to FR Notice Published 09/17/2010: Extending Comment Period from 11/01/2010 to 11/15/2010.		
Supplemental Information			
Website			
Comment Letter Date		**Rating, if Draft EIS**	

Return

Under the provisions of the Coast Guard Authorization Act of 1982, the Coast Guard has determined this project does not require Coast Guard involvement for bridge permit purposes. 1-1

Signature: Date: 11/15/2010
DAVID H. SULOUFF
Chief, Bridge Section
11th Coast Guard District
By direction of District Commander

http://yosemite.epa.gov/oeca/webeis.nsf/EIS01/BFD55C20261D36AE852577D9002109... 11/12/2010

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free at 1–866–208–3676, or for TTY, 202–502–8659.

You may also register online at *http://www.ferc.gov/docs-filing/esubscription.asp* to be notified via email of new filings and issuances related to this or other pending projects. For assistance, contact FERC Online Support.

For further information, contact David Turner by telephone at 202–502–6091 or by e-mail at *David.Turner@ferc.gov.*

Kimberly D. Bose,
Secretary.

[FR Doc. 2010–28472 Filed 11–10–10; 8:45 am]

BILLING CODE 6717–01–P

ENVIRONMENTAL PROTECTION AGENCY

[ER–FRL–8993–6]

Environmental Impacts Statements; Notice of Availability

Responsible Agency: Office of Federal Activities, General Information (202) 564–1399 or *http://www.epa.gov/compliance/nepa/.*

Weekly receipt of Environmental Impact Statements Filed 11/01/2010 Through 11/05/2010 Pursuant to 40 CFR 1506.9.

Notice

In accordance with Section 309(a) of the Clean Air Act, EPA is required to make its comments on EISs issued by other Federal agencies public. Historically, EPA has met this mandate by publishing weekly notices of availability of EPA comments, which includes a brief summary of EPA's comment letters, in the **Federal Register.** Since February 2008, EPA has been including its comment letters on EISs on its Web site at: *http://www.epa.gov/compliance/nepa/eisdata.html.* Including the entire EIS comment letters on the Web site satisfies the Section 309(a) requirement to make EPA's comments on EISs available to the public. Accordingly, on March 31, 2010, EPA discontinued the publication of the notice of availability of EPA comments in the **Federal Register.**

EIS No. 20100439, Final EIS, USFS, WI, Twin Ghost Project, Proposes to Implement Vegetation and Transportation Management Activities, Great Divide Ranger District, Chequamegon-Nicolet National Forest, Ashland, Bayfield, Sawyer Counties, WI, Wait Period Ends: 12/13/2010, Contact: Debra Proctor 715–634–4821 Ext.325.

EIS No. 20100440, Draft EIS, USFS, MT, Warm Springs Habitat Enhancement Project, Restoring and Promoting Key Wildlife Habitat Components by Managing Vegetation, Reducing Fuels, and Promoting a More Resilient Fire Adapted Ecosystem, Helena Ranger District, Helena National Forest, Jefferson County, MT, Comment Period Ends: 12/27/2010, Contact: Liz Van Genderen 406–495–3749.

EIS No. 20100441, Second Draft EIS (Tiering), NCPC, DC, Tier-2 DEIS—Smithsonian Institution National Museum of African American History and Culture (NMAAHC), Construction and Operation, Between 14th and 15th Streets, NW., and Constitution Avenue, NW., and Madison Drive, NW., Washington, DC, Comment Period Ends: 01/11/2011, Contact: Jane Passman 202–633–6549.

EIS No. 20100442, Draft Supplement, FTA, WA, East Link Rail Transit Project, New and Updated Information, Proposes to Construct and Operate an Extension of the Light Rail System From Downtown Seattle to Mercer Island, Bellevue, and Redmond via Interstate 90, Funding and US Army COE Section 404 and 10 Permits, Seattle, WA, Comment Period Ends: 12/27/2010, Contact: John Witmer 206–220–7950.

EIS No. 20100443, Final EIS, NOAA, WA, PROGRAMMATIC—Incorporation of the Revised Washington Shoreline Management Act Guidelines Into the Federally Approved Washington Coastal Management Program, Amendment No. 4 Approval, Coastal Counties in WA, Wait Period Ends: 12/13/2010, Contact: Bill O'Beirne 301–563–1160.

Amended Notices

EIS No. 20100369, Draft EIS, FTA, CA, Hercules Intermodal Transit Center, Construction to Improve Access to Public Transit, Funding, Contra Costa County, CA, Comment Period Ends: 11/15/2010, Contact: Paul Page 415–744–3133.

Revision to FR Notice Published 09/17/2010: Extending Comment Period from 11/01/2010 to 11/15/2010.

EIS No. 20100386, Draft EIS, BLM, UT, Uinta Basin Natural Gas Development Project, To Develop Oil and Natural Gas Resources within the Monument Butte-Red Wash and West Tavapuis Exploration and Developments Area, Applications for Permit of Drill and Right-of-Way Grants, Uintah and Duchesne Counties, UT, Comment Period Ends: 11/30/2010, Contact: Mark Wimmer 435–781–4464.

Revision to FR Notice Published 10/01/2010: Extending Comment Period from 11/15/2010 to 11/30/2010.

Dated: November 8, 2010.

Robert W. Hargrove,
Director, NEPA Compliance Division, Office of Federal Activities.

[FR Doc. 2010–28503 Filed 11–10–10; 8:45 am]

BILLING CODE 6560–50–P

ENVIRONMENTAL PROTECTION AGENCY

[FRL–9225–4]

Public Water System Supervision Program Revision for the State of Montana

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice.

SUMMARY: In accordance with the provisions of section 1413 of the Safe Drinking Water Act (SDWA), 42 U.S.C. 300g–2, and 40 CFR 142.13, public notice is hereby given that the State of Montana has revised its Public Water System Supervision (PWSS) Primacy Program by adopting federal regulations for the Lead and Copper Rule Short Term Regulatory Revisions which correspond to the National Primary Drinking Water Regulations (NPDWR) in 40 CFR part 141 and 142. The EPA has completed its review of these revisions in accordance with the SDWA and proposes to approve Montana's primacy revisions for the above stated Rule.

Today's approval action does not extend to public water systems in Indian country, as defined in 18 U.S.C. 1151. Please see **SUPPLEMENTARY INFORMATION,** Item B.

DATES: Any member of the public may request a public hearing on this determination by December 13, 2010. Please see **SUPPLEMENTARY INFORMATION,** Item C, for details. Should no timely and appropriate request for a hearing be received, and the Regional Administrator (RA) does not elect to hold a hearing on his own motion, this determination shall become effective December 13, 2010. If a hearing is granted, then this determination shall not become effective until such time following the hearing as the RA issues an order affirming or rescinding this action.

ADDRESSES: Requests for a public hearing shall be addressed to: James B. Martin, Regional Administrator, c/o Breann Bockstahler (8P–W–DW), U.S. EPA, Region 8, 1595 Wynkoop Street, Denver, CO 80202–1129.

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Executive Summary

The City of Hercules, California (Hercules) proposes to construct an intermodal transit center (Hercules ITC), associated roadway improvements, and ancillary facilities at a site adjacent to San Pablo Bay in Contra Costa County. The City is the lead agency for the California Environmental Quality Act. The City intends, in part, to construct this facility with federal funding; therefore, the Federal Transit Administration is acting as the federal lead agency for the project. The City of Hercules will also coordinate with the Capital Corridor Joint Powers Authority (CCJPA) to provide intercity passenger rail service to the site and the West Contra Costa Transit Authority (WestCAT) to provide bus connections.

The area surrounding the proposed Hercules ITC site is being redeveloped with transit oriented housing and business developments, and the proposed project would improve access to public transit (intercity rail and local buses) for residents and workers. Providing access to public transit is also expected to reduce congestion on the nearby Interstate 680, as well as local arterials.

The Hercules ITC includes pedestrian access to the existing Union Pacific Railroad (UPRR) line and a newly constructed passenger platform. Train service would be available throughout most of the day with the Hercules ITC serving passengers traveling throughout the Bay area making connections with Bay Area Rapid Transit (BART), local mass transit systems, and interconnecting trains going as far south as Los Angeles, and as far north as Sacramento and Oregon. Train passengers would be able to either walk from nearby residential units, bike along the multi-use path connection that is part of the proposed project, or park their motor vehicles in the parking lot that is part of the proposed project. Transit center patrons would also be able to access the site via public bus service that will be extended to the proposed Hercules ITC as part of this project. The proposed project includes development of a small café to serve commuters, nearby residents, and workers. The Water Emergency Transportation Authority is considering the construction of a ferry terminal in Hercules and the proposed Hercules ITC would accommodate a connection to the Hercules ferry terminal and it will be only be considered under cumulative effect analysis in this document.

Because the site is currently undeveloped (it was previously used for the production of explosives and fertilizer and has undergone hazardous materials remediation), nearby roadways would need to be extended to access the site. The John Muir Parkway would be extended as part of the project and two new bridges would be built over Refugio Creek to provide access to and circulation through the site. A temporary surface parking lot would be constructed immediately as part of the project and a three-story park structure is included in the project as a future proposed action. The project would also include relocation of existing utility pipelines, including a natural gas line.

In order to improve operation of the rail line, the UPRR track would be realigned to the east (away from San Pablo Bay) and a new railroad bridge would be constructed over Refugio Creek. Refugio Creek would also be realigned and the creek channel into San Pablo Bay would be dredged to improve flow during heavy rain events and high tides.

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Potential transit center sites were first limited to sites along the existing Union Pacific rail line. Locating a new rail line would not be efficient or practicable; therefore, the intermodal transit center had to be located adjacent to an existing line. The proposed Hercules ITC site was selected based on the projected ridership and safety. Other sites in the area would have fewer projected riders or are on curved stretches of track that have inadequate visibility for safe train operation. The Draft EIS/EIR considers a second action alternative (east of Refugio Creek) that would provide equal access to public transit, but this alternative would reduce the functionality of the adjacent properties and would require the threat of condemnation to acquire the site from a private party. This alternative was not selected as the proposed action for these reasons.

The potential adverse environmental effects, the severity of each effect, and proposed mitigation measures are shown below in **Table ES-1**.

Letter 1 – U.S. Coast Guard

Response to Comment 1-1.

Comment noted. Commenter notes that the project would construct new bridge crossings, but would not require U.S. Coast Guard bridge permits.

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

November 15, 2010

Mr. Paul Page
Federal Transit Administration, Region IX
201 Mission Street, Suite 1650
San Francisco, CA 94105

Subject: Draft Environmental Impact Statement for the Hercules Intermodal Transit Center, Hercules, California (CEQ #20100369)

Dear Mr. Page:

The Environmental Protection Agency (EPA) has reviewed the above-referenced document pursuant to the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500-1508), and Section 309 of the Clean Air Act. Our detailed comments are enclosed.

We commend the Federal Transit Administration (FTA) and the City of Hercules for seeking to increase access to and connectivity of public transportation services. We also commend the inclusion of pedestrian, bicycle, and multi-use trail improvements and amenities, and the incorporation of renewable energy elements, with the goal of achieving LEED certification. We encourage the incorporation of as many green infrastructure approaches (see http://cfpub.epa.gov/npdes/greeninfrastructure/technology.cfm) as possible to minimize impacts of runoff to San Pablo Bay.

EPA has some concerns and recommendations about the analysis of impacts to wetlands and waters of the U.S., air quality, and consultation with the Capitol Corridor Joint Powers Authority. Therefore, we have rated this document EC-2, *Environmental Concerns, Insufficient Information*. Please see the attached *Rating Factors* for a description of our rating system.

We appreciate the opportunity to review this DEIS. When the Final EIS is released for public review, please send two copies to the address above (mail code: CED-2). If you have any questions, please contact Carolyn Mulvihill, the lead reviewer for this project, at 415-947-3554 or mulvihill.carolyn@epa.gov.

Printed on Recycled Paper

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Sincerely,

Carolyn Mulsifed for

Connell Dunning, Transportation Team Supervisor
Environmental Review Office
Communities and Ecosystems Division

Enclosures:
Summary of EPA Rating Definitions
EPA's Detailed Comments

cc: Lisa Hammon, Assistant City Manager, City of Hercules
Ian Liffman, U.S. Army Corps of Engineers
John Cleckler, U.S. Fish and Wildlife Service
Kathryn Hart, San Francisco Bay Regional Water Quality Control Board
Lindy Lowe, Bay Conservation and Development Commission
Craig Goldblatt, Metropolitan Transportation Commission

2

EPA DETAILED COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE HERCULES INTERMODAL TRANSIT CENTER, NOVEMBER 15, 2010

Wetlands and Other Waters of the United States

EPA has a few concerns and recommendations regarding the analysis of potential impacts to wetlands and waters of the United States resulting from the proposed project.

John Muir Parkway Extension

The Draft Environmental Impact Statement (DEIS) states that the construction of the John Muir Parkway extension would require construction of a culvert crossing of the North Channel of Refugio Creek. The DEIS does not demonstrate that potential impacts to the North Channel resulting from this construction have been minimized to the maximum extent practicable. The Final Environmental Impact Statement (FEIS) should identify what other alternatives for the road crossing were considered and whether it is possible to construct a bridge crossing rather than a culverted crossing to reduce impacts to the channel. The FEIS should also discuss what criteria were used to choose the potential culvert sizes, and include information on what size storm the proposed culverts would pass. 2-1

Recommendations:

- Identify in the FEIS what other road crossing alternatives were considered and whether it is possible to construct a bridge crossing to reduce impacts to the channel.
- Discuss in the FEIS what criteria were used to choose culvert sizes, including information on what size storm the proposed culverts would pass.

Union Pacific Railroad Bridge Replacement

In the description of the Union Pacific Railroad (UPRR) bridge replacement, the DEIS does not indicate how the timber trestles will be removed, or whether they have been treated with creosote. The DEIS also does not discuss potential impacts from removal of the trestles. The FEIS should include this information, as well as a discussion of how storm water runoff from the tracks will be directed and the amount of new riprap that will be placed in the creek. 2-2

Recommendations:

- Include a discussion in the FEIS of how the timber trestles of the existing UPRR bridge will be removed, whether they have been treated with creosote, and what impacts may result from their removal.
- Include a discussion in the FEIS of how stormwater runoff from the tracks will be directed in the new bridge structure, and clarify how much new riprap will be placed in the creek as a part of this element of the project.

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Dredging

The Water Resources chapter of the DEIS states that approximately 400 cy of San Pablo Bay sediment would be dredged as part of the Refugio Creek Restoration. However, no quantitative data is provided in the Biological Resources chapter to identify the extent of impact to various habitat types from this dredging. This information should be included in the FEIS. Also please include a discussion on the status of consultation with the U.S. Fish and Wildlife Service.

The FEIS should also clearly identify the extent of proposed dredging on a figure. For example, clarify on the legend of Figure 4.9-1 or in the text whether the indicated 150ft by 40ft footprint is the full extent of proposed dredging. Also demonstrate in the FEIS that the dredging footprint is the minimum necessary to complete the project.

The DEIS indicates that the City of Hercules will coordinate sediment testing with the Dredged Material Management Office (DMMO). If dredged material is proposed for aquatic placement, coordination with the DMMO is required. However, if only upland placement is proposed, coordination through the DMMO is optional. Depending on the disposal option chosen, sediment testing could be required by the Regional Water Quality Control Board (RWQCB), U.S. Army Corps of Engineers (USACE), EPA, and/or Bay Conservation and Development Commission. 2-3

Section 4.10.3, Mitigation Measure WR-1a states that "[i]f the results of the SAP indicate that water quality will not be impacted by dredging, a consolidated Dredging-Dredge Material Reuse/Disposal permit would be issued by the USACE," which is "functionally equivalent to the RWQCB Report of Waste Discharge." While DMMO does use a consolidated dredging permit application, there is currently no consolidated dredging permit. The project will require a Clean Water Act (CWA) 404/River and Harbors Section 10 permit from USACE as well as a separate CWA 401 Certification/Waste Discharge Requirements from RWQCB.

Recommendations:

- Include quantitative information in the Biological Resources chapter of the FEIS regarding the estimated impacts to various habitat types from bay dredging. Also include a discussion on the status of consultation with the U.S. Fish and Wildlife Service.
- Include in the FEIS a figure that illustrates the dredging footprint. Demonstrate in the FEIS that the dredging footprint is the minimum necessary to complete the project.
- Clarify in the FEIS where dredged material is proposed to be disposed, which will inform the required coordination process.

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Compensatory Mitigation

The DEIS states that a jurisdictional determination (JD) of waters of the U.S. for the project site was issued by the USACE in December 2008, but that project design modifications, which enlarged the study area boundary and potential impacts, occurred in 2009. A new delineation was prepared in fall 2009 but has not yet been verified by the USACE. The JD of this delineation should be issued prior to the FEIS so that verified impacts can be included in the FEIS.

The compensatory mitigation proposal for these impacts must comply with the 2008 EPA/USACE Mitigation Rule (40 CFR 230, Subpart J). The DEIS indicates that compensatory mitigation for impacts to waters of the U.S. could be provided at the North Channel, Refugio Creek, and/or Chelsea Wetlands. According to a City of Hercules website on the Chelsea Wetlands Restoration project, the City has obtained over $240,000 in local and federal funding for the restoration project. Compensatory mitigation "credit" can only be given for work done in these areas above and beyond any work already funded by federal, state, or local grants. 2-4

Recommendations:

- Obtain the JD and include information on potential impacts to waters of the U.S. in the FEIS.
- Ensure that mitigation proposed for the impacts resulting from this project is not part of a previously-funded restoration project and complies with the 2008 Mitigation Rule.

Air Quality

In the Air Quality chapter, the DEIS lists the criteria for determining project conformity, including the project being included in a currently conforming transportation plan and transportation improvement program (TIP). However, the following analysis does not state whether the project is included in these documents. The FEIS should include this information.

The DEIS also states that "USEPA has granted a one-year grace period from the effective date of the new nonattainment designation before transportation conformity applies (USEPA 2009). Therefore, transportation conformity is not required for the $PM_{2.5}$ nonattainment area, and a hot-spot evaluation for $PM_{2.5}$ was not completed for this project." The referenced grace period will end on December 14, 2010. Since this project will not receive a Record of Decision by that date, FTA will need to follow the new procedures for projects in $PM_{2.5}$ nonattainment areas, which is to engage the metropolitan planning organization (in this area, the Metropolitan Transportation Commission [MTC]) to determine whether this project is a "project of air quality concern (POAQC)." If the project is a POAQC, then a $PM_{2.5}$ hot spot analysis must be performed. If the project is 2-5

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not a POAQC, then FTA will just need to complete the interagency consultation process to get concurrence on that decision with the appropriate interagency partners.

Finally, Table 4.7-1 lists the total net operational emissions for the project and indicates that all emissions will decrease. The FEIS should clarify what the model-year is for these estimates and provide an explanation for the decreases (decreases in vehicle traffic versus improving vehicle fuels and engines, etc.).

2-5 Cont.

Recommendations:

- Clarify in the FEIS whether the project is included in the region's conforming transportation plan and TIP.
- Consult with MTC on whether the project is a POAQC. If it is determined to be a POAQC, perform a $PM_{2.5}$ hot spot analysis and include the results of that analysis in the FEIS. Report the outcome of consultation with MTC in the FEIS.
- Clarify in the FEIS what the model-year for the emissions estimates is, and provide an explanation for the decreases in emissions.

Coordination with Capitol Corridor Joint Powers Authority

2-6

The DEIS states that the proposed project would provide access to the Capitol Corridor intercity passenger rail line, but does not discuss FTA and the City of Hercules' coordination with the Capital Corridor Joint Powers Authority (CCJPA). It is unclear whether CCJPA has agreed to add a Hercules stop to its Capitol Corridor route. This information should be clarified in the FEIS.

Recommendation:

- Include in the FEIS a discussion of the status of consultation between FTA, the City of Hercules, and the CCJPA. Clarify whether CCJPA has agreed to add a Hercules stop to its route.

4

SUMMARY OF EPA RATING DEFINITIONS*

This rating system was developed as a means to summarize the U.S. Environmental Protection Agency's (EPA) level of concern with a proposed action. The ratings are a combination of alphabetical categories for evaluation of the environmental impacts of the proposal and numerical categories for evaluation of the adequacy of the Environmental Impact Statement (EIS).

ENVIRONMENTAL IMPACT OF THE ACTION

"LO" (Lack of Objections)

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

"EC" (Environmental Concerns)

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

"EO" (Environmental Objections)

The EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

"EU" (Environmentally Unsatisfactory)

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potentially unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

ADEQUACY OF THE IMPACT STATEMENT

"Category 1" (Adequate)

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

"Category 2" (Insufficient Information)

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analysed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

"Category 3" (Inadequate)

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analysed in the draft EIS, which should be analysed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From EPA Manual 1640, Policy and Procedures for the Review of Federal Actions Impacting the Environment.

Letter 2 – U.S. Environmental Protection Agency (U.S. EPA)

Response to Comment 2-1

The John Muir Parkway crossing at the North Channel was designed to accommodate a 100-year storm event that would include the run-off from the adjacent business park, adjacent streets, and the planned flow from the Bayfront Development. The proposed crossing type was evaluated in consideration of technical constraints, functional requirements, and cost, and to mitigate environmental concerns.

The crossing type must be coordinated with existing and proposed utilities that will be placed within the road right-of-way and footprint. Due to geometric constraints, utilities such as a sanitary sewer line must be placed below the North Channel while other utilities (water, storm water, and electrical) will be placed above the channel in the road bed.

A clear span bridge was considered as an alternative to cross the North Channel. However, due to the soft soils present on the site and utility constraints, construction of a bridge or an open bottom culvert would require an elaborate foundation system and significantly higher costs to address the low flows anticipated in the intermittent drainage, and thus standard culvert construction is considered more practicable. The culvert has been designed to allow the plan and profile of the fresh water intermittent drainage to continue unencumbered under John Muir Parkway and sized to accommodate both the minimum hydraulic requirement and a 100-year flood event. The culvert crossing was initially sized as a forty-eight (48) inch reinforced concrete pipe (RCP) (or alternatively a 4-ft box culvert) with an earth bottom to satisfy the calculated hydraulic conveyance.

The proposed culvert has been widened in consideration of smaller frequent storms and will have a natural bottom. The culvert will be wide enough to support an active channel with a floodplain bench extending through the culvert. The active channel will convey anticipated base flow and up to a two-year event; the active channel width will be designed at ten (10) times the flow depth in the two-year event. The culvert will be 1.5 times the width of the active channel to allow for flood plain benches on either side of the channel. This will result in a culvert that is sized significantly larger than a culvert designed strictly for hydraulic performance.

Additionally, in response to requests from the SFRWQCB regarding creek crossings and stabilization, no armor is proposed as part of the John Muir Parkway crossing. Rather, banks will be stabilized using native vegetation.

Response to Comment 2-2

Due to the age of the materials, the wood trestles are assumed to have been treated with creosote. Contaminated materials will be removed, contained and off-hauled to an approved facility in accordance with local, state, and federal requirements; as such, no significant environmental impact will occur.

Stormwater runoff from areas outside of the UPRR tracks including the platform will be treated using infiltration treatment facilities. UPRR is exempt from stormwater treatment requirements according to 40 Code of Federal Regulations Section 122.26(a)(9)(D)(iii)(b)(14). Runoff from

within the UPRR right of way will drain through the ballast into open channels, or the San Pablo Bay, or Refugio Creek.

Footings and abutments for the new UPRR bridge and the Transit Loop bridge will be armored with approximately 21,890 square feet (0.5 acre) of rock slope protection (RSP) to ensure stability of the rail and transit bridges. Upstream, the Bayfront Bridge and the John Muir Parkway crossing of the North Channel will not include any RSP but will be stabilized and protected using native vegetation.

Response to Comment 2-3

As shown on Figure 4.9-1 in the Draft EIR/EIS, excavation will be limited to an area approximately 40-ft. x 150-ft. for the new channel area which will involve excavating approximately 400 cubic yards (cy) of bay sediments. This impact has been included in the Draft EIR/EIS discussion of biological resources under Impact BIO-14 (pages 4-98 and 4-99). Total impacts of Alternatives 1 and 2 are compared in Tables 4.9-1 and 4.9-2 of the Draft EIR/EIS. As discussed under Impact BIO-14, realignment of the Refugio Creek channel will eliminate three existing 90-degree turns of the channel and will improve the hydrologic conveyance of the channel. These abrupt turns are the result of historic modifications of the creek channel and include vertical banks of concrete bags and a debris shelf in the bay. Excavation will restore the creek to a more natural meandering channel and remove construction debris in the bay including creosote logs, bricks, pipe, etc. that are remained from the historic Hercules Powder Company.

USFWS staff visited the site in April 2010 and provided comments recommending the initiation of formal consultation in July 2010. Biological Assessments were prepared and submitted to the USFWS and the NMFS in February 2011, with the requests to initiate formal consultation. Biological Opinions from both the USFWS and the NMFS will be incorporated in the Final EIS and included in the Record of Decision.

Figure 4.9-1 of the Draft EIR/EIS provides the planned dredging/excavation footprint proposed to realign Refugio Creek in San Pablo Bay. The bottom low flow channel would be approximately 20 feet wide with a depth of 3.5 feet. Slopes would rise at approximately 1:1 and tie into the existing top of the mudflat to minimize sloughing and erosion back into the channel. Figure 4.9-1 also shows the approximate existing Refugio Creek Channel and the third right angle change as it flows out into the Bay. Figure 4.9-1, which incorrectly noted the existing channel as the "Approximate Excavation Channel," has been replaced as shown in Section 3.0, Minor Changes and Edits to the Draft EIR/EIS. This footprint of a 20 foot bottom width continues the proposed restoration work upstream and allows for a gradual widening as it enters the Bay. Design of the new channel and the necessary excavation/dredging has a straight alignment that is a direct connection between Refugio Creek outfall and existing low-flow channel within San Palo Bay. This design is the minimum necessary to reestablish a new channel and does not propose any additional excavation.

A portion of the excavated (dredged) material, if clean, may be used (placed) in aquatic sites as part of the restoration of cordgrass habitats in the bay. The City will coordinate with the Dredged Materials Management Office (DMMO), as necessary, to ensure compliance with all

applicable laws. The remainder of the material will be disposed of in uplands and either reused on site as fill or will be off-hauled to an appropriate facility in accordance with local, state and federal requirements; as such, no significant environmental impact will occur. The City will coordinate with the USACE for a Clean Water Act (CWA) 404/Rivers and Harbors Section 10 permit and with the RWQCB for a CWA 401 certification for the project.

Response to Comment 2-4

A Jurisdictional Delineation (JD) of waters of the United States has been submitted to the USACE and a verification visit was conducted. Revisions to the JD requested during the verification visit were completed and the revised document submitted to the USACE in February 2011 for USACE verification. Impacts based on verified features will be included in the FEIS.

The City will prepare a mitigation monitoring plan in accordance with the 2008 Mitigation Rule. Prior to proposal for use, the City will ensure that the mitigation is not part of a previously funded restoration project.

Response to Comment 2-5

The project is included in the regional emissions analysis prepared for the *Transportation 2035 Plan: Change in Motion* (Transportation 2035 Plan), adopted by the Metropolitan Transportation Commission (MTC) in April 2009 and the *2011 Transportation Improvement Program* (2011 TIP), adopted by the MTC in October 2010. The MTC has determined that both the Transportation 2035 Plan and the 2011 TIP are consistent with and conform to the intent of the State Implementation Plan, as demonstrated in the Transportation-Air Quality Conformity Analysis for the Transportation 2035 Plan and the 2011 TIP, dated October 27, 2010.

As the project sponsor, the City of Hercules coordinated with the MTC to determine if the project is a Project of Air Quality Concern (POAQC) and to evaluate the draft qualitative hot-spot analysis prepared for the Hercules ITC. In December 2010, EPA released final modeling guidance for performing quantitative $PM_{2.5}$ and PM_{10} hot-spot analyses at the project level for transportation projects, and established a two-year grace period for the implementation of the new guidelines. Quantitative hot-spot analyses will not be required for Transportation Conformity under 40 CFR §93.123(b)(4) until the end of the implementation grace period in December 2012. During the grace period, transportation projects that are within nonattainment or maintenance areas for particulate matter and are not exempt require a qualitative analysis that "must document that no new local $PM_{2.5}$ violations will be created and the severity or number of existing violations will not be increased as a result of the project" (FHWA 2006).

After release of the Draft EIR/EIS, a qualitative $PM_{2.5}$ hot-spot analysis (following the EPA's and FHWA's joint guidance) was conducted for the proposed project using a comparison approach and the analysis and results are included in the Final EIR in **Appendix A**. Nine transit stations along the Capitol Corridor line and eight $PM_{2.5}$ air quality monitoring stations were included in the comparison. The analysis concluded that the proposed project would have the anticipated net effect of reducing the regional impacts on air quality from those that would occur if the proposed Hercules ITC project was not completed.

The decrease in emissions is due to a combination of the following:

- Diesel bus and train emissions are not major contributors to ambient concentrations of $PM_{2.5}$ in the Bay Area. According to EPA emission summaries, all on-road motor vehicles including a small percentage of diesel buses, accounts for about 12.6% of total $PM_{2.5}$ emissions in the Bay Area.
- Residential wood combustion and industrial processes are the largest source of $PM_{2.5}$ emissions in the Bay Area, accounting for more than half (53.5%) of all emissions of $PM_{2.5}$ (EPA 2005)
- Ambient $PM_{2.5}$ monitoring in areas most similar to the Hercules ITC project site were below the National Ambient Air Quality Standards and California standards.
- The Build/No Build emission test conducted by the MTC for the RTP and TIP conformity analysis demonstrated that emissions from the Build scenario, which includes the proposed Hercules ITC, would be lower than the No Build scenario.

The Federal Transportation Conformity Rules (40 CFR §93.126) requires that projects determined to be non-exempt conduct a project-level review and an interagency consultation with the Air Quality Conformity Task Force (AQCT). The AQCT consists of members from the Environmental Protection Agency, the Federal Highways Administration, and the California Department of Transportation, and other agencies and serves to determine if construction of a project will result in negative air quality impacts of fine particulate matter in the project area. The MTC as the San Francisco Bay Area region's Metropolitan Planning Organization handles the project level review and the interagency consultation in the Hercules area.

The City initiated consultation with the AQCT using the streamlining process in April 2011 and sought concurrence on the Project of Air Quality Concern (POAQC) determination and review of the qualitative hot-spot analysis. At an AQCT meeting on May 26, 2011, the AQCT concurred that the project is a POAQC but the project does not substantially cause or contribute to $PM_{2.5}$ exceedance. The MTC sent the City a letter of project-level conformity completion on June 21, 2011 (Appendix B).

Response to Comment 2-6

The City of Hercules has closely coordinated the project with the Capitol Corridor Joint Powers Authority (CCJPA) in cooperation with the host railroad, Union Pacific Railroad (UPRR) and the passenger rail operator, Amtrak. The FTA has not been a direct party to the station stop coordination. Amtrak and CCJPA must work under Federal Railroad Administration (FRA) guidelines with respect to safe design and operations, and the FTA does not have any direct involvement with the CCJPA.

Since the Hercules Intermodal Transit Center will exclusively serve trains managed by CCJPA, a station stop approval will ultimately be required from the CCJPA Board. The CCJPA Board may approve a station stop provided the station is designed, developed, and operated according to the CCJPA's New Station Policies. Beyond meeting the core design and operational requirements, which have been reviewed and coordinated with Amtrak and UPRR (entities integral to CCJPA's ability to approve the station), a full funding plan for the station is required along with travel time mitigation, which usually includes track improvements elsewhere and/or schedule adjustments which offset the travel time impacts for stopping at the station. The City of

Hercules continues to coordinate and finalize a full funding plan and travel time mitigation plan between all the parties (Amtrak, CCJPA, UPRR, and the City of Hercules).

Throughout the development of the project, City of Hercules has met with CCJPA to coordinate the station design and the construction phasing, to review the funding plan as it is developing, and to also discuss potential mitigations for the loss in travel time due to the stop if approved. At this point, CCJPA staff has provided sufficient feedback on the design so that the City of Hercules feels the design meets all the CCJPA design and operational requirements. Working with CCJPA to certify that there is a full funding plan and mitigation for travel time loss are the only remaining tasks to complete with CCJPA. However, as the CCJPA is a state agency, it must comply with CEQA's requirements prior to issuing an approval. Consequently, before the Hercules ITC can be scheduled for CCJPA Board approval, the City of Hercules must certify the final EIR for the Hercules ITC project.

NOV-03-2010 10:01 From: To:15107992521 Page:2/2

Letter 3_U.S.DOI
Page 1 of 1

United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
Pacific Southwest Region
1111 Jackson Street, Suite 520
Oakland, California 94607

IN REPLY REFER TO:
ER#10/784

Filed Electronically

29 October 2010

Lisa Hammon
Assistant City Manager
City of Hercules
111 Civic Drive
Hercules, CA 94547

Subject: **Review of Draft Environmental Impact Report/Environmental Impact Statement for Construction of Intermodal Transit Center, City of Hercules, Contra Costa County, CA**

Dear Ms. Hammon,

The Department of the Interior has received and reviewed the subject document and has no comments to offer.

Thank you for the opportunity to review this project.

Sincerely,

Patricia Sanderson Port

Patricia Sanderson Port
Regional Environmental Officer

cc:
Director, OEPC
Staff Contact, OEPC
Office of Planning & Program Management, Paul Page

Letter 3 – U.S. Department of the Interior

Response to Comment 3-1.

Comment noted. The City appreciates the Department of the Interior's review. No response is required.

State of California – The Natural Resources Agency
DEPARTMENT OF FISH AND GAME
Bay Delta Region
7329 Silverado Trail
Napa, CA 94558
(707) 944-5500
www.dfg.ca.gov

ARNOLD SCHWARZENEGGER, Governor
John McCamman, Director

Letter 4_CDFG
Page 1 of 4

November 3, 2010

Ms. Lisa Hammon
City of Hercules and Federal Transit Administration
111 Civic Drive
Hercules, CA 94547

Dear Ms. Hammon:

Subject: Hercules Intermodal Transit Center Project, Draft Environmental Impact Statement/Environmental Impact Report, SCH #2009112087, Contra Costa County

The proposed project consists of the construction of the Hercules Intermodal Transit Center (Hercules ITC), which would include a new passenger train station on the existing Capitol Corridor line, a transit bus terminal, access roadways, trails and parking facilities. Additionally, the facility would be designed to accommodate potential future ferry service. Three project alternatives are analyzed in the draft Environmental Impact Statement/Environmental Impact Report (EIS/EIR), including a No-Action Alternative.

Both action alternatives involve realignment and restoration of Refugio Creek. The alternatives also involve construction of a station platform within the railroad right of way, construction of a surface parking lot adjacent to Refugio Creek, installation of a creek trail, and at least one public plaza.

Alternative 1 would involve construction of a station building immediately to the west of the mouth of Refugio Creek. A transit loop road at the terminus of John Muir Parkway would be installed, necessitating two additional bridges over the creek. A public promenade, a small park, and a plaza would be installed adjacent to the proposed bridges. Future phases of construction would involve construction of a parking garage adjacent to the park.

Alternative 2 would involve construction of a station building immediately to the east of the mouth of Refugio Creek. One new bridge would be installed to connect John Muir Parkway to Sanderling Drive. The public promenade, small park, and plaza proposed under Alternative 1 would be replaced by a conference and banking center with parking.

The Department of Fish and Game (DFG) has reviewed the documents provided for the subject project and offers the following comments.

Conserving California's Wildlife Since 1870

Letter 4_CDFG
Page 2 of 4

Ms. Lisa Hammon
November 3, 2010
Page 2

CHAPTER 3.9, AFFECTED ENVIRONMENT – BIOLOGICAL RESOURCES

California Endangered Species Act/California Environmental Quality Act

Definition of Take. Page 3-117 of the EIS/EIR indicates that "take" should be "interpreted to mean the direct killing of a species." Take is defined in Section 86 of the Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." This definition also applies under the California Endangered Species Act (CESA). 4-1

CESA Consultation for State Lead Agencies. On page 3-117, the EIS/EIR states:

> Under CESA, State agencies are required to consult with the California Department of Fish and Game (CDFG) when preparing CEQA documents. Consultation ensures that proposed projects or actions do not have a negative effect on state-listed species.

There does not appear to be a state lead agency for the proposed project. Therefore, the CESA consultation procedure for a state lead agency (CESA, Section 2053) does not apply. The project sponsor is responsible for obtaining a CESA Incidental Take Permit or Consistency Determination if incidental take of a state-listed species is expected to occur with implementation of the proposed project. CESA permits allow incidental take of individuals of a species only if the project's impacts would be "minimized and fully mitigated" [CESA, Section 2081(b)]. 4-2

Fish and Game Code

Fully Protected Species. DFG recommends that the following text be added to the regulatory discussion of CESA on pages 3-117 to 3-118:

> Certain species have been designated as "fully protected" under Sections 3511 and 4700 of the Fish and Game Code. By law, DFG cannot issue permits or licenses, including CESA incidental take permits, for take of fully protected species. DFG may only authorize the taking of such species for necessary scientific research.

California clapper rail (*Rallus longirostris obsoletus*), California black rail (*Laterallus jamaicensis*), and the salt marsh harvest mouse (*Reithrodontomys raviventris*), species thought to exist in the project area, are designated as fully protected species under Fish and Game Code. 4-3

Sensitive Biological Resources

California Black Rail (*Laterallus jamaicensis coturniculus*). Table 3.9-1 on page 3-135 indicates that protocol-level surveys for this species were last conducted in 2007 and are at least three years old. Although no individuals of this species were found in the Environmental Study Limit (ESL) during such surveys, individuals were documented in the nearby tidal marsh in 2001, adjacent to the southern-end of the project boundary for Track Option B. Since suitable nesting habitat occurs in the ESL and this species is known to exist in the immediate vicinity, it is reasonable to conclude that there is potential for this species to occur in the project area. 4-4

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November 3, 2010
Page 3

CHAPTER 4.9, ENVIRONMENTAL CONSEQUENCES – BIOLOGICAL RESOURCES

Impacts

Future Ferry Service Impacts. Alternatives 1 and 2 propose different locations for the station, each of which would result in a different configuration for the future ferry pier. The wave action impacts associated with future ferry service are a foreseeable consequence of the choice of a location for the station and could vary across the alternatives. For full disclosure, the EIS/EIR should analyze and compare potential wave action impacts on nearshore habitat associated with each of the two station location alternatives. 4-5

Potential Impacts to Sensitive Natural Communities. Table 4.9-1 lists approximately 8.014 to 8.199 acres of potential wetland impacts. All impacts to creeks and wetlands should be avoided where possible and there should be no net loss of either wetland acreage or wetland habitat value. Proposed mitigation measures for wetland impacts and restoration of Refugio Creek should be determined in coordination with the resource agencies and fully disclosed in the CEQA document prior to certification of the EIR. 4-6

Mitigation Measures

CNDDB Reporting. All mitigation measures requiring pre-construction biological surveys should require that any special-status species found during the surveys will be reported to the California Natural Diversity Database. 4-7

Notification to DFG. Mitigation Measures BIO-2 and BIO-4 should be revised to require notification to DFG at least 48 hours prior to construction if California clapper rail or salt marsh harvest mouse are found during pre-construction surveys. 4-8

California Clapper Rail Avoidance. The breeding season reported in Mitigation Measure BIO-3 (page 4-89) should be revised to read "January 15 to August 31." Construction should be avoided within 700 feet of identified calling centers during this period until DFG is consulted. California clapper rail is a fully protected species under Fish and Game Code, and take of this species cannot be authorized. 4-9

Salt Marsh Harvest Mouse Avoidance. Salt marsh harvest mouse is a fully protected species under Fish and Game Code, and take of this species cannot be authorized. If any areas with pickleweed or vegetation within 50 feet from the edge of pickleweed need to be cleared for project activities, vegetation should be removed only with non-mechanized hand tools (i.e. trowel, hoe, rake, and shovel). No motorized equipment, including weed wackers or lawn mowers, should be used to remove this vegetation. Vegetation should be removed under the supervision of a qualified biologist approved by DFG. If a mouse of any species is observed within the areas being removed of vegetation, DFG should be notified. Unless otherwise approved by DFG, the mouse should be allowed to leave on its own. Vegetation removal may begin when no mice are observed, or with DFG approval, and should start at the edge farthest from the salt marsh and work its way towards the salt marsh. This method of removal provides cover for salt marsh harvest mouse and allows them to move towards the salt marsh on their own volition as vegetation is being removed. 4-10

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Page 4 of 4

Ms. Lisa Hammon
November 3, 2010
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Visqueen fencing should be installed between areas of salt marsh harvest mouse habitat and work sites immediately following vegetation removal and before excavation activities begin to prevent entry of the mice into cleared areas. The fencing should be trenched into the ground and backfilled to prevent salt marsh harvest mouse from moving underneath the fencing. Fence stakes should face towards the work site, away from the habitat. The final design and proposed location of the fencing should be reviewed and approved by DFG prior to placement. The qualified biologist will have the ability to make field adjustments to the location of the fencing depending on site-specific habitat conditions.

A qualified biologist or site manager should monitor site fencing a) periodically throughout each work day during work within 300 feet of the fence; b) at least twice per week during clear weather; and c) within 24 hours after a storm. Maintenance of the fencing should be conducted as needed throughout the work period. Any necessary repairs to the fencing should be completed within 24 hours of the initial observance of the damage. Work should not continue within 300 feet of the damaged fencing until the fences are repaired and the site is surveyed by a qualified biologist to ensure that salt marsh harvest mouse have not entered the work area. 4-10

Prior to the initiation of work each day during a) all vegetation removal; b) the construction of the exclusion fencing; and c) all work within 300 feet of tidal or pickleweed habitats, the qualified biologist should thoroughly inspect the work area and adjacent habitat areas to determine if salt marsh harvest mouse, California clapper rails, California black rails, or other special-status species are present in these areas. The qualified biologist should remain on-site throughout these days while work activities are occurring. The qualified biologist should have the authority to stop work if deemed necessary for any reason to protect salt marsh harvest mouse, California clapper rail, California black rail, or any other special-status species.

If you have any questions, please contact Ms. Randi Adair, Environmental Scientist, at (707) 944-5596; or Mr. Liam Davis, Habitat Conservation Supervisor, at (707) 944-5529.

Sincerely,

Scott Wilson

Scott Wilson
Acting Regional Manager
Bay Delta Region

cc: State Clearinghouse

Letter 4 – Ca. Department of Fish and Game

Response to Comment 4-1.

The definition of 'take' on page 3-117 of the Draft EIR/EIS will be revised in the document to include the pursuit, capture, or killing of a species as follows:

> The California Endangered Species Act (CESA) of 1970 (CDFG Code Section 2050 et seq., and CCR Title 14, Subsection 670.2, 670.51) prohibits the take (interpreted to mean the direct or attempt to pursue, catch, capture, or killing of a species) of species listed under CESA (14 CCR Subsection 670.2, 670.5).

Response to Comment 4-2.

The FTA, as federal lead agency, has initiated consultation with the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) pursuant to Section 7 of the federal Endangered Species Act (FESA). The City is coordinating with CDFG staff to ensure conformance of the project with the California Endangered Species Act (CESA). A consistency determination will be sought for the project through the coordination and consultation efforts with the USFWS, NMFS, and CDFG.

Response to Comment 4-3.

The California Endangered Species Act/ California Environmental Quality Act discussion on page 3-118 of the Draft EIR/EIS has been updated to include the following text:

> Certain species have been designated as "fully protected" under Sections 3511 and 4700 of the Fish and Game Code. By law, DFG cannot issue permits or licenses, including CESA incidental take permits, for take of fully protected species. DFG may only authorize the taking of such species for necessary scientific research.

Listing status for each species with the potential to occur in the project site and vicinity is described in Table 3.9-1 and Appendix G of the Draft EIR/EIS. The listing status for California black rail has been updated as follows:

> In Table 3.9-1 Project Area Sensitive Species/Natural Communities Table: --/ST, SFP/--
>
> In Appendix G-6 Bird Survey Report, page 7: California black rail (*Laterallus jamaicensis coturniculus*) is a state threatened and fully protected species found in saline to brackish marshes with muted to full tidal action.

Response to Comment 4-4.

Table 3.9-1 indicates that the California black rail does have the potential to occur within the project site; however, due to the reasons indicated in Table 3.9-1, the potential for occurrence is low. The Draft EIR/EIS has identified mitigation measures including completing preconstruction surveys for California Black Rail (MM BIO-5). If California black rail is found,

the City of Hercules will coordinate with the CDFG to incorporate adequate protection measures for California Black Rail to avoid take.

Response to Comment 4-5.

A detailed wake wash analysis was conducted by Coast Harbor Associates (CHA) in 2007 to evaluate potential wake-related impacts to shoreline and biological resources along the proposed ferry route from Hercules to San Francisco. The analysis consisted of compilation of background data, review and analysis of existing physical processes of San Pablo Bay and biological resources, computational fluid dynamics (CFD) modeling of wakes by the proposed ferry, modeling of wake wash transformation to the shoreline, sediment transport modeling on the mudflats and swash zone areas, field investigations, model verification and final impact analysis.

Wake wash was predicted for the candidate 149-passenger, 25-knot vessel using CFD modeling. The modeling was performed for a range of depths and vessel speeds encompassing 28 scenarios and hydrodynamic conditions ranging from subcritical (deepwater), trans-critical (depth-Froude ~ 1) and supercritical flow regimes. The fully-characterized three-dimensional wake field was transformed into energy spectra and used for wake wash transformation modeling over the large areas of San Pablo Bay. Field wake wash measurements were conducted using the 149-passenger catamaran ferry near the navigation channel at Hercules and within the Petaluma River channel near Port Sonoma. The tests incorporated numerous runs with the ferry past a set of two gauges, one near the sailing line and one in the far-field.

The results of the modeling, analysis, and field investigations indicate that the wake wash heights reaching vulnerable portions of the shoreline within San Pablo Bay are expected to be very small, measuring approximately 5-10 cm at the shoreline along nearly the entire Hercules route. Additionally, the proposed Hercules route will include a navigation channel from deeper water aligned normal to the shoreline. Vessels will most likely operate at 25-knot speed in the channel, but would be required to slow to a low- or no-wake speed of approximately 8-12 knots prior to entering the proposed turning basin. Further analysis would be conducted to determine the boundaries on the low- or no-wake zone and the optimal speed limit within the zone based on the final vessels selected for operation on the route. If the no-wake zones are observed, the impact analysis, including sediment transport in the swash zone and mudflat vertical scouring analysis, indicate that the impacts of the proposed ferry traffic are negligible in comparison to existing ongoing physical processes due to environmental factors and existing vessel traffic (CHA 2007).

The two ferry terminal locations will be located near the end of the mudflat area approximately 600 feet from the station building at locations that are approximately 300 feet apart. Habitat communities nearest to the ferry turning basin located on Hercules Point are primarily ruderal habitat and rocky intertidal remaining from the Hercules Powder Company. However the area does support some pickelweed and cordgrass habitat. Potential wave impacts from either alternative are considered to be negligible on nearshore habitats. Consequently, the two alternatives are not anticipated to have a significant difference from each other with respect to potential wave action impacts on sensitive nearshore habitat communities.

Response to Comment 4-6.

The Draft EIR/EIS identified potential impacts to sensitive natural communities and has included detailed mitigation measures including avoidance, minimization, and compensatory replacement of affected habitats. Impacts to wetlands and other waters of the U.S., mitigation ratios, mitigation acreage, and location of proposed mitigation are summarized in Table 4.9-2 of the Draft EIR/EIS. If necessary, mitigation will be refined during consultation and permitting with the resource agencies. Permits will be secured from responsible regulatory agencies including USACE, SFRWQCB, CDFG, and BCDC prior to initiating any construction activities. Compensatory mitigation includes replacement ratios of 3:1 for unavoidable impacts. All permit conditions will be followed. Suitable compensatory mitigation will be determined in conjunction with the regulatory agencies and implemented in order to replace and/or enhance the functions and values lost due to impacting special aquatic sites during implementation of the proposed project. Consultation will be completed prior to adoption of the final EIS. Any new mitigation will be included as part of the Record of Decision (ROD) and will be incorporated into the Mitigation Monitoring and Reporting Program.

Response to Comment 4-7.

Preconstruction surveys are proposed as an essential element for mitigation of potentially significant effects to numerous species including California red-legged frog (BIO-1), California clapper rail (BIO-3), salt marsh harvest mouse (BIO-4), and California black rail (BIO-5), as well as special status birds and mammals. All mitigation measures that require preconstruction surveys are revised to include required reporting of the findings to the California Natural Diversity Database.

Response to Comment 4-8.

The CDFG commenter notes that Mitigation Measures BIO-2 and BIO-4 should be revised to require notification to CDFG at least 48 hours prior to construction if California clapper rail or salt marsh harvest mouse are found during preconstruction surveys. The commenter likely intended to refer to BIO-3 and BIO-4. Mitigation Measures BIO-3 and BIO-4 have been revised to include notification to both CDFG and USFWS as indicated in responses 4-9 and 4-10 below.

Response to Comment 4-9.

Mitigation Measure BIO-3 of the Draft EIR/EIS has been revised to read:

> If construction begins during the breeding season (January 15 to August 31 ~~April 15~~), a USFWS approved biologist will conduct a preconstruction survey of California cordgrass tidal marsh habitat for California clapper rail prior to any construction activities occurring within 500 feet of those habitats. The survey will include searching all accessible California cordgrass tidal marsh habitats in and within 500 feet of the project site for California clapper rail. The surveys shall be conducted within two weeks prior to the commencement of construction activities. If California clapper rail is not found, no further avoidance and minimization measures are necessary. If California clapper rail is found, the biologist will note whether or not a nest was observed and record the behavior of the bird(s) (e.g., exhibiting courtship/nesting behavior, foraging, etc.). Detection of California clapper rail will be reported to the USFWS and CDFG and findings will be submitted to the California Natural Diversity Database. If California clapper rail is detected, construction activities will

be avoided within 700 feet of identified clapper rail locations and occupied California cordgrass tidal marsh habitat until USFWS and CDFG are consulted regarding appropriate avoidance measures and permission is granted by USFWS and CDFG to commence work. ~~If California clapper rail is observed nesting or is determined by the biologist to be potentially intending to utilize the habitat for nesting, construction activities will be delayed within 500 feet of the California cordgrass tidal marsh where the bird(s) is found, and USFWS will be notified of the finding. Work will not commence within 500 feet of California cordgrass tidal marsh occupied by California clapper rail until USFWS is consulted regarding appropriate avoidance measures and permission is granted by USFWS to commence work.~~

Preconstruction survey(s) will be conducted again as specified above, if a lapse in construction activities of two weeks or more occurs at any time during the breeding season such that no more than two weeks will have elapsed between the last survey and the commencement of construction activities.

Response to Comment 4-10.

Mitigation Measure BIO-4 has been revised to read:

A USFWS approved biologist will conduct a preconstruction survey of the northern coastal salt marsh habitat in the project site prior to any construction activities occurring within 500 feet of those habitats. If salt marsh harvest mice are found in or adjacent to the project site during preconstruction surveys, USFWS and CDFG will be notified of the finding and consultation will be initiated. Findings of the preconstruction surveys will be reported to the California Natural Diversity Database. Construction activities within 500 feet of the northern coastal salt marsh will be delayed until consultation has been completed with USFWS.

If any areas with pickleweed habitat or vegetation within 50 feet from the edge of pickleweed habitat need to be cleared for project activities, vegetation will be removed only with non-mechanized hand tools (i.e., trowel, hoe, rake, and shovel). No motorized equipment, including weed whackers or lawn mowers, will be used to remove this vegetation. Vegetation will be removed under the supervision of a qualified biologist approved by USFWS and CDFG. If a mouse of any species is observed within the areas being removed of vegetation, USFWS and CDFG will be notified. Unless otherwise approved by USFWS and CDFG, the mouse will be allowed to leave on its own. Vegetation removal may begin when no mice are observed, or with USFWS and CDFG approval, and will start at the edge farthest from the salt marsh and work its way toward the salt marsh. This method of removal provides cover for salt marsh harvest mouse and allows them to move toward the salt marsh on their own volition as vegetation is removed.

Visqueen fencing will be installed between areas of salt marsh harvest mouse habitat and work sites immediately following vegetation removal and before excavation activities begin to prevent entry of the mice into cleared areas. The fencing will be trenched into the ground and backfilled to prevent mice from moving under the fencing. Fence stakes will face toward the work site and away from pickleweed habitat. The final design and proposed location of the fencing will be submitted to USFWS and CDFG for review and approval prior to placement. The qualified biologist will have the ability to make field adjustments to the location of the fencing based on site-specific habitat conditions.

A qualified biologist or site manager will monitor site fencing as follows:

- periodically throughout each day during which work is conducted within 300 feet of the fence;
- at least twice per week during clear weather; and
- within 24 hours after a storm.

Maintenance of the fencing will be conducted as needed throughout the work period. Any necessary repairs to the fencing will be completed within 24 hours of the initial observance of damage. Work will not continue within 300 feet of the damaged fencing until the fence is repaired and the site is surveyed by a qualified biologist to ensure that salt marsh harvest mice have not entered the work area.

Prior to initiation of work each day during all vegetation removal; the construction of the exclusion fencing; and all work within 300 feet of tidal or pickleweed habitats, the qualified biologist will thoroughly inspect the work area and adjacent habitat areas to determine if salt marsh harvest mouse or other special-status species are present in these areas. The qualified biologist will remain on-site while work activities that meet one of the criteria above are being conducted. The qualified biologist will have the authority to stop work if necessary to protect salt marsh harvest mouse or other special-status species.

~~If no salt harvest mice are found during preconstruction surveys, salt marsh harvest mouse exclusion fencing will be installed around the perimeter of the northern costal salt marsh to prevent salt marsh harvest mice from entering the project site and being harmed by construction activities. Location and design specifications for the proposed exclusion fencing will be submitted to USFWS for review and approval. A USFWS approved biologist will monitor installation of the fencing in order to ensure that the fencing is installed appropriately to ensure total exclusion of the salt marsh harvest mouse as well as to ensure that no individuals are harmed during installation.~~

~~A USFWS approved biologist monitor will be present during construction activities within and immediately adjacent to the northern coastal salt marsh habitat. The biological monitor will have the authority to stop construction activities if a salt marsh harvest mouse is found within the construction area. If a salt marsh harvest mouse is found in the project site during construction, work will immediately cease in the vicinity and USFWS will be notified.~~

Construction personnel would participate in a USFWS-approved worker environmental awareness program. A qualified biologist would inform all construction personnel about the life history of salt marsh harvest mouse and its potential presence in the project area and explain the state and federal laws pertaining to protecting this species and its habitat. Construction personnel would be informed of the presence of a biological monitor and receive instruction regarding reporting requirements if a salt marsh harvest mouse is found during construction.

Sent By: CALTRANS TRANSPORTATIO PLANNING; 510 286 5560; Nov-12-10 10:37AM; Page 1/2

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Page 1 of 2

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF TRANSPORTATION
111 GRAND AVENUE
P. O. BOX 23660
OAKLAND, CA 94623-0660
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TTY 711

Flex your power!
Be energy efficient!

November 12, 2010

CC080024
CC-080-10.06
SCH #2009112087

Ms. Lisa Hammon
City of Hercules
111 Civic Drive
Hercules, CA 94547

Dear Ms. Hammon:

Hercules Intermodal Transit Center Project– Draft Environmental Impact Report/ Environmental Impact Statement (DEIR/EIS)

Thank you for continuing to include the California Department of Transportation (Department) in the environmental review process for the Hercules Intermodal Transit Center Project. The following comments are based on the DEIR/EIS. As the lead agency, the City of Hercules is responsible for all project mitigation, including any needed improvements to state highways. The project's fair share contribution, financing, scheduling, implementation responsibilities and lead agency monitoring should be fully discussed for all proposed mitigation measures. This information should also be presented in the Mitigation Monitoring and Reporting Plan of the environmental document. Required roadway improvements should be completed prior to issuance of the Certificate of Occupancy. Since an encroachment permit is required for work in the State right of way (ROW), and the Department will not issue a permit until our concerns are adequately addressed, we strongly recommend that the City of Hercules work with both the applicant and the Department to ensure that our concerns are resolved during the environmental process, and in any case prior to submittal of a permit application. Further comments will be provided during the encroachment permit process; see the end of this letter for more information regarding encroachment permits. 5-1 5-2

Cultural Resources
The Cultural Resources studies and mitigation measures in the Cultural Resources Section of the DEIR/EIS satisfy environmental legal compliance for cultural resources within State ROW for the Department. Should ground disturbing activities take place as part of this project, these mitigation measures shall be implemented for an archaeological discovery. If there should be an inadvertent archaeological or burial discovery within State ROW, the Department's Office of Cultural Resource Studies shall be contacted at (510) 286-5618. A staff archaeologist will evaluate the finds 5-3

"Caltrans improves mobility across California"

Sent By: CALTRANS TRANSPORTATIO PLANNING; 510 286 5560; Nov-12-10 10:37AM; Page 2/2

Letter 5_CALTRANS
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Ms. Lisa Hammon
November 12, 2010
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within one business day after contact. The Department requires review of any potential data recovery plans within the State ROW. 5-3 cont.

Encroachment Permit
Please be advised that any work or traffic control that encroaches onto the State ROW requires an encroachment permit that is issued by the Department. To apply, a completed encroachment permit application, environmental documentation, and five (5) sets of plans clearly indicating State ROW must be submitted to the address below. Traffic-related mitigation measures should be incorporated into the construction plans during the encroachment permit process. See the website link below for more information. http://www.dot.ca.gov/hq/traffops/developserv/permits/ 5-4

Michael Condie, District Office Chief
Office of Permits
California DOT, District 4
P.O. Box 23660
Oakland, CA 94623-0660

Please feel free to call or email Luis Melendez of my staff at (510) 286-5606 or Luis_Melendez@dot.ca.gov with any questions regarding this letter.

Sincerely,

Lisa Carboni

LISA CARBONI
District Branch Chief
Local Development – Intergovernmental Review

c: State Clearinghouse

"Caltrans improves mobility across California"

Letter 5 – California Department of Transportation (CALTRANS)

Response to Comment 5-1.

The City will prepare a Mitigation Monitoring and Reporting Program for all mitigation measures in the Draft EIR/EIS pursuant to the requirements of California Public Resource Code Section 21081.6.

Response to Comment 5-2.

No work is planned to take place within State rights-of-way, thus a Caltrans encroachment permit is not needed. If that changes, the City will apply for an encroachment permit from Caltrans District 4.

Response to Comment 5-3.

Ground disturbing activities are not anticipated to take place within State rights-of-way.

Response to Comment 5-4.

Please see response to comment 5-2. The City appreciates information on the encroachment permit process.

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STATE OF CALIFORNIA ARNOLD SCHWARZENEGGER, *Governor*

CALIFORNIA STATE LANDS COMMISSION
100 Howe Avenue, Suite 100-South
Sacramento, CA 95825-8202

PAUL D. THAYER, *Executive Officer*
(916) 574-1800 FAX (916) 574-1810
California Relay Service From TDD Phone **1-800-735-2929**
from Voice Phone **1-800-735-2922**

Contact Phone: **(916) 574-1900**
Contact FAX: **(916) 574-1885**

October 26, 2010

File Ref: SCH# 2009112087

Lisa Hammon
City of Hercules
111 Civic Drive
Hercules, CA 94547

Subject: Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the Hercules Intermodal Transit Project, City of Hercules, Contra Costa County

Dear Ms. Hammon:

Staff of the California State Lands Commission (CSLC) has reviewed the Draft EIR/EIS for the above-proposed project. Under the California Environmental Quality Act (CEQA), the city of Hercules, in cooperation with the Federal Transit Administration (FTA), is the Lead Agency and the CSLC is a Responsible and/or Trustee Agency for any projects that could directly or indirectly affect sovereign lands, their accompanying Public Trust resources or uses, and the public easement in navigable waters.

As background, the State of California acquired sovereign ownership of all tidelands and submerged lands and beds of navigable waterways upon its admission to the United States in 1850. Such lands include, but are not limited to, the beds of more than 120 navigable rivers and sloughs, nearly 40 navigable lakes, and the 3-mile wide band of tide and submerged lands adjacent to the coast and offshore islands of the State. The State holds these lands for the benefit of all people of the State for statewide Public Trust purposes, which include waterborne commerce, navigation, fisheries, water-related recreation, habitat preservation, and open space. The boundary of these State-owned lands is generally the mean high tide line, except for fill and artificial accretion.

In December 2009, CSLC staff submitted comments in response to the Notice of Preparation to prepare a Draft EIR/EIS (attached). In order to determine the State's interest in the proposed Hercules Intermodal Transit Project, CSLC staff requested a more detailed map showing exactly where the proposed project would be located. The Draft EIR/EIS contains information sufficient to determine the State's interest.

Pursuant to Boundary Line Agreement (BLA) 144, recorded in Contra Costa County on April 22, 1974 between the State of California and Hercules Incorporated, 6-1

Letter 6_CSLC Page 2 of 2

Lisa Hammon
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October 26, 2010

Sequoia Refining Corporation, and Signal Oil and Gas Company, a portion of Refugio Creek within the proposed project site retains a Public Trust Easement. Based on the information provided in the Draft EIR/EIS, the proposed realignment and restoration of Refugio Creek appears to be consistent with the Public Trust Doctrine. As such, the CSLC will not require a lease or permit for the use of this easement. 6-1 cont.

This determination is without prejudice to any future assertion of State ownership or public rights, should circumstances change, or should additional information come to our attention. In addition, this letter is not intended, nor should it be construed as, a waiver or limitation of any right, title, or interest of the State of California in any lands under its jurisdiction.

CSLC staff appreciates the opportunity to comment on the Draft EIR/EIS. If you have any questions or concerns relating to environmental issues, please contact Joan Walter, Environmental Scientist, at 916-574-1310 or via email at Joan.Walter@slc.ca.gov. If you have any questions relating to jurisdiction, the Public Trust Easement, or the Boundary Line Agreement, please contact Drew Simpkin, Public Land Management Specialist, at 916-574-2275 or via email at Drew.Simpkin@slc.ca.gov.

Sincerely,

Cy R. Oggins, Chief
Division of Environmental Planning
and Management

cc: Office of Planning and Research
D. Simpkin, CSLC
J. Walter, CSLC

Letter 6 – California State Lands Commission (CSLC)

Response to Comment 6-1.

Comment noted. CSLC has commented that the project is consistent with the Public Trust Doctrine and will not require a lease or permit from the CSLC.

Letter 7_BAAQMD
Page 1 of 1

From: Ian Peterson [mailto:ipeterson@baaqmd.gov]
Sent: Monday, November 08, 2010 4:55 PM
To: Stanich, Serge
Cc: lhammon@ci.hercules.ca.us
Subject: Hercules ITC - Draft EIR/EIS

Hi Serge,

In following up with our prior communications regarding the Hercules ITC project, I am reviewing the Draft EIR/EIS. I understand the air quality analysis considers the regional implications and anticipated net reductions in overall transportation-related emissions as a result of increased transit-ridership and other alternative modes primarily available to commuters. Could you point me to where in the analysis local conditions have been addressed (i.e. concentrations levels of PM and TACs as result of increased frequency of bus and rail use in the immediate area)? Appendix I has a variety of information but I don't quite understand where it fits into this analysis. 7-1

Feel free to call if you have any questions and thank you for your time.

~

Ian Peterson
Bay Area Air Quality Management District | Environmental Planner
939 Ellis Street | San Francisco, CA 94109
Office: 415.749.4783
ipeterson@baaqmd.gov | www.baaqmd.gov

Letter 7 – Bay Area Air Quality Management District

Response to Comment 7-1.

The air quality analysis includes quantification of regional concentrations of various pollutants [including Particulate Matter (PM)] as described under Impact AIR-2 beginning on page 4-67 of the Draft EIR/EIS. Quantification of the local concentrations of CO is described under Impact AIR-3, on page 4-69 in the Draft EIR/EIS. Local impacts from PM and Toxic Air Contaminants (TAC) were addressed on a qualitative basis, rather than a quantitative basis, as described under Impact AIR-4, on page 4-70 of the Draft EIR/EIS. Quantification of the PM and TAC impacts could not be made because, although future train frequency would be similar to current schedules, detailed bus schedule and route changes as a result of the Hercules ITC were not available. As described in the Draft EIR/EIS, the changes in PM and TAC concentrations are expected to be minimal and the impact would be less than significant.

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Page 1 of 6

Making San Francisco Bay Better

November 10, 2010

Ms. Lisa Hammon
Assistant City Manager
City of Hercules
111 Civic Drive
Hercules, CA 94547

SUBJECT: Comments to the Draft Environmental Impact Report for the Hercules Intermodal Transit Center Project; SCH #2009112087 (BCDC File No. CC.HC.7410.1)

Dear Ms. Hammon:

Thank you for the opportunity to comment on the Draft Environmental Impact Report (DEIR) for the Hercules Intermodal Transit Center Project, located at a site adjacent to San Pablo Bay in the City of Hercules, Contra Costa County. The project would involve the construction of an intermodal transit center, associated roadway improvements, and ancillary structures at the site. Below are the staff's comments on the DEIR. Some of these comments may address specific BCDC-issues that will need to be addressed either in the FEIR or through the BCDC permitting process.

The Commission is a responsible agency for this project and will rely on the DEIR when it considers the project. Although the Commission itself has not reviewed the DEIR, the staff comments are based on the McAteer-Petris Act, the Commission's *San Francisco Bay Plan* (Bay Plan), the Commission's federally approved management program for the San Francisco Bay, and the federal Coastal Zone Management Act (CZMA).

Jurisdiction

The Commission's jurisdiction includes all tidal areas of the Bay up to the line of mean high tide (or in marshlands, the inland edge of marsh vegetation, up to five feet above mean sea level), all areas formerly subject to tidal action that have been filled since September 17, 1965, and a "shoreline band," which extends 100 feet inland from and parallel to the Bay shoreline.

Commission permits are required for construction of buildings, roadways, infrastructure and other improvements, changes in use, and dredging and dredged material disposal within its area of jurisdiction. To authorize a project, the Commission must be able to find the activities to be consistent with the McAteer-Petris Act and the policies and findings of the Bay Plan. In addition to any needed permits under its state authority, federal actions, permits, and grants that affect the Commission's jurisdiction are subject to review by the Commission, pursuant to the CZMA, for their consistency with the Commission's federally-approved management program for the Bay.

State of California • **SAN FRANCISCO BAY CONSERVATION AND DEVELOPMENT COMMISSION** • *Arnold Schwarzenegger, Governor*
50 California Street, Suite 2600 • San Francisco, California 94111 • (415) 352-3600 • Fax: (415) 352-3606 • info@bcdc.ca.gov • www.bcdc.ca.gov

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City of Hercules
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Based on the location of the project site, and as appropriately noted in the DEIR, a large portion of the project would occur within the Commission's jurisdiction and require Commission authorization. In order to fully evaluate the project's consistency with the Commission's laws and policies, staff will need to determine what components of the project fall within the Commission's Bay and shoreline band jurisdictions. The Commission will need a detailed site plan that depicts the Commission's Bay and shoreline band jurisdictions, describes the existing conditions and the proposed project, identifies areas where fill would be placed and removed, describes the proposed uses at the site, and clearly denote proposed public access areas and improvements. 8-1

Bay Fill

Section 66605 of the McAteer-Petris Act states, among other things, that further filling of the Bay should only be authorized if the fill is the minimum necessary to achieve the purpose of the fill and if the harmful effects associated with the fill are minimized. According to the Act, Bay fill is limited to water-oriented uses (such as ports, water-related industry, and water-oriented recreation and public assembly), minor fill for improving shoreline appearance, or public access.

The DEIR indicates that Bay fill will be involved to construct the railroad bridge, the transit loop bridge, bayfront bridge, and a portion of the Transit Center, install shoreline protection, and restore Refugio Creek. In addition, because of the existing location of Refugio Creek, a portion of the Transit/Civic Plaza and café/retail building may also involve Bay fill. Because Bay fill is limited to certain uses, please note that the uses of these buildings may be limited to the uses required in the Act. The widening of Refugio Creek and the construction of the creekside park and plaza will extend the Commission's Bay and shoreline band jurisdiction in these areas. As part of the permitting process for this project, the City of Hercules will be required to quantify the total amount of fill proposed to be placed with the project and to assess the impacts associated with its placement. The City should also be prepared to quantify and illustrate the extension of the Commission's jurisdiction as a result of the proposed project. 8-2

Public Access and Views

Section 66602 of the McAteer-Petris Act states that,"...existing public access to the shoreline and the waters of the San Francisco Bay is inadequate and that maximum feasible public access to the Bay, consistent with a proposed project, should be provided...." The Bay Plan policies on public access state that, "the public access improvements provided as a condition of any approval "should be consistent with the project and the physical environment..." and "...should be designed and built to encourage diverse Bay-related activities and movement to and along the shoreline...." The *Bay Plan* policies on Appearance, Design and Scenic Views further state that "all bayfront development should be designed to enhance the pleasure of the user or viewer of the Bay" and that "maximum efforts should be made to provide, enhance, or preserve views of the Bay and shoreline, especially from public areas, from the Bay itself, and from the opposite shore."

The DEIR states that the project design would include an approximately 5,300-foot-long and 14-foot-wide paved Class 1 segment of the Bay Trail through the project site. Additional public access would be provided outside the Commission's jurisdiction, including the creekside trail and park and possible future public access on Hercules Point (though this is not included in the project at this time). The project was reviewed by the Commission's Design Review Board (DRB) on January 11, 2010. The DRB commented favorably on the project especially on the 8-3

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City of Hercules
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proposed Bay Trail connection. One Board member, in particular however, stated that public access should be made available on Hercules Point as early as possible since the only thing missing from the project is an actual connection to the Bay.

In its permit application, the City of Hercules will be required to more specifically quantify the total public access provided as part of the project and to assess its consistency with the Commission's laws and policies outlined above. The DEIR should include further analysis on how the project is designed to "provide, enhance, or preserve views of the Bay and shoreline" such as by providing viewing opportunities along the Bay trail, at the transit station, or elsewhere, or the use of glass and other transparent materials for the station building. The DEIR should indicate where, if any, view corridors are provided from the public street to the Bay. 8-3 cont.

Because much of the proposed Bay Trail would be located inland of the existing UPRR tracks and not adjacent to the shoreline (with portions going through the station building), the Commission staff strongly encourages the City to pursue the development of Hercules Point as a public access park as soon as possible. It would also be helpful to include the City's proposed schedule for developing the park at Hercules Point. The development of Hercules Point as a public access park in the future will provide an integral component of shoreline public access needed in this location. In the interim, the Commission staff has indicated in previous conversations with the City that it would like to see overlooks provided Bayward of the transit station building where future connections to the ferry terminal are contemplated. This would provide passengers and the public with a much-needed viewing area at the shoreline in the interim, since no direct public access to the Bay would provided at this time. In addition, because a segment of the Bay Trail would be co-located with the sidewalk along Transit Loop Drive, the City should explore options to minimize conflicts of the joint use of this space by Bay Trail users and disembarking transit users, either by providing alternative trail options or widening this segment of the Bay Trail to accommodate the number of users. 8-4

Other Bay Plan Policies

The following are several other categories of issues raised by the proposed project's DEIR that the Commission has addressed through its Bay Plan policies:

1. **Fish, Other Aquatic Organisms and Wildlife.** The policies in this section address the benefits of fish, other aquatic organisms and wildlife and the importance of protecting the Bay's subtidal habitats, native, threatened or endangered species and candidates for listing as endangered or threatened. The DEIR indicates that impacts to biological resources would be mitigated to less than significant levels with the incorporation of mitigation measures such as pre-construction surveys for special-status species, construction work windows, and the use of best management practices, in consultation with the U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Game (CDFG) and the National Marine Fisheries Services (NMFS). The Commission generally relies on the advice of these agencies with respect to impacts on special-status species and requires the submittal of a final Biological Opinion to deem a permit application complete. The DEIR should sufficiently address how the construction and use of the proposed project would minimize impacts to special-status species and habitat in the Bay, including impacts from the placement of Bay fill, pile-driving, creek restoration and shoreline protection. 8-5

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2. **Water Quality.** The policies in this section address water quality and require Bay water pollution to be prevented to the greatest extent feasible. Policy 3 in particular requires new projects to be sited, designed, constructed and maintained to prevent or minimize the discharge of pollutants in the Bay by controlling pollutant sources at the project site, using appropriate construction materials, and applying best management practices. The DEIR states that the construction activities will be performed in accordance with the NPDES General Permit for Storm Water Discharges and will mitigate water quality impacts to less than significant. The Commission will rely on the best management practices included in the DEIR and the advice of the RWQCB to determine whether the project is consistent with its water quality policies. 8-6

3. **Water Surface Area and Volume.** Policy 1 in this section states that the surface area of the Bay and the total volume of water should be kept as large as possible and that filling that reduces area and water volume of the Bay should be allowed only for purposes providing substantial public benefits and only if there is no reasonable alternative. The DEIR should discuss how the proposed project would maintain or improve water circulation in the Bay, with particular attention to the proposal to widen and restore Refugio Creek and increase the Bay in this location. 8-7

4. **Tidal Marshes and Tidal Flats, Subtidal Areas and Mitigation.** Policy 1 of the Tidal Marshes and Tidal Flats section states, "tidal marshes and tidal flats should be conserved to the fullest possible extent." Policy 2 of the Subtidal Areas section states, "subtidal areas that are scarce in the Bay or have an abundance and diversity of fish, other aquatic organisms and wildlife (e.g., eelgrass beds, sandy deep water or underwater pinnacles) should be conserved. Filling, changes in use, and dredging projects in these areas should therefore be allowed only if: (a) there is no feasible alternative; and (b) the project provides substantial public benefits." If adverse impacts to Bay natural resources, such as to water surface area, volume, or circulation, fish, other aquatic organisms, and wildlife habitat, or subtidal areas, tidal marshes or tidal flats, cannot be avoided, Policy 1 of the Mitigation section of the Bay Plan states, "they should be minimized to the greatest extent practicable [and] measures to compensate for unavoidable adverse impacts to the natural resources of the Bay should be required."

The DEIR indicates that construction and dredging activities could result in the modification or disturbance of special aquatic sites including eelgrass beds, mudflats and tidal marshes that provide fish habitat. The DEIR states that these areas are of limited quantity and quality and have little potential to provide habitat for special-status fish species. The DEIR should include details of the size and kind of subtidal habitat that may be impacted, a discussion of how tidal marshes, tidal flats, and subtidal areas will be conserved, and describe how impacts to these areas would be minimized to the greatest extent practicable. If unavoidable adverse impacts would result, the City will need to mitigate for these impacts, as required by our Bay Plan policies. Because the proposed restoration of Refugio Creek would increase tidal marsh vegetation in this area, benefit habitat and marsh species, and provide increased flood control in this area, the restoration should provide a good amount of mitigation for the project. As indicated in the DEIR, a Mitigation and Monitoring Program will be required to quantify the loss in habitat and how these areas will be mitigated. The Commission staff will rely on the information of the Mitigation and Monitoring Program to ensure the project is consistent with these policies. 8-8

5. **Safety of Fills and Sea Level Rise.** Policy 4 in this section states that structures on fill or near the shoreline should have adequate flood protection including consideration of future relative sea level rise as determined by competent engineers. The policy states, "as a general rule, structures on fill or near the shoreline should be above the wave runup level or sufficiently

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City of Hercules
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set back from the edge of the shore so that the structure is not subject to dynamic wave energy. In all cases, the bottom floor level of structures should be above the highest estimated tide elevation. Exceptions to the general height rule may be made for developments specifically designed to tolerate periodic flooding." During review of the project by the Commission's Engineering Criteria Review Board (ECRB), the following rates of global sea level rise were provided to the applicant for analysis: (1) a low rate of 0.08 inches (2 mm) per year; (2) a medium rate of 0.18 in (4.6 mm) per year; and (3) a higher rate of 0.33 in (8.4 mm) per year. The City has provided some information directly to the Commission on the possible flooding impacts of the project.

In order to approve the project, the Commission will need to find that the public access and Bay fill project elements are designed with adequate flood protection including consideration of future sea level rise. The DEIR should explain how these project elements are designed to sufficiently address sea level rise and flooding during the life of the project (including storm surges). This discussion could include an analysis of how the structures could be raised, or designed to withstand flooding, or set at an elevation to accommodate sea level rise. If the structures cannot be constructed at an elevation high enough to withstand periodic flooding, the City should explain why this cannot be done at this time, and how the structures would be adapted in the future. 8-9

6. **Shoreline Protection.** The Bay Plan contains several policies regarding shoreline protection around the Bay. In particular, Policy No. 1 states that, "New shoreline erosion control projects…should be authorized if: (a) the project is necessary to protect the shoreline from erosion; (b) the type of protective structure is appropriate for the project site and the erosion conditions at the site; and (c) the project is properly designed and constructed…." The staff encourages the City to review the shoreline protection policies in the Bay Plan to ensure that these policies have been addressed in the DEIR. 8-10

7. **Dredging.** The Commission's dredging policies state, in part, that dredging should be authorized when the Commission can find that "dredging is needed to serve a water-oriented use or other important public purpose, such as navigational safety" and "the siting and design of the project will result in the minimum dredging volume necessary for the project."

The DEIR states that dredging activities could impact marine mammals (Impact BIO-13). It is unclear whether the dredging activities evaluated in the DEIR include the possible dredging resulting from the proposed future ferry terminal (which would be analyzed in a future EIR but are being included in this DEIR as cumulative impacts), or dredging required for the work proposed in Phases 1 – 3 of the project. The DEIR should clarify whether dredging is proposed as part of the initial project and, if so, the location and amount of material to be dredged, where the material would be placed or disposed of, and whether this dredging has the potential to impact marine mammals. 8-11

If the dredging impacts are being analyzed as cumulative impacts resulting from the future placement of a ferry terminal at this location, these impacts should be further evaluated. The DEIR should, at a minimum, address how the goals of the project can be achieved while minimizing the volume of dredging resulting from a potential ferry terminal at this particular location.

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Ms. Lisa Hammon
City of Hercules
Comments to Hercules ITC DEIR
November 10, 2010
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Again, we thank you for providing staff with the opportunity to review the DEIR for the Hercules Intermodal Transit Center project. Please feel free to contact me at (415) 352-3616, or email me at mingy@bcdc.ca.gov if you have any questions regarding this letter or the Commission's policies and permitting process.

Sincerely,

MING YEUNG
Coastal Program Analyst

MY/mm
cc: State Clearinghouse

Letter 8 – Bay Development and Conservation Commission (BCDC)

Response to Comment 8-1.

The location of the Bay Conservation and Development Commission's (BCDC) Bay and shoreline band jurisdiction is depicted in Figure 2.2-2: Alternative 1 Phasing Plan of the Draft EIR/EIS. The City has been coordinating with the BCDC in developing the overall site plan and has met with the BCDC Design Review Board and Engineering Criteria Review Board. The City is currently developing a permit application for the BCDC and will coordinate with the BCDC through the permitting process to ensure that all needed elements are included. The permit application package will include a detailed site plan that will include all of the project elements and clearly notes the jurisdictional boundaries of the BCDC.

Response to Comment 8-2.

The City and its engineering team have considered the various project elements and the necessary discharges required to construct the elements. Construction and discharges have been designed to avoid aquatic resources and discharges of fill will be kept to the minimum necessary to meet design standards and safety criteria. The City understands that discharges of fill into the bay can only be permitted for certain uses and proposes only to discharge fill as necessary to accommodate restoration activities and establish access and circulation. The City of Hercules is preparing a permit application for the BCDC that will include a detailed site plan noting the existing jurisdictional boundaries of the BCDC. The City has been coordinating extensively with the BCDC in preparation of the permit application and has coordinated with the BCDC Design Review Board and with the Engineering Criteria Review Board. Additionally, the City understands that as a result of realigning Refugio Creek, the extent of the San Francisco Bay and its tidal influence may change and may expand the jurisdiction of the BCDC. The City will work with the BCDC during the permit application process to ensure that all necessary project elements, including the total amount of fill proposed to be placed within the project, are included to satisfactory detail for the BCDC to complete its necessary review.

Response to Comment 8-3.

The Draft EIR/EIS analysis on visual and aesthetic resources is generally focused on potential project impacts on scenic vista/character according to CEQA guidelines. There are beneficial elements built into the proposed project that are designed to "provide, enhance, or preserve views of the Bay and shoreline."

The proposed Bay Trail segment would provide the public with a recreation facility that connects with existing segments of the Bay Trail and views of San Pablo Bay and its shoreline. The Point Pedestrian Bridge would be a connection to the future park at Hercules Point. As it stands, the Point Pedestrian Bridge would afford the public an elevated view of the Bay, shoreline, and Hercules Point. The Station Building has been designed with 22,000 square feet of glass wall area for passive solar heating, but also takes advantage of views of the Bay from inside the building. In Section 2.0, Alternatives Considered of the Draft EIR/EIS, the Waterfront Promenade proposed for east and north of Refugio Creek is a public space that would include benches from which to view the Bay and shoreline.

It should be noted that the proposed Bay Trail is located inland of the UPRR corridor as the UPRR corridor lies immediately adjacent to San Pablo Bay. Construction of the Hercules ITC would enhance existing public access to the Bay by completing 5,900 feet of Bay Trail that currently does not exist and connect Rodeo to Pinole. Additionally, the Hercules ITC includes three new crossings of the UPRR right-of-way that currently do not exist including:

- An emergency vehicle access at the western end of the platform, which would provide restricted access (City and emergency vehicle access only);
- A public pedestrian (and City maintenance vehicle) access to Hercules Point, which will be made available when Hercules Point is developed into a public open space; and
- A public viewing platform and access to the future WETA ferry terminal.

The location and number of public streets in the project area would change with the project, as will some of the views from those public streets. Portions of the existing Bay views from Bayfront Boulevard would be limited from the construction of the Station Building. Views would be provided by the proposed Bay Trail segment, the Waterfront Promenade, and the Point Pedestrian Bridge.

The City continues to coordinate regularly with the BCDC while the site plans are being developed. The permit application will include refined square footage and acreage of project elements that will provide public access to the Bay, as well as other project elements that will be located within the BCDC jurisdiction.

Response to Comment 8-4.

The City will work to develop Hercules Point as a public park as soon as possible, while integrating opportunities with funding, property access and additional remediation activities, if necessary. At this time, the City does not have a schedule for completion of the park. While a portion of the proposed Promenade and Bay Trail are collocated with the Transit Loop, the combined Promenade and Bay Trail will be approximately 20 feet wide, which is expected to accommodate both Bay Trail users and Transit Center users. The City will evaluate options to provide greater separation between Bay Trail users and Transit Center users to minimize conflicts. Plans will be coordinated with the BCDC as part of the permitting process.

Response to Comment 8-5.

Sections 3.9 and 4.9 of the Draft EIR/EIS discuss the existing baseline and affected environment for biological resources and also discuss potential impacts and mitigation measures of the Hercules ITC on biological resources. Mitigation Measures BIO-1 through BIO-25 include measures such as preconstruction surveys, exclusion fencing, wetland restoration and construction, driving piles “in the dry”, and others that will avoid and/or substantially reduce potential impacts to biological resources.

Response to Comment 8-6.

Comment noted. The City will implement standard construction best management practices as part of the stormwater pollution prevention plan and will coordinate with the SFRWQCB as part

of the Section 401 water quality certification to ensure that the project conforms to water quality standards.

Response to Comment 8-7.

The Draft EIR/EIS (Sections 2 and 3) identifies the existing conditions of Refugio Creek as a resulting from past land uses. Creek banks are steep and eroded, and in some locations lined vertically with concrete bags. Periods of high flows have resulted in scour. The existing UPRR bridge is inadequate in passing storm flows. The project will open the channel corridor and create flatter and lower banks that will provide for increased tidal influence and will diversify vegetation to include a mosaic of low and high tide marsh as well as riparian habitat. Currently, significant flow constraints exist at the UPRR bridge with the three 72-inch culverts beneath the service road and at the earthen pedestrian bridge upstream. Restoration of Refugio Creek will remove these constraints to flow and create a wider corridor that will improve hydrologic conveyance and ecological value. Additionally, it is expected that increasing the wetland vegetation and tidal marsh areas will improve nutrient and sediment retention, and the wider channel is anticipated to improve flows out to San Pablo Bay, as well as tidal influence upstream into the upper reaches of Refugio Creek.

Response to Comment 8-8.

As discussed in the Draft EIR/EIS in Section 4.9.3, mitigation for impacts is implemented in a three step process that requires first avoidance of the impact, second minimization of the necessary footprint of the impacts, and finally compensation for unavoidable impacts through the construction of compensatory mitigation. The design of the Hercules ITC has been developed through the consistent application of the three step mitigation process. As discussed under cumulative impacts in Section 4.9, Biological Resources, and in Section 6, Evaluation of Alternatives, potential cumulative impacts from the WETA ferry project and the Bayfront Development have also been incorporated into the overall mitigation design consideration. Unavoidable, permanent impacts will be compensated for through the restoration and expansion of the Refugio Creek floodplain to provide for expanded wetland vegetation, including tidal marsh and riparian habitats. The City will prepare a mitigation plan that will support the Joint Aquatic Resource Permit Application package that will be submitted to the USACE, BCDC, RWQCB, and CDFG. The plan will address community types that will be constructed, performance and success criteria, adaptive management activities, and long term maintenance.

Response to Comment 8-9.

The Draft EIR/EIS addresses sea level rise within the Section 4.10, Water Resources. The project will be constructed at an elevation higher than existing conditions to accommodate the grade separation elements of the project and should protect development from inundation due to flood and sea level rise.

Response to Comment 8-10.

As discussed in Section 4.2, Land Use, of the Draft EIR/EIS, the City has reviewed the Bay Plan and confirmed that the Draft EIR/EIS is consistent with the shoreline protection policies.

Response to Comment 8-11.

The project will require some excavation to realign Refugio Creek (an area of approximately 40-ft by 150-ft) but will not involve dredging. The dredging described in the Draft EIR/EIS Section 4.9, Biological Resources, Environmental Consequences addresses cumulative effects and impacts associated with the dredging of the proposed ferry project. Excavation of the new Refugio Creek channel and future dredging of the ferry channel and turning basin will be kept to the minimum necessary to complete the project.

Letter 9_City of Pinole
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From: Dean Allison [mailto:DAllison@ci.pinole.ca.us]
Sent: Monday, October 18, 2010 10:57 AM
To: Lisa Hammon
Cc: Winston Rhodes
Subject: Traffic Study for ITC

Lisa,

Hope all is well with you.

Winston and I are working on a comment letter to the ITC report.

It appears that there is a typo in one of the tables in the traffic study. See attached. Please verify and let me know the correct number. 9-1

I have minimal comments regarding Traffic/Wastewater/Geology. Winston is reviewing the documents for the remainder issues and may have more. I left you a message requesting additional time we may need if we wish to have my letter go before our City Council at their next, November 4, 2010 meeting. Yes Thursday due to the election.

Dean

Dean Allison
City of Pinole
Director of Public Works
510.724.9017

Letter 9_City of Pinole
Page 2 of 2

Hercules Intermodal Transit Center (HITC)

TABLE ES 1 INTERSECTION LEVEL OF SERVICE SUMMARY – A.M. PEAK

Int #	Intersection Name	Existing		Background		Project		Cumulative 2035 "No Project"		Cumulative 2035 "With Project"	
		V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
1	Willow Ave /I-80 WB off-ramp	0.208	A	0.221	A	0.221	A	0.591	A	0.591	A
2	Willow Ave/Hawthorne Dr	0.284	A	0.301	A	0.301	A	0.781	C	0.781	C
3	San Pablo Ave/Willow Ave	0.244	A	0.218	A	0.22	A	0.806	D	0.807	D
4	San Pablo Ave/John Muir Pkwy	0.427	A	0.513	A	0.524	A	0.764	C	0.78	C
5	San Pablo Ave/Sycamore Ave	0.674	B	0.927	E	0.933	E	0.859	D	0.865	D
6	San Pablo Ave/Hercules Ave	0.507	A	0.598	A	0.598	A	0.758	C	0.758	C
7	San Pablo Ave/Pinole Valley Rd	0.378	A	0.48	A	0.48	A	0.889	D	0.889	D
8	San Pablo Ave/Tennent Ave	0.536	A	0.651	B	0.651	B	**1.138**	**F**	**1.138**	**F**
9	San Pablo Ave/Appian Wy	0.297	A	0.36	A	0.632	A	0.624	B	0.626	B
10	Sycamore Ave/Bayberry Ave	0.808	D	**0.975**	**E**	**0.979**	**E**	0.656	B	0.66	B

9-1 cont.

Notes: **V/C: Volume to Capacity Ratio** **LOS: Level of Service**

Intersections operating below acceptable LOS are bold.

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Letter 9 – City of Pinole

Response to Comment 9-1.

The commenter is correct that there is an error on Table ES1 Intersection Level of Service in Appendix E of the Draft EIR/EIS. The Traffic Study states that volume to capacity ratios (V/C) must be less than 0.60 to warrant a LOS A rating. Table ES1 shows the V/C ratio at San Pablo Ave/Appian Way under project conditions as 0.632; level of service at this intersection should be LOS B rather than LOS A. This correction does not result in the identification of significant adverse impact, since LOS B is still an acceptable condition.

Letter 10_City of Pinole
Page 1 of 2

CITY OF PINOLE

Development Services Department
Public Works

2131 Pear Street
Pinole, CA 94564

Tel: (510) 724-9010
Fax: (510) 724-4921

November 5, 2010

City of Hercules
111 Civic Drive
Hercules, CA 94547

Attention: Lisa Hammon, Assistant City Manager

Subject: Comment Letter Intermodal Transit Center

The City of Pinole has reviewed the Draft Environmental Impact Report for the Hercules Intermodal Transit Center and the supporting traffic study. The City of Pinole has the following comments:

TRAFFIC

1- The traffic study analyzed 10 intersections, three of which are in the City of Pinole 10-1
   - San Pablo Avenue at Pinole Valley Road
   - San Pablo Avenue at Tennent Avenue
   - San Pablo Avenue at Appian Way.

2- The traffic study concluded that there were no measureable project impacts to the intersection of San Pablo Avenue at Pinole Valley Road and San Pablo Avenue. 10-2

3- Table ES1 on Page 6 of the Traffic Impact Report states that for intersection 9, San Pablo Avenue and Appian Way, 10-3
   - Existing + Background AM Peak is .362 with a LOS A
   - Existing + Background + Project AM Peak is .632 with a LOS A

   The post project V/C and LOS A are inconsistent, and there appears to be a typographical error.

4- With the V/C for intersection 9, for Existing +Background + Project AM Peak equal to 0.632 the City of Pinole sees this impact as significant and requests that additional studies be conducted to determine what mitigation measures should be part of the project. 10-4

5- If, however, if there is a typographical error, and the V/C listed for intersection 9 is .362 rather than .632; this means that there will be no impact and the City of Pinole has no concerns with respect to impact on this intersection.

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Page 2 of 2

Letter to City of Hercules
November 5, 2010
Page 2 of 2

6- The City of Pinole requests that the project include conditions that require all construction traffic to take access to and from the freeway within the City of Hercules. 10-5

UTILITIES – Wastewater

- The ITC project puts only a minor demand on the wastewater plant. The ITC includes restrooms and a small café as wastewater generators.
- The report correctly points out that the wastewater collected is treated at the Pinole/Hercules Wastewater; however, the report incorrectly states that the dry weather capacity of the treatment plant is 4.06 Million Gallons per Day. The dry weather capacity of the treatment plant is 3.52 Million Gallons per Day. 10-6
- To determine if there is capacity at the plant the EIR references a 2005 East Bay Municipal Utility District (EBMUD) Urban Water Management Plan (UWMP). The City of Pinole is not familiar with this plan. Furthermore the City of Pinole does not believe such a report should serve as the basis for determining if the plant has adequate capacity for the project.

  Rather the EIR should compare plant capacity with current flows at the plant, plus previously approved projects, timetables for those project, and expected project flows

- The comment letter requests that staff from the Pinole/Hercules Water Pollution Water Pollution Control Plant review building permits non-residential building construction to assure that proper grease and other devices are constructed. 10-7

The City of Pinole thanks the City of Hercules for the opportunity to review and comment on the Environmental Impact Report for the Intermodal Transit Center.

Sincerely,

Belinda B. Espinosa

Belinda B. Espinosa
City Manager for the City of Pinole

cc:
Chron File
Dean Allison, Director of Public Works / City Engineer

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Letter 10 – City of Pinole

Response to Comment 10-1.

The three intersections cited in the comment letter are included in the Traffic Study.

Response to Comment 10-2.

It is correct that the traffic study concluded that there were no measurable project impacts to the intersections cited in the Draft EIR/EIS (Tables 4.1-5 and 4.1-6).

Response to Comment 10-3.

As stated above (Comment letter 9, response 9-1), there is an error on Table ES1 Intersection Level of Service in Appendix E of the Draft EIR/EIS. The Traffic Study states that volume to capacity ratios (V/C) must be less than 0.60 to warrant a LOS A rating. Table ES1 shows the V/C ratio at San Pablo Ave/Appian Way with the project as 0.632, therefore the level of service at this intersection will be revised to be LOS B rather than LOS A. This correction does not result in a significant adverse impact.

Response to Comment 10-4.

As noted above (Comment letter 9, response 9-1), adding project related traffic to the intersection of San Pablo Avenue and Appian Way would reduce the level of service (LOS) from LOS A (excellent) to LOS B (good). The Draft EIR/EIS defines a traffic impact as significant if adding project related traffic would cause an intersection operating at an acceptable LOS A, B, C, or D to operate at an unacceptable LOS E or F. Adding project related traffic to the intersection of San Pablo Avenue and Appian Way would not reduce the LOS to an unacceptable level and would not result in a significant adverse effect requiring mitigation.

Response to Comment 10-5.

The Traffic Study found that the three intersections within the City of Pinole currently operate at LOS A. Because traffic conditions are “excellent”, it would be unreasonable and unwarranted to restrict construction traffic from using these public roadways.

Restricting construction traffic to within Hercules City limits is uncalled for due to the proximity of I-80 to the site via the John Muir Parkway. Most construction related traffic would use this direct route rather than travelling a longer route through the City of Pinole to access the same highway.

Response to Comment 10-6.

The capacity of 4.06 million gallons per day (MGD) for the Pinole/Hercules Wastewater Treatment Plant was taken from the EBMUD Urban Water Management Plan 2005 as discussed in the Draft EIR/EIS. Additionally, the City of Pinole’s website for the Wastewater Treatment Plant notes a capacity of 4.06 MGD. While the commenter notes that the dry weather capacity of the treatment plant is 3.52 MGD, the City of Pinole’s website notes that the average daily flow is

approximately 3.5 MGD. Based on the City of Pinole's website, additional capacity of the Pinole/Hercules Wastewater Treatment Plant is greater than 500,000 gallons per day.

The Pinole/Hercules Wastewater Treatment Plant is located at the foot of Tennent Avenue in the City of Pinole. It was originally built in 1955 as a primary treatment facility. Since then, it has had two major expansions and several modifications in order to meet the needs of these cities' growing populations. In 1972 the plant was upgraded from a primary to a secondary treatment facility, with a 2 MGD flow capacity. In 1985, the plant was again upgraded to handle a flow of 4.06 MGD. The plant serves a combined population of approximately 40,000, with an average daily flow of 3.5 million gallons. (http://www.ci.pinole.ca.us/publicworks/treat_plant.html)

As stated in the Draft EIR/EIS and confirmed by the commenter, the Hercules ITC is anticipated to contribute a minor demand on the wastewater plant resulting from restrooms supporting the Hercules ITC and the Transit Annex/Café building. It is estimated that the Hercules ITC and associated Transit Annex/Café would generate approximately 300 to 400 gallons per day. As the estimated additional capacity for the Pinole/Hercules Wastewater Treatment Plant is in excess of 500,000 gallons per day, the addition of the Hercules ITC is expected to result in only negligible increased demand on the facility's capacity and would not result in a significant adverse impact.

Response to Comment 10-7.

The City of Hercules will coordinate with staff from the Pinole/Hercules Water Pollution Control Plant to review building permits for non-residential building construction to assure that proper grease and other devices are constructed.

Letter 11_CCHS
Page 1 of 2

WILLIAM B. WALKER, M.D.
HEALTH SERVICES DIRECTOR
SHERMAN L. QUINLAN, REHS, MPH
ENVIRONMENTAL HEALTH DIRECTOR

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OCT 1 2010

September 28, 2010

Paul Page
Office of Planning & Program Management
Federal Transit Administration, Region IX
201 Mission Street, Ste 1650
San Francisco, CA 94105

RE: Hercules Intermodal Transit Center – Draft EIR

Dear Ms. Hammon:

The Contra Costa Environmental Health Division (CCEHD) has received a request for agency comments for the above referenced project. The following are our comments:

1. A permit from CCEHD is required for any well or soil boring prior to commencing drilling activities, including those associated with environmental investigation and cleanup, and geotechnical investigation. 11-1

2. Any abandoned wells (water, environmental, or geotechnical) and septic tanks must be destroyed under permit from CCEHD. If the existence of such wells or septic tanks are known in advance or discovered during construction or other activities, these should be clearly marked, kept secure, and destroyed pursuant to CCEHD requirements. 11-2

3. It is recommended that the project be served by public sewer water. 11-3

4. A health permit is required for retail food facilities. Food facilities include restaurants, stores, bars, cafeterias, snack bars, kiosks at transit sites, and any business or operation that sells or gives food away to the public (including employees or students). Plans must be submitted to CCEHD and approved prior to the issuance of building permits for such facilities. Prior to the submission of plans, CCEHD staff is available to meet with prospective developers/operators to discuss the requirements for these facilities and the plan review process. 11-4

5. Dumpster areas serving retail food facilities are required to have a drain to the sanitary sewer and provided with a hot/cold water supply. It is recommended that 11-5

Letter 11_CCHS
Page 2 of 2

developers be informed of this requirement, since it is usually easier to plan for the installation of sewer and water in dumpster areas during initial construction rather than install these afterwards. 11-5 Cont.

6. All retail food facilities must have approved restrooms. This includes kiosks located at transit sites. It is recommended that developers be informed of this requirement, since it is usually easier to plan for the installation of restrooms during initial construction rather than install these afterwards. 11-6

These comments do not limit an applicant's obligation to comply with all applicable laws and regulations. If you should have any questions, please do not hesitate to call me at (925) 692-2535.

Sincerely,

Joseph G. Doser, REHS
Supervising Environmental Health Specialist

JGD:lj

Letter 11 – Contra Costa Health Services (CCHS)

Response to Comment 11-1.

The City would coordinate with the CCEHD on obtaining necessary permits for any well or boring work on the project site.

Response to Comment 11-2.

The site has undergone extensive remediation under the supervision of the California Department of Substance Control. No remaining tanks are known or believed to exist on the site. If during excavation and construction, wells are encountered, removal would be coordinated with responsible agencies including Contra Costa Health Services and appropriate permits would be secured prior to removal. Additionally, Mitigation Measure HAZ-1b addresses response measures if contaminated soils are encountered during construction.

> **Mitigation Measure HAZ-1b:** If affected or potentially affected soil and/or sediments are encountered during construction activities (grading and excavation), these materials would be excavated, stockpiled, and characterized to evaluate appropriate reuse or disposal alternatives. Confirmation of materials, sample characterization of stockpile materials using analytical data, and soil reuse/disposal plans would be submitted to the City for review and acceptance.

Response to Comment 11-3.

As discussed in Draft EIR/EIS Water Supply Impact UT-4, the project water supply would be provided by existing municipal water supply.

Response to Comment 11-4.

Tenants of the proposed café would be responsible for obtaining required permits to operate.

Response to Comment 11-5.

This information has been provided to the City of Hercules for design consideration.

Response to Comment 11-6.

This information has been provided to the City of Hercules for design consideration.

Letter 12_EBMUD
Page 1 of 2

EAST BAY MUNICIPAL UTILITY DISTRICT

October 22, 2010

Lisa Hammon, Assistant City Manager
City of Hercules
111 Civic Drive
Hercules, CA 94547

Re: Notice of Availability of a Draft Environmental Impact Report for the Hercules Intermodal Transit Center Project

Dear Ms. Hammon:

East Bay Municipal Utility District (EBMUD) appreciates the opportunity to comment on the Draft Environmental Impact Report (EIR) for the Hercules Intermodal Transit Center Project located in the City of Hercules (City). EBMUD has the following comments.

GENERAL

On page 3-186, first paragraph, the first sentence should be revised to read "City of Hercules is served by the 22.3-million-gallon ~~Maloney~~ Maloney Reservoir located in the City of Pinole." 12-1

WATER SERVICE

EBMUD's Maloney Pressure Zone, with a service elevation between 0 and 200 feet, will serve the proposed project area. A main extension, at the project sponsor's expense, may be required to serve the proposed project depending on EBMUD's metering requirements and fire flow requirements set by the local fire department. When the development plans are finalized, the project sponsor should contact EBMUD's New Business Office and request a water service estimate to determine costs and conditions for providing water service to the proposed development. Engineering and installation of water mains and services requires substantial lead-time, which should be provided for in the project sponsor's development schedule. 12-2

The project sponsor should be also be aware that EBMUD will not inspect, install or maintain pipeline in contaminated soil or groundwater (if groundwater is present at any time during the year at the depth piping is to be installed) that must be handled as a hazardous waste or that may pose a health and safety risk to construction or maintenance personnel wearing Level D personal protective equipment. Nor will EBMUD install piping in areas where groundwater contaminant concentrations exceed specified limits for discharge to sanitary sewer systems or sewage treatment 12-3

375 ELEVENTH STREET . OAKLAND . CA 94607-4240 . TOLL FREE 1-866-40-EBMUD

Letter 12_EBMUD
Page 2 of 2

Lisa Hammon, Assistant City Manager
October 22, 2010
Page 2

plants. Applicants for EBMUD services requiring excavation in contaminated areas must submit copies of existing information regarding soil and groundwater quality within or adjacent to the project boundary. In addition, the applicant must provide a legally sufficient, complete and specific written remedial plan establishing the methodology, planning and design of all necessary systems for the removal, treatment, and disposal of all identified contaminated soil and/or groundwater. 12-3 cont.

EBMUD will not design the installation of pipelines until such time as soil and groundwater quality data and remediation plans are received and reviewed and will not install pipelines until remediation has been carried out and documentation of the effectiveness of the remediation has been received and reviewed. If no soil or groundwater quality data exists or the information supplied by the applicant is insufficient EBMUD may require the applicant to perform sampling and analysis to characterize the soil being excavated and groundwater that may be encountered during excavation or perform such sampling and analysis itself at the applicant's 12-4

If you have any questions, please contact David J. Rehnstrom, Senior Civil Engineer, Water Service Planning at (510) 287-1365.

Sincerely,

David J Rehnstrom

for William R. Kirkpatrick
Manager of Water Distribution Planning

WRK:AMW:djr
sb10_213.doc

Letter 12 – East Bay Municipal Utilities District

Response to Comment 12-1.

In the Draft EIR/EIS, under Section 3.13.2, Existing Conditions, in the last paragraph of Water Supply, the following has been revised.

> The City of Hercules is served by the 22.3-million-gallon ~~Mahoney~~ Maloney Reservoir located in the City of Pinole. Based on current projections of the UWMP, the Mokelumne watershed is of sufficient size to meet the near term water needs of the EBMUD and the City, including the proposed project area.

Response to Comment 12-2.

Comment noted. The City of Hercules will coordinate with East Bay Municipal Utility District to complete a water estimate and determine requirements for providing water to the proposed development prior to the initiation of any construction.

Responses to Comment 12-3 and Comment 12-4.

As discussed in the Draft EIR/EIS Section 3.12, the project area that comprises the former Hercules Powder Company has undergone extensive remediation under the oversight of the California Department of Toxic Substances Control. All areas except Hercules Point have been remediated to residential standards. Hercules Point has been remediated to industrial and commercial standards and carries a deed restriction requiring DTSC approval prior to any work being completed on Hercules Point. Additionally, the Draft EIR/EIS document includes two mitigation measures that address unexpected discoveries of hazardous materials during earth moving activities.

> **Mitigation Measure HAZ-1a:** The construction contractor shall develop a project-specific Health and Safety Plan that includes a project-specific contingency plan for hazardous materials and waste operations. This plan shall be submitted to and approved by the City before construction activities are allowed to proceed. The Health and Safety Plan, applicable to all grading and excavation activities, shall establish policies and procedures to protect workers and the public from potential hazards posed by hazardous wastes. The Health and Safety Plan shall be prepared according to federal and state OSHA regulations.
>
> **Mitigation Measure HAZ-1b:** If affected or potentially affected soil and/or sediments are encountered during construction activities (grading and excavation), these materials would be excavated, stockpiled, and characterized to evaluate appropriate reuse or disposal alternatives. Confirmation of materials, sample characterization of stockpile materials using analytical data, and soil reuse/disposal plans would be submitted to the City for review and acceptance.

Letter 13_Jeffrey Wisniewski
Page 1 of 1

From: Jeffrey Wisniewski [mailto:jeff3w@gmail.com]
Sent: Friday, October 29, 2010 4:21 PM
To: Lisa Hammon
Subject: ITC Draft EIR Comment

Ms. Hammon-
I have the following comment for the Draft EIR for the ITC project:

Appendix E
John Muir Parkway. John Muir Parkway is a four-lane extension of the SR-4 terminus, located west of I-80. John Muir Parkway serves as a local roadway between the North Shore Business Park and San Pablo Avenue. East of San Pablo Avenue, access is provided to I-80 eastbound and westbound, and to SR-4 eastbound. John Muir Parkway has recently been extended west to the Hercules Intermodal Transit Center property line and a new bridge has been constructed from John Muir Parkway to Tsushima Drive. SR-4 is commonly known as John
Muir Parkway from the City of Hercules to the City of Martinez. John Muir Parkway has a posted speed limit of 35 mph. 13-1

The posted speed limit west of Alfred Nobel Drive is 25 mph.
-Jeff

Letter 13 – Jeffrey Wisniewski

Response to Comment 13-1.

The speed limit for John Muir Parkway is posted at 25 miles per hour west of the intersection with Alfred Nobel Drive and is posted at 35 mph east of the same intersection. No change to the document is necessary. This comment does not raise a significant adverse environmental impact.

Letter 14_Myrna L deVera
Page 1 of 3

From: MyrnaLdeVera@aol.com [mailto:MyrnaLdeVera@aol.com]
Sent: Sunday, November 14, 2010 8:36 PM
To: Dennis Tagashira; Lisa Hammon
Subject: Comments on Draft EIR for Hercules Intermodal Transit Statio

Page 1-15: Project Phase Description Table – Are the dates on these table updated? Phase 1 shows the ITC Station to Start on 2010, so this seems to be a previous estimated schedule. Please update project phase description table. 14-1

Page 2-2: I applaud the plan for the Hercules ITC to incorporate energy conservation measures and designed to achieve a U.S. Green Building Council (USGBC) LEED for Building Design and Construction Silver certification.

Page 2-53, first paragraph, on Construction: Are these dates updated considering the recent delay on the ITC funding? Please update. 14-2

Page 4-7, Table 4.1-3, second paragraph: Concerning the statements:

"Since Hercules and the surrounding areas of western Contra Costa County are for the most part a bedroom community, it was assumed that morning peak trips would originate in the Hercules area and that these same trips would return to the Hercules area during the afternoon peak."

"It was assumed that there would be no "reverse commuting" such as traveling from San Francisco to Hercules during the morning commute."

Question: Why assume that all commuters will be only from Hercules and the surrounding cities and that there will be "no reverse commute"? Our vision of having the ITC and Waterfront is to turn Hercules from a bedroom community to a destination. The EIR statements seem contrary to our city's vision. Our pending developments were planned to create businesses and shops to attract out of town people to visit into Hercules. Is this flawed assumption (of only considering commuting to San Francisco and no reverse commute) going to affect the planning of parking and traffic flows? Already, many people from other cities commute into Hercules for their employment such as Bio-Rad. 14-3

Page 4-13 Regarding the forecasted number of inbound park-and-ride and outbound park-and-ride, the numbers seem low. Why is the outbound PM more than the AM commuters? Why were these based on the existing travel patterns and not projected for the future more populated Hercules and surrounding cities? Did the study consider that other neighboring city residents possibly as far as Vallejo would use the train and bus services? 14-4

Page 4-16 Parking Impacts. The deficit of 39 parking spaces will impact the residents of Bayfront and Promenade. The Planning Commission had designed a draft parking ordinance that includes residential parking permits. I suggest that the parking ordinance be reviewed and approved by Council as part of the mitigation measures for the parking deficit. 14-5

Letter 14_Myrna L deVera
Page 2 of 3

Page 4-19 The final design provides for bicycle lanes along the future John Muir Parkway extension, however, there are no bicycle lanes along Sycamore Avenue. Is it possible to provide bike lanes at this point in time? Also, I am highly concerned about the sharing of pedestrian and bicycles on one lane due to safety issues. I would like to see a separation of lanes by pavement material or line markings on the pavements. 14-6

Page 4-24 The statement that *"No existing structures are found in the proposed project area; consequently, there would be no project-specific impacts or adverse disruption to land uses or communities."* 14-7

Were the community disruption and displacement effects on the nearby Promenade neighborhood considered?

Page 4-30 The EIR assumes that the socioeconomic benefit is purely increasing transit options and improving transit services for nearby residents and businesses, and that less than 1000 transit riders are expected, thus there is only a "minor effect." 14-8

What about the benefits of outside cities accessing Hercules for its shops and restaurants? Again, the study assumes that only Hercules commuters will use the transit options to travel outside of Hercules instead of attracting outside commuters to visit Hercules as the DESTINATION that we have envisioned.

Page 4-117 Regarding the statements: *"The Hercules ITC and HB development, while related and part of the WDMP, are independent projects that are being evaluated under separate environmental review documents. Neither project is dependent upon the other for implementation ...."* 14-9

"Consequently, both projects are being evaluated for the potential impacts perspective to project elements in whole so that if either project does not occur, the other project may proceed."

The statements are contrary to what I had envisioned as a planning commissioner when working on the Waterfront project (ITC and HB developments.) I had always considered both projects to be dependent on each others' completion for each component's success. Thus, the statements disturb me since they imply that the ITC could be built without the Transit-oriented mixed-use development we envisioned to feed into the transit center. Without the Bayfront development, we will not achieve the people's vision of Hercules evolving into a destination. Rather, the waterfront will be a center for pushing people out of Hercules in trains and buses.

Page 4-131 *"While the UPRR tracks and waterside facilities are at risk due to location and the projected changes in inundation associated with climate change, the UPRR will be subject to such changes well beyond the boundaries of this project. At some point in the future, the railroad will likely need to be elevated. The Hercules ITC will either continue to operate as a transit center or be used in some other capacity."* 14-10

Letter 14_Myrna L deVera
Page 3 of 3

If the UPRR tracks are forecasted to below the flood levels, why not locate the UPRR tracks above the projected flood elevation as the ITC is elevated, thus avoiding the future exorbitant expenses of relocating the railroad?

14-10 cont.

Letter 14 – Myrna de Vera

Response to Comment 14-1.

The dates included in the Draft EIR/EIS will be updated. Construction of the project will be dependent upon securing all necessary environmental approvals and funding. Currently, construction is planned to begin in 2012 and continue through 2016. Table 1.5-1 on page 1-15 of the Draft EIR/EIS will be revised as follows:

Table 1.5-1 Hercules ITC Project Phasing and Schedule

Project Phase Description	Start	Complete
Phase 1 –Station & Access Infrastructure	~~2010~~ 2012	~~2013~~ 2016
Phase 2 – Café & Plaza	~~2012~~ 2015	~~2013~~ 2016
Phase 3 – Hercules Point Access	~~2013~~ 2016	~~2014~~ 2017
Phase 4* – Point Park & Open space	~~2014~~ 2018	~~2015~~ 2019
Phase 5* – Ferry Pier & Parking Garage	~~2017~~ 2019	~~2018~~ 2020

*dependent upon separate environmental clearance and funding availability

Response to Comment 14-2.

The schedule in the Draft EIR/EIS will be updated as noted in response to comment 14-1. The discussion of the construction schedule in Section 2 page 2-53 will be revised as follows:

> Construction of the Hercules ITC would proceed in phases over approximately ~~24 months~~ five (5) years. The initial phase, beginning in late 2011 or early 2012, would include construction of retaining walls, the Bay Trail, John Muir Parkway extension, Bayfront Boulevard extension, and upstream portions of Refugio Creek restoration, North Channel, and Bayfront Bridge.
>
> Construction of the rail platform, track relocation, signals, railroad bridge, and downstream portion of Refugio Creek ~~Transit Loop and temporary surface parking lot, and station building~~ is anticipated to begin in ~~2011~~ 2014 and require from 24 to 30 months to complete. Construction of the station building, Transit Loop and surface parking lot is anticipated to begin in 2015, with the intention that the train station and bus terminal could be completed and operation commence in 2016~~late 2012 to early 2013 with operation commencing late 2013~~. No schedule has been established at this time for the construction of the permanent parking structure. Timing of these facilities would depend on funding, economic conditions, and the development phasing of the surrounding the ~~H~~Bayfront development.

Response to Comment 14-3.

It is acknowledged that the City of Hercules plans to increase business development within the City and that other proposed projects in the vicinity of the Hercules ITC would increase the number of jobs within the City. Given the size of the current employment base within the City relative to the employment base of the San Francisco Bay Area, it is assumed that the vast majority of transit riders would leave the City of Hercules in the morning and relatively few would come into the City. The traffic study included the simplified assumption that that there would no reverse commute.

An additional reason for making this assumption is that transit commuters coming into the City of Hercules in the morning would continue their journey on foot, by bicycle, or via public transit. These reverse commuters would not increase automobile traffic on the local roads or demand for space at the Hercules Transit Center parking lot/structure and need not be included in any estimate of traffic impacts or adequacy of the parking lot/structure.

Response to Comment 14-4.

Comment noted. The transit center rail ridership forecast is based on the Capitol Corridor ridership forecast, information on station access facilities such as feeder bus service, parking availability, as well as local land use within one-half mile of the project that could attract riders by primarily non-motorized means.

Afternoon traffic peaks are commonly higher and more compressed than morning peaks, because people tend to stagger the starting time of their work day and tend to leave work between 5:00 p.m. and 6:00 p.m.

The long-term projections for rail ridership correspond to forecast years of 2020 and 2025 and included growth in the City of Hercules and the surrounding areas. The forecasts do not, however, incorporate any drastic changes in land use patterns within the City or economic activity relative to the current employment centers.

The traffic study considered the “catchment area” for the Hercules Transit Center to include the entire City of Hercules, Pinole, and Rodeo-Crockett. Vallejo was not considered to be within the “catchment area” for the Hercules Transit Center; bus riders from Vallejo would be expected to access the transit system at the Crockett park-and-ride lot.

Response to Comment 14-5.

The City can approve a parking ordinance at any time. CEQA does not require mitigation of inadequate parking supply, and there is no evidence that the parking deficit listed in the comment would result in a significant adverse impact on the environment.

Response to Comment 14-6.

The Draft EIR/EIS concluded (on pages 4-18 and 4-19) that the proposed project would not result in an increased hazard to pedestrians or bicyclists and would not conflict with adopted policies, plans, or programs promoting walking or bicycling due to operation of the project. Based on the traffic analysis conducted for this project, providing additional bicycle lanes outside the project area or adding a separation of lanes is not a warranted mitigation.

Response to Comment 14-7.

Figure 2.2-7 in Section 2.0, Alternatives Considered of the Draft EIR/EIS, depicts the boundary for the Hercules ITC project. The statement cited in the comment is accurate. There are no structures located within the project boundary. The Promenade neighborhood is located outside of this project boundary.

Temporary disruption from construction related activities has been analyzed in the Draft EIR/EIS in Impact LU-1: Potential of temporary affects or displaced land uses in or near the project sites resulting from construction activities, and Impact LU-2: Potential disruption or displacement of existing land uses or communities.

Response to Comment 14-8.

People from outside the City of Hercules would come into the City to access the intermodal transit center and may frequent local shops and restaurants. Any economic impact would, however, be generally attributable to transit riders who use the Hercules Intermodal Transit Center. This comment does not raise any significant adverse environmental impacts.

Response to Comment 14-9.

The City's vision to have both the Hercules ITC and the HB project completed is noted. The HB project is currently undergoing its own environmental review under CEQA and development plans are being processed by the City. The City is the project proponent and sponsor for the Hercules ITC. The applicant and sponsor for the HB development is a private developer. The City cannot require the HB project to be built. Thus, the environmental review for the Hercules ITC and HB projects must proceed independently of each other.

The Draft EIR/EIS notes that both the Hercules ITC and the HB development are related and part of the WDMP. However, while related, the two projects are not dependent upon the other to be developed and constructed. The Hercules ITC has the purpose of providing transit options to the greater community and its utility is independent from the HB development. Similarly, the HB development provides residential and commercial redevelopment, and the project can be implemented without the construction of the Hercules ITC; it does not depend on the construction of the Hercules ITC to be developed.

Response to Comment 14-10.

Changing the elevation of the UPRR to above sea-level rise elevation would necessitate changing the tracks well beyond the boundaries of the project. Such action would need to be initiated and implemented by UPRR, and is beyond the scope of this document. Additionally, the Draft EIR/EIS addresses sea level rise within the Section 4.10, Water Resources Environmental Consequences Section. The project will be constructed at higher elevation than existing conditions to accommodate the grade separation elements of the project and should protect development from inundation to flood and sea level rise.

Letter 15_Cletia Hart
Page 1 of 2

From: Cletia Hart [mailto:cletiahart@hotmail.com]
Sent: Monday, November 15, 2010 8:44 AM
To: Lisa Hammon
Subject: Commetns for ITC

Hi Lisa -

Attached are my brief comments regarding the EIR for the ITC. I will see you tonight at the meeting.

Thanks
Cletia

Here are my comments about the EIR for the ITC.

The EIR didn't present any overwhelming concerns for me about the project.

The financing for the project is a concern given that we don't have all the funds in place. I know there are many things in the works to obtain the necessary funds to complete this project once it begins but until all the funds are in place, it is a concern given the dollar amount involved.

Traffic access to/from the ITC, while not an immediate issue, could be a future issue given the projects planned for the surrounding area. While John Muir Parkway will be extended to the ITC, should the ITC be used by more individuals than currently planned, traffic could be an issue given the limited access to that area and the overall limited access in Hercules. Parking has been adequately addressed in the project plan with the future garage being built. 15-1

While the project plan is for an anticipated 1000 individuals a day using the ITC, hopefully more individuals will utilize the transportation offered in order to lessen traffic on I80.

I did have questions regarding the issue raised in the EIR about the rise of the sea levels over the years. In talking with Jesse Harder about this, he told me about the plans to raise the platform and the tracks at the ITC as well as the retaining walls to address potential sea level increases. The concern over the tracks along the Bay would be the responsibility of the Union Pacific. The project plan is addressing the issue for the future and the life of the buildings.

In the EIR, it stated there will be about 600 jobs created during the life of the project. Will the contractors being hiring local individuals when possible? 15-2

Letter 15_Cletia Hart
Page 2 of 2

Overall, I feel confident about the success of getting this project started and finished as a first step in completing the Master Plan for projects planned in the Waterfront area of Hercules. It is exciting to see this finally happening after so many years of planning and waiting for the ITC and subsequent projects.

Letter 15 – Cletia Hart

Response to Comment Letter 15-1.

Comment noted. The Traffic Impact Analysis projected growth in roadway traffic to the year 2035. Actual conditions may be higher or lower depending upon development in the City of Hercules and the San Francisco Bay Area.

Response to Comment Letter 15-2.

The extent to which local individuals are hired for construction will depend on the qualified firms and their staffing base. This comment does not raise a significant adverse environmental impact.

Letter 16_Sherry McCoy
Page 1 of 2

To: Lisa Hammon, Asst City Manager
From: Sherry McCoy
Subject: Questions and Comments for Draft EIR/EIS for the Hercules Intermodal Transit Center

Given below are my questions and comments for the Draft EIR/EIS for the Hercules Intermodal Transit Center.

Please contact me if you have any questions.

Comments/Questions:

Pg ES-1, paragraph 2 – "……expected to reduce congestion on the nearby Interstate 680……" Should this be 80? 16-1

Pg 2-5 – There will be 3 EIRs (/EIS) for the five phases of the Hercules ITC project plus an EIR for the Hercules Bayfront Project, 4 EIRs altogether - correct? 16-2

Pg 2-9, paragraph 2 – Why, initially, are there 2 northbound lanes and only 1 southbound lane? 16-3

Pg 2-25, last paragraph – What is the plan for use of the energy from the solar panels? 16-4

Pg 2-33, paragraph 5 – Is the pedestrian trail shown in any of the Figures? 16-5

Pg 2-53 and Pg 2-56 – On pg 2-53, it says construction of the Hercules ITC is anticipated to take 24 months. On pg 2-56, it says that the project with Track Option A will take 30 months, but IF Track Option B is implemented, this would be reduced by 6 – 9 month or 21-24 months for the project. Does the information on pg 2-53 assume that Track Option B will be implemented? 16-6

Pg 2-57, Creekside Trail – "The trail width will vary from 8-20 feet……" Is this wide enough to easily accommodate pedestrians and bikers at peak commute times? (Pg 2-41 says the Creekside Trail will be approximately 10ft wide.) 16-7

Pg 3-111 – "…..but trains would be expected to sound their horns as they approach the station, particularly through trains such as freight" - How many trains, including freight trains, are anticipated to go through the station, and how many of those would be between 11PM and 6AM? 16-8

Pg 4-2, bottom of pg, first two bullet points – shouldn't the first be complete and the second, under construction. 16-9

There are two TABLE 4.1-4 16-10

Comparison of Table 3.1-2 (Existing), Table 4.1-2 (Future Baseline) and Table 4.1-4 (Project Scenario – pg 4-14)

– Why does the Intersection 3, morning peak V/C ratio go down (Existing to Future Baseline/Project Scenario)? 16-11

- At a LOS of F, Intersection 10 is beyond the policy of the General Plan – not in Existing but Future Baseline and Project Scenario – a concern for any project. 16-12

- Given the LOS of E at San Pablo and Sycamore, has traffic movement to other streets been incorporated in the analysis (ie Railroad to Hercules Ave, etc)? 16-13

Letter 16_Sherry McCoy
Page 2 of 2

- Why does the V/C ratio increase at Appian only in the AM? 16-14

- According to Automobile Trip Assignment (pg 4-8), there are approximate twice evening peak hour trips compared to morning peak hour trips, yet the impact to Intersection 5 is less. Is this accurate? 16-15

Table 4.1-4 (Pg 4-8) – State Route 4 instead of 84. 16-16

Pg 4-15 – WestCAT would operate local and express bus service at the Hercules ITC.

- Would this include LYNX service? 16-17

- Given the location of the Hercules Transit Center, the buses going to the ITC would go through the Sycamore/Willow, Sycamore/San Pablo and San Pablo/John Muir Pkwy intersections. Was this factored in the numbers in Table 4.1-4 (pg 4-14) and is WestCat committed to this? 16-18

Table 4.1-5 – Are the numbers under the column labeled "Delay" time? (Centering is off on LOS columns for Intersection 8). 16-19

Are the LOS values in Table 4.1-5 and -6 based on different factors from the ones in Table 4.1-4 (pg 4-14)? 16-20

Pg 4-48/49 – There needs to be a balance between light/glare and safety for commuters and residents (at ITC non-use hours). Will lights in the station be set at one level or will it change with train movement through the station? 16-21

Pg 4-131, fourth paragraph – Is there an estimated time-frame for the elevation of the railroad? What scenario would cause the ITC to stop operating as a transit center? 16-22

General Comment:

In most of the analyses, the afternoon numbers are higher than the morning numbers (peak hour ridership, peak hour trips, etc) – what is the rationale for this (one would think they would be about the same)? 16-23

Editorial Comments:

Pg 1-9, paragraph 3, line 3 – There should be a period between "….Waterfront Area)The WDMP…."

Pg 1-9, paragraph 4, line 2 and line 4; and pg 1-10, paragraph 1, line 1 – It appears that WDMP should be WMP (Initiative). 16-24

Pg 2-2, paragraph 3 – extra period (line 4)

Pg 2-15, paragraph 1, sentence 1 – undertaken (instead of undertake)

Pg 3-52, ¾ down the pg – "Objective 13……." Is the spacing/font size on this correct?

Pg 3-56 – missing a) at the end of the sentence.

Letter 16 – Sherry McCoy

Response to Comment 16-1.

The following edit will be made to the last sentence of the second paragraph on the first page of the Draft EIR/EIS Executive Summary.

> Providing access to public transit is also expected to reduce congestion on the nearby Interstate ~~6~~80, as well as local arterials.

Response to Comment 16-2.

Page 2-5 of the Draft EIR/EIS lists the five phases of the project. The current Hercules ITC Draft EIR/EIS evaluates phases 1 through 3. Phases 4 and 5 would be evaluated under a separate environmental document for the future WETA ferry service to Hercules pursuant to CEQA and/or NEPA requirements. The HB Development project is currently undergoing separate environmental review, and a draft EIR was released for public review and comment. See page 4-177 of the Draft EIR/EIS.

Response to Comment 16-3.

The second northbound lane is to expedite bus left turns onto Bayfront Boulevard.

Response to Comment 16-4.

The energy generated from the proposed solar panels would be used by the Station Building and site lighting.

Response to Comment 16-5.

This pedestrian trail was not included in any of the figures; however, as noted by the comment, this pedestrian trail would follow the edge the North Channel Restoration Area at the top of slope.

Response to Comment 16-6.

To clarify, the project is anticipated to require approximately 30 months for the construction of the railroad station improvements. With the inclusion of Track Option B, the temporary shoofly track will not be necessary and the construction duration is likely to be shortened by approximately 6 months. Therefore, with Track Option B, the construction of the track improvements, including rail, platform, and UPRR bridge is expected to require approximately 24 months. The information on page 2-53 from the Draft EIR/EIS is based on implementation of Track Option B.

Response to Comment 16-7.

The Creekside Trail is designed to accommodate pedestrians and bicycles. The average width of the Creekside trail is 10-feet. The trail width varies from 8-ft. to 20-ft. through Creekside Park to

facilitate adjacent uses. The Creekside trail is a Class I bikeway per Caltrans design standards with a minimum paved width of 8-ft. (2.4 meters).

Response to Comment 16-8.

The noise monitoring survey indicated that between 45 and 50 trains travel along the Union Pacific Railroad line that runs along the shoreline of San Pablo Bay during a normal, 24-hour period. Freight traffic could be expected to be similar after project construction is complete. The Capitol Corridor operates approximately 32 trains in both directions (16 each way). While beginning and ending times for the termini are 4:30 a.m. and 11:30 p.m., trains generally pass through the Hercules area slightly later in the morning and earlier at night. It is unknown how many freight trains UPRR will operate at night between 11:00 p.m. and 6:00 a.m. as schedules will be determined by UPRR according to the needs of its business operations.

Response to Comment 16-9.

Comment noted. The bullet points on page 4-2 of the Draft EIR/EIS will be revised as follows:

- Commercial building: 9,850 sf of commercial uses at Willow Avenue/I-80 (~~under construction~~ Complete & majority of space occupied).
- Sycamore Downtown: 96 units over 40,000 sf of retail commercial space on Sycamore Avenue between Front and Tsushima Street (~~approved~~ under construction).

Response to Comment 16-10.

The following table titles in the Draft EIR/EIS have been changed:

Table ~~4.1-4~~ 4.1-5 Project Scenario Level of Service Summary

Table ~~4.1-5~~ 4.1-6 LOS Comparison Summary – A.M. Peak

Table ~~4.1-6~~ 4.1-7 LOS Comparison Summary – P.M. Peak

Response to Comment 16-11.

The Existing Conditions for the intersection of San Pablo Avenue and Willow Avenue (Intersection #3) shows a morning volume/capacity (V/C) ratio of 0.244 and the Future Baseline condition indicates a V/C ratio of 0.218. Appendix B of the Hercules Intermodal Transit Center Traffic Impact Analysis (*in* Appendix E of the Draft EIR/EIS) shows a 2006 base volume at the intersection of 103 vehicles (Existing AM, Page 5-1), increasing to 132 vehicles in 2010 (Future Background Volume, Page 5-1). The V/C ratio at the intersection improves, despite an increase in traffic volume, because the traffic signal is optimized and the light cycle shortened.

Response to Comment 16-12.

The cumulative ratio with and without project will improve to LOS B at morning peak and LOS C at evening peak.

Response to Comment 16-13.

Traffic modeling considers the current or existing conditions, estimates the volumes and conditions when project construction is complete, and applies a growth rate to estimate conditions at some future date. Traffic models are generally not iterative and do not consider drivers moving to other streets in response to congestion.

Response to Comment 16-14.

Comment noted. The Traffic Impact Analysis assumes that transit riders travel to the Hercules ITC during the morning commute and away from the Hercules ITC in the afternoon. Morning traffic at San Pablo Avenue and Appian Way would have only a slight adverse effect on intersection performance (.680 to .683), and the intersection performance in the afternoon traffic would be the same with or without the project.

Response to Comment 16-15.

The Draft EIR/EIS accurately states that the Hercules ITC project would generate an estimated 40 morning peak hour trips and 71 evening peak hour trips (page 4-8) and that the proposed project would remove vehicles from the roadway network to reflect a shift from auto travel to transit. This would result in fewer regional trips on I-80 but more trips on the local network as drivers travel to the Hercules ITC. By way of comparison, peak hour traffic volume on I-80 is approximately 12,200 vehicles per hour (Draft EIR/EIS page 3-9), and the direct project-related impact is not expected to be substantial either for the morning or afternoon peak.

Response to Comment 16-16.

The following entry in Table 4.1-4 of the Draft EIR/EIS has been changed.

Origin/Destination	Percent Distribution to/from Hercules ITC (Parcel K) garage
State Route ~~8~~4 (eastbound)	5%

Response to Comment 16-17.

The City continues to coordinate with WestCAT regarding bus service to the Hercules ITC, including LYNX Transbay service. At the time of preparation of the Draft EIR/EIS, the City estimated approximately 35 JPX buses per day based on 15-minute peak frequency and hourly off-peak frequency for weekday service only. Currently, bus service, including LYNX, has not been defined or formally established with WestCAT.

Response to Comment 16-18.

When the Traffic Impact Study (Appendix E of the Draft EIR/EIS) was prepared, the number of travelers connecting from the Hercules ITC to the Hercules Transit center was not known and future traffic analysis did not include any additional bus traffic at the intersections mentioned. This effect is not expected to be substantial due to the limited number of commuters who would

take transit to access the Hercules ITC. As shown on Table 4.1-3 (page 4-7) of the Draft EIR/EIS, an estimated 6 transit riders would board the train in the morning peak hour and 7 would connect to transit from the train in the afternoon.

Response to Comment 16-19.

The column refers to "Delay" in minutes.

Response to Comment 16-20.

The LOS values in the Draft EIR/EIS Table 4.1-4 (page 4-14) assesses project impact on the operation of the intersections and provides an estimate of whether the project decreases intersection performance. The LOS values in Tables 4.1-5 and 4.1-6 assess the delay at the intersections with and without the project.

Response to Comment 16-21.

The general operation of the Hercules ITC would include manual switch control, automatic time-scheduled shut off, and after-hour override capability. The project will also be subject to a Final Lighting Plan to be reviewed and approved by the City Planning Commission. See Draft EIR/EIS pages 4-48 to 4-53.

Response to Comment 16-22.

The forecast sea level rise is for 20-55 inches by the end of the century. Elevation of the track would require a regional track elevation program and would be implemented by UPRR. There is no forecast as to when this would happen. Traffic modeling for the Hercules ITC is forecasted to 2035. It is anticipated that the Hercules ITC would continue to operate well beyond this point. Passenger facilities (Station Building, Platform, Trail and Roadways) with the Hercules ITC are located above projected flood elevation and sea level rise. It would be purely speculative to forecast as to when the Hercules ITC would stop operating; CEQA does not require such speculation.

Response to Comment 16-23.

Afternoon traffic peaks are commonly higher and more compressed than morning peaks because people tend to stagger the starting time of their work day, but tend to leave work between 5:00 p.m. and 6:00 p.m.

Response to Comment 16-24.

The following are changes to the Draft EIR/EIS text.

Page 1-9, paragraph 3 first sentence:

> Pursuant to General Plan Programs 8A.2 and 8A.3, on July 25, 2000, the City Council approved and the Waterfront Development Master Plan (WDMP) for 167-acres of property, including the proposed Hercules ITC site (generally known as the Waterfront Area).

Page 1-9, paragraph 4 first sentence:

On July 22, 2008, the Hercules City Council adopted the Waterfront ~~Now~~ Master Plan Initiative (WMP Initiative).

Page 2-2, paragraph 3 first sentence:

In keeping with "new urbanist" principles of creating a safe, walkable community, pedestrian and bicycle use would be promoted by orienting streets, wide sidewalks, and dedicated trails to enhance safety and separating cyclists and pedestrians from vehicular traffic. Vehicular access would be limited to public streets.~~.~~

Page 2-15, paragraph 2 first sentence:

Track Option B emerged from a value engineering (VE) study, undertaken by the City of Hercules to identify improvements to the Hercules ITC project.

Page 3-52, paragraph 12:

~~Objective 13: Attain compatible land uses within existing and planned development areas.Circulation Element~~

Objective 13: Attain compatible land uses within existing and planned development areas.

Circulation Element

Page 3-56, paragraph 1 first sentence:

… Corporation, a corporate research and development facility, as well as the North Shore Business Park (office, research, and light industrial). …

Letter 17_Mike Bowermaster
Page 1 of 4

Comments from Mike Bowermaster.

From: Mike Bowermaster [mailto:mkbower@yahoo.com]
Sent: Monday, November 15, 2010 4:34 PM
To: Lisa Hammon
Subject: ITC Draft EIR - Comments - JPGs

Dear Lisa, the follow are my comments, and 2 jpeg images are attached:

While I am critical of mainly the lack of dedicated bike lanes and the lack of traffic calming on Promenade Street, it is important to underline the big-picture view of the ITC project. The ITC project is a great transit-oriented, smart-growth, pedestrian friendly, mixed-use project that will be a shining example of unique urban planning. It holds the potential to be a great example of progressive and smart urban planning for not only the Bay Area, but also the state and the broader nation as a whole.

1) Completion of the East Bay Regional Parks District trail (Bay Trail) that will link all the way from Pinole to Rodeo is a big recreational as well as commute benefit for the area (V1 Section 2 part 2; Bay Trail and Waterfront Promenade). 17-1

2) Bike lanes are needed along John Muir Parkway and Sycamore Avenue. The project has proposed bicycles on the sidewalk for the "Creekside Trail" (V2 Appendix E Traffic Impact Analysis; 2.4 Bicycle Network and Pedestrian Facilities). Biking on the sidewalk is bad (regardless of the sidewalk width), unless a dedicated bike lane is painted on the ground separating the sidewalk from pedestrians & bikes. Dedicated bike lanes should be apart of all roads in the project, including Bayfront Bridge. Hercules currently is very bike unfriendly because of a lack of bike lanes. Other than the bay trail the project isn't advancing the poor bike situation in town. (V2 Appendix E Traffic Impact Analysis; 5.4 Vehicle Site Access and Circulation; "For pedestrians and bicyclist, the project would include crosswalks and sidewalks [but no dedicated bikelanes - MIKE]." 5.7 Pedestrian and Bicycle Facilities; "West of San Pablo Avenue, bicyclists would share Sycamore Avenue [no dedicated bikelanes - MIKE] with motor vehicles to access the intermodal transit center.") 17-2

3) All of HDR's "Transit Connectivity" slides the last 18 months have shown the alternate route to the station in an inaccurate location (see attached image #1, yellow arrow). The primary route to the station is on John Muir Parkway. The second most likely route will be on Promenade Street to Sycamore Ave (see attached image #2, purple arrow). Taraya Terrace will not be as likely because of the extra dog-leg intersection at Sanderling as well as the blind corner @ Sycamore. If Promenade is the path of least resistance, and therefore the second busiest route, traffic calming measures must be taken to slow cars down on Promenade Street. As the street is currently designed, it is easy to speed by hugging the side of the street where there is no parallel parking. I commented on this topic vocally at the Public Scoping Meeting (12/08/2009), in written form for the Scoping portion of the EIR (see email below dated 12/23/2009), vocally at the Planning Commission meeting that focused on the Draft EIR (10/18/2010), and the City published the comments in the Draft EIR under V1 Section 7; Traffic. To date the City has not acknowledged that Promenade Street joins John Muir Parkway as the two main vehicular routes to the ITC, or the significant traffic impacts the project will place on Promenade Street. 17-3

4) Lynx Bus should have a stop as apart of this multi-modal station, like it currently does in Victoria by the Bay. This is especially important for San Francisco commuters at least until ferry service arrives (V1 Section 3; 3.1.3; Transit Service; "Currently, WestCAT does not provide service to the waterfront area where the proposed intermodal transit center would be located.") 17-4

5) BioRad imagery/history/artwork should be used as apart of the largest portion of the retaining wall (V1 Section 2 part 1; Union Pacific Railroad Track Relocation and Railroad Bridge Replacement), which is between BioRad and the baytrail. 17-5

1

Letter 17_Mike Bowermaster
Page 2 of 4

6) The City should continue to be aggressive about really pushing to get ferry service as a part of the project (V1 Section 1; 1.3.1; Water Transit Services). From my experience the last few years on the Promenade HOA Board of Directors, there is a big demand for ferries to San Francisco from the numerous communities living in walking distance to the ITC. 17-6

7) Speaking of Promenade, I find the use of the word "Promenade" in reference to a portion of the new baytrail (V1 Section 2 part 2; Bay Trail and Waterfront Promenade) confusing with the Promenade neighborhood nearby. Is this an attempt to give meaning to the Promenade neighborhood's name after the fact? [Hercules has a history of having redundant and confusing names: Sycamore Ave, Sycamore North, Sycamore Downtown, Sycamore Crossing, etc] 17-7

From: Mike Bowermaster [mailto:mkbower@yahoo.com]
Sent: Wednesday, December 23, 2009 12:55 PM
To: Lisa Hammon
Subject: Station EIR & Plaza Comments (Scoping)

Good afternoon Lisa,

I would like to clarify points I've made verbally at the meetings here in writing.

Bayfront EIR:

Large scale in relation to other projects in Hercules: The downtown on Bayfront Blvd is becoming more residential and office, and less other uses. The New Town Center (NTC) project nearby may be taking away the economic viability of making the Bayfront Blvd downtown truly mixed-use. I encourage the two projects (NTC & Anderson Pacific's downtown) to be studied to prevent NTC from cannibalizing on the retail, restaurants, etc on Bayfront Blvd.

Train Station EIR:

Traffic: All powerpoint presentations from the station team erroneously present alternative routes to John Muir Exp as going Syamore to RR ave to Bayfront blvd. The most likely alternative is not this *indirect* route. The most *direct* route is Sycamore to Promenade Street straight up to the station. Taraya at Sycamore is a difficult intersection and Taraya also has the "dog leg" curve at Sanderling. If John Muir Exp is backed up, cars will travel first on Promenade St, not Taraya or RR. Traffic calming measures will need to be implemented to slow cars along the length of Promenade. Traffic calming (such as larger sidewalk bulb-outs) need to be implemented to *dissuade* cars from leaving (number 1) the bus loop and from then entering (number 2) at Bayfront & Promenade. 17-8

Transit Plaza & Building G Comments:

1) From opening day there needs to be metal poles or barriers of some sort to prevent cars from doing "donuts" in the plaza. These barriers should be *removable* to allow firetrucks in or to allow farmers market vehicles in at 17-9

2

Letter 17_Mike Bowermaster
Page 3 of 4

appropriate times. I like the idea of farmers' trucks next to vender stalls up on the plaza to help encourage farmers markets in the plaza. Farmers markets are my personal favorite use of the square. 17-9 Cont'd

2) Bldg G's relationship with the plaza in unengaged. The plaza is not embracing this building and is turning its back to it. Anderson Pacific needs to be pressed and commit to the design of the plaza side of bldg G, so the plaza can reflect its design. The two go hand-in-hand. The plaza space next to G is a great opportunity for restaurant tables and seating from G to fill the square. 17-10

3) Plaza is uninspired and bland. Where are the guiding landscape renderings showing the intent of the plaza design? These rendering should be freehand, loose, and very conceptual. I'm not convinced we know the point and purpose for this plaza because the design is so vague. What is historic about the current design? 17-11

4) The whole intermodal transit station team needs a historical consultant who is actively researching the history of the site and incorporating that into the design. More specifically, the design of the cafe, plaza, and building G needs to created in a fashion tied to the history of the area. 17-12

5) What is being done to prevent the plaza from becoming a haven for skateboarders? 17-13

6) Where is the police substation? 17-14

7) Will there be video surveillance cameras with complete coverage of the plaza, station, and cafe recording at all times? This would be very effective at preventing crime. 17-15

Thank you for your time,
Mike

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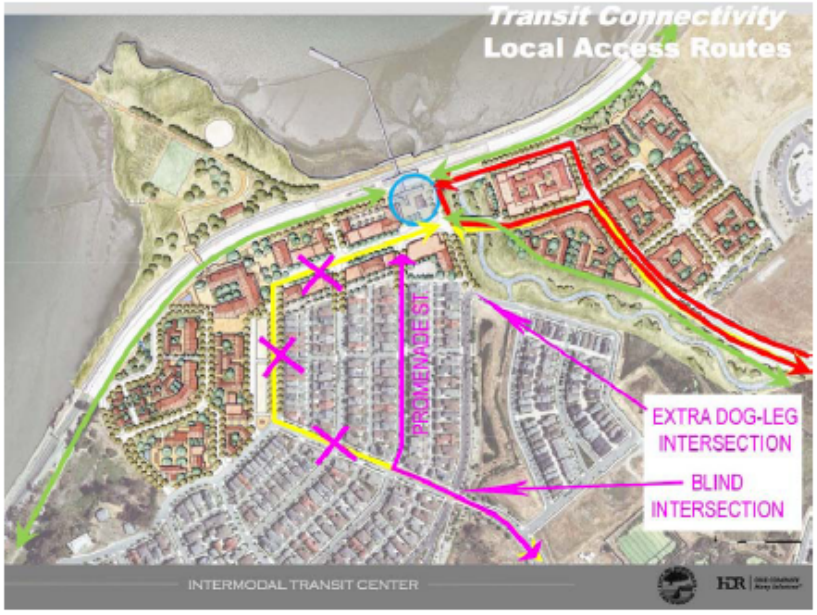
Letter 17_Mike Bowermaster
Page 4 of 4



4

Letter 17 – Mike Bowermaster

Response to Comment 17-1.

Comment noted. This comment does not raise issues related to the substance of the Draft EIR/EIS and/or environmental analysis and no response is required.

Response to Comment 17-2.

The Draft EIR/EIS concluded (pages 4-18 and 4-19) that the proposed project would not result in an increased hazard to pedestrians or bicyclists and would not conflict with adopted policies, plans, or programs promoting walking or bicycling due to operation of the project. Based on the traffic analysis conducted for this project, providing additional bicycle lanes outside the project area or adding a separation of lanes in not a warranted mitigation as no significant adverse environmental impact would occur.

Response to Comment 17-3.

While commuters could use Promenade Street to access the Hercules ITC, the City will also install directional signage to designate John Muir Parkway as the primary access route to the Hercules ITC to minimize potential diversionary use of Promenade Street by commuters. If congestion becomes an issue after the Hercules ITC begins operation, the City can consider adding traffic calming measures to the street, if necessary. No significant adverse environmental impact will result.

Response to Comment 17-4.

The City is coordinating with WestCAT regarding potential bus service to the Hercules ITC and will review the potential for a LYNX Transbay service to originate at the Hercules ITC.

Response to Comment 17-5.

The City is evaluating art work available for the retaining wall.

Response to Comment 17-6.

WETA is responsible for the implementation schedule of the proposed ferry project. The City will continue coordination with WETA on the ferry project.

Response to Comment 17-7.

The Promenade refers to pedestrian accessible portions of the Transit Loop and the retaining wall that will provide public views of the San Pablo Bay.

The Comments below were submitted during the Scoping Period and were considered during the preparation of the Draft EIR/EIS. However, as the email was attached to the comments on the Draft EIR/EIS, the City and FTA have provided the following responses.

Response to Comment 17-8.

See response 17-3

Response to Comment 17-9.

Comment noted. The City will consider including access restriction such as removable metal poles to prevent illegal vehicle access while allowing for public safety or emergency vehicle as well as potential farmers' market trucks to access the Plaza.

Response to Comment 17-10.

The commenter addresses an issue outside of the scope of the Hercules ITC Draft EIR/EIS. Development of Lot G is proposed as part of the HB Development and undergoing a separate environmental review. However, the City will continue to work with the developer and the community to ensure that the development continues a consistent vision with the Waterfront.

Response to Comment 17-11.

Since the comment was received during the scoping period, the City has held numerous public workshops to incorporate community input into the plans and design of the Hercules ITC, which has been revised to incorporate historic elements into the nature of the structures. The conceptual drawings included in the Draft EIR/EIS reflect this coordination with the public.

Response to Comment 17-12.

See response 17-11. The City has not included a historical consultant. However, through the public workshops on the design of the Hercules ITC, numerous historic photographs of the area were reviewed to enhance the design and include contextual references. Draft EIR/EIS Figure 2.2-8 reflects the culmination of the public workshops including the smoke stacks of the Café/Transit Annex and the Plaza. However, as addressed in response 17-10, Lot G is not included in the development of the Hercules ITC and is outside the scope of this document.

Response to Comment 17-13.

The use of the Plaza by skateboarders is not likely to result in a significant environmental impact. However, in the interest of public safety, the City may restrict skateboarding in the plaza if such activity presents a nuisance or threat to public safety.

Response to Comment 17-14.

Alternative 2 includes a small retail complex that would include space for a security office or police substation. Alternative 1 includes a smaller structure and does not include space for a security or police substation. As discussed on page 4-155 of the Draft EIR/EIS, implementation of the project is not expected to result in a significant increased demand on police protection services.

Response to Comment 17-15.

Comment noted. The City may consider installing a surveillance system to increase security for the Hercules ITC and the Plaza. This comment does not raise or relate to an environment impact so no additional response is provided in this document. This recommendation can be raised before and addressed by the City at the public hearing on the project.

Letter 18_Sierra Club
Page 1 of 1

Lisa Hammon, Assistant City Manager
City of Hercules
111 Civic Drive
Hercules, CA 94547

Hercules City Council

Steve Kirby
104 Whaler Circle
Hercules, CA 94547
799 - 9472

October 11th, 2010

Hello Lisa,

I just started reading the DEIR last week. In addition to my interest as a Hercules resident and an initial follower of this project, I will be reading for and reporting to the Sierra Club, as its Hercules Project Coordinator for the West Contra Costa County Executive Committee.

Over the years I have kept our ExCom / Club apprised of this project and we anticipate no serious concerns or objections.

My personal concern is based upon the length and depth of this particular report. I will be hard pressed to read, digest, and perhaps write any comments before the deadline at the end of this month. My assumption is that there are other individuals and / or groups who share this same concern. In addition, with the Public Meeting scheduled for the 18th, there are then only two weeks before the close of the comment period. My next meeting with the WCCCExCom will not be until the 27th, which will allow only 5 days for comments prior to the deadline.

This is a very significant project and the DEIR should be as thorough as possible. Especially in light of the recent need for an interim City Manager, I am requesting that the City Council consider authorizing an extension to this 45-day public review period for the purpose of ensuring maximum and adequate public participation on such a complex and important project. 18-1

Sincerely,

Steve

Letter 18 – The Sierra Club

Response to Comment 18-1.

The original comment deadline of November 1, 2010 was extended by 14 days to November 15, 2010.

Comment Received During Draft EIR/EIS Public Hearing October 18, 2010 7:00 PM

Verbal Comment 19 – Mike Bowermaster (City of Hercules resident)

One commenter was present at the Public Hearing for the Draft EIR/EIS, held on October 18, 2010. Mr. Michael Bowermaster, a resident of the City of Hercules, raised issues concerning bike lanes, traffic circulation (including traffic calming along Promenade Street) and the LYNX Bus. Relevant responses can be found under Letter 17, Responses 17-1, 17-2, and 17-3. Mr. Bowermaster expressed support for the project, particularly the Bay Trail and also suggested the City aggressively push for the development of the ferry service.

Verbal Comment 19 – Mike Bowermaster

Response to Comment 19-1.

Comment noted.

Response to Comment 19-2.

Bikes lanes are proposed for John Muir Parkway and will connect to the Creekside Trail and to the Baytrail to provide bicycle commuter opportunities through the project area.

Response to Comment 19-3.

While commuters could use Promenade Street to access the Hercules ITC, the City will also install directional signage to designate John Muir Parkway as the primary access route to the Hercules ITC to minimize potential diversionary use of Promenade Street by commuters. If congestion becomes an issue after the Hercules ITC begins operation, the City can consider adding traffic calming measures to the street, if necessary. No significant adverse environmental impact will result.

Response to Comment 19-4.

The City continues to coordinate with WestCAT regarding bus service to the Hercules ITC, including LYNX Transbay service. At the time of preparation of the Draft EIR/EIS, the City estimated approximately 35 JPX buses per day based on 15-minute peak frequency and hourly off-peak frequency for weekday service only. Currently, bus service, including LYNX, has not been defined or formally established with WestCAT.

Response to Comment 19-5.

The City of Hercules does not control the schedule or funding of the WETA Hercules Ferry project. The City will continue to coordinate with WETA and facilitate the progress and eventual implementation of having ferry service at the City of Hercules.

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3.0 Minor Changes and Edits to the Draft EIR/EIS

This chapter summarizes the minor text edits made to the Hercules ITC Draft EIR/EIS as a result of comments or minor corrections. New text is indicated in underlined and text to be deleted is ~~struck through~~. Text changes are presented in section and page order in which they appear in the Draft EIR. All page numbers, paragraph, table, figures, and references pertain to the published Draft EIR/EIS. None of the changes presented results in changes to impact determinations identified in the Draft EIR/EIS. None of the changes constitute new significant information or result in any new significant impacts of the project.

Changes to the Executive Summary

On page ES-1, the last sentence of the second paragraph has been revised as follows:

> Providing access to public transit is also expected to reduce congestion on the nearby Interstate ~~6~~80, as well as local arterials.

Changes to the Section 1.0 Purpose and Need

On page 1-9, the first sentence of the third paragraph has been edited as follows:

> Pursuant to General Plan Programs 8A.2 and 8A.3, on July 25, 2000, the City Council approved the Waterfront Development Master Plan (WDMP) for 167-acres of property, including the proposed Hercules ITC site (generally known as the Waterfront Area).

On page 1-9, the first sentence of the fourth paragraph has been edited as follows:

> On July 22, 2008, the Hercules City Council adopted the Waterfront ~~Now~~ Master Plan Initiative (WMP Initiative).

On page 1-15 Section 1.5 Project Funding and Schedule Summary, Table 1.5-1 depicting the phasing and schedule has been revised as follows:

Table 1.5-1 Hercules ITC Project Phasing and Schedule

Project Phase Description	Start	Complete
Phase 1 –Station & Access Infrastructure	~~2010~~ 2012	~~2013~~ 2016
Phase 2 – Café & Plaza	~~2012~~ 2015	~~2013~~ 2016
Phase 3 – Hercules Point Access	~~2013~~ 2016	~~2014~~ 2017
Phase 4* – Point Park & Open space	~~2014~~ 2018	~~2015~~ 2019
Phase 5* – Ferry Pier & Parking Garage	~~2017~~ 2019	~~2018~~ 2020

**dependent upon separate environmental clearance and funding availability*

Changes to the Section 2.0 Alternatives Considered

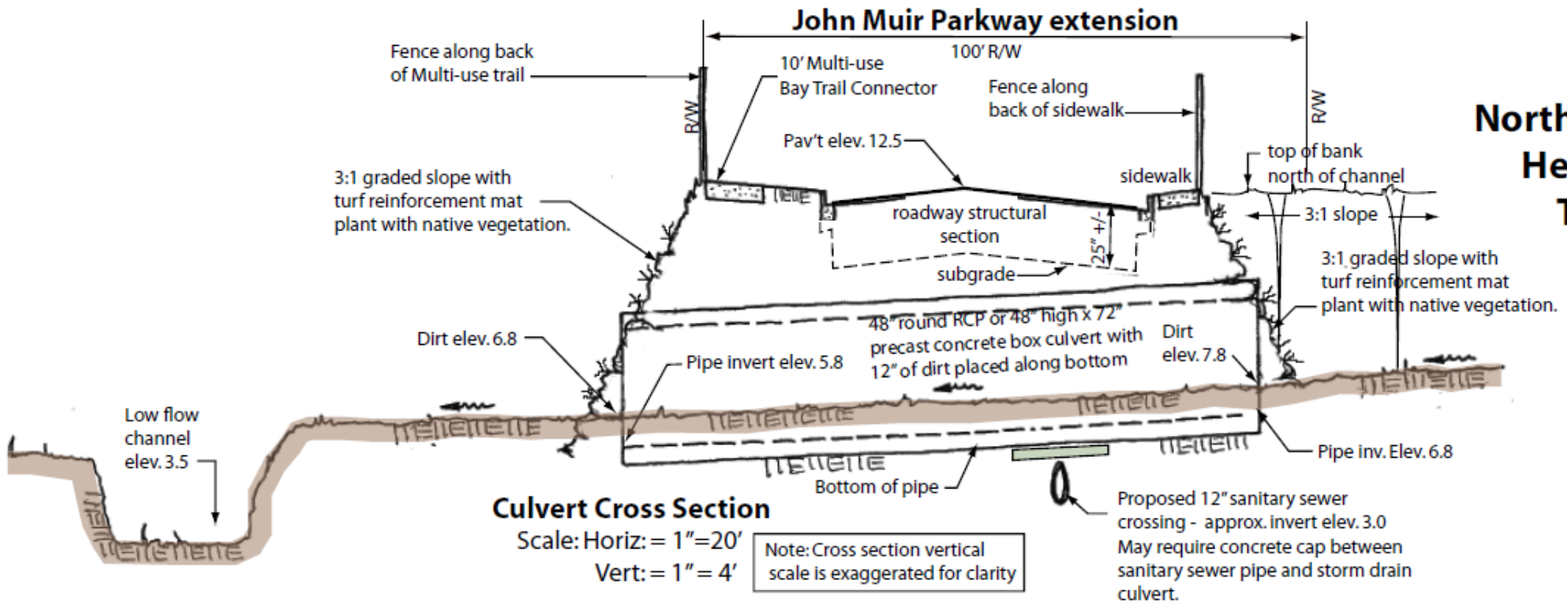
On page 2-2, the first sentence of the second paragraph has been edited as follows:

> In keeping with "new urbanist" principles of creating a safe, walkable community, pedestrian and bicycle use would be promoted by orienting streets, wide sidewalks, and dedicated trails to enhance safety and separating cyclists and pedestrians from vehicular traffic. Vehicular access would be limited to public streets.~~.~~

On page 2-15, the first sentence of the second paragraph has been edited as follows:

> Track Option B emerged from a value engineering (VE) study, undertaken by the City of Hercules to identify improvements to the Hercules ITC project.

On page 2-11, Figure 2.2-3 Culvert Crossing for North Channel at John Muir Parkway has been replaced, as shown on the following page.

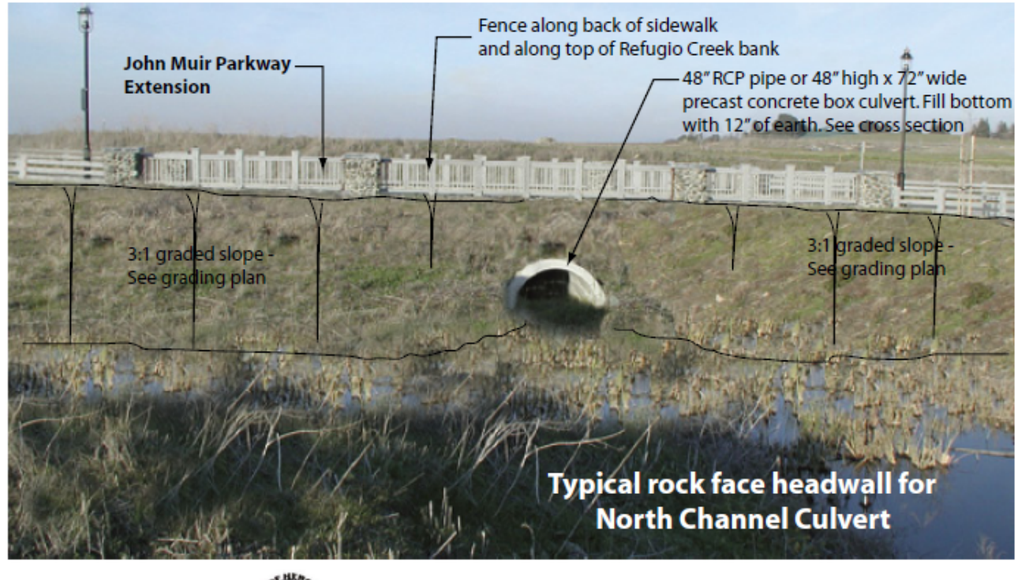


Conceptual
Northern Channel Culvert
Hercules Waterfront
The Village Area

October 16, 2007
Revised July 22, 2008

BKF

HerculesBayfront, LLC
Anderson Pacific LLC
Opticos Design, Inc.



Notes:
1. For grading of Refugio Creek area see drawing prepared by Balance Hydrologics, Inc., dated 10-03-07.

2. For Wetland Mitigation Plan see drawing prepared by WRA, dated Sept 2007.

HDR 2365 Iron Point Road, Suite 300
Folsom, CA 95630-8709

Figure 2.2-3. Culvert Crossing for North Channel at John Muir Parkway

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On page 2-33, the following three paragraphs were inadvertently omitted from the chapter. These paragraphs should be inserted at the top of page.

3.1.1.1 Refugio Creek and North Channel Restoration

Refugio Creek is currently a channelized annual stream and a low-flow tributary of San Pablo Bay that traverses the UPRR ROW east of Hercules Point (**Figure 2.2-11**). The creek passes through three culverts under a service road, then under the railroad bridge, and empties into San Pablo Bay. The creek channel is about 30 feet wide (measured from the tops of the banks) in the vicinity of the site. An earthen pedestrian bridge with two culverts crosses the creek channel approximately 300 feet southeast of the project site. The nearest existing road crossings over the creek are at Tsushima Street, approximately 0.4 mile southeast of the project site, and at Sycamore Avenue and San Pablo Avenue, approximately 0.75 mile southeast of the project site.

The segment of Refugio Creek channel between Hercules ITC's southern (upstream) boundary and immediately north of the proposed railroad crossing bridge, where it enters San Pablo Bay, includes approximately 1,200 linear feet of tidal channel. As a result of historic filling, the creek banks have developed very steep to vertical profiles, and are supported by sand and concrete bags along the banks. The creek banks within the project site range in height from 8 to 14 feet from creekbed to top-of-bank. Part of the lower creek area is within the 100-year flood zone identified by the Flood Insurance Rate Map (FIRM) (Map Number 06013C0043F), effective June 16, 2009. Within the project area, the existing low-flow creek channel varies in width (top-of-bank to top-of-bank) from approximately 20 feet in the upstream portion to about 40 feet in the downstream portion. A non-tidal tributary, referred to as the North Channel, enters the main creek channel from the northeast near the southern (upstream) project boundary (Figure 2.2-1). An additional non-tidal tributary (referred to as the Central Channel) enters the main creek channel from the south, approximately in the middle of the main channel length on the project site (Figure 2.2-1).

The Hercules ITC project would involve realigning and restoring Refugio Creek from San Pablo Bay upstream approximately 1,000 feet to the existing restored segment (**Figure 2.2-12**). The realignment would require a new mouth into San Pablo Bay. A new railroad bridge over the new creek alignment would also be constructed. The existing railroad bridge does not meet UPRR design criteria, and the bridge is overtopped in the 50-year and 100-year flood events (HDR 2009). Additionally, HDR (2009) found that due to development within the Refugio Creek watershed, the flows through Refugio Creek would increase from 1,100 cubic feet per second (cfs) to 2,400 cfs in a 100-year flood event.

On page 2-53, the discussion of construction has been revised as follows:

Construction of the Hercules ITC would proceed in phases over approximately ~~24 months~~ five (5) years. The initial phase, beginning in 2012, would include construction of retaining walls, the Bay Trail, John Muir Parkway extension, Bayfront Boulevard extension, upstream portions of Refugio Creek restoration, North Channel, and Bayfront Bridge. Construction of the rail platform, track relocation, signals, railroad bridge, and downstream portion of

Refugio Creek ~~Transit Loop and temporary surface parking lot, and station building~~ is anticipated to begin in ~~2011~~ 2014 and require from 24 to 30 months to complete. Construction of the station building, Transit Loop and surface parking lot is anticipated to begin in 2015, with the intention that the train station and bus terminal could be completed and operation commence in 2016~~late 2012 to early 2013 with operation commencing late 2013~~. No schedule has been established at this time for the construction of the permanent parking structure. Timing of these facilities would depend on funding, economic conditions, and the development phasing of the surrounding the ~~H~~Bayfront development.

Changes to Section 3.5 Visual and Aesthetic Resources

On page 3-52, the following has been revised beginning with 'Objective 13':

~~Objective 13: Attain compatible land uses within existing and planned development areas.Circulation Element~~

Objective 13: Attain compatible land uses within existing and planned development areas.

Circulation Element

Page 3-56, paragraph 1 first sentence:

Corporation, a corporate research and development facility, as well as the North Shore Business Park (office, research, and light industrial).

Changes to the Section 3.9 Biological Resources

On page 3-117, the California Endangered Species Act/California Environmental Quality Act definition of 'take' has been revised as follows:

The California Endangered Species Act (CESA) of 1970 (CDFG Code Section 2050 et seq., and CCR Title 14, Subsection 670.2, 670.51) prohibits the take (interpreted to mean the direct pursue, catch, capture, or killing of a species) of species listed under CESA (14 CCR Subsection 670.2, 670.5).

On page 3-118 under the California Endangered Species Act/California Environmental Quality Act, the following is added after the first paragraph:

Certain species have been designated as "fully protected" under Sections 3511 and 4700 of the Fish and Game Code. By law, DFG cannot issue permits or licenses, including CESA incidental take permits, for take of fully protected species. DFG may only authorize the taking of such species for necessary scientific research.

On page 3-136, Table 3.9-1 Project Area Sensitive Species/Natural Communities Table, the Federal/State/CNPS statuses for the California black rail are revised as follows:

California black rail (*Laterallus jamaicensis coturniculus*) --/ST, SFP/--

Appendix G-6 Bird Survey Report, page 7, the listing status of the California black rail has been revised as follows:

California black rail (*Laterallus jamaicensis coturniculus*) is a state of California threatened and fully protected species found in saline to brackish marshes with muted to full tidal action.

Changes to the Section 3.13 Utilities

On page 3-186, first sentence of the first paragraph has been revised as follows:

The City of Hercules is served by the 22.3-million-gallon ~~Mahoney~~ Maloney Reservoir located in the City of Pinole. Based on current projections of the UWMP, the Mokelumne watershed is of sufficient size to meet the near term water needs of the EBMUD and the City, including the proposed project area.

Changes to the Section 4.1 Traffic and Transportation Systems

On page 4-2 under No-Action Alternative, the bullet points after the second paragraph have been revised as follows:

- Commercial building: 9,850 sf of commercial uses at Willow Avenue/I-80 (~~under construction~~ Complete & majority of space occupied).
- Sycamore Downtown: 96 units over 40,000 sf of retail commercial space on Sycamore Avenue between Front and Tsushima Street (~~approved~~ under construction).

On page 4-8, the following entry in Table 4.1-4 has been revised.

Origin/Destination	Percent Distribution to/from Hercules ITC (Parcel K) garage
State Route ~~8~~4 (eastbound)	5%

On page 4-14, the following table number has changed:

Table ~~4.1-4~~ 4.1-5 Project Scenario Level of Service Summary

On page 4-15, line 2 has been revised as follows:

Impact TRANS-2: The proposed Hercules ITC project would result in slight increases in transit ridership.

On page 4-16, Impact TRANS-3 has been revised.

Impact TRANS-3: The proposed Hercules ITC project ~~w~~could ~~not~~ increase parking demand that may exceed the available parking supply.

On page 4-16, paragraph 7 has been revised as follows:

CEQA Determination: There are no parking impacts for Alternative 2. ~~For both~~ Under Alternative~~s~~ 1 ~~and 2~~, potential impacts related to parking would be reduced to less than significant with implementation of **Mitigation Measure TRANS-3**.

On page 4-18, Impact TRANS-5 has been revised as follows:

Impact TRANS-5: The proposed Hercules ITC project ~~w~~could ~~not~~ result in increasing hazards to pedestrians or bicyclists or conflicts with adopted policies, plans, or programs promoting walking or bicycling due to operation of the project.

On page 4-19, line 3 of Mitigation Measure TRANS-5 has been revised as follows:

…access analysis ~~indicates~~ estimates that 34 bicycle riders would board the train, and therefore, it would be…

On page 4-21, the following table number has changed:

Table ~~4.1-5~~ 4.1-6 LOS Comparison Summary – A.M. Peak

On page 4-22, the following table number has changed:

Table ~~4.1-6~~4.1-7 LOS Comparison Summary – P.M. Peak

Changes to the Section 4.2 Land Use, Plans and Policies

On page 4-26, paragraph 7 has been revised as follows:

CEQA Determination: ~~The implementation of Alternative 2 would be inconsistent with the WDMP. The WDMP, as amended by the Waterfront Master Plan Initiative, can only be changed by the consent of the owner of the land or by a vote of the people in the City. The City is not the owner of the land under Alternative 2.~~ While Alternative 2 is considered inconsistent with the WDMP, the WDMP could be amended should the City Council decide to select this alternative. Therefore, this is considered a less than significant impact and no mitigation is required.

Changes to the Section 4.4 Cultural Resources

On page 4-34, statement Impact CULT-1 has been revised as follows:

Impact CULT-1a: The project has the potential to adversely affect previously unidentified archaeological resources during construction

On page 4-35, the following is inserted after CEQA Determination for CULT-1a:

Impact CULT-1b: The project has the potential to adversely affect previously identified archaeological resources during construction

Ballast and sub-ballast excavation and installation. The excavation to install ballast for Track Option B will not exceed 24 inches deep below the existing grade. An excavation of this depth is expected to avoid any encounter with the buried archaeological deposit.

Railroad drainage ditch placement. Typically the UPRR requires a 4-foot deep drainage ditch adjacent to the toe of the ballast. If a ditch that deep was constructed, it would be expected to adversely affect the top of the buried archeological deposit. Excavation of such a ditch will be avoided by instead installing a concrete trapezoidal channel along the new track. Emplacement of this type of ditch will require an excavation approximately twelve inches below the existing grade, which is sufficiently shallow to avoid the archaeological deposits. The concrete drainage channel will be constructed over the location where the site is known to occur, based on observations of its location made during installation of a fiber optic line in 1999, and for a distance of at least 50 feet beyond it.

Utility relocation adjustments: There are six existing buried utilities that will need to be rerouted to accommodate Track Option B. These include fiber optic ducts owned by MCI, Quest, Comcast, and Level 3, and two fuel oil lines owned by Kinder Morgan and Shell Oil. One of two possible utility relocation plans will be implemented to avoid effects to the archaeological deposit.

1. Rerouting. With permission of the utility owners, existing fiber optic and fuel oil lines will be rerouted by circumventing the area where the buried site was encountered. The utilities will be moved to a corridor along Bay Trail, which is south of, and at least three feet higher than, the soil surface at the location of the buried archaeological site. The utilities will be placed in trenches dug approximately 3 feet deep. Since the Bay Trail is 3 feet higher than the surface where the buried archaeological deposit is located, an encounter with archaeological deposits is not expected along Bay Trail. To avoid disturbance to the site, the currently buried utilities will be abandoned in place in the location where the buried site was originally encountered.
2. Directional Drilling. The alternative approach will be to abandon existing utilities in place and reinstall them beneath the archaeological deposit. Directional drilling will be used to reroute the utilities at a minimum depth of 16 feet deep. At this depth it is unlikely that archaeological deposits will be encountered. This method was used successfully during installation of the Level 3 fiber optic line in 1999.

3. Existing Utility Removal. Fuel lines will be abandoned in place and may need to be filled with slurry upon abandonment. Fiber optic ducts may be removed in the vicinity of the archaeological site if burial depth is less than three feet. If buried at a depth of greater than three feet in the vicinity of the archaeological deposit, ducts will be left in place to avoid any further disturbance to the deposit that may result from duct removal.

Monitoring. To encourage successful avoidance, both an archaeological and tribal monitor will be present during construction within 100 feet of the known location of the archaeological deposit. In the event archaeological deposits are exposed, construction at the find location will be stopped and new measures will the designed and implemented in consultation with the SHPO and Tribes.

On page 4-35, Impact CULT-2 has been revised as follows:

Impact CULT-2: The project has the potential to adversely affect previously unidentified human remains during construction

Changes to the Section 4.5 Visual and Aesthetic Resources

On page 4-53, line 6 of Mitigation Measure VAR-3 has been revised as follows:

…facility, such as screened/hooded~~ing~~ lighting, automatic dimmers, or strategically placed…

Changes to the Section 4.6 Parklands and Recreation Facilities

On page 4-61, paragraphs one and two have been revised as follows:

Impact PR-6: ~~The proposed project~~ Alternatives 1 and 2 ~~w~~could ~~not have potential for~~ result in impacts to historic sites or other cultural resources.

Alternatives 1 and 2. ~~No historic sites were identified at these sites, as described in~~ **Section 4.4, Cultural Resources,** addresses the potential for impacts to historic properties and other cultural resources. Measures have been identified to reduce potential impacts to less-than-significant. ~~Therefore, no impacts would occur to Section 4(f) properties under provisions of Section 106 of the NHPA of 1966. As also discussed in **Section 4.4**; however, construction activities associated with project implementation would have the potential to unearth undocumented resources, which could result in significant impacts. In the event this actually occurs, potential impacts to undocumented resources would be further minimized by application of the mitigation measures recommended in **Section 4.4** and would result in a less-than-significant effect.~~

Changes to the Section 4.8 Noise and Vibration

On page 4-84, paragraph 5 lines 4 through 9 have been revised as follows:

~~However, i~~Implementation of Track Option B would also have a number of beneficial effects reducing the potential adverse effects associated with Option A~~of the project related to noise~~

~~and vibration~~. Implementation of Track Option B would eliminate the need to construct the shoofly tracks, thereby avoiding the need to route traffic closer to residents temporarily during construction of the Hercules ITC. Additionally, Option B would require fewer piles reducing noise and vibrations impacts.

Changes to the Section 4.9 Biological Resources

On page 4-88, paragraph 1 line 3, Mitigation Measure BIO-1 has been revised as follows:

> … commence until approval is received by USFWS. Preconstruction survey findings will be reported to the CNDDB.

On page 4-89, Mitigation Measure BIO-2 has been revised as follows:

> Mitigation Measure BIO-2: ~~Fairy shrimp surveys will be completed in winter 2009/2010 within suitable habitats for VPFS. If VPFS are detected during surveys, the USFWS will be notified and appropriate avoidance and/or mitigation measures will be implemented prior to commencement of construction within or adjacent to VPFS occupied habitat. If no VPFS are found, no further mitigation would be necessary.~~ Fairy shrimp surveys were conducted in winter 2009/2010 within suitable habitats for VPFS. No VPFS were detected during surveys. Additional surveys may be required by the USFWS if construction is delayed. However, at this time, no further mitigation would be necessary.

On page 4-89, Mitigation Measure BIO-3 has been revised as follows:

> If construction begins during the breeding season (January 15 to August 31~~April 15~~), a USFWS approved biologist will conduct a preconstruction survey of California cordgrass tidal marsh habitat for California clapper rail prior to any construction activities occurring within 500 feet of those habitats. The survey will include searching all accessible California cordgrass tidal marsh habitats in and within 500 feet of the project site for California clapper rail. The surveys shall be conducted within two weeks prior to the commencement of construction activities. If California clapper rail is not found, no further avoidance and minimization measures are necessary. If California clapper rail is found, the biologist will note whether or not a nest was observed and record the behavior of the bird(s) (e.g., exhibiting courtship/nesting behavior, foraging, etc.). Detection of California clapper rail will be reported to the USFWS and CDFG and findings will be submitted to the California Natural Diversity Database. If California clapper rail is detected, construction activities will be avoided within 700 feet of identified clapper rail locations and occupied California cordgrass tidal marsh habitat until USFWS and CDFG are consulted regarding appropriate avoidance measures and permission is granted by USFWS and CDFG to commence work. ~~If California clapper rail is observed nesting or is determined by the biologist to be potentially intending to utilize the habitat for nesting, construction activities will be delayed within 500 feet of the California cordgrass tidal marsh where the bird(s) is found, and USFWS will be notified of the finding. Work will not commence within 500 feet of California cordgrass tidal marsh occupied by California~~

~~clapper rail until USFWS is consulted regarding appropriate avoidance measures and permission is granted by USFWS to commence work.~~

Preconstruction survey(s) will be conducted again as specified above, if a lapse in construction activities of two weeks or more occurs at any time during the breeding season such that no more than two weeks will have elapsed between the last survey and the commencement of construction activities. Preconstruction survey findings will be reported to the CNDDB.

On page 4-90, Mitigation Measure BIO-4 has been revised as follows:

A USFWS approved biologist will conduct a preconstruction survey of the northern coastal salt marsh habitat in the project site prior to any construction activities occurring within 500 feet of those habitats. If salt marsh harvest mice are found in or adjacent to the project site during preconstruction surveys, USFWS and CDFG will be notified of the finding and consultation will be initiated. Construction activities within 500 feet of the northern coastal salt marsh will be delayed until consultation has been completed with USFWS. Preconstruction survey findings will be reported to the CNDDB.

If any areas with pickleweed habitat or vegetation within 50 feet from the edge of pickleweed habitat need to be cleared for project activities, vegetation will be removed only with non-mechanized hand tools (i.e., trowel, hoe, rake, and shovel). No motorized equipment, including weed whackers or lawn mowers, will be used to remove this vegetation. Vegetation will be removed under the supervision of a qualified biologist approved by USFWS and CDFG. If a mouse of any species is observed within the areas being removed of vegetation, USFWS and CDFG will be notified. Unless otherwise approved by USFWS and CDFG, the mouse will be allowed to leave on its own. Vegetation removal may begin when no mice are observed, or with USFWS and CDFG approval, and will start at the edge farthest from the salt marsh and work its way toward the salt marsh. This method of removal provides cover for salt marsh harvest mouse and allows them to move toward the salt marsh on their own volition as vegetation is removed.

Visqueen fencing will be installed between areas of salt marsh harvest mouse habitat and work sites immediately following vegetation removal and before excavation activities begin to prevent entry of the mice into cleared areas. The fencing will be trenched into the ground and backfilled to prevent mice from moving under the fencing. Fence stakes will face toward the work site and away from pickleweed habitat. The final design and proposed location of the fencing will be submitted to USFWS and CDFG for review and approval prior to placement. The qualified biologist will have the ability to make field adjustments to the location of the fencing based on site-specific habitat conditions.

A qualified biologist or site manager will monitor site fencing as follows:

- Periodically throughout each day during which work is conducted within 300 feet of the fence;
- At least twice per week during clear weather; and

- Within 24 hours after a storm.

Maintenance of the fencing will be conducted as needed throughout the work period. Any necessary repairs to the fencing will be completed within 24 hours of the initial observance of damage. Work will not continue within 300 feet of the damaged fencing until the fence is repaired and the site is surveyed by a qualified biologist to ensure that salt marsh harvest mice have not entered the work area.

Prior to initiation of work each day during all vegetation removal; the construction of the exclusion fencing; and all work within 300 feet of tidal or pickleweed habitats, the qualified biologist will thoroughly inspect the work area and adjacent habitat areas to determine if salt marsh harvest mouse or other special-status species are present in these areas. The qualified biologist will remain on-site while work activities that meet one of the criteria above are being conducted. The qualified biologist will have the authority to stop work if necessary to protect salt marsh harvest mouse or other special-status species.

~~If no salt harvest mice are found during preconstruction surveys, salt marsh harvest mouse exclusion fencing will be installed around the perimeter of the northern costal salt marsh to prevent salt marsh harvest mice from entering the project site and being harmed by construction activities. Location and design specifications for the proposed exclusion fencing will be submitted to USFWS for review and approval. A USFWS approved biologist will monitor installation of the fencing in order to ensure that the fencing is installed appropriately to ensure total exclusion of the salt marsh harvest mouse as well as to ensure that no individuals are harmed during installation.~~

~~A USFWS approved biologist monitor will be present during construction activities within and immediately adjacent to the northern coastal salt marsh habitat. The biological monitor will have the authority to stop construction activities if a salt marsh harvest mouse is found within the construction area. If a salt marsh harvest mouse is found in the project site during construction, work will immediately cease in the vicinity and USFWS will be notified.~~

Construction personnel would participate in a USFWS-approved worker environmental awareness program. A qualified biologist would inform all construction personnel about the life history of salt marsh harvest mouse and its potential presence in the project area and explain the state and federal laws pertaining to protecting this species and its habitat. Construction personnel would be informed of the presence of a biological monitor and receive instruction regarding reporting requirements if a salt marsh harvest mouse is found during construction.

On page 4-91, paragraph 8 line 7, Mitigation BIO-5 has been revised as follows:

… the commencement of construction activities. Preconstruction survey findings will be reported to the CNDDB.

On page 4-92, paragraph 8 line 3, Mitigation BIO-6 has been revised as follows:

… are found, no further mitigation would be necessary. Preconstruction survey findings will be reported to the CNDDB.

On page 4-93, paragraph 1 line 3, Mitigation BIO-7 has been revised as follows:

… mouse avoidance measures. Preconstruction survey findings will be reported to the CNDDB.

On page 4-93, paragraph 6 line 2, Mitigation BIO-8 has been revised as follows:

… grubbing) in and within 500 feet of suitable nesting habitat for ~~these~~sensitive bird species should commence…

On page 4-93, paragraph 7 line 10, Mitigation BIO-8 has been revised as follows:

… nesting birds during construction. Preconstruction survey findings will be reported to the CNDDB.

On page 4-95, paragraph 4 line 3, Mitigation BIO-9 has been revised as follows:

…construction activities~~;~~, delineating them as environmentally sensitive areas. Environmentally…

On page 4-95, paragraph 4 line 5, Mitigation BIO-9 has been revised as follows:

… wildlife species, including, but not limited to, the salt marsh harvest mouse, the San Pablo vole,…

On page 4-96, paragraph 1 line 4, Mitigation BIO-10 has been revised as follows:

… period of active growth. Preconstruction survey findings will be reported to the CNDDB.

On page 4-106, paragraph 2 line 2, Mitigation BIO-23 has been revised as follows:

… in turbidity would be avoided/minimized through the use of construction Best Management Practices (BMPs) to reduce the …

On page 4-111, Figure 4.9-1 Refugio Wetland Mitigation has been replaced, as shown on the following page.

Legend

- Project Boundary
- Station Building
- Station Platform

Refugio Creek Restoration:
Wetland graphic prepared by RDG, 03-2010.

1 in = 150 ft (at tabloid layout)

N

0 12.5 25 50 Meters

0 50 100 200 Feet

Figure 4.9-1: Refugio Wetland Mitigation

City of Hercules
Hercules Intermodal Transit Facility
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources.
No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey.
Data is State Plane Feet, NAD83 Zone 3

HDR 2365 Iron Point Road, Suite 300
Folsom, CA 95630-8709

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Changes to the Section 4.10 Water Resources

On page 4-123, line 15, Mitigation Measure WR-1b has been revised as follows:

- Determination of dredged volumes;

On page 4-128, paragraph 8 line 3, Mitigation Measure WR-6 has been revised as follows:

> **…Activities. In accordance with this permit, a SWPPP would be developed, and BMP~~S~~s would be …**

Changes to the Section 4.11 Geology and Soils

On page, 4-137, the following has been inserted after paragraph 3:

> **CEQA Determination:** With the implementation of Mitigation Measure WR-2, soil erosion impacts would be less than significant.

Changes to Appendix E – Hercules ITC Traffic Impact Analysis Report

On page 6, the Project LOS for San Pablo Ave./Appian Wy has been revised from LOS A to LOS B in Table ES-1 Intersection Level of Service Summary – A.M. Peak as shown below.

TABLE ES 1 INTERSECTION LEVEL OF SERVICE SUMMARY – A.M. PEAK

Int #	Intersection Name	Existing		Background		Project		Cumulative 2035 "No Project"		Cumulative 2035 "With Project"	
		V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
1	Willow Ave /I-80 WB off-ramp	0.208	A	0.221	A	0.221	A	0.591	A	0.591	A
2	Willow Ave/Hawthorne Dr	0.284	A	0.301	A	0.301	A	0.781	C	0.781	C
3	San Pablo Ave/Willow Ave	0.244	A	0.218	A	0.22	A	0.806	D	0.807	D
4	San Pablo Ave/John Muir Pkwy	0.427	A	0.513	A	0.524	A	0.764	C	0.78	C
5	San Pablo Ave/Sycamore Ave	0.674	B	0.927	E	0.933	E	0.859	D	0.865	D
6	San Pablo Ave/Hercules Ave	0.507	A	0.598	A	0.598	A	0.758	C	0.758	C
7	San Pablo Ave/Pinole Valley Rd	0.378	A	0.48	A	0.48	A	0.889	D	0.889	D
8	San Pablo Ave/Tennent Ave	0.536	A	0.651	B	0.651	B	**1.138**	**F**	**1.138**	**F**
9	San Pablo Ave/Appian Wy	0.297	A	0.36	A	0.632	~~A~~ B	0.624	B	0.626	B
10	Sycamore Ave/Bayberry Ave	0.808	D	**0.975**	**E**	**0.979**	**E**	0.656	B	0.66	B

Notes: **V/C: Volume to Capacity Ratio** **LOS: Level of Service**

Intersections operating below acceptable LOS are bold.

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Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

4.0 List of Preparers

Name	Qualifications	Role
City of Hercules – CEQA Lead Agency and Project Sponsor		
Robert Reber	AICP	Senior Planner
Federal Transit Administration – NEPA Lead Agency		
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HDR, Inc. – Environmental Consultant		
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David McCrossan	M.S., 28 years	Transportation Planner
Linda Rimbach	B.S., 23 years	Project Engineer
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Appendix A

Qualitative Hot-Spot Analysis

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

Hercules Intermodal Transit Project
Qualitative $PM_{2.5}$ Hot-Spot Analysis Summary

INTRODUCTION

The U.S. Environmental Protection Agency (EPA) commented on the Hercules ITC Draft EIR/Draft EIS that since the grace period from transportation conformity requirements for $PM_{2.5}$ nonattainment areas expired in December 14, 2010, which was prior to a Record of Decision on the project, the Hercules ITC project needs to take steps to determine project conformity with transportation plans and programs. These steps include clarifying whether the project is included in the region's conforming transportation plan and transportation improvement program, consulting with the Metropolitan Transportation Commission to determine whether the project is a 'project of air quality concern' and whether a $PM_{2.5}$ air quality hot-spot analysis should be performed.

In late 2010, the EPA released final modeling guidance for performing quantitative $PM_{2.5}$ and PM_{10} hot-spot analyses at the project level for transportation projects, and established a two-year grace period for the implementation of the new guidelines. Quantitative hot-spot analyses will not be required for Transportation Conformity under 40 C.F.R. § 93.123(b)(4) until the end of the implementation grace period in December 2012. Per EPA comments and the final modeling guidance, a qualitative $PM_{2.5}$ hot-spot Analysis [following the EPA's and the Federal Highway Administration's (FHWA) joint guidance] was conducted for the proposed project for inclusion in the Final EIR.

PARTICULATE MATTER

Background

Particulate matter refers to solid or liquid particles suspended in the air that may be composed of acids, organic chemicals, metals, or soil and dust particles. Particle sizes range from those large enough to be seen as smoke or haze to those that act as a gas and can only be seen through an electron microscope. Those particles with diameters less than 2.5 microns are denoted as $PM_{2.5}$, and sources include fuel combustion, power plants, and diesel vehicles. Those particles with diameters of less than 10 microns are denoted as PM_{10}, and sources include fuel combustion, fugitive dust from unstable or disturbed dirt surfaces, vehicle travel on unpaved roads, crushing and grinding operations, and open burning. The San Francisco Bay Area has been designated nonattainment for the $PM_{2.5}$ NAAQS, but is in attainment for the PM_{10} NAAQS.

The Hercules Intermodal Transit Center (Hercules ITC) project involves the development of a multimodal transit facility on the Hercules waterfront in Contra Costa County. The development

would include bus and commuter train access, parking for transit passengers, and roadway/trail/sidewalk infrastructure necessary to support the multimodal facility. The project would improve access to public mass transit.

The Hercules ITC would be designed to facilitate alternative modes of transportation. It would be pedestrian and bicyclist-oriented, and would link together rail and bus service (WestCAT). The Hercules ITC would also be designed to facilitate a future ferry terminal to serve commuters to and from downtown San Francisco. The Hercules ITC would include the construction of a station building, a platform, and a pedestrian bridge spanning over the Union Pacific Railroad (UPRR) right-of-way. Vehicular and pedestrian bridges at Transit Loop Drive, the extension of Bayfront Boulevard, and a new railroad bridge at the Refugio Creek terminus are planned. The project would include realignment of the UPRR tracks and an East Bay Regional Parks Trail (Bay Trail).

Statutory Requirements for $PM_{2.5}$ Hot-spot Analyses

An air quality hot-spot analysis is an estimation of the likely future localized pollutant concentrations and a comparison of those concentrations to the relevant air quality standards. The focus is usually the immediate area around a proposed project, as opposed to the regional focus of an emissions inventory for an entire nonattainment area. Hot-spot analyses may be either quantitative, in which future concentrations are calculated for specific locations within the study area, or qualitative, in which the proposed project and study area are compared to similar existing facilities, existing monitoring data, and other readily available information.

In December 2010, EPA released final modeling guidance for performing quantitative $PM_{2.5}$ and PM_{10} hot spot analyses at the project level for transportation projects (EPA 2010), and established a two-year grace period for the implementation of the new guidelines. Quantitative hot-spot analyses will not be required for Transportation Conformity under 40 C.F.R. § 93.123(b)(4) until the end of the implementation grace period in December 2012. During the grace period, transportation projects that are within nonattainment or maintenance areas for $PM_{2.5}$ and are not exempt require a qualitative analysis that must document that no new local $PM_{2.5}$ violations will be created and the severity or number of existing violations will not be increased as a result of the project.

In March 2006, EPA and FHWA issued a joint, updated guidance document on performing qualitative hot-spot analyses in $PM_{2.5}$ and PM_{10} nonattainment and maintenance areas (EPA and FHWA 2006). Those projects that are of "air quality concern," as defined by 40 C.F.R. § 93.123(b)(1), require a hot-spot analysis. The methodology may involve a comparison of the study area with an area possessing similar characteristics, a review of findings from air quality studies that may have been performed, or other qualitative approaches.

$PM_{2.5}$ Regional Conformity Determination

Section 176(c) of the CAA and the federal conformity rule require that transportation plans and programs conform to the intent of the State Implementation Plan for air quality through a regional emissions analysis in $PM_{2.5}$ nonattainment areas. For the San Francisco Bay Area, the relevant transportation plans and programs are the long-range regional transportation plan (RTP), called *Transportation 2035 Plan: Change in Motion*, adopted by the Metropolitan Transportation Commission (MTC) in April 2009, and the *2011 Transportation Improvement Program* (TIP), adopted by MTC in October 2010. MTC has determined that the Transportation 2035 Plan and the 2011 TIP are consistent with and conform to the intent of the State Implementation Plan, as demonstrated in the *Transportation-Air Quality Conformity Analysis for the Transportation 2035 Plan and 2011 Transportation Improvement Program*, dated October 27, 2010.

The Hercules Intermodal Transit Center project was included in the regional emissions analysis, and there have been no significant changes in the project's design concept or scope as used in the conformity analysis. Therefore, the project comes from a conforming plan and program in accordance with 40 C.F.R. § 93.115.

$PM_{2.5}$ Hot-spot Analysis

As previously noted, EPA's latest guidance on $PM_{2.5}$ hot-spot analyses requires localized assessment for projects of air quality concern. The proposed project is of air quality concern primarily because it would be a new bus and rail terminal that would have a significant number of diesel vehicles congregating at a single location (40 C.F.R. 93.123(b)(1)(iii)); therefore, it requires a hot-spot analysis.

A comparison approach was used for this analysis, in which anticipated rail and bus traffic volumes at the new intermodal transit center were compared with those at a similar transit center near existing air quality monitoring sites. This approach essentially uses the similar site as a surrogate for comparison with the proposed project.

Ideally for the comparison approach, $PM_{2.5}$ air quality monitoring stations should be located close to transit stations to obtain representative pollutant levels that can be used as a surrogate for the proposed project site. However, the collocation of these facilities is rare in the real world. Therefore, it is usually necessary to identify several similar transit stations and all $PM_{2.5}$ air quality monitoring stations in the vicinity for the comparison analysis.

For this analysis, nine stations along the Capitol Corridor line were included in the comparison, from the Suisun/Fairfield Station on the north to the Fremont/Centerville Station on the south.

All nine stations have multiple transit bus connections and two have connections to the Bay Area Rapid Transit (BART) system. Eight ambient $PM_{2.5}$ air quality monitoring stations were also included, encompassing all $PM_{2.5}$ monitoring stations within a 50-mile radius of the proposed Hercules ITC.

The proposed Hercules ITC project is tentatively scheduled for construction in 2011. Anticipated rail and bus traffic volumes were obtained from the project description and the Traffic Impact Analysis prepared for the proposed project.

The qualitative analysis of the potential impacts associated with the proposed project began with a review the selected transit stations, including approximate size and configuration of the station, the number and frequency of bus connections, the presence of other rail transit connections (e.g., BART), and the proximity to other potential emission sources (e.g., industrial facilities, airports). For the purpose of this analysis, all bus traffic was assumed to consist of diesel engine vehicles because specific data on engine types were not available. Reviewed parameters for the rail transit stations are summarized in Table A-1.

The review of rail transit stations along the Capitol Corridor line in the region of the proposed Hercules Intermodal Transit Center revealed that the current design of the Hercules ITC is similar in size and configuration to other regional transit stations. Further, the expected number and frequency of bus connections is similar to other nearby stations. Nearby transit stations most similar to the proposed Hercules ITC are the Martinez, Emeryville, and Oakland Jack London stations. Nearby transit stations that are more active, with more intensive uses, more nearby emissions sources, and connections to other major rail transit, are the Richmond and Oakland Coliseum stations. Nearby transit stations that are smaller, less intensive, or with less nearby major emission sources are the Suisun/Fairfield, Berkeley, Hayward, and Fremont/Centerville stations.

Table A-1. Rail Transit Stations along Capitol Corridor

Station name	Bus connections		Other rail transit connections	Other emission sources nearby
	Number of routes	Typical frequency		
Suisun/Fairfield	3	15 min. to 1 hr.	None	Industrial sites – 1.5 mi.
Martinez	5	40 min. to 2 hrs.	None	Industrial sites – 0.25 mi. Major oil refinery – 0.75 mi. Shipping port – 1.0 mi.
Hercules (proposed)	6−8 (est.)	30 min. (est.)	None	Wastewater treatment plant – 0.75 mi. Oil refinery – 1.5 mi.
Richmond	8	15−30 min.	BART	Industrial sites – 1.0 mi. Large rail yard – 1.0 mi. Major oil refinery – 1.5 mi.
Berkeley	1	15−30 min.	None	No major sources within 1.5 mi.
Emeryville	8	15−30 min.	None	Major shipping port – 1.5 mi.
Oakland Jack London	8	15−30 min.	None	Oakland Inner Harbor – 0.25 mi. Major shipping port – 0.5 mi. Naval air station – 1.5 mi.
Oakland Coliseum	4	15−30 min.	BART	Industrial sites – 0.1 to 1.0 mi. Metal pipe foundry – 0.25 mi. Oakland Int. Airport – 1.5 mi.
Hayward	4	1 hr.	None	Industrial sites – 0.25 to 0.5 mi. Hayward Executive Airport – 1.0 mi.
Fremont/Centerville	4	30 min.	Altamont Commuter Express	No major sources within 1.5 mi.

The review then focused on the air quality monitoring stations in the area, including measured concentrations of $PM_{2.5}$; number of exceedances of the National Ambient Air Quality Standards (NAAQS) for $PM_{2.5}$; size of the surrounding community; proximity of the monitoring station to the nearest rail station, bus transit center, major roadway or highway, and other sources of fine particulate matter; and estimated traffic volumes on nearest major roadways or highways. Reviewed parameters for the $PM_{2.5}$ air quality monitoring stations are summarized in Table A-2.

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Table A-2. $PM_{2.5}$ Air Quality Monitoring Stations in the Bay Area

Station name	Size of surrounding community[a]	2009 $PM_{2.5}$ monitoring results (in µg/m^3 [b])							ADT on nearest major roadway[j]	Other major $PM_{2.5}$ sources
		24-hour (NAAQS is 35 µg/m^3) (No separate Cal. standard)				Annual (NAAQS is 15 µg/m^3) (Cal. standard is 12 µg/m^3)				
		Max.[c]	Exc.[d]	3-yr average[e]	NAAQS violation?[f]	Avg.[g]	3-yr average[h]	NAAQS violation?[i]		
Vallejo	121,435	38.9	5	36	yes	9.7	9.8	no	142,000 (0.4 mi.)	Wood burning Major oil refineries
Concord	125,864	39.0	1	33	no	8.4	8.7	no	242,000 (1.8 mi.)	Major oil refineries
Oakland	430,666	36.3	1	NA[k]	NA	9.3	NA	NA	155,000 (1.0 mi.)	Major shipping port International airport Large industrial sites
San Francisco	856,095	35.6	1	27	no	9.7	9.4	no	224,000 (0.3 mi.)	Industrial sites
Livermore	85,312	45.7	4	34	no	9.2	9.4	no	166,000 (0.9 mi.)	No industrial sources
Fremont	218,128	39.3	1	27	no	9.4	9.2	no	142,000 (1.0 mi.)	Industrial sites Salt production plant
Redwood City	78,568	31.7	0	28	no	8.7	8.7	no	194,000 (0.3 mi.)	Industrial sites
Santa Rosa	163,436	29.0	0	28	no	8.4	8.2	no	120,000 (0.6 mi.)	No industrial sources

[a] most recent population estimate, as reported in the BAAQMD *2009 Air Monitoring Network Report*
[b] micrograms per cubic meter
[c] the highest average contaminant concentration over a 24-hour period, from midnight to midnight
[d] the number of days during the year for which the monitoring station recorded contaminant concentrations exceeding the national standard of 35 µg/m^3
[e] the three-year average of the annual 98th percentiles of the individual 24-hour $PM_{2.5}$ concentrations
[f] a NAAQS violation occurs when the three-year average of the annual 98th percentiles of the individual 24-hour PM2.5 concentrations exceed 35 µg/m^3
[g] the yearly average (arithmetic mean) of the readings taken at the monitoring station
[h] the three-year average of the quarterly averages of $PM_{2.5}$
[i] a NAAQS violation occurs when the three-year average of the quarterly averages of $PM_{2.5}$ exceeds 15 µg/m^3
[j] most current available average annual daily traffic volume on the nearest major arterial or highway
[k] the Oakland monitoring site has not yet been operating for 3 years, so 3-year averages are not available and NAAQS violations cannot be determined

Transportation sources do not appear to be major contributors to $PM_{2.5}$ concentrations at the air quality measurement stations in the Bay Area. This is supported by the absence in the *Transportation-Air Quality Conformity Analysis for the Transportation 2035 Plan & 2011 Transportation Improvement Program* of any transportation control measures (TCMs) specifically addressing PM_{10} or $PM_{2.5}$. Further, a review of the monitoring data in Table A-2 suggests that those locations that have the highest ambient concentrations of $PM_{2.5}$ are generally located in less populated suburban areas with lower ADT on the nearest major roadway.

For example, the Vallejo location is situated in a community of about 121,000 people, with approximately 142,000 ADT on the nearest highway located four tenths of a mile from the monitoring site. This location recorded the highest three-year average $PM_{2.5}$ concentration in the Bay Area, exceeded the 24-hour $PM_{2.5}$ standard on five occasions during 2009, and has resulted in the only violation of the 24-hour $PM_{2.5}$ NAAQS in the Bay Area. According to BAAQMD, the primary source of $PM_{2.5}$ at this monitoring site is wood burning in the wintertime, which is exacerbated by valley drainage winds from the Napa Valley, and shallow temperature inversions.

The second highest three-year average $PM_{2.5}$ concentration was measured at the Livermore monitoring station, which is situated in a community of about 85,000 people, with approximately 166,000 ADT on the nearest highway located nearly a mile from the monitoring station. This location recorded four daily exceedances of the 24-hour $PM_{2.5}$ standard in 2009, although the three-year average concentration is slightly below the NAAQS.

By contrast, the San Francisco monitoring station is situated in a community of over 850,000 people, with approximately 224,000 ADT on the nearest highway located just over one-quarter mile from the monitoring station. This location recorded one of the lowest three-year average 24 hour $PM_{2.5}$ concentrations in the Bay Area and only one daily exceedance of the 24-hour $PM_{2.5}$ standard in 2009. Similarly, the Oakland monitoring station is situated a community of more than 430,000 people, with approximately 155,000 ADT on the nearest highway located about one mile from the monitoring station. This location also recorded one daily exceedance of the 24-hour $PM_{2.5}$ standard in 2009. The Oakland monitoring station has not been operating long enough to calculate a three-year average for comparison with the NAAQS, but available data from the past two years suggests that the average is trending below the NAAQS and will likely meet the standard when the 2010 data is available for inclusion in the calculation.

For comparison, the proposed Hercules ITC location is situated in a community of about 25,000 people, with approximately 182,000 ADT on the nearest highway located about one mile from the proposed site. Based on surrounding population, proximity to major highways, and proximity to major sources of $PM_{2.5}$, the Hercules ITC location would be most similar to the area surrounding the Redwood City and Concord air quality monitoring station. Those monitoring stations measured maximum 24-hour $PM_{2.5}$ concentrations of 31.7 $\mu g/m^3$ and 39.0 $\mu g/m^3$,

respectively, in 2009, with three-year averages of 28 μg/m^3 and 33 μg/m^3, respectively. Both of the calculated three-year averages met the NAAQS. All measured concentrations of the annual standard at both monitoring stations met the NAAQS and the California standard.

Disregarding the surrounding population size, the San Francisco and Oakland monitoring stations also have similar characteristics, in terms of proximity to major transportation facilities and major $PM_{2.5}$ sources, to the Hercules ITC area. Those monitoring stations measured maximum 24-hour $PM_{2.5}$ concentrations of 35.6 μg/m^3 and 36.3 μg/m^3, respectively, in 2009, with a calculated three-year average of 27 μg/m^3 at the San Francisco monitoring station, which meets the NAAQS. As mentioned above, the Oakland monitoring station has not been operating long enough to calculate a three-year average for comparison with the NAAQS, but available data from the past two years suggests that the average is trending below the NAAQS and will likely meet the standard when the 2010 data is available for inclusion in the calculation. All measured concentrations of the annual standard at both monitoring stations met the NAAQS and the California standard.

As part of the *Transportation-Air Quality Conformity Analysis for the Transportation 2035 Plan & 2011 Transportation Improvement Program*, the MTC estimated and compared Build and No Build scenario emissions of $PM_{2.5}$ for 2015, 2025, and 2035. The applicable conformity test for $PM_{2.5}$ is the Build/No Build test, in which the emissions from the RTP and TIP (Build scenario) must be less than or equal to emissions from the transportation system under current programs (No Build scenario). The Hercules ITC is included in the Build scenario used for the comparison to determine conformity. Results of the conformity test, shown in Table A-3 on the next page, indicated that the total vehicle-related emissions of $PM_{2.5}$ and the NO_x precursor associated with the implementation of the RTP and TIP are projected to be lower than those for the current transportation system for each of the years of analysis and are, therefore, in conformity.

Table A-3. Emissions Comparison for the Build/No Build Test for $PM_{2.5}$ (in tons per day)

	2015		2025		2035	
	No Build	**Build**	**No Build**	**Build**	**No Build**	**Build**
$PM_{2.5}$	5.92	5.66	5.87	5.78	6.36	6.14
NO_x	112.63	109.55	60.36	60.16	42.87	42.85

Notes: Emissions are for wintertime only
Source: MTC, 2010b.

Discussion and Conclusion

Nearby transit stations most similar to the proposed Hercules ITC are the Martinez, Emeryville, and Oakland Jack London stations. Of the $PM_{2.5}$ monitoring stations in the Bay Area, the site

characteristics of the Redwood City and Concord monitoring stations most closely resemble those characteristics projected for the Hercules ITC area now and into the future. Further, the San Francisco and Oakland monitoring stations are located in larger communities, but have similar proximity to major transportation facilities and major $PM_{2.5}$ emission sources. Based on the review of these similar transit stations and $PM_{2.5}$ monitoring stations, it is unlikely that the proposed Hercules ITC project would cause or contribute to an exceedance of the $PM_{2.5}$ standards. This conclusion is based on the following findings:

- Diesel bus and train emissions are not major contributors to ambient concentrations of $PM_{2.5}$ in the Bay Area. According to EPA emission summaries, all on-road motor vehicles, including a small percentage of diesel buses, accounts for about 12.6% of total $PM_{2.5}$ emissions in the Bay Area. Similarly, all non-road equipment, which includes heavy construction equipment, aircraft, and ships, as well as trains, accounts for only 6.2% of total $PM_{2.5}$ emissions in the Bay Area (EPA 2005).
- Residential wood combustion and industrial processes are the largest sources of $PM_{2.5}$ emissions in the Bay Area, accounting for more than half (53.5%) of all emissions of $PM_{2.5}$ (EPA 2005).
- Ambient $PM_{2.5}$ monitoring in areas most similar to the Hercules ITC project site were below the NAAQS and California standards.
- The Build/No Build emission test conducted by MTC for the RTP and TIP conformity analysis demonstrated that emissions from the Build scenario, which includes the proposed Hercules ITC, would be lower than the No Build scenario.

The proposed Hercules ITC would increase local and regional mobility and transportation options by providing new and expanded transit services with multi-modal connections that would encourage use of public transit. The Hercules ITC would provide bus-to-train connections and provide car commuters with access to new transit options that would divert traffic from Interstate-80, the most congested corridor in the Bay Area. An expanded and more convenient transit system with new train, bus, and trail connections to existing transit services would provide commuters with more options and reduce car usage and its associated impacts.

In summary, the proposed project would have the anticipated net effect of reducing the regional impacts on air quality from those that would occur if the proposed Hercules ITC were not completed. This conformity determination meets all of the applicable CAA Section 176(c) requirements for federally funded or approved transportation projects. Specifically, the requirements for particulate matter hot-spot analyses are codified at 40 C.F.R. §93.116 and §93.123. By meeting these regulatory requirements, as well as other requirements in the

conformity regulations, this conformity determination demonstrates compliance with the requirements of CAA §176(a)(1).

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Appendix B

MTC Letter of Project-Level Conformity Completion

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

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Memorandum

TO: Robert Reber, City of Hercules DATE: June 21, 2011

FR: Ashley Nguyen, MTC W. I.

RE: PM2.5 Project Level Conformity Consultation Re: Hercules Intercity Rail Station

On May 26, 2011, the Air Quality Conformity Task Force determined that the above project was a Project of Air Quality Concern as defined by 40 CFR 93.126(b)(1). The Task Force also reviewed and approved the $PM_{2.5}$ Hot-Spot Analysis completed for the project.

All the interagency consultation requirements of $PM_{2.5}$ project level conformity are now complete. As the project sponsor, you are receiving this memo notifying you may proceed forward with obtaining federal approvals for the $PM_{2.5}$ Hot-Spot Analysis. Please save this memo as documentation of completing the consultation process for $PM_{2.5}$ project level conformity.

If there are any questions regarding the status of the above project, please direct them to me at (510) 817-5809.

J:\SECTION\PLANNING\AIRQUAL\PM2.5_Conformity\CityofHercules_PM2.5.doc

DRAFT ENVIRONMENTAL IMPACT REPORT/ENVIRONMENTAL IMPACT STATEMENT

FOR THE HERCULES INTERMODAL TRANSIT CENTER

VOLUME 1

STATE CLEARINGHOUSE #2009112087

Prepared by:

CITY OF HERCULES CALIFORNIA

FTA Federal Transit Administration

SEPTEMBER 2010

CITY OF HERCULES INTERMODAL TRANSIT CENTER

Draft EIR/EIS

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September 2010

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

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List of Acronyms and Abbreviations

AB	Assembly Bill
ABAG	Association of Bay Area Governments
ACHP	Advisory Council on Historic Preservation
ADA	Americans with Disabilities Act
Agency	California Natural Resources Agency
AIRFA	American Indian Religious Freedom Act
APE	area of potential effect
ASTM	American Society for Testing and Materials
AT&SF	Atchison, Topeka and Santa Fe Railroad
BAAQMD	Bay Area Air Quality Management District
BART	Bay Area Rapid Transit
Bay Plan	San Francisco Bay Plan
BCDC	Bay Conservation and Development Commission
BDAT	Bay Delta and Tributaries Project
BMP	Best Management Practice
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CAFE	Corporate Average Fuel Economy
Cal/EPA	California Environmental Protection Agency
Caltrans	California Department of Transportation
CAP	Clean Air Plans
CARB	California Air Resources Board
CAT	California Climate Action Team
CCAA	California Clean Air Act
CCCWMA	Contra Costa County Watershed Management Area
CCCL	Contra Costa County Library
CCJPA	Capitol Corridor Joint Powers Authority
CCR	California Code of Regulations
CCTA	Contra Costa Transportation Authority
CCTS	Central California Taxonomic System
CDFG	California Department of Fish and Game
CE	carapace width
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESA	California Endangered Species Act
CFC	chlorofluorocarbons
CFR	Code of Federal Regulations
Cfs	cubic feet per second
CH_2=CH-C1	vinyl chloride
CH_4	methane
CHSC	California Health and Safety Code
CMP	Congestion Management Program
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2e	carbon dioxide equivalents
CPT	Cone Penetration Test
CPUC	California Public Utilities Commission
CRHR	California Register of Historical Resources
CRLF	California red-legged frog
CSLC	California State Lands Commission

Cy	cubic yard
CWA	Clean Water Act
dB	decibel
dBA Ldn	A-weighted decibel Daytime-Nighttime Noise Level
Delta	Sacramento-San Joaquin Delta
DPR	California Department of Parks and Recreation
DTSC	California Department of Toxic Substance Control
EBMUD	East Bay Municipal Utilities District
EBRPD	East Bay Regional Park District
EIR	environmental impact report
EIS	environmental impact statement
EFH	essential fish habitat
EMS	Emergency Medical Services
ESA	Endangered Species Act
EVA	emergency vehicle access
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FLPMA	Federal Land Policy Management Act
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
General Plan	City of Hercules General Plan
GHG	greenhouse gas
GPS	Global Positioning System
GWP	Global Warming Potential
H_2S	hydrogen sulfide
$H2O(_g)$	water vapor
HAP	hazardous air pollutants
HB	Hercules Bayfront
HCFC	hydrochlorofluorocarbons
HFC	hydrofluorocarbons
HMU	Hercules Municipal Utility
HNTC	Hercules New Town Center
HOV	high occupancy vehicle
HPC	Hercules Powder Company
HRC	Hercules-Rodeo-Crockett
HUD	U.S. Department of Housing and Urban Development
HWMP	Hazardous Waste Management Plan
Initiative	Waterfront Plan District Master Plan Initiative
ITC	Intermodal Transit Center
I-80	Interstate 80
IPCC	Intergovernmental Panel on Climate Change
JPA	Joint Powers Authority
kWh	kilowatt-hours
LAFCO	Local Agency Formation Commission
LCFS	Low-Carbon Fuel Standard
LGOP	Local Government Operations Protocol
LHMP	Local Hazard Mitigation Plan
LOS	level-of-service
LWCFA	Department of Interior Land and Water Conservation Fund Act
mgd	million gallons per day
mm/sec	millimeters per second
mm/yr	millimeters per year
Magnuson-Stevens Act	Magnuson-Stevens Fishery Conservation and Management Act
M_L	Local Magnitude
MEI	Maximally Exposed Individual
MLLW	mean lower low water

MMPA	Marine Mammal Protection Act
MMRP	Mitigation and Monitoring Reporting Plan
MMT	million metric tons
MPO	Metropolitan Planning Organization
msl	mean sea level
MTC	Metropolitan Transportation Commission
MTL	mean tide level
MT/yr	metric tons per year
M_W	Moment Magnitude
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NGVD	National Geodetic Vertical Datum
NHD	National Hydrography Dataset
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NOA	Notice of Availability
NO_2	nitrogen dioxide
NO_x	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NWIC	Northwest Information Center
O_3	ozone
OAL	Office of Administrative Law
OES	Office of Emergency Services
OHWM	ordinary high water mark
OPR	Governor's Office of Planning and Research
OSHA	Occupational Safety and Health Administration
OUs	Operable Units
Pb	lead
PBDEs	Polybrominated Diphenyl Ethers (flame retardants)
PC-R	Planned Commercial Residential
PFC	perfluorocarbons
PM	particulate matter
ppm	parts per million
ppt	parts per trillion
PPV	peak particle velocity
RCRA	Resource Conservation and Recovery Act
RDA	Redevelopment Agency
Red Barn	The Red Barn Company
RFS	Renewable Fuel Standard
RHFPD	Rodeo-Hercules Fire Protection District
RMP	Regional Monitoring Program
RMS	root mean square
ROD	Record of Decision
ROG	reactive organic gases
ROW	right-of-way
RTAC	Regional Targets Advisory Committee
RWQCB	Regional Water Quality Control Board
SAFETEA-LU	Safe Accountable Flexible Efficient Transportation Equity Act: A Legacy for Users
sf	square feet
SF_6	sulfur hexafluoride
SFBAAB	San Francisco Bay Area Air Basin
SFC	sulfur hexafluoride
SHPO	State Historic Preservation Officer

SIP	State Implementation Plan
SO_4	sulfates
SO_2	sulfur dioxide
SR-4	State Route 4
SRRE	Source Reduction and Recycling Element
SPBWRP	San Pablo Bay Watershed Restoration Program
SPT	Standard Penetration Test
SWMP	Stormwater Management Plan
SWPPP	Stormwater Pollution Prevention Plan
TAC	toxic air contaminants
TCM	transportation control measures
TIP	Transportation Implementation Plan
TMDLs	total maximum daily loads
TOD	transit oriented development
TSO	traffic service objectives
UPRR	Union Pacific Railroad
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGBC	U.S. Green Building Council
USGS	United States Geological Survey
USC	United States Code
UWMP	Urban Water Management Plan
UV	ultraviolet
VPFS	vernal pool fairy shrimp
v/c ratio	volume to capacity (measure to traffic on roadways)
WC	Waterfront Commercial
WestCAT	Western Contra Costa Transit Authority
WCCTAC	West Contra Costa Transportation Advisory Committee
WCCUSD	West Contra Costa Unified School District
WDMP	Waterfront District Master Plan
WETA	Water Emergency Transportation Authority
WSA	water supply assessment
WTA	Water Transit Authority
WWA	Wetland Wildlife Associates
WWR	Wetlands and Water Resources, Inc.

HERCULES INTERMODAL TRANSIT CENTER
Hercules, California

DRAFT ENVIRONMENTAL IMPACT REPORT/
DRAFT ENVIRONMENTAL IMPACT STATEMENT

PREPARED PURSUANT TO:

California Environmental Quality Act, PRC 21000 *et seq*, and the State of California CEQA Guidelines, California Administrative Code, 15000 *et seq*; National Environmental Policy Act of 1969, §102 (42 U.S.C. §4332); Federal Transit Law (49 U.S.C. §5301(e), §5323(b) and §5324(b)); Executive Order 11990 (Protection of Wetlands); Executive Order 11988 (Floodplain Management), Executive Order 12898 (Environmental Justice), National Historic Preservation Act of 1966 § 106 (16 U.S.C. §470f)

by the

City of Hercules, California

and the

FEDERAL TRANSIT ADMINISTRATION
U.S. DEPARTMENT OF TRANSPORTATION

Lisa Hammon

Lisa Hammon
Assistant City Manager
City of Hercules, California

9-2-2010
Date of Approval

Leslie T. Rogers

Leslie T. Rogers
Regional Administrator, Region IX
Federal Transit Administration

9-3-2010
Date of Approval

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

ABSTRACT

The City of Hercules, California (Hercules) proposes to construct an intermodal transit center (ITC), associated roadway improvements, and ancillary facilities at a site adjacent to San Pablo Bay in Contra Costa County. This document is a joint Environmental Impact Report (EIR) and Environmental Impact Statement (EIS) and analyzes the environmental impacts of the ITC. The EIR is prepared in accordance with the California Environmental Quality Act (CEQA), and the City is the State lead agency under CEQA. The EIS is prepared in accordance with the National Environmental Policy Act (NEPA) and the Federal Transit Administration is acting as the federal lead agency under NEPA. The City intends, in part, to construct this facility with federal funding, which invokes the application of NEPA. Hercules will also coordinate with the Capital Corridor Joint Powers Authority (CCJPA) to provide intercity passenger rail service to the site and the Western Contra Costa Transit Authority (WestCAT) to provide bus connections.

Prior to identifying a preferred alternative, various sites along the Union Pacific Railroad (UPRR) corridor were considered and rejected due to a variety of reasons, including safety considerations (inadequate sight lines) or fewer projected transit riders. The attached EIR/EIS considers two action alternatives (one on the west side of Refugio Creek and the other on the east side) and the No Action alternative.

Environmental concerns include potential adverse effects to biological resources from clearing the site, realigning Refugio Creek, and dredging a channel into San Pablo Bay to facilitate flow of Refugio Creek during heavy rain fall and high tides. The proposed project would move the Union Pacific tracks closer to sensitive receptors and there would be a slight increase in noise as a result of the proposed project. Other elements of the built environment would experience a beneficial effect from improved access to public transit services and the project would further the City of Hercules' land use goals.

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A 45-day period has been established for comments on this document. Comments may be submitted in writing or may be made orally at the public hearing(s). Written comments should be submitted to Lisa Hammon or Paul Page at the addresses above. Information on the public hearing can also be obtained from the City of Hercules.

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

PREFACE

This Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS) has been prepared pursuant to California Environmental Quality Act (CEQA), PRC 21000 *et seq*, and the State of California CEQA Guidelines, California Administrative Code, 15000 *et seq*; as well as the NEPA of 1969, §102 (42 U.S.C. §4332). There are a number of differences between the guidelines for CEQA and NEPA that affect reporting in this document. CEQA provides an Initial Study Checklist (Appendix G of the CEQA Guidelines) that describes thresholds for determining significance for environmental topics. These thresholds, along with the other local requirements that were used throughout the analysis, are presented in Chapter 5, Table 5-1, CEQA Significance Criteria. CEQA requires identification of and mitigation for significant adverse impacts in an EIR, while under NEPA, measures to avoid, minimize or mitigate impacts are considered for all of the adverse impacts of a project regardless of significance. Another important difference between CEQA and NEPA is that CEQA primarily considers impacts to the physical environment while NEPA includes impacts to the human environment, such as socioeconomic impacts and environmental justice.

The affected environment or existing conditions are described in Chapter 3 of this Draft EIR/EIS. Chapter 4 documents the construction, operational and cumulative impacts of each alternative and identifies measures that will mitigate the impacts. Due to the joint CEQA/NEPA nature of the environmental analysis, CEQA significance determinations have been called out separately after each impact is discussed in Chapter 4. In addition, Chapter 5 includes discussions of significance before and after mitigation, a summary of any significant and unavoidable impacts, growth inducement and cumulative impacts, pursuant to CEQA Guidelines and Statute. The evaluation of project alternatives is included in Chapter 6.

Technical appendices, which were prepared as part of the environmental analysis for the project, are available for review at the City of Hercules, 111 Civic Drive, Hercules, CA. Please contact Lisa Hammon at (510) 799-8251, or at lhammon@ci.hercules.ca.us.

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

Executive Summary

The City of Hercules, California (Hercules) proposes to construct an intermodal transit center (Hercules ITC), associated roadway improvements, and ancillary facilities at a site adjacent to San Pablo Bay in Contra Costa County. The City is the lead agency for the California Environmental Quality Act. The City intends, in part, to construct this facility with federal funding; therefore, the Federal Transit Administration is acting as the federal lead agency for the project. The City of Hercules will also coordinate with the Capital Corridor Joint Powers Authority (CCJPA) to provide intercity passenger rail service to the site and the West Contra Costa Transit Authority (WestCAT) to provide bus connections.

The area surrounding the proposed Hercules ITC site is being redeveloped with transit oriented housing and business developments, and the proposed project would improve access to public transit (intercity rail and local buses) for residents and workers. Providing access to public transit is also expected to reduce congestion on the nearby Interstate 680, as well as local arterials.

The Hercules ITC includes pedestrian access to the existing Union Pacific Railroad (UPRR) line and a newly constructed passenger platform. Train service would be available throughout most of the day with the Hercules ITC serving passengers traveling throughout the Bay area making connections with Bay Area Rapid Transit (BART), local mass transit systems, and interconnecting trains going as far south as Los Angeles, and as far north as Sacramento and Oregon. Train passengers would be able to either walk from nearby residential units, bike along the multi-use path connection that is part of the proposed project, or park their motor vehicles in the parking lot that is part of the proposed project. Transit center patrons would also be able to access the site via public bus service that will be extended to the proposed Hercules ITC as part of this project. The proposed project includes development of a small café to serve commuters, nearby residents, and workers. The Water Emergency Transportation Authority is considering the construction of a ferry terminal in Hercules and the proposed Hercules ITC would accommodate a connection to the Hercules ferry terminal and it will be only be considered under cumulative effect analysis in this document.

Because the site is currently undeveloped (it was previously used for the production of explosives and fertilizer and has undergone hazardous materials remediation), nearby roadways would need to be extended to access the site. The John Muir Parkway would be extended as part of the project and two new bridges would be built over Refugio Creek to provide access to and circulation through the site. A temporary surface parking lot would be constructed immediately as part of the project and a three-story park structure is included in the project as a future proposed action. The project would also include relocation of existing utility pipelines, including a natural gas line.

In order to improve operation of the rail line, the UPRR track would be realigned to the east (away from San Pablo Bay) and a new railroad bridge would be constructed over Refugio Creek. Refugio Creek would also be realigned and the creek channel into San Pablo Bay would be dredged to improve flow during heavy rain events and high tides.

Potential transit center sites were first limited to sites along the existing Union Pacific rail line. Locating a new rail line would not be efficient or practicable; therefore, the intermodal transit center had to be located adjacent to an existing line. The proposed Hercules ITC site was selected based on the projected ridership and safety. Other sites in the area would have fewer projected riders or are on curved stretches of track that have inadequate visibility for safe train operation. The Draft EIS/EIR considers a second action alternative (east of Refugio Creek) that would provide equal access to public transit, but this alternative would reduce the functionality of the adjacent properties and would require the threat of condemnation to acquire the site from a private party. This alternative was not selected as the proposed action for these reasons.

The potential adverse environmental effects, the severity of each effect, and proposed mitigation measures are shown below in **Table ES-1**.

Table ES-1.
Environmental Effects, Level of Impact, and Proposed Mitigation Measures

Draft EIR/EIS Section	Environmental Area/Impacts	Alternatives	Impacts	Mitigation	Level of Significance After Mitigation
4.1	Traffic and Transportation Systems	1 and 2	TRANS-4: Construction of the project will introduce additional large (haul) trucks and other related traffic that could result in potentially adverse safety impacts to pedestrians.	MM TRANS-4: Contractor will develop and implement traffic safety plan in coordination with the City.	Less than significant
4.3	Cultural Resources	1 and 2 and Track Option B	CULT-1: The project may adversely affect unidentified archeological resources during construction	MM CULT-1: Prior to construction, project crews will be briefed on the identification of cultural materials. If cultural materials are encountered, construction within 100 feet will stop, the City will be notified and a qualified archeologist will examine and document the materials. The archeologist will coordinate with responsible agencies as appropriate to develop mitigation measures prior to resuming construction in the area of the discovery. The archeologist will oversee implementation of the procedures once they have been determined.	Less than significant
4.3	Cultural Resources	1 and 2 and Track Option B	CULT-2: Construction of the project may adversely affect unidentified human remains.	MM CULT-2: Prior to construction, project crews will be briefed on the potential to identify human remains. If remains are encountered, construction within 100 feet will stop. The City will be notified. The Contra Costa County Coroner will be contacted to evaluate the find. If the Coroner determines that the remains are Native American, the City will coordinate with the Native American Heritage Commission.	Less than significant

Draft EIR/EIS Section	Environmental Area/Impacts	Alternatives	Impacts	Mitigation	Level of Significance After Mitigation
4.3	Cultural Resources	1 and 2 and Track Option B	CULT-3: Construction of the project may adversely affect unidentified paleontological resources	MM CULT-3: Prior to construction, project crews will be briefed on the potential to identify paleontological resources. If materials are encountered, construction within 100 feet will stop and the City will be notified. A qualified paleontologist will examine, document and evaluate the find. The paleontologist will coordinate with the responsible agencies regarding the development of appropriate mitigation measures. The paleontologist will oversee implementation of the procedures once they have been determined.	Less than significant
4.5	Visual and Aesthetic Resources	1 and 2	VAR-3: Implementation of the project would create new sources of substantial light and glare and would result in significant adversely affected day and nighttime views in the area.	MM VAR-3: Prior to the approval of the final project design plans, the project applicant shall submit a Final Lighting Plan for review and approval by the City Planning Commission. The Final Lighting Plan shall be in compliance with the General Plan, the WDMP, and all other applicable City codes, as required by City Planning authorities. The Final Lighting Plan shall specify reasonable measures to minimize light spillover and glare from the completed facility, such as screened / hooding lighting, automatic dimmers, or strategically placed landscaping.	**Significant and unavoidable.**
4.5	Visual and Aesthetic Resources	1 and 2	VAR Cumulative Impacts: It is anticipated that a ferry terminal would eventually be added to the Hercules ITC facility and would connect to the northern side of the station. The eventual build-out of the Hercules Bayfront project to the east and west of the Hercules ITC complex and the existing residential and commercial development to the	MM VAR-3: Prior to the approval of the final project design plans, the project applicant shall submit a Final Lighting Plan for review and approval by the City Planning Commission. The Final Lighting Plan shall be in compliance with the General Plan, the WDMP, and all other applicable City codes, as required by City Planning authorities. The Final Lighting Plan shall specify reasonable measures to minimize light spillover and glare from the completed	**Significant and Unavoidable.**

Draft EIR/EIS Section	Environmental Area/Impacts	Alternatives	Impacts	Mitigation	Level of Significance After Mitigation
			south and west would serve to add to the incremental effects of the light and glare emanating from the Hercules ITC and ferry terminal area, and would result in additional light and glare in combination with approved development projects that are scattered throughout the study area. Cumulative development in Hercules ITC site would obstruct and alter views looking west over the Bay. Cumulative visual effects are anticipated to be significant and unavoidable.	facility, such as screened / hooding lighting, automatic dimmers, or strategically placed landscaping.	
4.7	Air Quality	1 and 2 and Track Option B	AIR-1: Construction of the proposed project would create emissions of fugitive dust from excavation and grading, and emissions of criteria pollutants from construction equipment exhaust.	MM AIR-1: During construction, construction contractors will be required to implement fugitive dust control measures and reduce emissions.	Less than significant
4.8	Noise and Vibration	1 and 2 and Track Option B	NOI-3: Noise-generating construction activities are anticipated to exceed noise level standards and be at least 5 dBA above the ambient noise environment at adjacent noise-sensitive land uses.	MM NOI-3: The proposed project shall implement best-available construction noise control measures.	**Significant and unavoidable.**
4.9	Biological Resources	1 and 2 and Track Option B	BIO-1: Construction of the proposed project could potentially result in “take” through harm or harassment of individual California red-legged frogs (CRLF)	MM BIO-1: Preconstruction surveys for CRLF would be conducted in the project site approximately two weeks prior to the initiation of construction activities to ensure that CRLF is not actively using the project site as a dispersal corridor. Surveys will not commence until approval is received by USFWS.	Less than significant

Draft EIR/EIS Section	Environmental Area/Impacts	Alternatives	Impacts	Mitigation	Level of Significance After Mitigation
				Construction personnel would participate in a USFWS-approved worker environmental awareness program. A biological monitor would be present during all construction activities within Refugio Creek.	
4.9	Biological Resources	1 and 2 and Track Option B	BIO -2: Construction of the proposed project could potentially result in “take” through harm or harassment of vernal pool fairy shrimp (VPFS).	MM BIO-2: Fairy shrimp surveys will be completed in winter 2009/2010 within suitable habitats for VPFS. If VPFS are detected during surveys, the USFWS will be notified and appropriate avoidance and/or mitigation measures will be implemented prior to commencement of construction within or adjacent to VPFS occupied habitat.	Less than significant
4.9	Biological Resources	1 and 2 and Track Option B	BIO -3: Construction of the proposed project could potentially result in “take” through harm or harassment of California clapper rail.	MM BIO-3: If construction begins during the breeding season (January 15 to April 15), a USFWS approved biologist will conduct a preconstruction survey of California cordgrass tidal marsh habitat for California clapper rail prior to any construction activities occurring within 500 feet of those habitats.	Less than significant
4.9	Biological Resources	1 and 2 and Track Option B	BIO -4: Construction of the proposed project could potentially result in “take” through harm or harassment of salt marsh harvest mouse.	MM BIO-4: A USFWS approved biologist will conduct a preconstruction survey of the northern coastal salt marsh habitat in the project site prior to any construction activities occurring within 500 feet of those habitats. A USFWS approved biological monitor will be present during construction activities within and immediately adjacent to the northern coastal salt marsh habitat. Construction personnel would participate in a USFWS-approved worker environmental awareness program.	Less than significant

Draft EIR/EIS Section	Environmental Area/Impacts	Alternatives	Impacts	Mitigation	Level of Significance After Mitigation
4.9	Biological Resources	1 and 2 and Track Option B	BIO -5: Construction of the proposed project could potentially result in “take” through harm or harassment of California black rail.	MM BIO-5: If construction begins during the breeding season (February 1 to August 31), a CDFG approved biologist will conduct a preconstruction survey of pickleweed tidal marsh habitat for California black rail prior to any construction activities occurring within 500 feet of those habitats.	Less than significant
4.9	Biological Resources	1 and 2 and Track Option B	BIO -6: Construction of the proposed project could potentially result in disturbance of sensitive bat species, including pallid bat and hoary bat.	MM BIO-6: Preconstruction bat surveys shall be conducted to inspect inside culverts under the railroad tracks and trees within the willow riparian habitat.	Less than significant
4.9	Biological Resources	1 and 2 and Track Option B	BIO -7: Construction of the proposed project could potentially impact San Pablo vole and/or salt marsh wandering shrew	MM BIO-1: Preconstruction surveys for San Pablo vole and salt marsh wandering shrew will be conducted simultaneously with salt marsh harvest mouse surveys. If these species are detected, CDFG will be contacted regarding appropriate measures to relocate them out of the work area or protect occupied habitat in conjunction with salt marsh harvest mouse avoidance measures. Exclusionary fencing installed for salt marsh harvest mouse would also prevent these species from entering the project site.	Less than significant
4.9	Biological Resources	1 and 2 and Track Option B	BIO -8: Construction of the proposed project could potentially result in disturbance to other sensitive bird species (Cooper’s hawk, tricolored blackbird, northern harrier, white-tailed kite, saltmarsh common yellowthroat, San Pablo song sparrow, burrowing owl) and migratory birds during the nesting season.	MM BIO-8: If feasible, ground disturbing activities (e.g., clearing and grubbing) in and within 500 feet of suitable nesting habitat for these species should commence outside of the breeding season (September 1 to January 14). If birds began nesting in and within 500 feet of the project site after construction commenced, it could be assumed that they were not disturbed by construction activities.	Less than significant

Draft EIR/EIS Section	Environmental Area/Impacts	Alternatives	Impacts	Mitigation	Level of Significance After Mitigation
4.9	Biological Resources	1 and 2 and Track Option B	BIO-9: Construction of the proposed project would result in impacts to northern coastal salt marsh habitat, coastal brackish marsh habitat and brackish stream habitat.	MM BIO-9: Prior to commencement of construction activities that have the potential to impact the Northern Coastal Salt Marsh and Coastal Brackish Marsh, a permit will be obtained from the USACE and the BCDC for fill and/or disturbance of this habitat. All permit conditions will be followed. Suitable compensatory mitigation for impacts to Northern Coastal Salt Marsh and Coastal Brackish Marsh will be determined in conjunction with the USACE and BCDC and implemented to ensure no net loss of Northern Coastal Salt Marsh occurs.	Less than significant
4.9	Biological Resources	1 and 2	BIO-10: Construction of the proposed project could potentially result in loss of eelgrass and/or widgeongrass beds.	MM BIO-10: A valid preconstruction eelgrass survey will be completed during the period of active growth of eelgrass (typically March through October). The preconstruction survey will be completed prior to the beginning of construction and shall be valid until the next period of active growth. If any eelgrass is identified in the project area, post-construction eelgrass surveys will be conducted to determine if any eelgrass was adversely impacted. The survey will be prepared in consultation with CDFG and/or NMFS.	Less than significant
4.9	Biological Resources	1 and 2	BIO-11: Construction of the proposed project could potentially result in loss of intertidal mudflats.	MM BIO-11: A permit will be obtained from the USACE and the BCDC prior to impacting the intertidal mudflats. All permit conditions will be followed. Suitable compensatory mitigation will be determined in conjunction with the USACE and BCDC and implemented in order to replace and/or enhance the functions and values lost due to impacting special aquatic sites during implementation of the proposed project.	Less than significant

Draft EIR/EIS Section	Environmental Area/Impacts	Alternatives	Impacts	Mitigation	Level of Significance After Mitigation
4.9	Biological Resources	1 and 2 and Track Option B	BIO-12: Construction of the proposed project could potentially result in the spread of invasive species.	MM BIO-12: The contractor will ensure that construction equipment is clean of potential noxious or invasive species prior to utilization of equipment on the site.	Less than significant
4.9	Biological Resources	1 and 2	BIO-13: Dredging activities could impact marine mammals	MM BIO-13: Implementation of **Mitigation Measure WR-1** and the following measures will be followed during dredging in San Pablo Bay to reduce turbidity. • In-water construction and dredging activities will occur during the window of June through November, to minimize effects on listed species and their habitat. • Sampling and testing for contaminants will be conducted in potential dredging locations in San Pablo Bay prior to the onset of dredging activities (per USEPA and USACE requirements). If sediments to be dredged are contaminated such that their resuspension may adversely affect listed species or their habitat, NMFS and CDFG will be consulted. • Bankward slopes of the dredged area will be slanted to acceptable side slopes (e.g., 3:1) to prevent sloughing.	Less than significant
4.9	Biological Resources	1 and 2	BIO-14: Construction and dredging activities could result in the modification or disturbance of special aquatic sites including eelgrass beds, mudflats, and tidal marshes that provide fish habitat.	MM BIO-14: Any tidal marsh habitat that is degraded or lost due to the movement of relocating the mouth of Refugio Creek will be mitigated for by planting tidal marsh vegetation (i.e., cordgrass) in San Pablo Bay, in the vicinity of where Refugio Creek currently flows out into San Pablo Bay. Tidal marsh habitat will be monitored over time to ensure no net loss in tidal marsh habitat. Wetland restoration will be coordinated with the responsible agencies as	Less than significant

Draft EIR/EIS Section	Environmental Area/Impacts	Alternatives	Impacts	Mitigation	Level of Significance After Mitigation
				part of the wetland permitting required under Section 404 of the CWA. Although eelgrass surveys within the ESL and vicinity were completed in 2007, and no eelgrass was found (WWR 2007b), valid preconstruction eelgrass surveys will be completed (see Mitigation Measure #BIO-10).	
4.9	Biological Resources	1 and 2 and Track Option B	BIO-15: Construction and dredging activities may temporarily increase sedimentation and turbidity in Refugio Creek and San Pablo Bay.	BIO-15: Implementation of **Mitigation Measures BIO-13, WR-1,** and **WR-2** will reduce potential impacts to fish and other aquatic species to less than significant. No additional measures will be required.	Less than significant
4.9	Biological Resources	1 and 2 and Track Option B	BIO-16: Construction activities may potentially result in a chemical spill in Refugio Creek or San Pablo Bay.	MM BIO-16: Implementation of a Spill Prevention and Response Plan designed to minimize the potential for chemical spills and seepage, would reduce the potential impact to a less than significant level.	Less than significant
4.9	Biological Resources	1 and 2	BIO-17: Dredging activities could result in the entrainment of special-status fish and aquatic species.	MM BIO-17: Dredging activities in San Pablo Bay will be conducted during the work window of June through November to minimize potentially significant impacts to anadromous salmonids and longfin smelt. This work window also will minimize potential impacts to other fish and aquatic species by minimizing the timing of dredging to June through November.	Less than significant
4.9	Biological Resources	1 and 2 and Track Option B	BIO-18: Vibration and pressure waves resulting from pile driving could impact special-status fish and aquatic species and marine mammals.	MM BIO-18: Pile driving will be conducted “in the dry,” (within a cofferdam or during low tide) minimizing any potential impacts to fishes and marine mammals to less than significant levels.	Less than significant

Draft EIR/EIS Section	Environmental Area/Impacts	Alternatives	Impacts	Mitigation	Level of Significance After Mitigation
4.9	Biological Resources	1 and 2	BIO-19: Dredging activities could result in resuspension of contaminants.	MM BIO-19: Sampling and testing for contaminants will be conducted in potential construction/dredging locations in San Pablo Bay prior to the onset of dredging activities. Dredging activities in San Pablo Bay will be conducted during the work window of June through November to minimize potentially significant impacts to anadromous salmonids and longfin smelt. This work window also will minimize potential impacts to other fish and aquatic species by minimizing the time period of dredging to June through November.	Less than significant
4.9	Biological Resources	1 and 2	BIO-20: Construction and dredging activities could result in increased predation risk of special-status fish and aquatic species.	MM BIO-20: In-water construction activities in San Pablo Bay and dredging activities in San Pablo Bay will be conducted during the work window of June through November to minimize potentially significant impacts to anadromous salmonids and longfin smelt.	Less than significant
4.9	Biological Resources	1 and 2	BIO-23: Dredging activities could impact phytoplankton production	MM BIO-23:Temporary impacts to phytoplankton production due to increases in turbidity would be avoided/minimized through the use of construction BMPs to reduce the potential for increases in turbidity (e.g., use of silt curtains or methods to protect from disturbance).	Less than significant
4.9	Biological Resources	1 and 2	BIO-24: Dredging activities could impact Pacific herring spawning.	MM BIO-24: Dredging activities will only occur during the window of June through November, minimizing potential impacts on herring spawning activities.	Less than significant
4.9	Biological Resources	1 and 2 and Track Option B	BIO-25: Construction of the proposed project would result in impacts to wetlands and other waters of the U.S.	MM BIO-25 Prior to commencement of construction activities that have the potential to impact the wetlands or other waters of the U.S., a permit will be obtained from the USACE and BCDC for fill and/or disturbance of this habitat.	Less than significant

Draft EIR/EIS Section	Environmental Area/Impacts	Alternatives	Impacts	Mitigation	Level of Significance After Mitigation
				All permit conditions will be followed. Suitable compensatory mitigation for impacts to wetlands and other waters of the U.S. will be determined in conjunction with the USACE and implemented to ensure no net loss of wetlands occurs.	
4.10	Water Resources	1 and 2	WR-1: Dredging of Refugio Creek and San Pablo Bay could potentially adversely impact water quality through mobilization of contaminated sediment.	MM WR-1a: If contaminated sediment is encountered, further sediment characterization and a sediment removal plan (including upland disposal or beneficial reuse) will be required to protect water quality. MM WR-1b: If impacted sediments are to be dredged in Refugio Creek and/or San Pablo Bay, impacts to water quality could be minimized through the use of the following BMPs: • Use of silt curtains, which prevent suspended sediment from migrating out of the immediate project area; • Dredging only on low or incoming tide; • Hydraulic or closed clamshell dredging to reduce the generation of suspended sediments; • Shunting, which involves pumping of the free water in a sediment holding barge to the bottom of the water body, which reduces turbidity; • Employment of an independent, certified, on-board dredging inspector to ensure compliance with permit conditions; and • Monitoring will be conducted during dredging to allow for: measurement of the efficiency of contaminated sediment removal; determination dredged volumes;	**Significant and unavoidable.**

Draft EIR/EIS Section	Environmental Area/Impacts	Alternatives	Impacts	Mitigation	Level of Significance After Mitigation
				measurement of sediment re-suspension at the dredge site; and checking performance of barriers and other controls.	
4.10	Water Resources	1 and 2 and Track Option B	WR-2: Construction of project could potentially adversely impact water quality by degradation.	MM WR-2: Erosion will be controlled in accordance with an approved Erosion Control Plan. In addition, all construction activities will be performed in accordance with the California NPDES General Permit for Storm Water Discharges Associated with Construction Activities, 2009-009-DWQ, requiring the implementation of BMPs to control sediment and other pollutants mobilized from construction activities	Less than significant
4.10	Water Resources	1 and 2 and Track Option B	WR-3: The project *could* potentially adversely impact the existing drainage pattern of the site or area, which would result in substantial erosion or siltation on or off-site.	MM WR-3: Implementation of MM WR-2	Less than significant
4.10	Water Resources	1 and 2 and Track Option B	WR-4: The project could potentially adversely impact the existing drainage pattern of the site or area, which could result in flooding on or offsite.	MM WR-4: Implementation of MM WR-2	Less than significant
4.10	Water Resources	1 and 2 and Track Option B	WR-5: Operations in a floodplain could constitute hazards and may adversely impact human safety and property	MM WR-5: New facilities will be designed to minimize flooding through the use of retaining wall, levees, and/or construction on fill. Flood hazard warnings will be posted and flood evacuation plans will be developed. Construction and design will account for the maximum flood level so that facilities are built above the mark.	Less than significant

Draft EIR/EIS Section	Environmental Area/Impacts	Alternatives	Impacts	Mitigation	Level of Significance After Mitigation
4.10	Water Resources	1 and 2	WR-6: Stormwater runoff from the Hercules ITC site and parking may adversely impact water quality	MM WR-6: Operation of the Hercules ITC will be in conformance with the California NPDES General Permit for Storm Water Discharges Associated with Industrial Activities.	Less than significant
4.11	Geology and Soils	1 and 2 and Track Option B	GEO-1: Seismic activity could damage facilities and/or injure people.	MM GEO-1: A site-specific geotechnical investigation shall be required for this project. The project will conform to provisions of current building codes and to the recommendations of the geotechnical investigations performed for the proposed project.	Less than significant
4.11	Geology and Soils	1 and 2 and Track Option B	GEO-2: The proposed project could result in substantial soil erosion of topsoil	MM WR-2: Prior to construction, the City will develop and erosion control plan and stormwater pollution prevention plan. Best management practices will be incorporated into the project to avoid and minimize potential erosion. The project will be constructed in conformance with the NPDES Construction Stormwater Permit.	Less than significant
4.11	Geology and Soils	1 and 2 and Track Option B	GEO-3: Liquefaction, landslides, or lateral spreading could damage facilities and/or injure people and structures.	MM GEO-3: Design-level analyses of the liquefaction hazard shall be required for the project. Specifically, a program of site-specific exploratory borings and accompanying laboratory testing will be required to delineate any potentially liquefiable materials underneath proposed facilities. These geotechnical investigations will also be required for consideration prior to foundation design.	Less than significant

Draft EIR/EIS Section	Environmental Area/Impacts	Alternatives	Impacts	Mitigation	Level of Significance After Mitigation
4.11	Geology and Soils	1 and 2 and Track Option B	GEO-4: Subsidence could damage facilities.	MM GEO-4: Project design will incorporate mitigation measures to avoid or minimize the potential for subsidence including driving piles to support structures, surcharging, and grading design considerations.	Less than significant
4.12	Hazards and Hazardous Materials	1 and 2 and Track Option B	HAZ-1: The proposed project could create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or through the accidental upset or release of hazardous materials.	MM HAZ-1a: The construction contractor shall develop a project-specific Health and Safety Plan that includes a project-specific contingency plan for hazardous materials and waste operations. MM HAZ-1b: If affected or potentially affected soil and/or sediments are encountered during construction activities (grading and excavation), these materials would be excavated, stockpiled, and characterized to evaluate appropriate reuse or disposal alternatives. MM HAZ-1c: The construction contractor shall develop a Spill Prevention and Response Plan and provide copies to all contractors working on the proposed project. MM HAZ-1d: Construction contractors and employees shall immediately control the source of any leak and contain any spill using appropriate spill containment and countermeasures. In addition, all precautions required by the RWQCB for the project's NPDES General Permit for Stormwater Discharges Associated with Construction Activity would be taken to ensure that no hazardous materials enter the nearby waterways.	Less than significant

Draft EIR/EIS Section	Environmental Area/Impacts	Alternatives	Impacts	Mitigation	Level of Significance After Mitigation
4.14	Public Services	1 and 2	PUB SVC-1: Construction traffic and other activities have the potential to adversely disrupt police and fire department emergency response times in the project area.	MM PUB SVC-1: Prior to the start of construction activities, the City shall consult with the emergency service providers who have jurisdiction in the immediate vicinity of the Hercules ITC site to develop a Construction Emergency Response Access Plan that would identify appropriate routes and access points that would be available to police and fire services to use during the construction phase.	Less than significant

1. Purpose and Need

The City of Hercules (City) in cooperation with the Federal Transit Administration (FTA) has prepared a joint Draft Environmental Impact Report/Environmental Impact Statement (Draft EIR/EIS) for the construction of the Hercules Intermodal Transit Center (Hercules ITC), which would include a new passenger train station on the existing Capitol Corridor line, a transit bus terminal, access roadways, trails and parking facilities. Additionally, the facility would be designed to accommodate potential future ferry service. The Hercules ITC will be located on the southeastern shoreline of San Pablo Bay (a part of San Francisco Bay), approximately one mile northwest of Interstate 80 (I-80) (**Figure 1.1-1**). The Hercules ITC is within the City's Waterfront District, which is planned for mixed-use development.

The Hercules ITC would serve commuters, residents, students, visitors, and recreational users who desire an alternative way to travel to and from the City and the San Francisco Bay Area (Bay Area) and the Sacramento region to access employment, entertainment, educational, and recreational destinations. This Draft EIR/EIS will not include the evaluation of a ferry terminal as part of the Hercules ITC. Although the Water Emergency Transportation Authority (WETA) is considering the construction of a ferry terminal in Hercules (see Section 1.3) and the proposed Hercules ITC would accommodate a connection to the Hercules ferry terminal. WETA is leading that project and it will be evaluated under a separate environmental document.

Similarly, a transit-oriented development project is currently proposed on land interspersed and adjacent to the Hercules ITC. The Hercules Bayfront Project (HB) (see Section 1.3, below) has been initiated by a private developer, and would share some infrastructure with the Hercules ITC; however, it is the subject of a separate CEQA environmental review. Both the proposed Hercules ferry terminal and the HB would each have independent utility and can be constructed and/or operated exclusive of the Hercules ITC. This Draft EIR/EIS provides an analysis of the cumulative effects associated with these and other projects.

1.1. PURPOSE OF THE PROPOSED PROJECT

Residents of the Bay Area depend heavily on regionwide and transbay commuting. Despite the use of existing public transit services, particularly rail and buses, traffic congestion continues to rank highly among the area's top concerns. The severity of congestion will increase in the future as population and employment in the Bay Area increase. The purpose of the proposed Hercules ITC is to increase local and regional mobility and transportation options by providing new and expanded transit services with multi-modal connections that would encourage use of public transit. The Hercules ITC would provide bus-to-train connections and provide car commuters with access to new transit options that would divert traffic from Interstate-80 (I-80), the most congested corridor in the Bay Area for the past six years. An expanded and more convenient transit system with new train, bus, and trail connections to existing transit services would provide commuters with more options and reduce car usage and its associated impacts.

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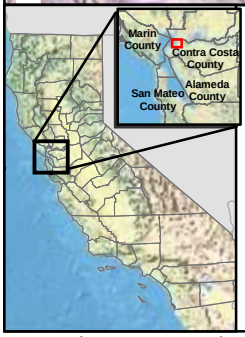

Legend

Project Boundary

1 in = 2,000 ft (at letter layout)

N

0 125 250 500 Meters

0 500 1,000 2,000 Feet

City of Hercules
Hercules Intermodal Transit Facility
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources. No Warranty is made for its accuracy or completeness.
Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey.
Data is State Plane Feet, NAD83 Zone 3

Figure 1.1-1: Project Location Map

HDR 2365 Iron Point Road, Suite 300
Folsom, CA 95630-8709

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1.2. NEED FOR THE PROPOSED PROJECT

1.2.1. Traffic Congestion

Regardless of economic conditions, traffic congestion is an ongoing and steadily increasing problem in the Bay Area. Alternatives to reduce traffic congestion have been explored in numerous prior studies. According to the Metropolitan Transportation Commission (MTC), the Bay Bridge approach corridor along I-80 from State Route 4 (SR-4) in Hercules to the Bay Bridge experiences the worst congestion in the Bay Area.

The California Department of Transportation's (Caltrans') Bay Area monitoring program found that between 1992 and 2005, traffic delay in the region more than doubled from 64,100 hours to 135,700 hours. According to Caltrans' 2006 report, between 2001 and 2005, traffic delay on the I-80 segment from SR-4 to the Bay Bridge metering lights increased by 16 percent—from 9,410 hours to 10,930 hours (MTC and Caltrans District 4 2007). This segment includes the stretch of I-80 that passes near the vicinity of the proposed Hercules ITC. MTC projects that traffic congestion will continue to worsen; by 2020, MTC expects that Bay Bridge traffic will increase by 50 percent and be "at capacity" for nearly 5 hours a day during the morning and afternoon peak hours. MTC also predicts that, due to high housing costs, many more Bay Area workers will be living far from their jobs, resulting in more commuting time and pollution on roadways. Even during an economic downturn, BART runs at capacity through the Transbay Tube during peak hours. Improvements in commuter bus service are dependent upon traffic flow and limited by road capacity and dedicated High Occupancy Vehicle (HOV) lanes for significant expansion. Increased train and transit services would provide expanded commute capacity, while avoiding corresponding increases in traffic congestion.

1.2.2. Transit Options for Growing Population and Employment in Hercules

The project vicinity is designated for residential and commercial uses under the Land Use element of the City of Hercules General Plan (General Plan), which projects continued long-term population growth within the City limits. The Waterfront District Master Plan (WDMP) is the City's specific planning document that governs the development of properties in the Waterfront area including the project vicinity. The General Plan assumes that buildout of the City will increase population from 19,488 in 2000 to 28,400 by 2020 (ABAG 2009). The Association of Bay Area Governments (ABAG) estimates that the population of Contra Costa County will increase by 25 percent during the same period. This growth in population and economic activity will contribute to the steady increases in local and regional traffic forecast in the General Plan and in the regional traffic projections prepared by the MTC. Development proposed on the remaining land under the WDMP includes 1,392 'non-flex' residential units and 134,000 square feet of 'flex space' (with an associated population increase of about 4,624 residents), as well as development of 81,000 sq. ft. of office and 74,000 sq. ft. of retail space.

As part of the General Plan and WDMP, the proposed Hercules ITC is intended to be the central element of the planned mixed use development in the waterfront area. Residential and commercial development would be clustered around transit facilities to enable local residents to use public transit and reduce the need for automobile use. The mixed use development will also include recreational, other public facilities, and open space (**Figure 1.2-1**). This projected

development is not part of the Hercules ITC considered in this Draft EIR/EIS, but will be the subject of a separate environmental review; however, the Hercules ITC and the planned mixed use project is being designed in close coordination. Improved bus service integrated with connections to new transit options would also benefit commuters in other parts of Hercules and other local cities. Ridership forecasts for the Hercules ITC for 2025 forecast a total of 1,124 daily boardings and 243 peak-hour boardings for train service.

Additionally, the San Francisco Bay Area Water Transit Authority (WTA), now the WETA, is a regional agency authorized by the State of California to operate a comprehensive San Francisco Bay Area public water transit system. In 2003, the WTA's plan, “A Strategy to Improve Public Transit with an Environmentally Friendly Ferry System" (Plan) was approved by statute (Senate Bill 915, Ch. 714, stats of 2003). The Plan drew on extensive technical studies that examined ridership demand, cost effectiveness, vessel design, environmental impacts, safety, and operations. A Hercules–San Francisco route was identified in the Plan as a potential future ferry route. The potential environmental effects of proposed new ferry service on San Francisco Bay under the WTA Plan were studied at a program planning level in the Program FEIR prepared in 2003 (SCH # 2001112048; URS 2003), and the Notice of Determination was submitted to the State Clearinghouse on July 15, 2003. The 2003 Program EIR included a Hercules/Rodeo location and seven other potential new ferry service locations around the Bay and Sacramento–San Joaquin Delta. While ferry service is anticipated for the city of Hercules, current planning for the ferry is still in development and considered a future project. The current project proposes to construct a rail and bus transit facility that can eventually support future ferry service.

Legend

- Hercules ITC Project Boundary
- Hercules Bayfront Development
- Approximate Parcel Boundaries

N

1 in = 500 ft (at tabloid layout)

0 60 120 240 Meters

0 250 500 1,000 Feet

Figure 1.2-1: Project Boundaries

City of Hercules
Hercules Intermodal Transit Facility
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources.
No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey.
Data is State Plane Feet, NAD83 Zone 3

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1.3. PROJECT BACKGROUND

1.3.1. History

The proposed project site is part of the Hercules Waterfront District, and is located within the former Hercules Powder Company (Company) property in the City of Hercules (**Figure 1.3-1**). The manufacture of explosives initiated the creation of the town of Hercules in 1881 as a company town for the Company. The Company provided homes and dormitories for its workers, and a small company town developed on the site, which was incorporated in 1900. Extensive facilities were developed on the site for the manufacture of black powder, dynamite and trinitrotoluene (TNT), and provided these products during both World Wars. The Company manufactured explosives at the site and shipped the products by ship using the pier at Hercules Point and by rail using the then Southern Pacific Rail Road. During World War II the Company was the largest such plant in the country, however, after the war, the demand for munitions plummeted and new products needed to be developed. As part of the development of the site, Refugio Creek was modified to accommodate the Company and maintained through the operation of the fertilizer company.

By 1964, a large facility had been constructed for the production of fertilizer and other chemicals. The company name was changed to Hercules, Incorporated and the facility stopped producing explosives, and began producing fertilizers. Excess safety buffer zone lands were sold off, since they were no longer needed. The fertilizer operation was closed in 1977 and many of the factory facilities were demolished. The land was purchased in 1979 by Hercules Properties, Ltd. and underwent site remediation procedures during the 1980s and early 1990s. Since then, residential and neighborhood commercial mixed-use development has been taking place in what is currently the Historic Town Center District, south and east of the proposed Hercules ITC site. Development within the facility grounds continues and current proposals exist before the City to develop remaining areas as part of the Waterfront District Master Plan and Waterfront Now Initiative.

Waterfront District Master Plan and Waterfront Master Plan Initiative

Pursuant to General Plan Programs 8A.2 and 8A.3, on July 25, 2000, the City Council approved and the Waterfront Development Master Plan (WDMP) for 167-acres of property, including the proposed Hercules ITC site (generally know as the Waterfront Area)The WDMP established the five Planning Sub-Districts, including a 23-acre Transit Village as proposed by the WDMP. Development of the sub-districts have been and will continue to be implemented as separate projects by private interests and would consist of a mix of residential and commercial uses focused on a commuter railroad station. Two of the five planning sub-districts have already been developed.

On July 22, 2008, the Hercules City Council adopted the Waterfront Now Initiative (WMP Initiative). The purpose of the WDMP Initiative was to modify the General Plan, Zoning Ordinance, and WDMP in order to facilitate completion of the Waterfront Area as a transit-oriented neighborhood mixed-use project. Among the goals and objectives of the WDMP Initiative, is the provision “for the location of a Multi-Modal Transit System linking together rail service via Capitol Corridor Joint Powers Authority (CCJPA), a connection to downtown San

Francisco via a ferry terminal, and bus service via Western Contra Costa Transit Authority (WestCAT), making Hercules home to the first train, ferry, and transit center in California."

The WDMP Initiative included a development agreement between the City of Hercules and Hercules Bayfront LLC. Specific projects allowed by the development agreement will undergo review pursuant to CEQA and pursuant to the City's governing ordinances.

In October 2009, Hercules Bayfront LLC submitted development applications to the City to facilitate development of two sub-districts within the WDMP. The applications exclude the Hercules ITC. The Hercules Bayfront (HB) project would implement the elements of the General Plan and WDMP through the development of a mixed-use neighborhood that includes walkable streets, supporting a variety of dwelling types and community-oriented businesses, with public plazas that have views of San Pablo and San Francisco bays. The applications that propose additional amendments to the WDMP, the General Plan and Zoning Ordinance provisions, and the Hercules Bayfront Development Agreement. The changes basically seek to increase office space by 34,000 sq. ft. and retail space by 15,000 sq. ft. No change has been submitted for residential uses (1,392 units).

Water Transit Services

Senate Bill 428, enacted in October 1999, formed and empowered the WTA to plan and operate new and expanded water transit services and related ground transportation access services for the San Francisco Bay Area. WTA's mission was "to build and operate a cost-effective, convenient, and environmentally responsible ferry system that will enhance commuter choices and the Bay Area's public transit system." Key service provisions that reinforce the agency's mission include:

- Providing convenient access to and enhanced shuttle/transit connections with the ferry;
- Providing service frequencies and hours of operation that meet demand, focusing on those periods of peak demand, to maximize use of the service in the most cost effective manner;
- Providing transbay travel times that compete with automobile travel and encourage single occupant drivers to use alternative modes of transportation, including ferries; and,
- Using vessels designed to reduce emissions and that can accommodate bicycle riders.

In July 2003, the WTA submitted the Implementation and Operations Plan (IOP) to the state's Governor and Legislature, in accordance with WTA's legislative mandate. The IOP presented a strategy to improve Bay Area transit service with an environmentally - friendly ferry system. The IOP proposed a total of nine new regional ferry terminal locations to supplement existing ferry service, including one at Hercules / Rodeo. A Programmatic Environmental Impact Report (Program EIR) was then prepared for the regional ferry service expansion defined in the IOP. The EIR evaluated several alternative proposals for the expansion of ferry services, as well as for railroad and mass transit. The Final Program EIR was issued in June of 2003. On July 27, 2006, the WTA approved a motion to carry forward the remaining ferry / rail service / transit options, including Hercules / Rodeo, for further examination and analysis in a combined California Environmental Quality Act/National Environmental Quality Act (CEQA / NEPA) environmental document. The FTA was designated the federal lead agency and WETA was designated the local lead agency for the joint environmental document.

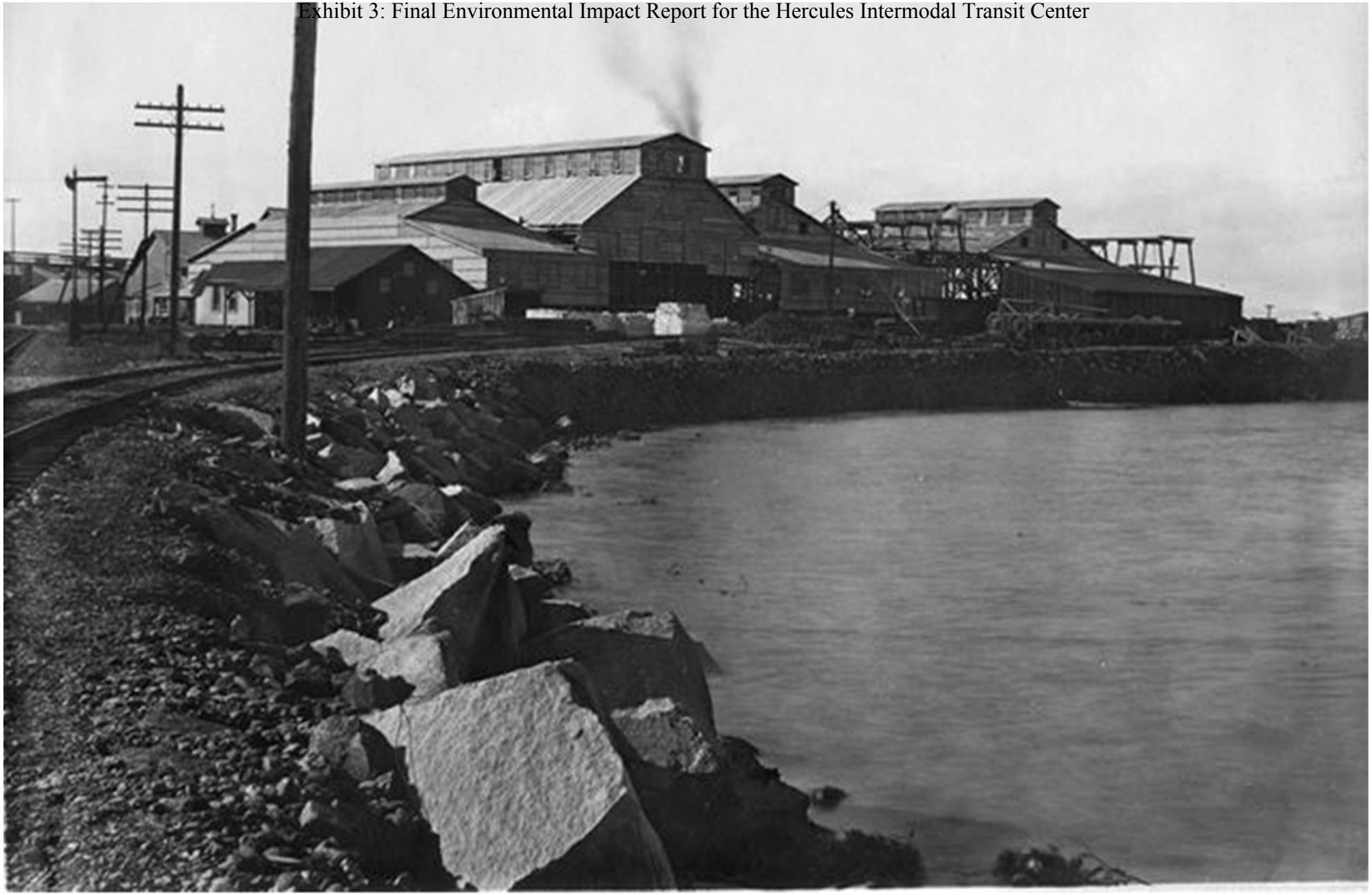

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Figure 1.3-1: Hercules Powder Company original dynamite plant, early 1900s

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Reorganization of WTA

In November 2007, the State Legislature reconstituted WTA and modified its mission. The new organization, called the WETA, became responsible for planning the mobilization of ferry service to respond to emergency circumstances that prevent or impair the use of the Bay Bridge or Transbay Tube, and for expansion of regional ferry service as described in the IOP.

WETA is currently considering a project to build a ferry terminal adjacent to the proposed Hercules ITC. The Hercules ferry terminal would provide additional public transportation service from the San Pablo Bay – San Francisco East Bay area to downtown San Francisco, and tie in to the Hercules ITC commuter rail and bus facilities. The Hercules ferry terminal would operate independently of freeways or bridges and could provide continued transit service during emergencies when these other infrastructures are compromised. The Hercules ferry terminal project would include dredging of a portion of San Pablo Bay, driving support piles, constructing the ferry dock structure, and building the access ramp that ties into the Hercules ITC station building. The Hercules ferry terminal would utilize the other transit and support facilities that are to be developed as part of the Hercules ITC project.

Initially, the ferry terminal and rail/transit station was planned as one multi-modal facility with WETA as the lead. In 2009, the City of Hercules, in consultation with WETA, decided to advance the rail service and transit components separately as the Hercules ITC Project. At that time, it was uncertain when the ferry component could feasibly be developed. The City then replaced WETA as the local lead agency for the environmental document to evaluate the rail and transit components, while WETA remains as the lead for the ferry service component.

1.4. PROJECT OBJECTIVES

The following are the objectives for the Hercules ITC:

1. Reduce vehicle trips on I-80, the most congested freeway in the Bay Area, by providing alternatives to commuting in single occupant vehicles.

2. Provide coordinated, intermodal transit connections by bus, train, human-powered connections (bicycling and walking), and a future ferry service, for transport to/from jobs, recreational uses, educational opportunities, etc.

3. Improve emergency response by having rail and (future) ferry services available in case of a natural or man-made disaster that disables the Bay Bridge or other highways/roadways. Ferry and rail service could also be used to deliver goods and services, if bridges or major highways are disabled in an emergency.

4. Support TOD and "new urbanist" standards by providing the transportation links within the 43-acre waterfront development, which also includes housing (including affordable housing), retail, office, and commercial space.

5. Improve safety along the railroad corridor by providing completely grade-separated access over railroad tracks from the adjacent development by constructing a series of retaining walls

and fences for approximately 2 miles along the waterfront and by constructing over-crossings to Hercules Point and the future ferry terminal.

6. Implement the Goals, Policies and Programs in the General Plan to:

   - Develop transportation facilities to provide access to the region, particularly public transit systems (buses, ridesharing, rail transit, as well as potential over-water transit) (Land Use Policy 3A, Circulation Policy e).

   - Establish trail linkage between Pinole and Rodeo as part of the regional bay access trail system (Land Use Program 14A.2 and Open Space/Conservation Policy 1b) and continue to improve and protect Refugio Creek as a major environmental amenity (Program 14.A.3).

7. Improve Refugio Creek to reduce existing risk of local flooding and protect project improvements while allowing adequate flows into the San Pablo Bay and enhancing ecological value.

8. Implement the General Plan, WDMP, and Waterfront NOW Initiative and their directive to construct an intermodal transit center on Block I, consistent with state and federal regulations.

9. Promote public access and views toward the San Pablo Bay by parks and promenade with safe crossings over the UPRR railroad tracks providing public access to future open space at Hercules Point and viewing areas of San Pablo Bay and beyond.

1.5. PROJECT FUNDING AND SCHEDULE SUMMARY

The City of Hercules has secured numerous grants and other funding for the Hercules Intermodal Transit Center project. The proposed project will be fully-funded through a mix of federal, State, regional and local sources. Currently, the project has secured federal funding through High Priority Project earmarks and two STIP-TE grants. Future federal sources include additional appropriation requests, TIGER II grant requests and FRA Rail and Realignment and Improvement funds. Federal funding for environmental analysis for the Transit Loop, as well as construction of Transit Loop Drive and Bridge and the bus shelter/colonnade (approximately $10.3 M); State funding has been secured through the State Traffic Congestion Relief Fund, and the STIP- Regional Improvement Program. State funds for preconstruction, construction of the rail station, Bayfront Bridge, and Bay Trail (approximately $10 M).

Regional funding sources will include Contra Costa County Measure J funds, West County Transportation Mitigation Program funds and East Bay Regional Park District Measure WW funds. Regional funds would be applied to the rail station and the Bay Trail ($9 M). Local matching funds will be provided through the City of Hercules Redevelopment Agency. Redevelopment agency funds (as needed to fully fund phases of the project), in addition to funding obtained by developer fees. City staff continue to submit grant applications at all levels.

The project will be implemented over a series of five phases. Phase 1 (Intermodal Transit Center, rail improvements, John Muir Parkway extension, Refugio Creek crossings, Refugio Creek realignment and improvements, utility line relocations) is anticipated to commence during the month of in early 2011 and continue for approximately 22 months. Phase 2 (Café/Transit Annex Building and Transit/Civic Plaza) would be implemented in late 2012, and Phase 3 (Hercules Point Bridge) is anticipated to start in 2013, and last for about 6-8 months each. Phase 4 (Hercules Point and Open Space), and Phase 5 (Ferry Terminal), are Future Projects and their anticipated implementation dates are not presently determined. Detailed information regarding each of the individual project phases is provided in Section 2 of this Draft EIR/EIS.

Project Phase Description	Start	Complete
Phase 1 – ITC Station & Access Infrastructure	2010	2013
Phase 2 – Café & Plaza	2012	2013
Phase 3 – Hercules Point Access	2013	2014
Phase 4* – Point Park & Open space	2014	2015
Phase 5* – Ferry Pier & Parking Garage	2017	2018
*dependent upon separate environmental clearance and funding availability		

1.6. PURPOSE OF DRAFT EIR/EIS DOCUMENT

This Draft EIR/EIS describes, analyzes, and compares the potential environmental impacts of implementing the alternatives, and provides additional information on the methods and assumptions used for the analyses. It also proposes mitigation measures that can minimize the effect of adverse impacts.

The City held several meetings between 2007 and 2009 to gather input from local, state, and federal agencies, and other interested parties. On November 18, 2009, the City participated in an interagency meeting at the U.S. Army Corps of Engineers office in San Francisco and presented an overview of the Hercules ITC and invited agency comments on the project.

The next phase of the Draft EIR/EIS process began with the initiation of scoping, the process used to identify issues to be examined in the Draft EIR/EIS. The scoping period and public meeting accompanying scoping were announced by publishing a Notice of Intent in the Federal Register on November 20, 2009 (Appendix B), as required under NEPA. To meet CEQA requirements, a Notice of Preparation containing the scoping information was submitted to the State Clearinghouse and distributed to appropriate state, regional, and local agencies on November 24, 2009 (Appendix B). In addition, the City and FTA sent out Letters of Participation to state and federal agencies to encourage their participation in the environmental process. A scoping meeting was held on December 8th, 2009 in Hercules. Ongoing consultation with interested agencies has occurred. More information about agency participation and consultation is provided in Section 7.0.

A second series of public meetings occurs after the Draft EIR/EIS is published and circulated for review. Agencies and the general public have the opportunity to review and comment on the Draft EIR/EIS during a formal comment period, which is required for a minimum of 45 days. The public comment period begins upon publication of a Notice of Availability (NOA) for the

Draft EIS in the Federal Register, and a Notice of Completion is filed with the State Clearinghouse for the EIR. During this period, public meetings are held and the Draft EIR/EIS is distributed. Summary information of the technical analysis presented in the Draft EIR/EIS is produced to facilitate public understanding of the environmental impacts addressed and the mitigation measures proposed.

At the end of the comment period, the City and FTA will review the information presented in the Draft EIR/EIS, as well as the comments received on the Draft EIR/EIS, to select the preferred project or alternative. Public comments are recorded and categorized to prepare responses to the comments, which are then incorporated into the Final EIR/EIS. In addition to revisions in the text that correspond to the comments received, the Final EIR/EIS identifies the lead agency's preferred alternative and the reasons for selecting this alternative. The release of the Final EIR/EIS is announced by publishing a NOA in the Federal Register. Once the Final EIR/EIS is published, a minimum 30-day waiting period is required before a Record of Decision (ROD; NEPA) and a Notice of Determination (CEQA) can be issued.

The ROD and the Notice of Determination notify the public of the project or alternative that the agency has selected to be carried forward for more detailed engineering and design and the rationale for that decision. The EIR/EIS analysis is considered as part of the decision-making process, an over-all process that may also include consideration of other decision factors in addition to environmental effects, such as costs, technical feasibility, agency statutory mission, project purpose and need, and study goals and objectives.

2. Alternatives Considered

2.1. NO-ACTION ALTERNATIVE

The No-Action (No Build) Alternative is a base scenario for comparison with the Action Alternatives. Under the No-Action Alternative, conditions in the waterfront area would remain as they currently exist with no bus service, and without the construction of a train station or a bus terminal. Land-based transit services and roadways would remain in their present state with no new improvements other than those that have already been programmed and funded. In addition, new roadways would not be constructed in the waterfront area, and improvements to Refugio Creek to address flooding would not occur.

2.2. ACTION ALTERNATIVES

The City proposes to construct the Hercules ITC along the Union Pacific Railroad (UPRR) tracks on the City's waterfront in Contra Costa County. The Hercules ITC would include a bus terminal (served by WestCAT), intercity passenger rail service, a new Capitol Corridor stop, parking for transit passengers, and the roadway/trail/sidewalk infrastructure to support the multimodal transit facility. The Hercules ITC would redevelop a brownfield site, promote access to and views of San Pablo Bay, improve existing mass transit, provide an alternative travel mode for I-80 commuters out of the Bay Area's most congested corridors, and bring together the City's public and private spaces while orienting the community to the bay. The Hercules ITC would also serve to facilitate connection to future ferry service being proposed by the San Francisco Bay Area WETA.

As part of the City's General Plan, the Hercules ITC is intended to be the central element within the Waterfront District that would include residential and commercial development clustered around transit facilities to encourage local residents to use public transit, thereby reducing automobile use. Part of the waterfront area is already developed. The remaining area to develop, the HB project, is not part of the project being considered in this DRAFT EIR/EIS, and will be the subject of a separate environmental review. However, impacts associated with the HB project will be considered in the cumulative impact analysis for this project.

2.2.1. Alternative 1: West of Refugio Creek Location

The Hercules ITC would be designed to promote alternative modes of transportation. It would be pedestrian- and bicyclist-oriented, and include walkable streets, trails, and other open space areas. In addition, the Hercules ITC would link CCJPA passenger rail service and WestCAT bus service through its intermodal transit center, and also be designed to facilitate the development of a future ferry terminal to serve commuters traveling to and from San Francisco.

The Hercules ITC would include the construction of a station building located southwest of Refugio Creek, and a center platform accessed via a pedestrian bridge spanning the UPRR tracks to the train platform and future ferry pier (**Figure 2.2-1**). Primary vehicle access to the transit station from I-80 would be provided through the extension of John Muir Parkway from its current terminus northeast of Tsushima Bridge. The extension of John Muir Parkway would be coupled with the extension of Bayfront Boulevard to provide an east-west connection over

Refugio Creek. The John Muir Parkway/Bayfront Boulevard improvements would require a new bridge over Refugio Creek (Bayfront Bridge). Bus and commuter vehicles would access the transit station via the John Muir Parkway extension. Buses would continue from John Muir Parkway onto Transit Loop Drive (counter clock-wise direction), cross Refugio Creek via Transit Loop Bridge then connect back to Bayfront Boulevard and exit via the Bayfront Bridge back to John Muir Parkway. Commuter vehicular traffic would access the transit center via John Muir Parkway to the Bayfront Bridge connecting to the extension of Bayfront Boulevard onto Transit Loop Drive (clock-wise direction). These new roads would be pedestrian and bicycle friendly. Additionally, construction of the Hercules ITC would require improvements to the UPRR rail line, including replacement of the railroad bridge over Refugio Creek; realignment and straightening of UPRR tracks; and safety improvements, such as retaining walls and railing grade providing separation of the tracks from the HB development area. Other improvements would include the Hercules Point Bridge across the UPRR tracks to provide access for the future Hercules Point open space, temporary surface parking to service the Hercules ITC, a neighborhood park, the completion of the East Bay Regional Parks District (EBRPD) trail (Bay Trail) along the waterfront area, Creekside Trail, and the realignment and restoration of Refugio Creek.

The Hercules ITC would include elements that promote the establishment and public use of open spaces oriented towards the bay. These elements would include the Bay Trail, a promenade, plazas, and a neighborhood park. Additionally, bay views would be maximized from the Transit Loop, the Bay Trail, plazas, and the project bridges by creating vertical separation from the tracks allowing pedestrians and park users' views toward the bay over the railroad tracks and trains. For example, Railroad Avenue, an existing street connecting the neighborhood to the waterfront, would terminate in an open plaza, thus providing the public a destination to enjoy bay views.

In keeping with "new urbanist" principles of creating a safe, walkable community, pedestrian and bicycle use would be promoted by orienting streets, wide sidewalks, and dedicated trails to enhance safety and separating cyclists and pedestrians from vehicular traffic. Vehicular access would be limited to public streets.. Commuter buses would be routed along John Muir Parkway and the Transit Loop. Clearly defined pedestrian areas would be demarcated by paving, planters, street furniture, and landscaping. Crosswalks and sidewalks would be located in areas that are clearly visible and marked and would be separated from vehicular traffic by islands or curbs, where feasible. The project would be Americans with Disabilities Act (ADA) compliant.

Additionally, the Hercules ITC design would incorporate energy conservation measures and be designed to achieve a U. S. Green Building Council (USGBC) LEED for Building Design & Construction (LEED BD& C) Silver certification. A number of LEED credits in the following categories are being pursued: Sustainable Sites, Water Efficiency, Energy & Atmosphere, Materials & Resources, and Indoor Environmental Quality. The project team is also considering pursuing a number of Innovation & Design and Regional Priority credits that are resonant with the site, program, and project goals. To receive a LEED Silver certification, the project design and construction process must achieve 50 to 59 LEED points as defined by the USGBC.

Legend

- Project Boundary
- Retaining Wall
- Gas Line
- Bay Trail
- Cafe/Retail
- Creekside Park and Plaza
- Creekside Trail
- Emergency Vehicle Access
- Interim Transit Parking Lot
- John Muir Parkway, Bayfront Blvd, and Bridge
- Landside Ramp
- North Channel Restoration/Wetland Mitigation Area
- Point Pedestrian Bridge
- Pointside Viewing Platform
- Promenade
- Railroad Plaza
- Refugio Creek Restoration
- Station Building
- Station Platform
- Transit Loop Drive and Bridge
- Transit/Civic Plaza

N

1 in = 500 ft (at tabloid layout)

0 62.5 125 250 Meters

0 250 500 1,000 Feet

Figure 2.2-1: Alternative 1

City of Hercules
Hercules Intermodal Transit Facility
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources.
No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey.
Data is State Plane Feet, NAD83 Zone 3

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Development of the Hercules ITC would be completed in five phases as follows (**Figure 2.2-2**):[1]

- Phase 1 – Intermodal Transit Center
  - John Muir Parkway Extension
  - Bayfront Boulevard Extension and Bridge
  - UPRR Track Relocation, Railroad Bridge Replacement, and Relocation of Existing Utilities
  - Station Platform and Emergency Vehicle Access
  - Station Building
  - Bay Trail and Promenade
  - Creekside Trail
  - Refugio Creek and North Channel Restoration
  - Transit Loop and Bridge
  - Creekside Park
  - Transit Parking
- Phase 2 – Café/Transit Annex Building and Transit/Civic Plaza
  - Café/Transit Annex Building
  - Transit/Civic Plaza
- Phase 3 – Hercules Point Bridge
  - Hercules Point Bridge
  - Landside Ramp
  - Railroad Plaza
  - Hercules Point Viewing Platform
- *Phase 4 (Future) – Hercules Point Park and Open Space
  - Hercules Point Park
  - Hercules Point-side Ramp/Berm
- *Phase 5 (Future) – Ferry Terminal
  - Ferry Pier/Dock
  - Ferry Emergency Vehicle Access Connection

*Because Phases 4 and 5 may occur sometime in the future, this DRAFT EIR/EIS does not evaluate them as part of the Hercules ITC. If these phases move forward, they would be evaluated under separate environmental documents. However, the potential for these phases would be considered in the cumulative impact analysis for this project.

[1] The future mixed-use HB project may be overlaid with some or all of the phases described.

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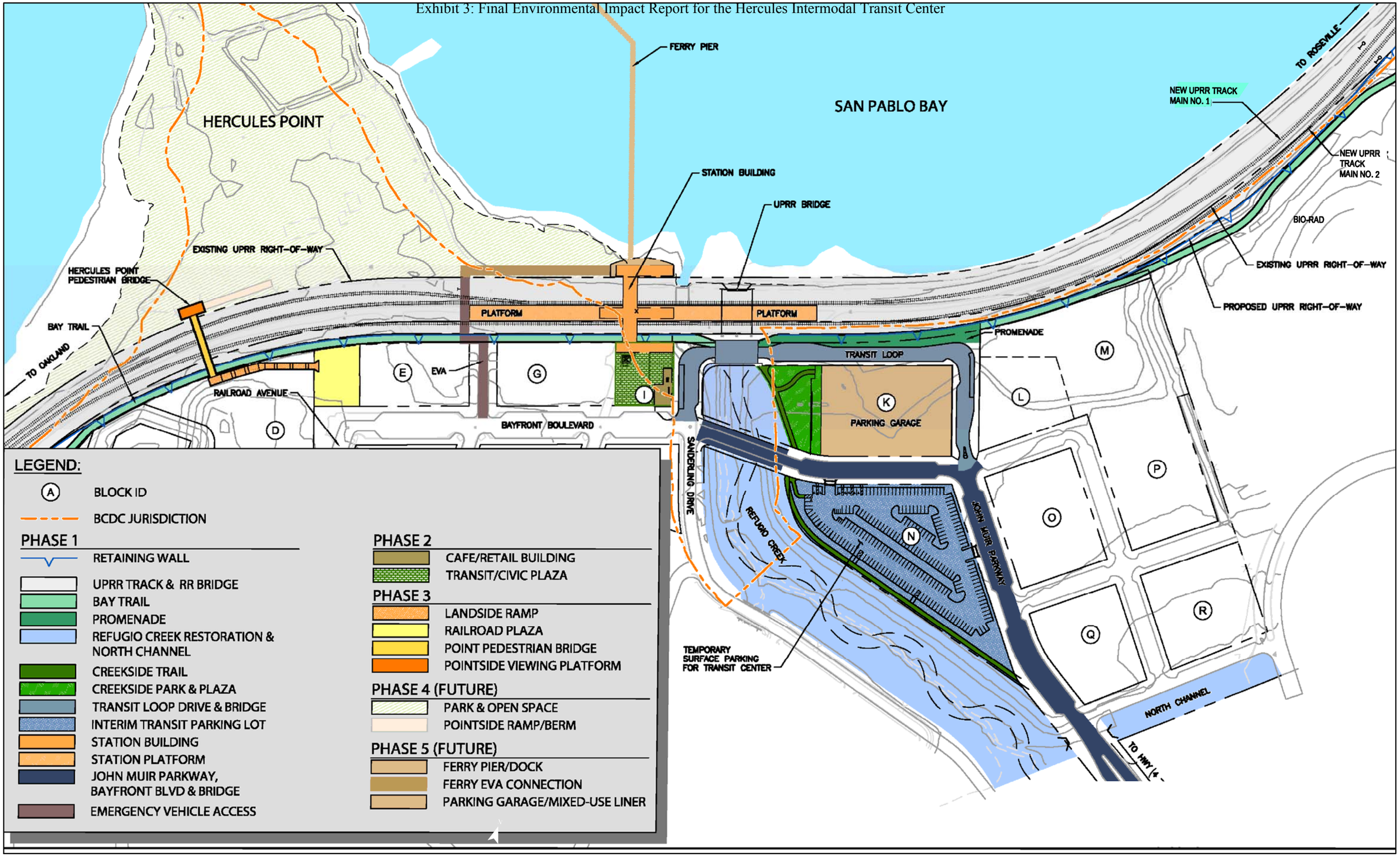

Figure 2.2-2: Alternative 1 Phasing Plan

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Proposed Facilities

Phase 1 – Intermodal Transit Center

John Muir Parkway Extension

John Muir Parkway, an existing four-lane median separated roadway, would be extended north approximately 700 feet from its existing terminus, approximately 1,000 feet west of the Tsushima Bridge across the North Channel. This extension would connect to the proposed extension of Bayfront Boulevard and Transit Loop (Figures 2.2-1 and 2.2-2). The parkway would serve as the primary transit access route to the Hercules ITC, Transit Loop, and Transit Parking Lot. The John Muir Parkway extension would require a concrete culvert to cross the North Channel.

The new roadway segment would have two paved 12-foot lanes traveling north and one 12-foot lane traveling south, and include 14-foot-wide sidewalks. Southbound traffic may eventually be expanded to two lanes, which would result in restriping all the travel lanes to be 11-foot in both directions. John Muir Parkway includes parking and sidewalks on both sides of the street, for a total ROW width of 80 feet. Figure 2.2-1 depicts the proposed alignment of the John Muir Parkway extension. The extension would require construction of a culvert crossing of the North Channel of Refugio Creek. The proposed North Channel culvert crossing would incorporate a 48-inch-diameter reinforced concrete pipe or 48-inch-high by 72-inch-wide precast concrete box culvert. It would be approximately 91 feet long, with an additional 40 feet of culvert apron (heavy rocks placed at the culvert outlet) (**Figure 2.2-3**).

Bayfront Boulevard Extension and Bridge

The Bayfront Boulevard extension would be a two-lane roadway connecting the existing boulevard segment, which ends at Sanderling Drive, to the planned John Muir Parkway extension. The new roadway segment would be approximately 620 feet long. The extension would include construction of the Bayfront Bridge over Refugio Creek (Figure 2.2-1).

The proposed Bayfront Bridge would be a two-lane, cast-in-place reinforced concrete box girder span, approximately 200 feet long and 50 feet wide. The 2-span bridge would be supported above Refugio Creek by three 4-foot-diameter columns, which would form a single pier aligned with the width of the bridge (i.e., in the upstream-downstream direction). The pier would be supported under the creekbed by piles. The bridge would include two 12-foot-wide traffic lanes, two 3-foot-wide shoulders, and 10-foot-wide sidewalks on both sides. The bridge sides would be enclosed by traffic rated railing on both sides. The bridge would consist of a constant depth (flat bottom) girder with decorative railings along the sidewalk and abutments that would be consistent with the architectural character of the waterfront.

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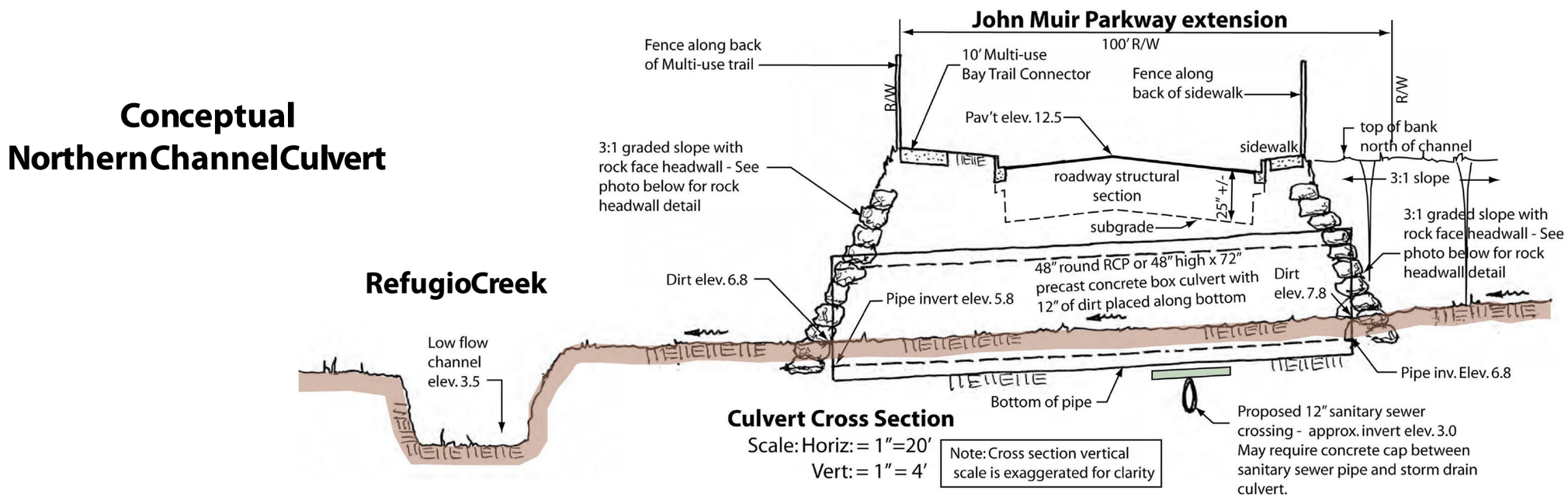

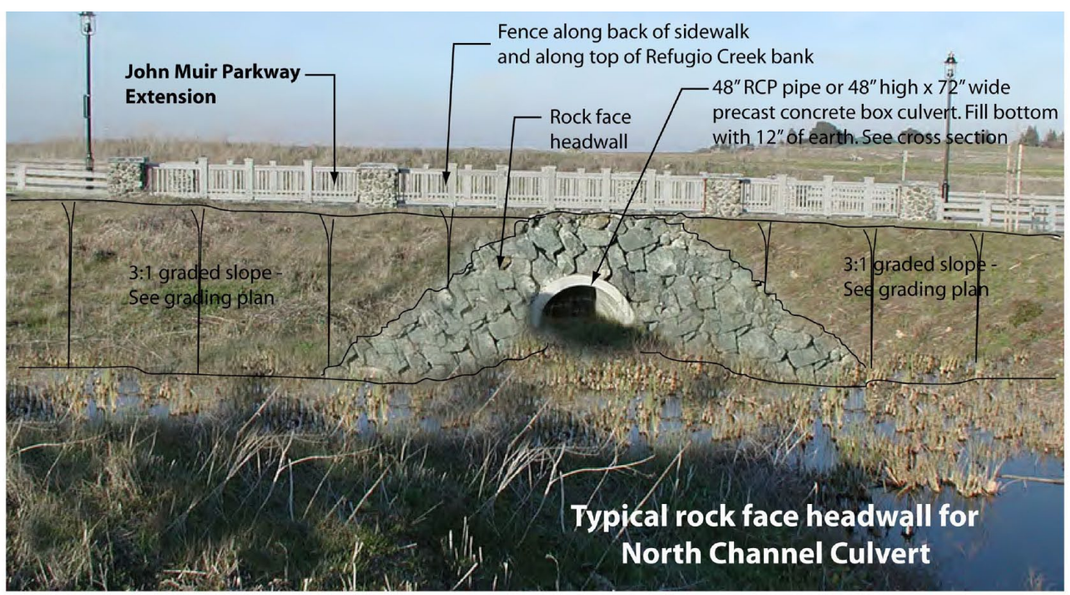

Notes:
1. For grading of Refugio Creek area see drawing prepared by Balance Hydrologics, Inc., dated 10-03-07.

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Figure 2.2-3: Rock culvert crossing for John Muir Parkway at North Channel

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Union Pacific Railroad Track Relocation and Railroad Bridge Replacement

The UPRR ROW extends across the site on a generally east-west orientation (Figure 2.2-2). The existing railroad ROW runs along the shoreline of San Pablo Bay and is 100 feet wide with two main tracks approximately 13 to 14 feet apart. Near the west end of the project site there is an additional track (storage 'house' track) located on the water side. Along the tracks, there are signals and utilities, including two petroleum pipelines (one active and one non-active), fiber-optic and telephone cables, and electrical lines located along the south side of the existing UPRR ROW. The tracks range in elevation from approximately 9 feet above mean sea level (msl) to approximately 12.5 feet above msl. The ground on either side of the track within the UPRR ROW ranges from near sea level adjacent to the bay on the water side to approximately 20 feet above msl on the land side, particularly near the eastern limit of the project site.

At the proposed train station, the existing tracks would be realigned, and spread to accommodate a center platform. Approximately 5,000 linear feet of track would be affected, in an area extending eastward from Hercules Point to about 3,000 feet east of Refugio Creek. Both waterside and landside tracks would be realigned vertically and horizontally in order to satisfy rail geometric constraints as well as adjust for prior track settlement. The track realignment would also potentially accommodate a third main track on the water side, allowing freight and other through trains to bypass the proposed station while a passenger train is stopped in the station.

The UPRR track realignment would include expanding the rail ROW to the south to provide adequate clearances and straighten the curvature of the tracks through the station area. This would also require the relocation of a crossover and associated signals in order to accommodate the proposed Station Platform and train operations. The Hercules ITC would also necessitate replacing the UPRR timber trestle bridge (a two-span structure, approximately 30 feet long) over Refugio Creek with a new bridge and installing new riprap within the creek (**Figure 2.2-4**). The existing bridge would be replaced because it does not meet current 50-year or 200-year storm event design criteria, and because it redirects surface water runoff into Refugio Creek.

The new railroad bridge would be located approximately 100 feet east of the current bridge location. The new railroad bridge would be positioned to accommodate the new mouth for Refugio Creek that is part of the creek restoration (see Refugio Creek and North Channel Restoration) and would have a larger span to accommodate the realigned enhanced creek. The proposed 2-span railroad bridge would be approximately 68 feet long and 100 feet wide. The railroad bridge would be supported on two abutments and a center pile bent. The railroad bridge foundation would consist of steel H-piles. The driven pile foundation would include a combination of vertical and battered piles. The railroad bridge deck would consist of precast, prestressed concrete box girders connected to the abutments and bent with restrainer rods and deck plates.

Track realignment would result in a need for soil nail retaining walls up to 25 feet high and 1,900 feet long along the section of track adjacent to the Bio-Rad Laboratories, Inc. (Bio-Rad) boundary. The Bio-Rad property (1000 Alfred Nobel Drive) is located at a point approximately 200 feet northeast of the proposed boarding platform at the eastern limit of the project. The soil nail wall is needed to allow for the track realignment, while accommodating the Bay Trail

alignment and minimizing impacts to adjacent properties. West of Bio-Rad, the existing site grades drop and design grades would be achieved through construction of a mechanically stabilized earth (MSE) with ground improvement supporting design fills. Approximately18,000 cubic yards of ground improvement would be required to support the MSE retaining wall. Ground improvements could include treatment, such as cement deep soil mixing (CDSM) or other in-situ soil improvement. The retaining wall would extend west just beyond the proposed Hercules Point pedestrian bridge for a total length of approximately 3,050 feet. The retaining walls would be located adjacent to the UPRR ROW to accommodate the Bay Trail at an elevation above the tracks and south horizontally to the tracks. The retaining walls would also provide an elevated trail and promenade with extended views of San Pablo Bay (**Figure 2.2-5**).

Several communication utilities including Qwest, Comcast, MCI, and Level 3 fiber optic lines are all currently located within the UPRR ROW. In addition, Kinder Morgan and Shell Oil have petroleum pipelines within and adjacent to the UPRR ROW. These lines would be relocated to avoid conflicts with the proposed track, platform, and railroad bridge. The lines would be rearranged within the UPRR ROW and adjacent to the proposed retaining wall based on input from and coordination with the utility and petroleum companies. The relocated pipelines would be installed within the proposed Bay Trail and roadway for a section of the alignment; the fiber optic lines would be realigned on the south side of the proposed tracks but remain within the UPRR ROW to the extent feasible. The pipelines would be directionally drilled under Refugio Creek and the fiber optic conduits would be jack-and-bored underneath the creek.

The track realignment would require acquisition of approximately two acres of additional ROW to accommodate rail service to the passenger platform and maintain operations for UPRR. The additional ROW would have a width of up to 30 feet and a length of approximately 3,365 feet for a total of approximately 1.77 acres. . Figure 2.2-2 depicts the overall phasing and site layout for the Station Building and surroundings.

The Union Pacific Railroad Track Relocation (Track Option A) design includes the installation of two temporary shoofly tracks[2] consistent with the initial requirements of the UPRR (see discussion Project Construction and Operation below). The shoofly tracks allow train operations to continue during construction by detouring trains around the project on the landside creating sufficient clearance to construct the train station and platform. However, the design also adds significant complexity to the construction staging due to conflicts with the proposed retaining walls, utilities, and bridges. The construction requires removal of one temporary shoofly track and shifting of the other shoofly track to create the final mainline station track alignment. The other mainline station track would be partially replaced, tied into the existing storage track and realigned to accommodate the new platform being constructed for the station.

The Union Pacific Railroad Track Relocation (Track Option B) would eliminate the temporary shoofly track, and instead would create permanent station and passing tracks through the project area and past the station stop to meet freight and passenger operational requirements. The station and passing tracks would minimize the interruptions to through traffic and passenger services.

[2] Shoofly track is a temporary track of minimum standards, which is used as a detour around a construction area such as a bridge replacement.

Constructing station and passing tracks would simplify the Hercules ITC construction staging and reduce construction related impacts.

Track Option B emerged from a value engineering (VE) study, undertake by the City of Hercules to identify improvements to the Hercules ITC project. The study was conducted to ensure that the Hercules ITC project considered the most cost effective solutions in the current design. The VE recommendations have been incorporated into the project description within this Draft EIR/EIS document. However, implementation of Track Option B is dependent upon approval from UPRR. Discussion of Track Option B is included in this Draft EIR/EIS for public review, consideration and comment. Track realignment work would be completed within the existing UPRR right-of-way and would not require new right-of-way.

Track Option B would be comprised of the following modifications from the Option A for main tracks (MT1 and MT2), (**Figure 2.2-6**).

1. A new signal controlled station passing track (MT1) at Hercules capable of holding a full length freight train.

2. A new right hand turnout[3] on MT2 at the existing crossover[4] at milepost (MP) 20.4 at the west end of the ITC Project

3. Construction of a new dedicated station track on the land side of MT2 at MP 20.4 to MP MP 22.1, approximately 8,600 feet of new track.

4. Construction of a new crossover and turnout at MP 22.1 connection to the new dedicated station track that would be used primarily by passenger trains.

5. The crossover configuration would also allow parallel moves between all tracks.

Track Option B provides added benefit to UPRR and CCJPA effectively mitigating freight-passenger train conflicts during operations and reducing the additional impact of an added station stop to the Capitol Corridor schedule.

Station Platform and Emergency Vehicle Access

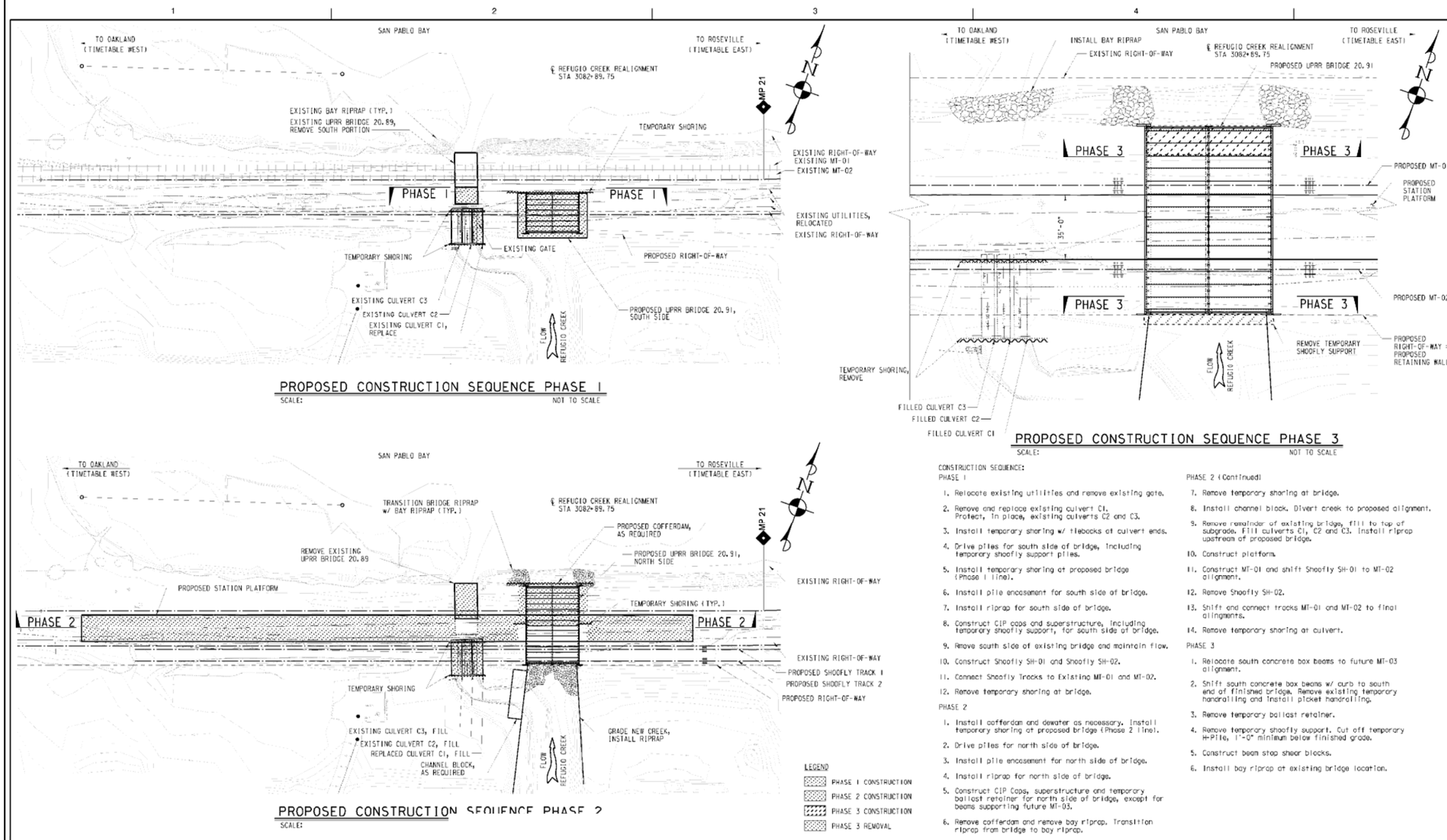
The proposed passenger platform would be a mat foundation deck, 35 feet wide by 800 feet long, constructed between the new main UPRR track and Station track (**Figure 2.2-7**). The center platform would have two passenger shelter structures to provide protection from the elements. Pedestrian access to the platform would be provided from the pedestrian overpass by a combination of stairs, ramps, and elevators; these would also be covered or enclosed for weather protection.

The Hercules ITC would include a restricted, private at-grade crossing for emergency ingress and egress only. The route would extend from the Bay Trail to the north across the UPRR ROW and connect to the west end of the Station Platform. The crossing would provide emergency

[3] A turnout is a track structure that allows trains to move from one track to another track or banch-line.
[4] A crossover is comprised of two turnouts (one at either end with a connecting track) permitting movement of rail cars from one track to another.

access to the west end of the passenger platform and be secured by locked gates. Within Phase 1, the EVA crossing would be constructed up to the UPRR ROW fence (Figure 2.2-1). The ferry EVA connection would be completed in the future if the ferry terminal project is approved and constructed (Phase 5).

The EVA would be approximately 20 feet wide by 129 feet long within the UPRR ROW, and approximately 20 feet wide by 230 feet long south of the UPRR ROW). The future connection to the ferry is planned to be 20 feet wide by approximately 350 feet long north of the UPRR ROW.



CONSTRUCTION SEQUENCE:

PHASE 1

1. Relocate existing utilities and remove existing gate.
2. Remove and replace existing culvert C1. Protect, in place, existing culverts C2 and C3.
3. Install temporary shoring w/ tiebacks at culvert ends.
4. Drive piles for south side of bridge, including temporary shoofly support piles.
5. Install temporary shoring at proposed bridge (Phase 1 line).
6. Install pile encasement for south side of bridge.
7. Install riprap for south side of bridge.
8. Construct CIP caps and superstructure, including temporary shoofly support, for south side of bridge.
9. Remove south side of existing bridge and maintain flow.
10. Construct Shoofly SH-01 and Shoofly SH-02.
11. Connect Shoofly Tracks to Existing MT-01 and MT-02.
12. Remove temporary shoring at bridge.

PHASE 2

1. Install cofferdam and dewater as necessary. Install temporary shoring at proposed bridge (Phase 2 line).
2. Drive piles for north side of bridge.
3. Install pile encasement for north side of bridge.
4. Install riprap for north side of bridge.
5. Construct CIP Caps, superstructure and temporary ballast retainer for north side of bridge, except for beams supporting future MT-03.
6. Remove cofferdam and remove bay riprap. Transition riprap from bridge to bay riprap.

PHASE 2 (Continued)

7. Remove temporary shoring at bridge.
8. Install channel block. Divert creek to proposed alignment.
9. Remove remainder of existing bridge, fill to top of subgrade. Fill culverts C1, C2 and C3. Install riprap upstream of proposed bridge.
10. Construct platform.
11. Construct MT-01 and shift Shoofly SH-01 to MT-02 alignment.
12. Remove Shoofly SH-02.
13. Shift and connect tracks MT-01 and MT-02 to final alignments.
14. Remove temporary shoring at culvert.

PHASE 3

1. Relocate south concrete box beams to future MT-03 alignment.
2. Shift south concrete box beams w/ curb to south end of finished bridge. Remove existing temporary handrailing and install picket handrailing.
3. Remove temporary ballast retainer.
4. Remove temporary shoofly support. Cut off temporary H-Pile, 1'-0" minimum below finished grade.
5. Construct beam stop shear blocks.
6. Install bay riprap at existing bridge location.

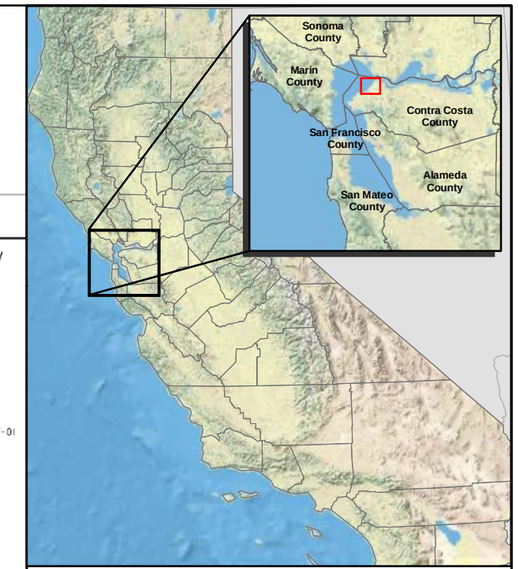


Figure 2.2-4: UPRR Bridge 20.91 Over Refugio Creek Construction Sequence

City of Hercules
Hercules Intermodal Transit Facility
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources.
No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey.
Data is State Plane Feet, NAD83 Zone 3

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Figure 2.2-5: Retaining walls for grade separation at UPRR

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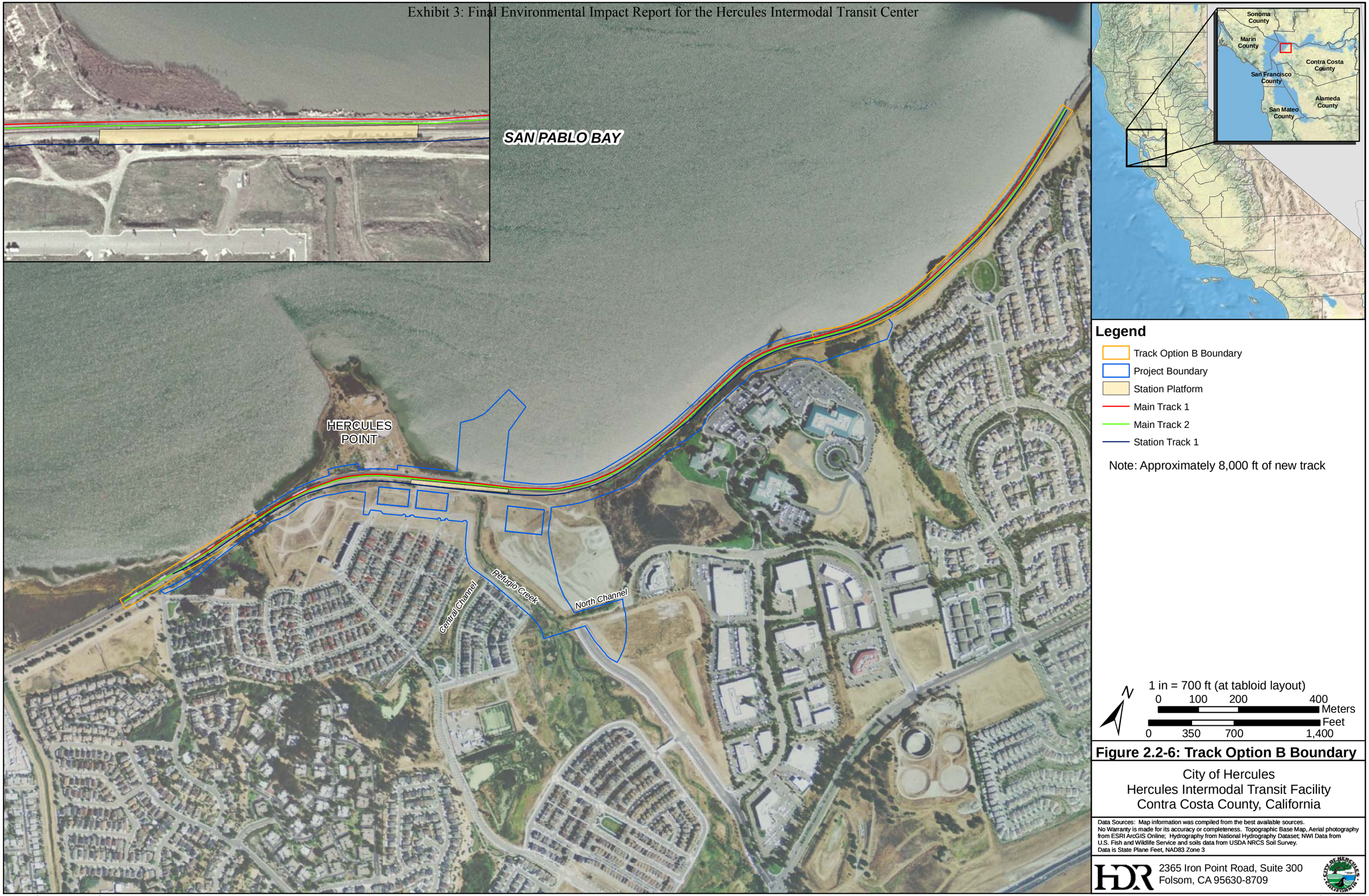

Figure 2.2-6: Track Option B Boundary

City of Hercules
Hercules Intermodal Transit Facility
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources.
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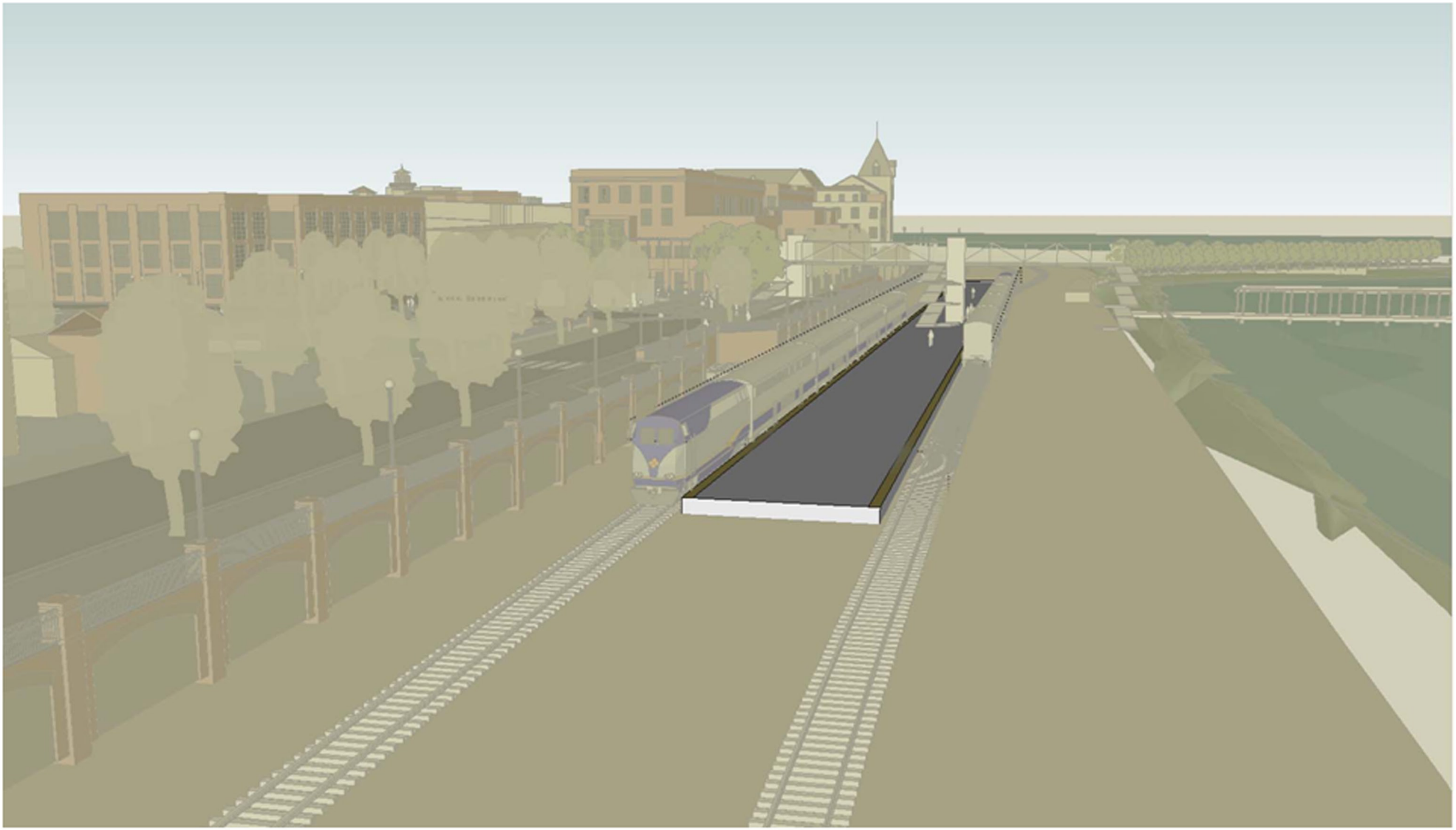

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Figure 2.2-7: Hercules ITC center platform

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Station Building

The proposed Station Building would be located on Bayfront Boulevard, west of Refugio Creek (**Figure 2.2-8**). The approximately 11,075 square-foot land side Station Building would provide grade-separated pedestrian access over the railroad tracks to an approximately 25,100-square-foot platform and future ferry terminal. The Station Building would be an open 30 foot tall, from plaza level, steel-frame structure with a basement, with a glass-enclosed ADA-compliant ramp, stairs, and elevator to provide access to the passenger rail platform and over the UPRR tracks by way of a pedestrian bridge. The station building includes an 85-foot tall clock tower at the south-west corner, which will include a storage room at the plaza level and a security room at the bridge level.

The pedestrian bridge would be elevated approximately 16 feet above the plaza ground level (approximately 26 feet above existing ground level and top of rail) to maintain required vertical clearance above the train tracks. The height of the pedestrian overcrossing is set by the UPRR and California Public Utility Commission clearance requirements. Pedestrian ramps would provide access from the station entry to the pedestrian bridge. The pedestrian bridge would connect to the rail platform by way of ramps and stairs. ADA-compliant elevators for emergency/freight use would also be placed at the transit terminal and the rail platform. The ramps would be ADA-compliant and designed with a series of landings and turns to maintain ease of access and accommodate peak passenger foot traffic, while reducing safety hazards and the potential for nuisance or vandalism.

The design of the building reflects historic train shed forms, including the open curved roof, would incorporate functional elements (stairs, ramps) lower in height to minimize its perceived height and mass. The structure would be glass reinforced with steel frames, which would provide panoramic views of San Pablo Bay and beyond. Seating and architectural elements associated with the station would be largely determined by the functional requirements of Amtrak and CCJPA. The building would have louvered or open-able windows to provide ventilation. Additionally, there will be a mechanical ventilation system in the station building; however there will be no mechanical heating or cooling connected with the ventilation system. There will be a radiant floor heating system in the platform area.

The Station Building's frame would be extensively glazed, with over 22,000 sf of glass wall area, and a window-to-wall ratio of over 66 percent. Laminated glass would both limit overheating and provide passive solar heating. Overheating for most hours would be controlled with proper ventilation. If necessary, solar gains could also be used to heat the building for most of the day or evening.

The platform would have glass awnings above the North and South entrances to provide adequate shade from direct sun at eye level throughout the day. To reduce visual glare when illuminated by direct sun, opaque or a clear glass would be used for awning material.

The roof would be covered with glare-resistant photovoltaic cells (**Figure 2.2-9**). The approximately 5,100 sf of photovoltaic cells would generate about 47,100 kilowatt-hours (kWh) of alternating current (AC) energy per year.

Access to the Ferry Plaza would not be open until the ferry pier and dock are constructed. Access would be limited to the mezzanine level (upper) only, except for maintenance and security personnel; no access would be allowed to the ground level of the Ferry Plaza.

The Station Building would serve to provide for the passenger loading and unloading of the local and regional buses operated by WestCAT. Buses would reach the terminal by way of a proposed extension of John Muir Parkway that would cross Bayfront Boulevard and connect with the proposed Transit Loop Drive around the parcel east of the terminal (shown as "Block K" on Figure 2.2-1) in a counter-clockwise direction.

A maximum of twelve small–scale Mariah Power wind power turbines are proposed for installation at the Station Platform. The turbines would generate modest amounts of energy and be representative elements of the green character of the project (**Figure 2.2-10**). Each wind turbine could potentially generate approximately 200 kWh of energy per year, which would provide enough energy to operate a small residence for a month. While the turbine generated power cannot completely provide for the annual energy needs to light the interior of the Transit Building (about 20 megawatt hours), it would be provide sufficient energy to operate a limited area of exterior lighting or other iconic element.

Bay Trail and Waterfront Promenade

The Bay Trail would be a newly constructed Class I trail, approximately 5,900 feet long by 10-feet-wide (paved) with two foot wide gravel shoulders within a 27-foot-wide easement , excluding the promenade, and would connect existing segments of the Bay Trail (Figure 2.2-1). The trail would extend from Bio-Rad on the east end of the project and connect to the existing Bay Trail terminus near the west end of the project. The trail would cross over Refugio Creek on the north side of the Transit Loop Bridge. When complete, the trail would close a critical gap in the existing trail (in the Carquinez Strait region) from Pinole to the south and a residential development (Victoria-by-the-Bay) to the north and provide opportunities for biking, walking, and scenery viewing. Switchbacks or ramped trail sections would be ADA compliant to the extent feasible.

The waterfront promenade would be a 500-foot-long public space that varies from about 18 feet wide on its west end to about 26 feet wide on its east end. The promenade would have a walking path of stamped and/or colored concrete integrated benches and bay viewing areas.

Creekside Trail

Excluding the trails located within Creekside Park, the Creekside Trail would be a 960-foot-long trail of varying width (8 feet minimum to 20 feet maximum) (Figure 2.2-1). This trail would serve as a pathway for bicyclists and pedestrians, connecting users from John Muir Parkway near the North Channel along the east bank of Refugio Creek with the Hercules ITC facility across Bayfront Boulevard. Pedestrian crossing protections such as flashing lights would be installed at street crossings to alert drivers to the potential presence of pedestrians and designs to encourage safety and reduced bicycles speeds would be incorporated.

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Figure 2.2-8: Hercules ITC station building

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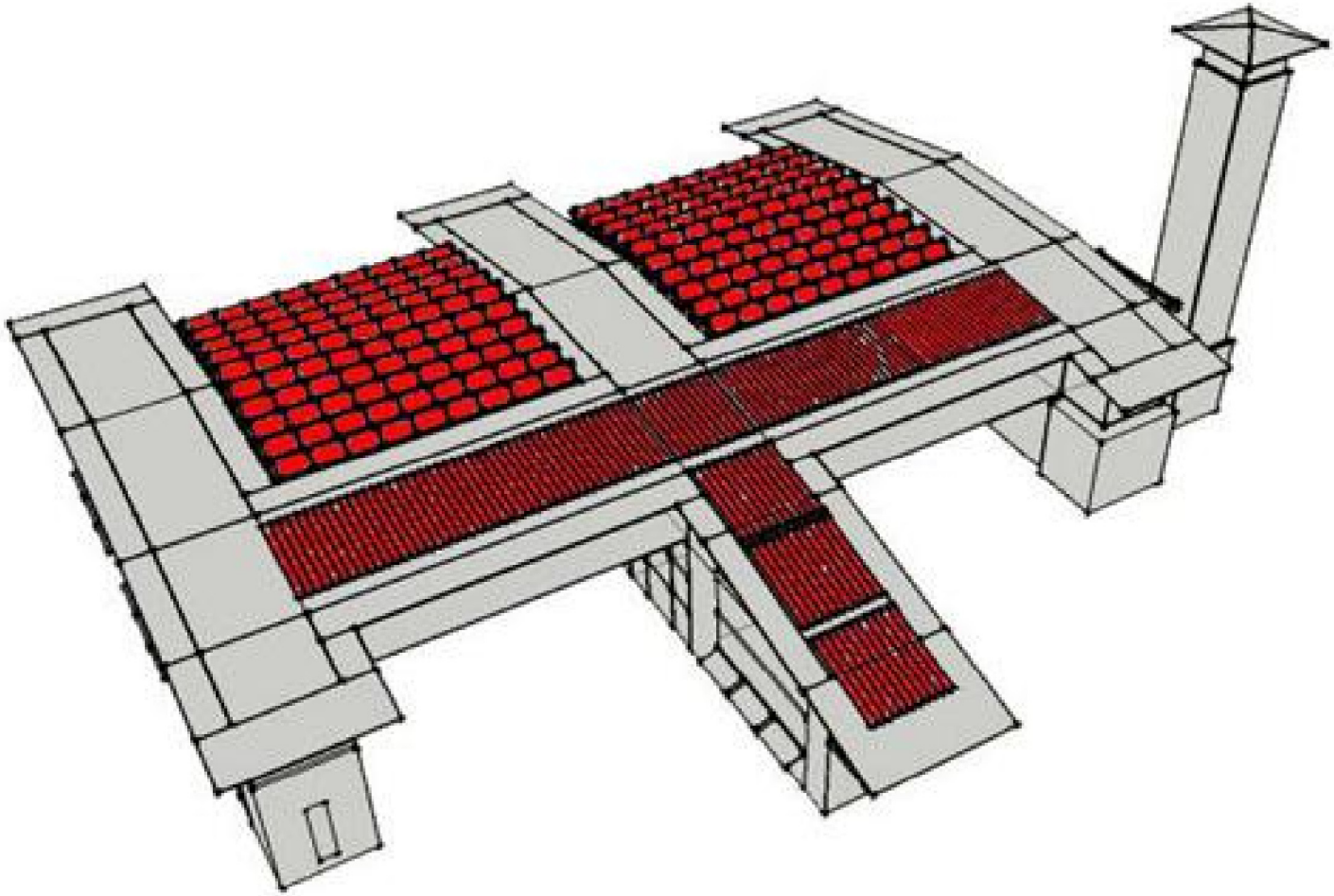

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Figure 2.2-9: Photovoltaic Panels on Top of Station Building

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The existing creek and culverts near the existing railroad bridge would be filled. The creek upstream would be improved by realigning the creek, cutting back the existing slopes and constructing new creek embankments. On the upstream side of the existing railroad bridge, there are currently three 72-inch-diameter culverts under the access road near the proposed location of the Transit Loop Bridge (Figure 2.2-11). These culverts restrict flow during flood events and result in overtopping of the access road and railroad tracks. The existing channel has a 90-degree bend where Refugio Creek encounters the access road and a second 90-degree bend, where flows enter the culverts under the access road. These man-made sharp bends in the existing channel further reduce channel capacity to convey flows. As part of the restoration, these bends would be eliminated, the creek straightened, and a new outlet to San Pablo Bay constructed. The new railroad bridge would cross Refugio Creek at the new mouth. The railroad bridge abutments would be constructed outside of the creekbed and banks. New riprap slope protection would also be installed to protect the bridge abutments through the UPRR prism.

A new meandering low flow channel and enlarged marsh would be incorporated to improve hydraulic and ecological function. The marsh would gradually increase the floodplain width to a maximum of approximately 200 feet upstream of Bayfront Bridge. Restoration work in the channel would include planting of native plant species. It is also anticipated that there would be some voluntary colonization of tidal marsh species, including pickleweed (*Sarcocornia pacifica*), gumplant, and other native species.

Currently, the existing Refugio Creek channel is approximately 1590 feet (0.54 acre) from the proposed southern project boundary at the previously restored portion of the creek to San Pablo Bay at edge of the UPRR ballast. As described above, this restoration will remove two 90 degree turns of Refugio Creek. However, constructing the new meandering channel will create an increase in the overall length and acreage of Refugio Creek resulting in a channel approximately 1652 feet long (0.97 acre).

An upstream portion of the creek was reconstructed as a habitat restoration project as part of previous development projects; reconstruction and habitat restoration of the lower section of the creek from the North Channel to the mouth of Refugio Creek would be performed as part of the Hercules ITC.

Additionally, the North Channel will be re-graded and enhanced to accommodate an expanded wetland area and provide mitigation to compensate for the impacts associated with the crossing of John Muir Parkway across the North Channel **(Figure 2.2-13).** This area may also serve to provide some stormwater detention and water quality improvements prior to discharge back into the North Channel and downstream into Refugio Creek and ultimately into San Pablo Bay. Immediately north of North Channel, a 10 foot-wide pedestrian trail will connect residents from Linus Pauling to John Muir Parkway.

Restoration work conducted under the Hercules ITC project would include similar elements as restoration work upstream to allow a seamless and complete habitat restoration of the entire lower creek. The creek channel would be regraded and widened in order to restore a more natural serpentine form, increase flood-flow capacity, provide a creek floodplain, and restore associated tidal wetlands. The restored creekbed would be approximately 180 to 185 feet wide from top-of-bank to top-of-bank, with the restored banks at a slope no greater than 3:1, and some of the

slopes on the two riparian planting area slope banks varying between 6:1 and 9:1. The restoration and flood control components would connect with the portion of Refugio Creek upstream of the Waterfront District that was similarly restored in December 2000.

The portion of the restored creek wetland area included in the Hercules ITC (between North Channel and the creek mouth) may provide compensatory mitigation for wetlands affected by development activity within the project site. Approximately 0.08 acre of jurisdictional waters within the existing North Channel would be permanently affected by the installation of the John Muir Parkway culvert. Other jurisdictional waters would be temporarily impacted by the creek restoration grading; this temporary impact would be mitigated when the channel is regraded and restored (the restored serpentine form would make the channel longer than the original main channel by approximately 120 linear feet). Tidal marsh and freshwater wetlands adjacent to Refugio Creek would be affected by the restoration work. At a minimum, restoration work would reestablish the same amount of acreage to ensure that restoration activities are entirely self-mitigating.

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Figure 2.2-11 : Refugio Creek Existing Condition

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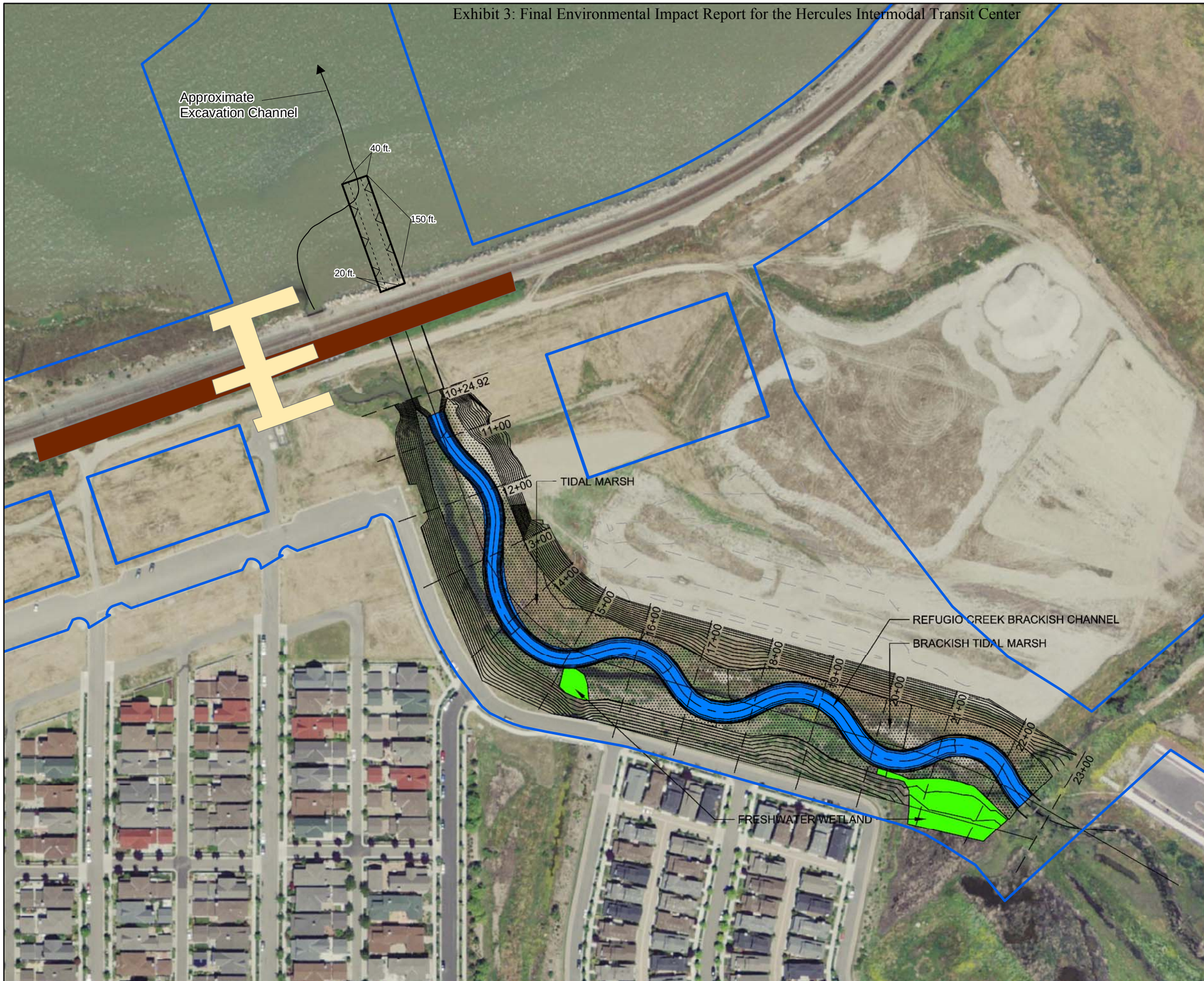

Legend

- Project Boundary
- Station Building
- Station Platform

Refugio Creek Restoration:
Wetland graphic prepared by RDG, 03-2010.

1 in = 150 ft (at tabloid layout)

N

0 12.5 25 50 Meters

0 50 100 200 Feet

Figure 2.2-12: Refugio Wetland Mitigation

City of Hercules
Hercules Intermodal Transit Facility
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources.
No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey.
Data is State Plane Feet, NAD83 Zone 3

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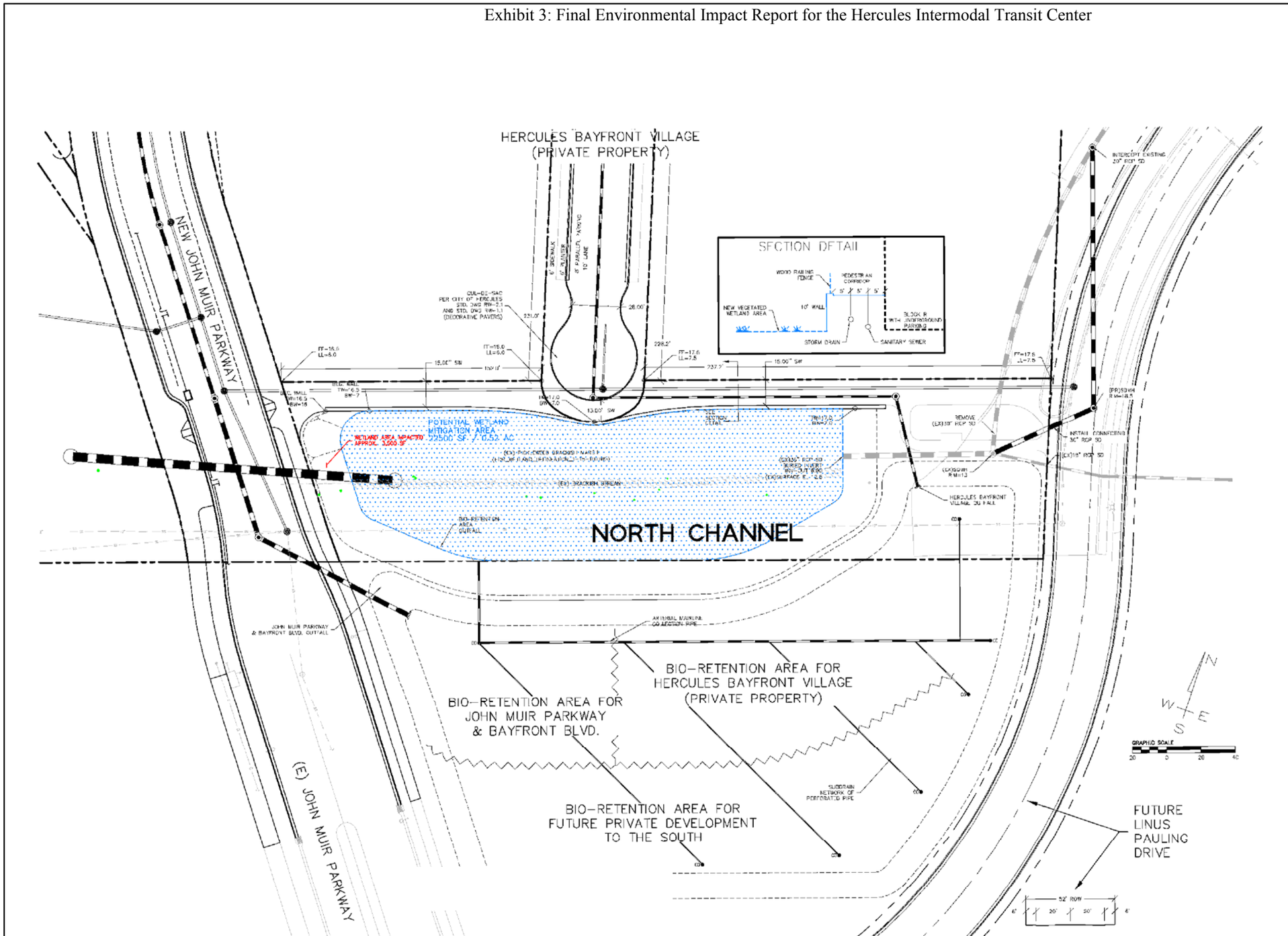

1 in = 60 ft (at tabloid layout)

0 7.5 15 30 Meters

0 30 60 120 Feet

Figure 2.2-13:
North Channel Wetland Mitigation

City of Hercules
Hercules Intermodal Transit Facility
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources.
No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey.
Data is State Plane Feet, NAD83 Zone 3

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The approximate 10-foot-wide Creekside Trail flanked with landscaping and split rail fencing would be constructed along the creek's eastern edge and would ultimately connect to the proposed Bay Trail to adjacent to the UPRR tracks.

Chelsea Wetlands Restoration

The Chelsea Wetlands is a vacant 11-acre lot located adjacent to Pinole Creek and the San Pablo Bay in the City of Hercules southwest of Hercules Point (**Figure 2.2-14**). The City has proposed restoration of the property to reestablished tidal influence to the wetlands and to reduce local flooding (Appendix J). The site historically supported tidal marsh habitat; however, a large portion of the site was filled approximately 100 years ago during development of the Hercules/Pinole area. The site currently supports annual grasslands, a small tidal drainage channel with adjacent pockets of tidal marsh, and a few small, scattered seasonal wetlands. Restoration of the Chelsea Wetlands will also provide off-channel flood storage for lower Pinole Creek. Restoration of the Chelsea Wetlands includes the creation of approximately 5.2 acres of tidal salt marsh, 0.7 acre of tidal channel and 1.1-1.8 acre of marsh-upland transition, as well as the enhancement of 0.05 acre of existing tidal channel and 2.1 acres of marsh-upland transition. A portion of the restoration at the Chelsea Wetlands may serve as partial compensatory mitigation for the impacts associated with construction of the Hercules ITC.

Transit Loop and Bridge

Transit Loop Drive would serve as a transit loop to allow transit vehicles to enter and exit the Hercules ITC and would provide drop-off, pick-up, and short-term parking areas for non-transit vehicles. Transit Loop Drive would be a two-lane paved roadway that extends north from John Muir Parkway at the intersection with Bayfront Boulevard, west at the northern end of a parcel known as Block K, across Refugio Creek, then south to Bayfront Boulevard (Figure 2.2-1).

Transit Loop Drive Bridge would consist of a single span (approximately 72 foot long), cast-in-place concrete bridge spanning Refugio Creek (**Figure 2.2-15**). The Transit Loop Drive Bridge would be supported on two abutments with wing walls supported on driven steel H-piles. The bridge would consist of a variable depth (arched bottom) girder with decorative railings along the sidewalk and a brick façade at the abutments. The face of the bridge girder may include decorative elements that relate to the waterfront’s architectural character.

Creekside Park and Plaza

Creekside Park and Plaza would make up the area within the Transit Loop, Bayfront Boulevard, Refugio Creek, and the footprint of the future building on Block K (**Figure 2.2-16**). The area is about 100 feet by 200 feet inclusive of Creekside Trail, which would wind along the western edge of the park adjacent to Refugio Creek. The area is a more natural space taking design references from Refugio Creek and San Pablo Bay. An open lawn would fill the center of the space and transition into tidally influenced native plants as the space blends into the creek to the west. The Creekside Park would be bound by a linear footpath corridor to the east, adjacent to Block K. The north edge would be formed by a distinctive swale providing stormwater treatment with rocks and stepping stones; it would also be planted with trees as a windscreen. The area also

would have a small trellis along the edge of the trail providing a small staging area that would be screened from the sun and provide a focal point down Bayfront Boulevard and beyond.

Parking

In the near term (prior to build-out of the proposed HB Project), a 220-space surface parking lot located southwest of the planned intersection of John Muir Parkway and Bayfront Boulevard (Block N) would provide parking for train and bus patrons. Figure 2.2-2 identifies the surrounding parcels and their locations. This parking lot would eventually be replaced by mixed-use and residential development as part of the proposed HB project at Block N; replacement parking available to transit terminal commuters would be included in the HB development project. Long-term parking for the Hercules ITC would be provided in a multi-story building on a waterfront parcel east of Refugio Creek (identified as Block K on Figure 2.2-2) and could accommodate approximately 250 parking spaces, meeting all forecasted transit parking needs.

Phase 2 – Café/Transit Annex Building and Transit/Civic Plaza

Café/Transit Annex Building

This building design would integrate both public and private uses into a single structure (**Figure 2.2-17).** At the eastern edge a covered transit waiting area, adjacent to the Transit Loop, would serve the bus bay (ticket vending machines may also be incorporated into this area). The end of the building at Bayfront Boulevard would accommodate a café or other small retail use. The café would be a single-story, approximately 1,400-square-foot building with seating, private restroom, and kitchen facilities included in the main building. The kitchen facility would accommodate either deli-style or short-order food. Connected by a roofed breezeway are two single-occupancy, handicapped-accessible public restrooms. Refuse storage would be within and enclosed area located behind the restrooms.

Transit/Civic Plaza

The Transit/Civic Plaza would be an active gathering space oriented towards the main street of Bayfront Boulevard with clear, direct connections to the Bay Trail and Waterfront Promenade (Figure 2.2-17). From the plaza, three routes would connect to the promenade. South of the plaza there would be a passage between the Station Building and adjacent private development. The primary station access from the plaza would connect through a building passage where elevators, ramps, and other transit services would be located. To the north edge of the plaza and Station Building, the Transit Loop sidewalk would extend directly to the Waterfront Promenade.

With approximately 12,273 sf of open space area, the Transit/Civic Plaza would provide access openings with the following dimensions:

- South – 88 feet,
- East – 38 feet plus a 22.5-foot opening in the cafe building,
- West – 12.5 feet plus 20 feet from Block G, and
- North – 22-foot opening from the Bay Trail and 12-foot openings below the station stairs.

Phase 3 – Hercules Point Bridge

Hercules Point Bridge and Land Side Ramp

The Hercules Point Bridge and the land side concrete ramp would connect the community to a viewing platform at Hercules Point via a ramp from the Railroad Plaza at the base of Railroad Avenue with a 130-foot prefabricated steel bridge spanning over the UPRR tracks (Figure 2.2-2). Completion of the water side ramp connecting the viewing platform down to the point would be dependent upon completion of the Hercules Point Park and open space (Phase 4). The Hercules Point bridge will serve primarily pedestrians to access Hercules Point. The bridge will also provide restricted access to accommodate light utility trucks and public service vehicles for maintenance on Hercules Point and public safety.

Railroad Plaza

The proposed Railroad Plaza would be approximately 100 feet by 150 feet in size and located at the terminus of Railroad Avenue. It would provide a destination to for views the bay and access the proposed Hercules Point Bridge, which would ultimately provide a connection to the proposed Hercules Point Park and open space (Figure 2.2-1 and 2.2-2).

Phase 4 (Future Project) – Hercules Point and Open Space

Hercules Point is a planned open space and designated public park on 10.96 acres. This phase of the project is beyond the scope of this document; however, it is included in the cumulative effects analysis. Additional environmental documentation and approval would be completed before this phase of the project proceeds to construction.

Phase 5 (Future Project) – Ferry Terminal

A future connection to a ferry terminal is anticipated to complete the City's goal to fulfill the multimodal transit opportunity afforded by the waterfront property. While the connection is planned to occur as part of the City's long-range goal, planning and accommodations are included in the current proposal (including the Station Building, transit/civic plaza, and emergency vehicle access) to help facilitate the future ferry service. While this phase of the project is beyond the scope of this document, analysis of required project components and potential impacts is included for the purposes of cumulative affects analysis. Additional environmental documentation and approval of the ferry terminal and ferry service would be required before this phase of the project begins construction.

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Figure 2.2-14: Chelsea Wetlands Restoration Site

City of Hercules
Hercules Intermodal Transit Facility
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources. No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey. Data is State Plane Feet, NAD83 Zone 3

HDR 2365 Iron Point Road, Suite 300 Folsom, CA 95630-8709

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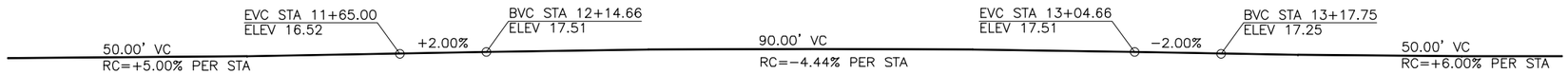
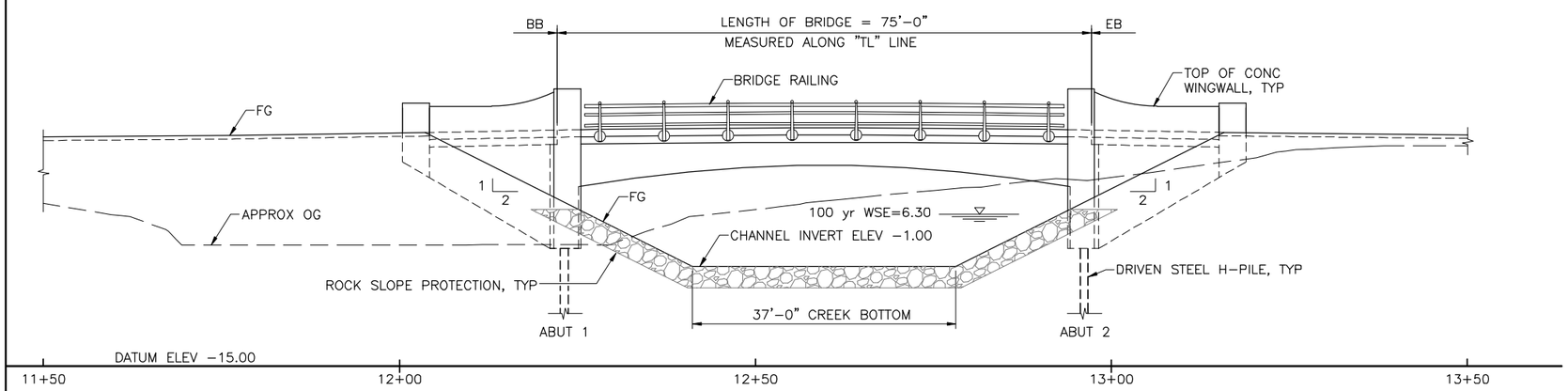


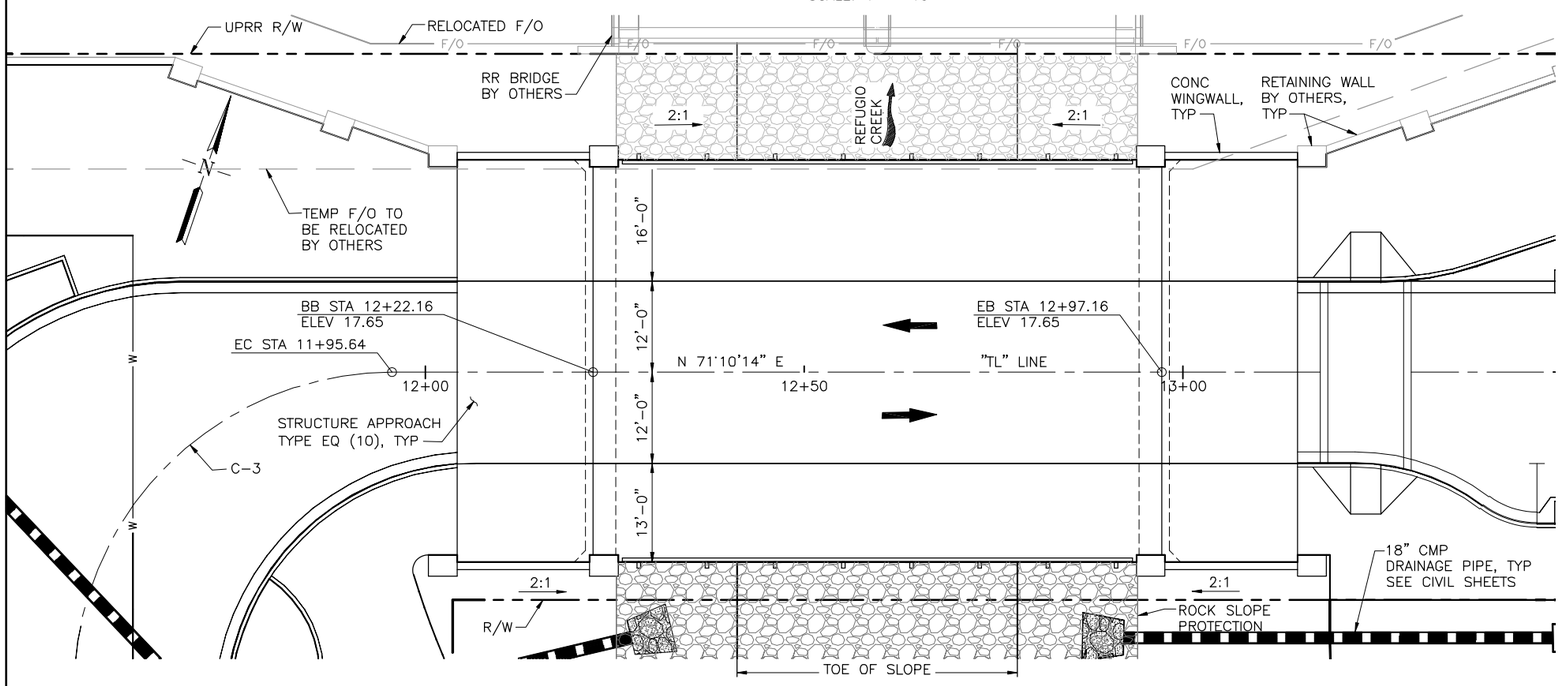
PROFILE GRADE

NO SCALE



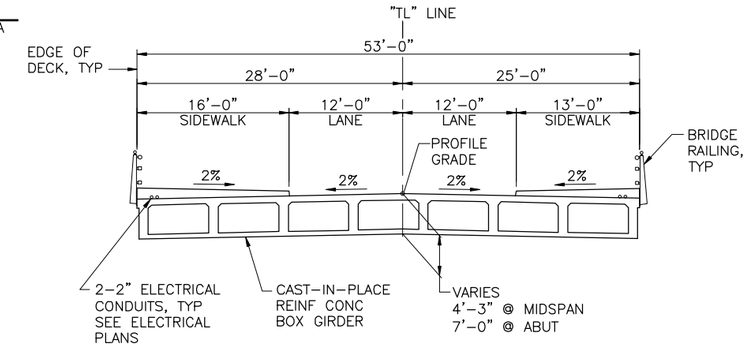
ELEVATION

SCALE: 1" = 10'



PLAN

SCALE: 1" = 10'



TYPICAL SECTION

SCALE: 1/8" = 1'-0"

INDEX TO BRIDGE PLANS

SHEET NO.	TITLE
S001	GENERAL PLAN
S002	DECK CONTOURS
S003	ROCK SLOPE PROTECTION DETAILS
S004	FOUNDATION PLAN
S005	ABUTMENT LAYOUT
S006	ABUTMENT DETAILS NO.1
S007	ABUTMENT DETAILS NO.2
S008	TYPICAL SECTION
S009	GIRDER LAYOUT
S010	GIRDER REINFORCEMENT

CALTRANS STANDARD PLANS DATED MAY 2006

A-10A	ACRONYMS AND ABBREVIATIONS (SHEET 1 OF 2)
A-10B	ACRONYMS AND ABBREVIATIONS (SHEET 2 OF 2)
A-10C	SYMBOLS (SHEET 1 OF 2)
A-10D	SYMBOLS (SHEET 2 OF 2)
A62-C	LIMITS OF PAYMENT FOR EXCAVATION AND BACKFILL BRIDGE
BO-1	BRIDGE DETAILS
BO-3	BRIDGE DETAILS
BO-5	BRIDGE DETAILS
BO-13	BRIDGE DETAILS
B7-1	BOX GIRDER DETAILS

CALTRANS STANDARD PLAN SHEET NO.

DETAIL NO.

CONTRACTOR TO VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIALS.

HDR Engineering, Inc.
2121 N. California Blvd
Suite 475
Walnut Creek, CA 94596
925-974-2500

ISSUE	DATE	DESCRIPTION
B	02-10-2010	60% SUBMITTAL - PROGRESS SET
A	11-2009	30% SUBMITTAL - PRELIMINARY DESIGN

DESIGNED BY	J. NAUMAN
CHECKED BY	
DRAWN BY	J. TAI
APPROVED BY	
PROJECT NUMBER	115958

60% SUBMITTAL NOT FOR CONSTRUCTION OR RECORDING

CITY OF HERCULES CALIFORNIA TRANSIT LOOP DRIVE

Figure 2.2-15: Transit Loop Bridge GENERAL PLAN

0 1" 2"
CAUTION: THIS DRAWING MAY BE REDUCED

FILENAME	S001.dwg
SCALE	AS SHOWN

SHEET **S001**

Feb 09, 2010 - 4:28pm C:\PwWorking\MCS_EXPORT\2010-02-09_Submittal\CAD\S001.dwg - S001 msiegel

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Folsom, CA 95630-8709

Figure 2.2-16: Creekside Park & Plaza

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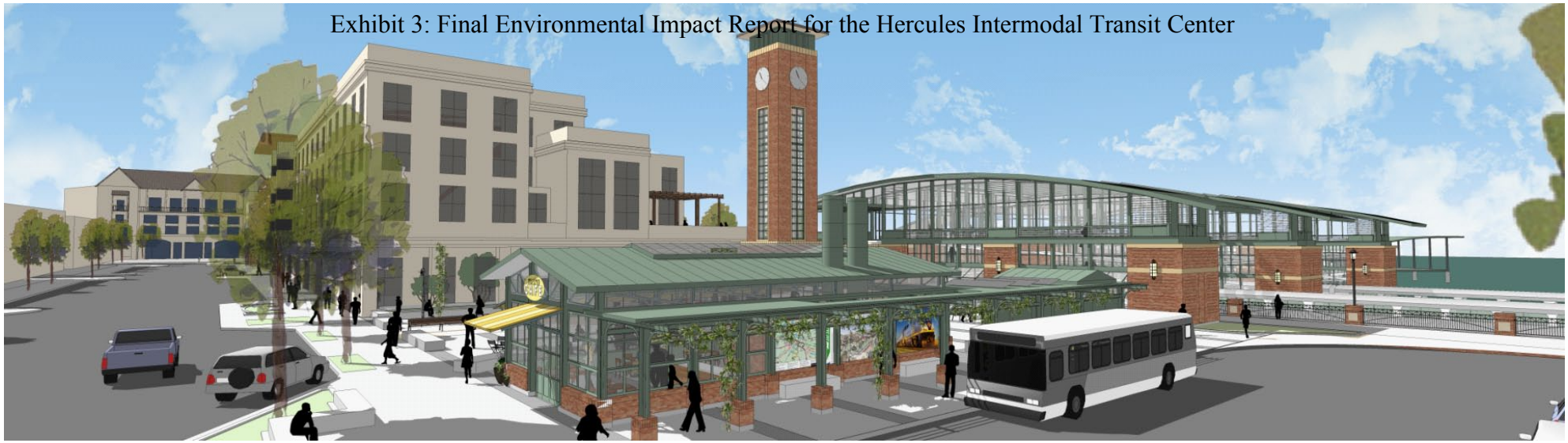

Cafe / Transit Annex

Civic Plaza

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Project Construction and Operation

Construction

Construction of the Hercules ITC would proceed in phases over approximately 24 months. The initial phase would include John Muir Parkway extension, Bayfront Boulevard extension, upstream portions of Refugio Creek restoration, North Channel, and Bayfront Bridge. Construction of the rail platform, track relocation, signals, railroad bridge, Transit Loop and temporary surface parking lot, and station building is anticipated to begin in 2011, with the intention that the train station and bus terminal could be completed in late 2012 to early 2013 with operation commencing late 2013. No schedule has been established at this time for the construction of the permanent parking structure. Timing of these facilities would depend on funding, economic conditions, and the development phasing of the surrounding the HB development.

Grading and demolition occurred on much of the project site between 2002 and 2007. In general, grading included removal and reworking of existing fills and buried subsurface debris, abandonment of pile elements (cut off in place to an elevation 5 feet below existing grade), environmental remediation under the observation of the California Department of Toxic Substance Control, and installation of wick drains and placement of surcharge fills imported from various sites. East of Refugio Creek, construction of Phase I surcharge fills was completed in the summer of 2009. West of Refugio Creek, surcharge fills were placed and monitored based on existing fill load conditions. An existing sanitary sewer pump station has since been constructed at this site. This work was completed in conjunction with the development of the adjacent residential development.

John Muir Parkway and Bayfront Boulevard Extensions

The proposed John Muir Parkway and Bayfront Boulevard extensions would include standard earthmoving equipment (e.g., bulldozers, excavators), plus specialized equipment (e.g., backhoes) to be used adjacent to Refugio Creek for construction. Approximately 40,000 cubic yards (cy) of soil surcharge about 6 to 8 feet in height was previously placed on portions of the project site to consolidate the underlying bay mud. A portion of this material would need to be removed from the vicinity of the parkway.

Bayfront Bridge

The Bayfront Bridge would include standard earthmoving equipment (e.g., bulldozers, excavators), plus specialized equipment (e.g., backhoes) adjacent to Refugio Creek.

Union Pacific Railroad Track Relocation and Bridge Replacement (Option A)

The UPRR track relocation and railroad bridge replacement would be constructed in three stages. The project would include standard earthmoving equipment (e.g., bulldozers, excavators), pile driving equipment (e.g. cranes, hammers), plus specialized equipment (e.g., backhoes and long reach excavator) near Refugio Creek.

Stage 1. Stage 1 would necessitate that rail traffic to remain on the existing tracks. The site would initially be rough graded. Retaining walls would be constructed in areas where required track clearances can be maintained. The foundation for the Hercules Point Bridge and the landside and platform Station Building would be constructed.

The Kinder Morgan and Shell Oil pipelines currently within the UPRR ROW would be relocated outside of it. Directional drilling under the creek (25 feet below bottom) would be used to relocate the pipelines. Qwest, Comcast, and MCI level 3 fiber optic lines would remain within the ROW, but would be relocated to the south.

Next, the southern portion of the railroad bridge over the realignment of Refugio Creek would be constructed. Piles would be driven and timber lagging would be placed at Refugio Creek to support the rail ballast and shoofly tracks[5] for Stage 2 (see below). Portions of the existing culvert would be removed and replaced with a new culvert.

The remaining retaining walls that do not conflict with the shoofly track would then be constructed, and the south portion of the Station Platform and corresponding station utilities would be constructed. The portion of the existing railroad bridge over Refugio Creek would be removed.

The structural frame for the landside and platform sections of the Station Building would be completed, and the pedestrian bridge connecting the two sections would be constructed. Once the bridge and framing are complete, building glazing clear of rail traffic would be erected.

The shoofly alignment not in conflict with the existing tracks would be constructed. Rail traffic may need to be temporarily suspended or consolidated when shoofly tracks are tied into the existing tracks and train operation is redirected onto the shoofly tracks.

Stage 2. During Stage 2, active rail traffic would utilize the shoofly tracks for approximately 12 months. The northern portion of the railroad bridge would be constructed over the realignment of Refugio Creek. The remaining portion of the Station Platform and corresponding utilities would then be constructed, and the Station Building would be constructed within the limits of the Station Platform. The northernmost Station Building and the pedestrian bridge between the platform and northernmost Station Building would be constructed. The Station Building would be constructed on piles.

Excavation would begin on the south side of the railroad bridge to tie into the existing alignment of Refugio Creek to prepare for creek realignment. This would be followed by excavation on the north side of the railroad bridge and tie into San Pablo Bay to complete realignment of the creek. The existing railroad bridge and culverts over Refugio Creek would be removed. The creek would be backfilled to its new alignment.

The portion of the final track alignment would be constructed. Rail traffic may need to be temporarily suspended or consolidated onto one track during the period while the track tie-in is

[5] Shoofly track is a temporary track of minimum standards, which is used as a detour around a construction area such as a bridge replacement.

constructed. The waterside shoofly track (temporary tracks used for detours) would be shifted for the final alignment of track MT-02 immediately prior to the next stage of construction.

Stage 3. At the end of Stage 3, UPRR traffic would be placed on its ultimate alignment. To accomplish this, the shoofly tracks and other track work not required for the ultimate alignment would be removed. The south portion of the train bridge over Refugio Creek that was needed for the shoofly tracks would be removed.

The final (northernmost) portion of the railroad bridge over Refugio Creek would be constructed. The remaining portion of the retaining wall would be constructed. The remaining elements of the Station Buildings and corresponding utilities would be constructed. Railroad bridge work would be completed prior to diverting the creek into the realigned segment.

Union Pacific Railroad Track Relocation and Bridge Replacement (Option B)

Stage 1: In this phase, traffic on existing main lines (MT1 and MT2) is maintained as is without interruption. Implementation would require some limited work within 25 feet of the existing track. Due to the proximity of live traffic, UPRR or its contractor would construct the new railroad bridge under MT1 and MT2 existing tracks, and separately under the proposed platform area and new station track track. The contractor would then install pile foundations for the landside station structure, center (platform) station structure and foundation for center platform.

The contractor then would construct the main ITC station building, pedestrian overcrossing from Civic Plaza to the center platform, retaining walls, pipeline and fiber optic relocations, bike path and part of center platform including ramps, stairs.

Stage 2: UPRR or its contractor would construct the new station track, realign MT1, MT2 and install crossovers and signals. This effectively provides three tracks through the station site allowing construction staging flexibility while maintaining two tracks in operation. Currently, three tracks exist along the UPRR corridor along the southwest portion of the project near the Chelsea Wetlands. Construction of the new tracks would require minor improvements to the existing ballast elevations and upgrading of the storage track to support regular freight traffic.

Along the northeastern portion of the UPRR corridor, construction of the new track would require the placement of new ballast to support the track and widening the railroad envelope by approximately 20 feet. Prior to the placement of the new ballast, the area would be excavated and prepared by placing sub-ballast and compacting prior to the placement of new ballast. This new and wider corridor would require an expansion of the drainage crossing located in the northeast section of the corridor.

Stage 3: The passing track, MT1 (Figure 2.2-6), would then be used as the primary route through the construction site. The contractor could construct the ferry terminal station structure concurrently with the railroad bridge construction.

Track Option A and B would accommodate the same train traffic volumes and speeds. By constructing the dedicated station and passing tracks (Track Option B) in place of the double

track shoofly (Track Option A), the project could realize the benefit of several other significant cost savings that would not be feasible otherwise, and combined, reduce overall project capital costs.

By constructing Track Option B, the project could realize the benefit of several other significant cost savings that would not be feasible otherwise, and combined, reduce the overall project capital costs by approximately $11 million.

If implemented, Track Option B could offer the following additional benefits to the Hercules ITC over Track Option A:

- Significantly shorten the overall construction duration: potentially by as much as by six to nine months less than anticipated 30 months for Track Option A.
- Simplify the construction staging therefore minimizing possible delays.
- Reduce net project costs (through combination of reduced construction duration, improved design and lower risk to the contractor).
- Eliminate the temporary shoofly tracks that would be needed to detour train traffic around the station construction area.
- Potentially reduce the number of piles required, substantially reducing local disruption and noise experienced by nearby residents during the construction period.
- Reduce impacts to Refugio Creek by eliminating the need to extend the existing culverts at Refugio Creek and reducing the period of disturbance in the area.
- Reduce the temporary noise and vibration impacts associated with diverting train traffic closer to residential areas during use of the shoofly tracks.
- Improve train operations by reducing delay caused by passenger-freight operations conflicts.

Station Building, Pedestrian Bridge, Plaza, and Platform

A pile foundation system would be used to support the Station Building and Pedestrian Bridge. Two foundation options have been recommended.

- Option 1 consists of the incorporation of lightweight fills under Station Building and Plaza. The Station Plaza area would be graded to an elevation dependent on the loading and fill to near design grade with lightweight foam concrete slurry fill. The Station Building and Pedestrian Bridge would be supported on pile foundations. Piles would be designed for downdrag[6] forces induced by the lightweight fill loads. The lightweight retail structure would be supported on shallow foundations.

[6] Downdrag is a downward force exerted on a drilled shaft, pile, or other structural element by settling soil. It is sometimes called “negative skin friction.”

- Option 2 consists of the incorporation of cement deep soil mixing ground improvement. The east side of the southern Station Building pad (adjacent to Refugio Creek) would be filled with lightweight, low-strength foam concrete. Shoring would be required at Refugio Creek. Deep soil mix columns would be installed throughout the plaza extending to the bottom of the Young Bay Mud to provide support of fills and reduce settlement of the plaza. The Station Building and pedestrian bridge would be supported on soldier pile foundations.

The passenger platform and main tracks on the land side would require minor grading for the roadbed, installation of tracks, placement and compaction of ballast, drainage facilities, utility relocation, and installation of security fencing.

Transit terminal including the Station Building, the Pedestrian Bridge Crossing, Station Plaza, and Platform work would include site clearing, demolition, grading, and construction of the Station Building, pedestrian plaza, and access driveways; this work would be carried out from the land side of the railroad tracks to minimize and/or avoid the need to cross the tracks during construction.

The Ferry Plaza foundation would be constructed on a concrete mat supported by piles. Approximately 250 cubic yards of concrete would be placed within the Bay to construct the foundation.

Bay Trail at Bio-Rad

The portion of the Bay Trail near Bio-Rad is hilly, steep, and approximately 40-feet higher in elevation than the adjacent tracks. As a result, the area is subject to landslides. During construction, design cut slope areas containing adverse conditions, such as dip slope conditions, water seepage, intensely sheared materials, and unconsolidated sandy materials, may be exposed. Such adverse conditions could lead to potentially unstable situations and slope failures. Therefore, as part of construction, the existing landslides would be mitigated by earthwork repair, stabilization using soldier piles, and stabilization using drilled piers. In order to mitigate for removal of the entire landslide debris of postulated landslides, the following measures would be required: (1) excavation of keyways;[7] (2) installation of subdrains; and (3) reconstruction of the cut slopes within the landslide limits. The modifications of the slope gradient downhill of the proposed trail would modify the slope to a 2:1 ratio (horizontal:vertical).

Remainder of Bay Trail and Waterfront Promenade

The remainder of the Bay Trail and the Waterfront Promenade would be constructed according to ABAG and East Bay Regional Park District standards.

Creekside Trail

The Creekside Trail would be constructed according to City of Hercules standards. The trail width will vary from 8 to 20 feet and would likely be paved with asphalt.

[7] Keyway is an excavated trench into competent earth material beneath the toe of a proposed fill slope.

Refugio Creek and North Channel Restoration

The proposed Refugio Creek Restoration would include standard earthmoving equipment (e.g., bulldozers, excavators), plus specialized equipment (e.g., backhoes) to be used near Refugio Creek. Within the Refugio Creek corridor area, approximately 16,381 cy of material would be cut and approximately 2,524 cy would be filled to implement the Refugio Creek restoration component of the project. This grading activity would generate 13,587 cy of export material that would be used within the currently undeveloped portion of the waterfront area as surcharge materials, or moved to an off-site storage area within the City limits.

Restoration and realignment of Refugio Creek will require dewatering during construction to minimize erosion and sedimentation and allow for excavation in dry conditions. Cofferdams or a similar dewatering technique would be installed at upstream and downstream locations to dewater Refugio Creek to enable constructing in dry conditions. The contractor will construct cofferdams approximately fifteen feet upstream and downstream of the proposed work limits. The cofferdams will be constructed of clean sand bags, washed gravel; sheet metal, or water inflated cofferdam method (such as AquaDam). If necessary, the temporary fill used to construct the cofferdam will occupy the minimum footprint possible. Water will be pumped from the upstream location to the downstream location via a temporary flexible pipe. At the discharge location, to minimize the potential for erosion, the water flows from the pipe will be discharged via one of two alternative methods: 1) a T-pipe to reduce velocities over a riprap apron or 2) into a containment area between two cofferdams adjacent to San Pablo Bay. The riprap apron and containment area will be constructed over visquine or similar material to facilitate clean-up and removal of materials. Upon completion of construction, all temporary fill and material associated with the dewatering including sandbags, sheet metal piling, and/or rock will be removed and the area restored to preconstruction contours. Additionally, the cofferdam would be used to restrict tidal flow into the construction area.

Effectively, the entire channel from the upstream project boundary to the bay side edge of the UPRR ballast will be filled and a new meandering channel will be constructed. Approximately 2,400 cubic yards of clean fill will be required to fill in the existing channel. Stream crossings at the UPRR, Transit Loop, and Bayfront Bridges would be constructed so that the bridges completely span the new creek channel and footings/abutments are placed outside of the channel. However, the new UPRR will require supporting piles that will be placed in the middle of the channel under the UPRR where the channel widens before it enters the Bay. The Transit Loop and UPRR Bridges will also require rock slope protection and armor placed in the channel bed to prevent scour. Approximately three feet of rock slope protection will be keyed in and placed within the channel bed.

Restoration of Refugio Creek may be completed in one or in multiple phases depending on seasonal variation and construction progress. Under either condition, phases of construction would be planned to be completed within a construction season to ensure that channel construction and modification does not occur during the wet season or to adversely affect protected flora or fauna. Restoration of Refugio Creek would be timed with the construction of other project elements to ensure efficient construction timelines as well as to minimize potential impacts and adverse effects. Construction the new UPRR bridge would likely be constructed either prior or concurrent to the realignment of Refugio Creek at this reach. However, the

restoration of Refugio Creek may be constructed prior to or concurrent with the construction of the Bayfront and/or Transit Loop bridges.

Erosion control measures including wattles, jute netting, mulching, and seeding would be installed throughout the restoration area to stabilize disturbed soils and minimize erosion when the cofferdams are removed. When the primary channel grading and restoration work is completed and the bridge installed, the cofferdams would be removed and Refugio Creek would be allowed to flow naturally through the newly constructed channel.

Constructing the new mouth of Refugio Creek in San Pablo Bay would be done using a long reach excavator from the shore. Excavation work within the Bay would be done during low tide.

Creek excavation work is anticipated to be done from the landside. The mouth of Refugio Creek can most likely be excavated from the landside, but excavation may require an excavator be placed on pontoons. The creek channel would be continued into San Pablo Bay for approximately 200 feet to provide an initial unobstructed tidal connection. Excavation would be done during low tide. Silt curtains would be installed for work in open water. Long-term maintenance is not expected to be required.

The tidal wetlands would be constructed by excavating and widening the steep banks of the existing creek into a gradually sloped, floodplain to allow tidal influence. The water sources for the wetlands would be tidal flows from San Pablo Bay, influenced by freshwater flows from upstream runoff, sheetflow, and stormwater discharge from adjacent developed areas.

Chelsea Wetlands Restoration

Construction of the proposed restoration work at the Chelsea Wetlands would include standard earthmoving equipment (e.g., bulldozers, excavators) and specialized equipment (e.g., backhoes) to be used near Pinole Creek. Approximately 50,000 cy of material would be excavated to create the necessary elevations to establish the necessary hydrology by providing tidal influence. If completed concurrent with the development of the Hercules ITC, this excavated material could be used as project fill within the project footprint of the Hercules ITC, or moved to an off-site storage area within the City limits.

Transit Loop and Bridge

In order to prepare the site to begin earthwork activities, areas to be developed would be cleared of all surface and subsurface deleterious materials, including: existing building foundations; slabs; buried utility and irrigation lines; pavement; debris; and designated trees, shrubs, and associated roots. Excavations extending below the planned finished site grades would be cleaned and backfilled with suitable compacted material. Following clearing, the site would be stripped to remove surface organic materials. Organic materials would be stripped from the ground surface to a depth of at least 2 to 3 inches below the surface. Strippings would be removed from the site or, if considered suitable by the landscape architect and owner, they would be used in landscape fill in other parts of the Hercules ITC.

Approximately 20 piles, approximately 60 to 80 feet deep, would be driven to construct the single-span bridge over Refugio Creek. Driven piles would be used instead of drilled piles due to

shallow groundwater and soft/loose deposits that are anticipated to make vertical excavations problematic. Piles would be driven into the banks and adjacent areas. Equipment would be staged adjacent to the creek beginning on the east side and would be completed on the west side of the creek.

Ground improvement such as cement deep soil mixing would be implemented for Transit Loop Drive as protection against roadway and bridge/road interface differential settlement. Deep soil mix columns would be installed throughout the bus facility extending toward the Young Bay Mud to provide support and reduce settlement of the roadway.

Creekside Park and Plaza

The Creekside Park and Plaza would be built at grade and would be an open space park. The Creekside Park would be approximately 17,000 sf (0.4 acre) and would be landscaped with a variety of local plant species as well as non-invasive ornamentals and turf for active recreation areas. Approximately, 4,400 sf would include impervious surfaces such as pavers, concrete and asphalt for walkways and the Creekside Trail. The remainder of the park and plaza would be comprised of pervious planted areas including lawn, trees, a bio-infiltration area, and some ornamental planting. The creek corridor would be planted with local and California native drought resistant vegetation.

Café/Transit Annex Building

The Café/Transit Annex Building would be built at approximately nine feet above existing grade. The structures would likely be placed on driven piles.

Transit/Civic Plaza

The Transit/Civic Plaza would be built at approximately nine feet above existing grade by placement of lightweight fills. The plaza open space would be a combination of impervious hardscape and softscape areas planted with vegetation.

Railroad Plaza

The Railroad Plaza would be built on surcharge fills approximately ten feet above original grade and five feet below anticipated settled finish ground. The plaza would be an open space planted with vegetation.

Operation

The Train Station would not be staffed. Maintenance would be performed by Amtrak and the City's Public Works Department.

The Café/Transit Annex Building would be privately operated. Outside maintenance would be performed by the City's Public Works Department.

Maintenance of Refugio Creek and the various trails and plazas would also be performed by the City's Public Works Department.

2.2.2. Alternative 2: East of Refugio Creek Location

Alternative 2 would provide the same public transportation benefits as Alternative 1 described above. The primary differences between the two action alternatives is that the configuration of Alternative 2 would reroute vehicle traffic, provide pedestrian access to the transit facility at the eastern end of the train platform, and place the transit-related features, including the parking structure, east of Refugio Creek. In addition, the future ferry terminal would be moved east of the mouth of Refugio Creek (**Figure 2.2-18**). Development of Alternative 2 would be phased similarly as Alternative 1 described above, and the components would be similar.

Alternative 2 would route bus traffic through a transit loop located within the Hercules ITC development area and would consequently not require construction of the Transit Loop and Bridge (Figure 2.2-18). The transit-related facilities would be located east of Refugio Creek on the planned John Muir Parkway extension near its intersection with Bayfront Boulevard. A looped driveway from John Muir Parkway would provide separate vehicle access for commuter bus/paratransit drop-off and turnaround, and for passenger vehicle drop-off. A three-level parking structure would be located along John Muir Parkway, adjacent and east of the proposed Transit Center. Additional parking spaces would be provided for buses, taxis, and short-term automobile parking along the passenger vehicle access driveway, for a total of about 400 spaces.

Proposed Facilities

The main difference between the two action alternatives would be that Alternative 2 would not require construction of the Transit Loop Bridge and the transit-related facilities would be located east of Refugio Creek. Alternative 2 facilities that are different from Alternative 1 are described below.

Station Building and Bus Turnaround

Under Alternative 2, the Station Building would be located east of Refugio Creek on the planned John Muir Parkway extension near its intersection with Bayfront Boulevard (Figure 2.2-18). The Station Building would be a one-story structure maintaining similar architectural elements as Alternative 1 with an area of approximately 3,600 sf. The Station Building would be situated within an elevated pedestrian plaza constructed one level above grade, allowing passengers to enter the building at a level several feet above the rail line grade. This would serve to reduce the height of the ramps/stairs needed to reach the pedestrian overpass to the rail platform. Access to the train platform would be similar to that described for Alternative 1, with a combination of ramps, stairs, or elevators connecting to the proposed pedestrian overpass above the rail line.

A looped driveway from John Muir Parkway would provide vehicle access for commuter bus/paratransit drop-off and turnaround and for passenger vehicle drop-off. The driveway would slope upward from the street to the pedestrian plaza. Landscaped areas would be located between the Station Building and the drop-off areas; these would also slope upwards from street level to the plaza and include ADA-compliant sidewalks and paths for pedestrian access to the plaza and Station Building.

In addition to the Station Building, a small retail building could be developed in the plaza area. The retail building would have one story and an area of about 3,000 sf, and would also provide

space for a security office or police substation. Possible tenants would include small neighborhood businesses such as a café or retail shop.

Parking

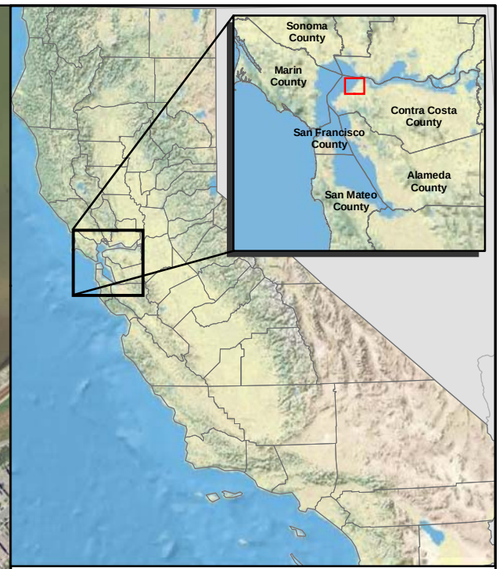
A three-level parking structure, consisting of approximately 385 spaces, would be located along John Muir Parkway, adjacent and east of the proposed Station Building. The main entry and top floor of parking would be at the level of the station plaza, with two floors of parking below extending beneath the proposed Station Building, conference/banquet facility, and plaza. Access to the garage would be provided by a separate driveway from the extension of Bayfront Boulevard east of John Muir Parkway. The parking structure would provide parking for train and bus patrons as well as for conference/banquet facility users. Additional parking spaces would be provided for buses, taxis, and short-term automobile parking along the passenger vehicle access driveway, for a total of about 400 spaces.

Station Platform and Emergency Vehicle Access

Under Alternative 2, the proposed passenger platform would be identical to that in Alternative 1. Pedestrian access to the platform would be provided from the pedestrian overpass through a combination of stairs, ramps, or elevators; these would also be covered or enclosed for weather protection. Under Alternative 2, the pedestrian overpass would be located at the easternmost end of the platform connecting to the transit center station and the Ferry Plaza structure located on the bay side of the UPRR.

Construction of Alternative 2 would also require the construction of an EVA that would be located in the same location as in Alternative 1. Within Phase 1, the EVA crossing would not extend to the east (parallel) with the UPRR tracks. The ferry EVA connection would be completed in the future if the ferry is approved and constructed (Phase 5).

The EVA would be 20 feet wide by 129 feet long within the UPRR ROW, and 20 feet wide by 230 feet long south of the UPRR ROW. The future connection to the ferry is planned to be 20 feet wide by approximately 720 feet long north of the UPRR ROW. This additional length would require an additional bridge to cross the mouth of Refugio Creek. The bridge would be approximately 80 feet long; bridge footings and abutments would be constructed outside of the bed and banks of Refugio Creek.



Legend

- Project Boundary
- Retaining Wall
- Gas Line
- Bay Trail
- Creekside Trail
- Emergency Vehicle Access
- Interim Transit Parking Lot
- John Muir Parkway, Bayfront Blvd, and Bridge
- Landside Ramp
- Long Term Parking
- North Channel Restoration/Wetland Mitigation Area
- Parking, Conference, and Banquet
- Point Pedestrian Bridge
- Pointside Viewing Platform
- Railroad Plaza
- Refugio Creek Restoration
- Station Building
- Station Platform

1 in = 500 ft (at tabloid layout)

N

0 62.5 125 250 Meters

0 250 500 1,000 Feet

Figure 2.2-18: Alternative 2

City of Hercules
Hercules Intermodal Transit Facility
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources.
No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey.
Data is State Plane Feet, NAD83 Zone 3

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2.2.3. Alternatives Considered and Withdrawn

Alternative 3: Rodeo Station Location

In the 1990s, the West Contra Costa Transportation Advisory Committee (WCCTAC) performed a screening process of potential Capitol Corridor station sites between Martinez and Richmond and narrowed the selection down to two: Hercules and Rodeo. A site analysis was performed using CCJPA Policy on Train Stations criteria (adopted October 14, 1998) and WCCTAC requirements (Korve Engineering 1999). These criteria included travel measures, site design measures, land use/environmental consideration, institutional viability, and cost measures.

The evaluation of land use, policy, and environmental considerations revealed constraints associated with both the Hercules and Rodeo sites; however, neither site had a fatal flaw that would render it infeasible for locating a train station (Korve Engineering 1999). The Hercules site was strongly supported by the General Plan and the intensity of future development. The Rodeo site was envisioned as a catalyst for downtown redevelopment; however, the location was not supported by Contra Costa County's General Plan. In addition, ridership projections indicated that the Hercules site would have a higher patronage potential than the Rodeo site.

The proposed Hercules station site is more centrally located with respect to the densely populated areas of west Contra Costa County. The proposed development in Hercules would have a greater pedestrian market area (4,400 pedestrians) than Rodeo (1,300 pedestrians). The transit ridership potential from Hercules would be three times that of Rodeo. At Rodeo, the surrounding property is mostly developed, thus limiting expansion; the site at Hercules is vacant and the development design would provide for future expansion. Environmental constraints for both Hercules and Rodeo were similar. In every category except cost, the Hercules site was rated superior to the Rodeo site (Korve Engineering 1999).

Additionally, the 2003 WTA Program EIR included analysis for a "Hercules/Rodeo" site, but did not include a site-specific analysis of a Rodeo location. While a potential ferry terminal could be sited at the existing Rodeo Marina (**Figure 2.2-19**), to serve as a multi-modal transit station and facilitate alternative modes of travel, a train station and potential future ferry terminal would be better served if constructed at a location within Hercules. For these reasons, this alternative was not carried forward for detailed analysis.

Alternative 4: Hercules Point Location

This alternative would locate the future ferry terminal on Hercules Point, with the ferry pier located on the north or west side of the point (Figure 2.2-19). A new vehicle and pedestrian bridge would be required to cross the UPRR tracks and provide access to the point. Roadways and parking areas would be constructed on Hercules Point near the future ferry terminal. The new train station would be constructed in the same location as proposed under Alternatives 1 and 2 and, under Alternative 5 discussed below. There would be no direct physical connection between the ferry terminal and the transit station/bus terminal. Buses, private vehicles, and pedestrians/cyclists would gain access to the ferry terminal by way of the separate rail overcrossing.

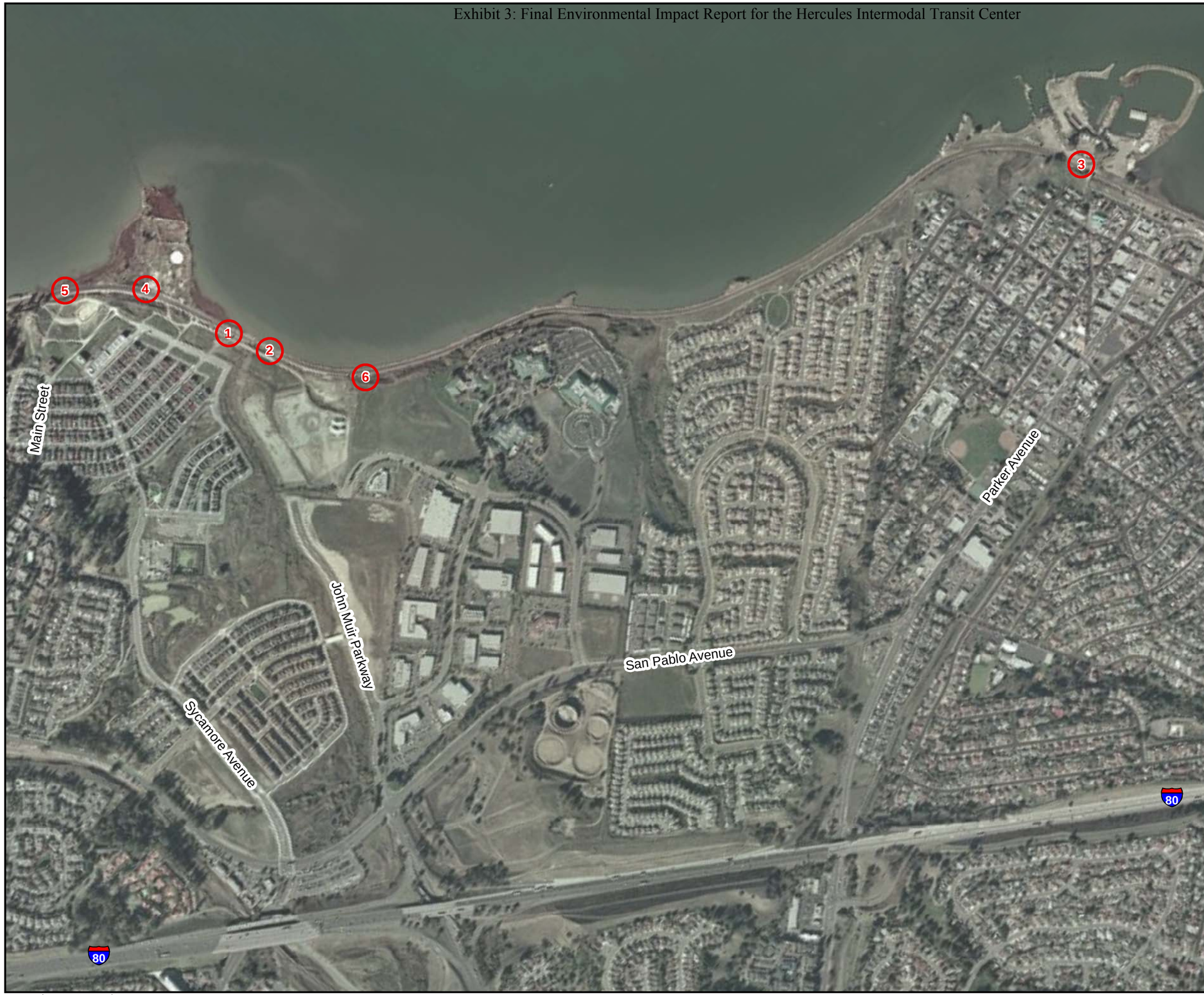
This alternative would achieve some of the objectives of the Hercules ITC and, in the future, could reduce ferry terminal initial and maintenance dredging, dredge spoils generation, and associated costs. However, this alternative would require construction of a highly visible vehicle bridge over the train tracks, at significant cost. In addition, the geotechnical and hazard (soil contamination) conditions on Hercules Point make this location less suitable for development of the bridge, ferry terminal, and other necessary improvements. Impacts related to these issues would be greater than those of the project alternatives. The Hercules Point location would not meet the objectives of providing easy connections among existing and planned ground transit facilities as effectively as Alternatives 1 and 2. This alternative would be inconsistent with the General Plan, as amended by the Waterfront Initiative, and the Waterfront District Master Plan, as amended by the Waterfront Initiative, which designate Hercules Point for open space and recreational uses. Additionally, Hercules Point is within the jurisdiction of the BCDC and siting the facility on the Point would require parking facilities which would be an incompatible use with BCDC guidelines relating to the promotion of visual resources and public access. For these reasons, this alternative was not carried forward for detailed analysis.

Alternative 5: Main Street Location

This alternative would locate the train station on the UPRR at a location southwest of Hercules Point at a location extending Main Street towards San Pablo Bay (Figure 2.2-19). Primary access to the train station would be via John Muir Parkway and Sycamore Avenue. As described above, there would be no direct physical connection between the ferry terminal and the transit station/bus terminal. Buses, private vehicles, and pedestrians/cyclists would gain access to the ferry terminal by way of a separate rail overcrossing. This location would not provide a convenient location to a future ferry terminal. Additionally, immediately adjacent to the proposed location is an existing open space area owned by the California State Lands Commission and leased to the East Bay Regional Parks, which inhibits development potential. Most importantly, design restrictions require a minimum length of 800 feet for the construction of a passenger platform and be located on tangent track, that is straight and without curve (Capitol Corridor Join Powers Authority 2006). Locating a train station at this location would not provide the minimum geometry necessary to meet the design standards established by UPRR, Amtrak and the CCJPA. For these reasons, this location was not carried further for detailed analysis.

Alternative 6: Business Park Location

This alternative would locate the train station on the UPRR at a location northeast of Refugio Creek near the Bio-Rad facility (Figure 2.2-19). Primary access to the train station would be via John Muir Parkway. This area was not studied further due to the severe elevation differential between the railroad mainline and adjoining property. There is no feasible or practicable way to construct the station and transit improvements and connect with a passenger loading platform in the right-of-way. Additionally, similar to Alternative 5, locating a train station at this location would not provide the minimum geometry necessary to meet the design standards established by UPRR, Amtrak and the CCJPA. For these reasons, this location was not carried further for detailed analysis.



Legend

1 - West of Refugio Creek Location

2 - East of Refugio Creek Location

3 - Rodeo Station Location

4 - Hercules Point Location

5 - Main Street Location

6 - Business Park Location

1 in = 800 ft (at tabloid layout)

N

0 100 200 400 Meters

0 400 800 1,600 Feet

Figure 2.2-19: Alternatives Evaluated

City of Hercules
Hercules Intermodal Transit Facility
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources.
No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey.
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3. Affected Environment

3.1. TRAFFIC AND TRANSPORTATION SYSTEMS

This section presents an overview of the traffic and transportation systems in the vicinity of the Hercules ITC in Hercules, California and describes the potential effects on these transportation systems from constructing and operating the proposed project. The existing transportation modes include roadways, railways, and pedestrian/bicycle trails.

The transportation portion of the proposed project includes development of a bus-to-train connection for an anticipated usage of up to 837 riders per day (Fehr & Peers 2009), extending John Muir Parkway, and providing a 220-space surface parking lot (on Block N) in the near-term. In the long-term, a transit area garage with approximately 450 spaces would be constructed. The proposed project would improve access to public mass transit and would be a benefit to the residents and workers in the vicinity of the Hercules ITC and the region. In fact, the majority of transit riders using the Hercules ITC are projected to come from the new residential units located within one-half mile of the transit center and the immediate surrounding cities and communities of Hercules, Pinole, and Rodeo-Crockett. Residents and commuters from the unincorporated communities of Contra Costa and Solano counties along I-80 east of Hercules are also likely to utilize the Hercules ITC. The traffic related to proposed project would result in minor net benefit to the area-wide transportation systems that serve the seven-million people who live in the Bay Area. This discussion, therefore, focuses on the cities of Hercules, Pinole, and Rodeo-Crockett (the area of western Contra Costa County) and does not address the traffic conditions or transportation systems in the larger Bay Area.

3.1.1. Regulatory Framework

Local Plans and Policies

Measure C (1988) and Measure J (2004)

The current transportation planning approach in Contra Costa County began in 1988 with the passage of Measure C, which established a one-half cent sales tax in Contra Costa County to fund a specified set of transportation improvements. It also included a growth management element that established service standards for the transportation system and mandated that the standards be maintained on certain routes as growth occurs.

Measure C created the Contra Costa Transportation Authority (CCTA) as the agency responsible for implementing its provisions. Since 1998, the CCTA has further refined the Measure C policies and procedures through a series of published documents. Of particular importance to transportation analysis are their review requirements for General Plan amendments, which refer to “Action Plans for Routes of Regional Significance” that the County and the applicable regional agencies have agreed upon.

Measure C was renewed in 2004 with the passage of Measure J, which extends the sales tax for an additional 25 years (through 2034).

Contra Costa County 2007 Congestion Management Program

Under state law, the CCTA is responsible for preparing and adopting a Congestion Management Program (CMP) and updating it every other year. The most recent update was adopted on December 16, 2009. CMPs must contain level of service (LOS) standards for state highways and major arterials, measures to evaluate system performance, a seven-year capital improvement program, a program to analyze the impacts and costs of local land use decisions on the regional transportation system, and a travel demand element that promotes transportation alternatives to single-occupant vehicles. The CCTA has drawn the CMP performance measures from the traffic service objectives (TSO) in the Action Plans for Routes of Regional Significance. For roadways in the project vicinity, the CMP uses the TSOs established in the West Contra Costa County Action Plan 2000 Update.

West County Action Plan 2009 Update

Service level standards for "Routes of Regional Significance" are to be established through a cooperative process among jurisdictions and are to be institutionalized in documents called Action Plans. The West County Action Plan 2009 Update was adopted for the jurisdictions in western Contra Costa County. TSOs were revised for these facilities. The CCTA's 2009 Congestion Management Program updated the TSOs and is used as the basis for evaluating transportation impacts on "Routes of Regional Significance."

The following facilities in the project study area are considered "Routes of Regional Significance": I-80, SR-4, San Pablo Avenue, and Willow Avenue. The primary TSOs that apply to all of the West County Routes of Regional Significance are:

- Maintain LOS D or better at all signalized intersections along Willow Avenue;
- Maintain LOS E or better on all roadway segments of San Pablo Avenue and SR-4;
- Maintain LOS E or better on all roadway segments of SR-4;
- Maintain LOS E or better at all signalized intersections along San Pablo Avenue;
- Increase the I-80 HOV lane vehicle usage rate by 10 percent;
- Maintain a drive-alone rate of no more than 75 percent;
- Increase transit ridership in West County by 10 percent between 2007 and 2012;
- By 2012, increase the bicycle and pedestrian mode splits to 3 percent for commute trips;
- Maintain a 3,000 per day ridership on the Capitol and San Joaquin Corridor trains by the year 2005; and
- Achieve a 500 per day ridership on the Hercules-San Francisco ferry line by 2012.

In addition to TSOs, the Action Plan contains actions that were cooperatively determined by the cities and the county to support achievement of the TSOs. One of these key actions required the local agencies to work with CCTA and MTC to actively pursue funding to expand bus service to/from Pinole, Hercules, Rodeo, and Crockett.

Three primary fee programs are in place to help finance improvements to transportation facilities within the study area. The City of Hercules assesses and collects a Development Impact Fee to support improvements to local transportation facilities. Two additional fee programs, the Hercules-Rodeo-Crockett Area of Benefit Fee and the West Contra Costa Sub-regional Transportation Mitigation Fee, are administered by the West Contra Costa County Transportation Advisory Committee. The City of Hercules traffic impact fee supports local capital improvements. The Hercules-Rodeo-Crockett and West Contra Costa fees administered by the county are assessed on new development in western Contra Costa County.

City of Hercules General Plan

The City's General Plan Circulation Element includes a policy of "... maintaining a Level of Service D or better for peak hour traffic operating conditions." (City of Hercules 1998a) The Circulation Element also presents a series of transportation policy statements; the policies with direct applicability to this EIR/EIS are reproduced below.

Circulation Element

Policy 2 on page II-20 of the General Plan provides:

> *"The policy on traffic level of service reflects the 'traffic service objectives' defined in the West County Action Plan. The City has adopted a Growth Management Element to comply with Contra Costa County Measure C (1988). This element includes adoption of level of service standards on 'basic routes' depending upon the location of the route: CBD (central business district), urban, suburban, semi-rural, and rural*."

As noted in the Growth Management Element of the General Plan, the following are the traffic service standards for Basic Routes (Local Streets) in Hercules:

LOS "High" D to "Low" E (maximum volume-to-capacity [v/c] ratio is 0.94)

- Sycamore Avenue (from Willow Avenue to San Pablo Avenue)
- Willow Avenue (from I-80 ramps to Sycamore)

LOS "High" D (maximum v/c ratio is 0.89)

- Sycamore Avenue (Highway 4 Freeway – Willow Avenue)
- Refugio Valley Road (Sycamore – Redwood/Falcon)
- Alfred Nobel Drive
- Linus Pauling Drive
- James Watson Drive
- John Muir Parkway

LOS "Low" D – (maximum v/c ratio is 0.84)

- All other Basic Routes (that is, except Routes of Regional Significance)

For health, safety, and general welfare, it is the City's policy to provide adequate levels of traffic service throughout the City. Level of Service D or better is the citywide standard for traffic operating conditions during peak hours on residential streets and intersections. Level of Service D for the commercial/industrial development is acceptable under certain specified conditions.

New development is required to pay its fair share of the cost of improving regional routes so that compliance with the service standard specified in the Action Plan is maintained.

a. Neighborhood design should discourage through traffic on local streets.

b. Residential streets will be designed in relation to the needed capacity and the adjoining housing patterns.

c. Proposed elements within view of designated scenic routes in the City should be reviewed in terms of their visual impact.

d. The City shall actively participate in cooperative efforts to provide effective public transit to the City and adjacent communities, including promoting a commuter rail extension of BART in the City and a train station along San Pablo Bay within the Lower Refugio Valley serving the Capitol Corridor to intercept through travelers on I-80.

e. The City should promote the establishment of riding and hiking trails throughout the community and coordinate with other agencies planning trail systems in the area and region.

f. Minimize through traffic in residential neighborhoods.

g. The City shall participate in and/or encourage the following planned capital improvements, as applicable:

    - Installation of ramp-metering hardware at all on-ramp locations on I-80;
    - Reconstruction of I-80/Highway 4 freeway interchange;
    - Construction of Highway 4 freeway; and
    - Widening of I-80 to include HOV lanes, Atlas Road to Carquinez Bridge.

h. Additional transportation policies included within the Growth Management Element.

3.1.2. Existing Conditions Intersection Level of Service Methodology

To evaluate the existing traffic conditions, the LOS was evaluated at critical intersections using the CCTA LOS Methodology.

The CCTA has adopted the Critical Lane Volume Planning Method described in Transportation Research Circular 212 to evaluate intersection levels of service (Transportation Research Board 1980). The CCTA has updated Circular 212 procedures to increase intersection capacity to 1,800 vehicles per hour from 1,500 vehicles per hour to account for local driving conditions (CCTA 2006).

Intersection levels of service using the critical lane concept are based on the volume of conflicting traffic (generally through movements versus opposing left turns) at the intersection during the peak hour of travel demand.

Level of Service Definition

LOS is a common measure of traffic operations using letters A through F to indicate the amount of congestion and delay. LOS A is free flow conditions, LOS D is typically considered acceptable for peak hour traffic periods in urban areas, LOS E is near or at capacity, and LOS F represents congested conditions above capacity.

The correlation between volume-to-capacity (v/c) ratios for signalized intersections is contained in **Table 3.1-1**.

Significance Criteria

In the City of Hercules, LOS D or better (LOS A, B, C, or D) is the citywide standard for traffic operating conditions during peak hours on arterial streets and at signalized intersections. LOS D is the target service level most frequently adopted by jurisdictions in urban areas. However, the City has adopted LOS E as the target service level for signalized intersections on San Pablo Avenue.

The City of Hercules General Plan defines a traffic impact as significant, if the addition of project-related traffic causes an intersection that operates at an acceptable LOS under pre-project conditions to operate at a lower LOS.

3.1.3. Existing Conditions

The area around the Hercules ITC is currently being redeveloped for residential and commercial uses. Over 1,392 residential units have been built in the area immediately south and east of the site as part of a mixed-use development. A total of 81,000 square feet of office space, 1,500 square feet of retail space, and 134,000 square feet of flex space have either been developed or are scheduled for development within one-half mile of the site. The area immediately to the north of the project site includes a research facility and established neighborhoods further to the north. The area to the east of the site, along San Pablo Avenue, includes strip mall commercial activities and other small commercial outlets.

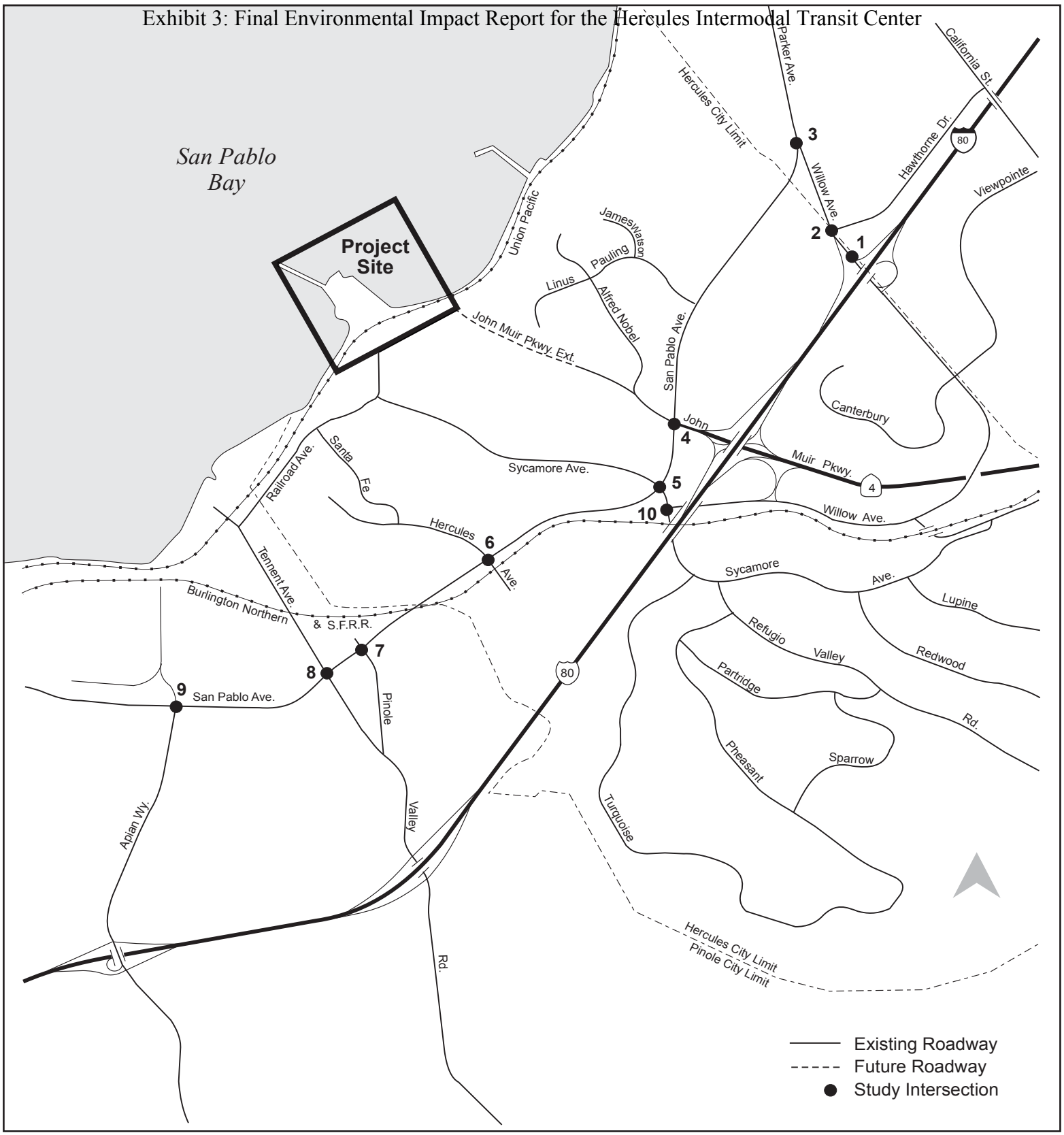
Although the site of the Hercules ITC is currently undeveloped, the site was previously used extensively for the manufacturing explosives and fertilizers. Bayfront Boulevard, constructed as part of the adjacent subdivision development, is the only public vehicular access to the site. Security or construction activities may generate a small number of vehicle trips on working days, but there is no other existing vehicle traffic associated with the site. John Muir Parkway was recently partially extended but the roadway is not complete and will not open to the public until project completion.

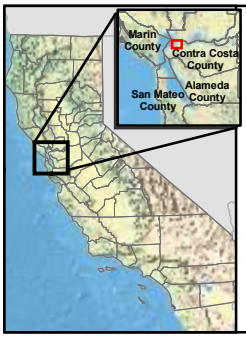
Table 3.1-1
Signalized Intersection Level of Service Thresholds

Level of Service	Description of Traffic Conditions	Volume-to-Capacity Ratio
A	The approach to an intersection appears quite open and turning movements are made easily. Little or no delay is experienced. No vehicles wait longer than one red traffic signal indication. The traffic operation can generally be described as excellent.	0.00-0.60
B	The approach to an intersection is occasionally fully utilized and some delays may be encountered. Many drivers begin to feel somewhat restricted within groups of vehicles. The traffic operation can generally be described as very good.	0.61-0.70
C	The approach to an intersection is often fully utilized and back-ups may occur behind turning vehicles. Most drivers feel somewhat restricted, but not objectionably so. The driver occasionally may have to wait more than one red traffic signal indication. The traffic operation can generally be described as good.	0.71-0.80
D	There is increasing restriction causing substantial delays and queues of vehicles on approaches to the intersection during short times within the peak period. However, there are enough signal cycles with lower demand such that queues are periodically cleared, thus preventing excessive back-ups. The traffic operation can generally be described as fair.	0.81-0.90
E	Capacity occurs at LOS E. It represents the most vehicles that any particular intersection can accommodate. At capacity there may be long queues of vehicles waiting upstream of the intersection and vehicles may be delayed up to several signal cycles. The traffic operation can generally be described as poor.	0.91-1.00
F	LOS F represents a jammed condition. Back-ups from locations downstream or on the cross street may restrict or prevent movement of vehicles out of the approach under consideration. Hence, volumes of vehicles passing through the intersection vary from signal cycle to signal cycle. This volume would be less than capacity because of the jammed condition.	1.01+
Source: Transportation Research Board, Circular 212, 1980		

Roadway Network

Regional access is provided by I-80 and SR-4. Local access is provided primarily by San Pablo Avenue, John Muir Parkway, Willow Avenue, and Sycamore Avenue along with other connecting roadways. These roadways are described below and are illustrated in **Figure 3.1-1**.





1 in = 2,000 ft (at letter layout)

N

0 125 250 500 Meters

0 500 1,000 2,000 Feet

Figure 3.1-1: Site Location and Study Intersections

City of Hercules
Hercules Intermodal Transit Facility
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources. No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey.
Data is State Plane Feet, NAD83 Zone 3

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Regional Access

Interstate 80

I-80 is a six- to eight-lane freeway that travels in a northeast-southwest direction through the City of Hercules. Located just east of the project site, I-80 connects to SR-4 to the east, and serves as the main artery to Oakland and San Francisco to the south (west). HOV lanes are provided in both directions south of SR-4 and in the southbound direction to the Carquinez Bridge. The northbound HOV lane is under construction from SR-4 to the Carquinez Bridge. Local access is provided off of Willow Avenue and Sycamore Avenue. In the vicinity of the project, the peak hour traffic volume on I-80 is approximately 12,200 vehicles per hour and the average annual daily traffic is 182,000 vehicles per day (Caltrans 2008).

California State Route 4

SR-4 is a four-lane expressway east of I-80 that travels in an east-west direction. West of I-80, the expressway terminates and becomes John Muir Parkway just northeast of the project site. Local access is provided off of John Muir Parkway. In the vicinity of the project, the peak hour traffic volume is approximately 3,300 vehicles per hour and the average annual daily traffic is 37,000 vehicles per day (Caltrans 2008).

Local Access

San Pablo Avenue

San Pablo Avenue extends through the City of Hercules in a north-south direction, running parallel to I-80 throughout western Contra Costa County and Alameda County. San Pablo Avenue serves as an unofficial reliever route to I-80, which is one of the most congested roadways in the Bay Area. Within the City of Hercules, San Pablo Avenue is a four-lane arterial, with separate left turn lanes at major intersections. The posted speed limit is 45 miles per hour (mph). CCTA has designated San Pablo Avenue as a “Route of Regional Significance.”

John Muir Parkway

John Muir Parkway is a four-lane roadway in the City of Hercules that extends from the SR-4 terminus, located west of I-80. While SR-4 is also referred to as ‘John Muir Parkway’ on some maps, the John Muir Parkway discussed in this document specifically refers to a local roadway between the North Shore Business Park and San Pablo Avenue. East of San Pablo Avenue, the John Muir Parkway provides access to I-80 eastbound and westbound, and to SR-4 eastbound. John Muir Parkway has recently been extended west to the Hercules ITC property line and a new bridge has been constructed from John Muir to Tsushima Street. John Muir Parkway has a posted speed limit of 35 mph.

Sycamore Avenue

This arterial generally runs east-west between San Pablo Avenue and SR-4. West of San Pablo Avenue, Sycamore Avenue is a two lane collector with a posted speed limit of 25 mph.

Exclusive left turn lanes are provided at major intersections and on-street parking is provided west of San Pablo Avenue. Sycamore Avenue has most of the retail/commercial activity in the City along its frontage. A recently completed striping project narrows Sycamore to two lanes in the vicinity of the Hercules City Hall and library.

Willow/Bayberry Avenue

Willow (formerly Bayberry) Avenue is a two-lane collector roadway primarily serving I-80 eastbound off-ramp traffic destined for Hercules. Willow Avenue runs east-west and currently extends between Sycamore Avenue and Palm Avenue. Vehicles exiting I-80 turn right onto Willow Avenue westbound to the Sycamore Avenue intersection. On-street parking is prohibited along the entire length of Willow Avenue, except for the Rodeo side. Willow Avenue is a four-lane arterial street that begins at San Pablo Avenue and ends at Sycamore Avenue. Willow Avenue provides access to I-80. It has a posted speed limit of 35 mph.

Hercules Avenue

Hercules Avenue is a two-lane local street (four-lane near intersection) serving primarily residential areas in the City of Hercules. In the vicinity of the project, Hercules Avenue indirectly connects Railroad Avenue to San Pablo Avenue.

Railroad Avenue

Railroad Avenue is a two-lane local street connecting Santa Fe and Bayfront Boulevard. This street currently fronts the proposed project site and is the western border of the existing housing development.

Santa Fe

Santa Fe is a two-lane local street serving residential areas that are in the vicinity of the project. This street connects Railroad Avenue to Hercules Avenue.

Tsushima

Tsushima is a two-lane local street serving the residential areas in the vicinity of the project. This street connects to Sycamore Avenue, John Muir Parkway, and San Pablo Avenue.

Transit Service

The WestCAT provides public transit service to communities in western Contra Costa County, including the City of Hercules. Currently, WestCAT does not provide service to the waterfront area where the proposed intermodal transit center would be located. However, most WestCAT bus routes operate out of the Hercules Transit Center which is located off Willow Avenue just east of I-80. Approximately 13 local, express, regional, and transbay routes operate out of the Hercules Transit Center. The Hercules Transit Center was recently relocated from San Pablo Avenue west of I-80 to its current location.

Transbay Service

The Lynx is a new commuter bus route that serves the Transbay Terminal in San Francisco directly from the Hercules Transit Center. The Lynx also provides service to the Victoria by the Bay neighborhood near Rodeo. Weekday-only service is provided during peak commuting hours in both directions. A one-way fare is currently $5.00 (WestCAT 2009).

Regional Service

The Martinez Link 30Z is a regional bus route that provides service to the Amtrak station and Veterans Administration Hospital in Martinez, and the El Cerrito del Norte Bay Area Rapid Transit (BART) station via the Hercules Transit Center. Only weekday service is provided during commute times and the early evening hours.

Express Service

WestCAT operates express service between the Hercules Transit Center and the El Cerrito del Norte BART station. Transfers to and from BART trains are coordinated with the schedule. An alternating route pattern (JL and JR) is operated at all times with half of the buses stopping at Hilltop Mall Shopping Center in Richmond mid-route and the other half stopping at the Richmond Parkway Transit Center.

Route JX/JPX provides weekday only commuter service. Transfers to and from BART trains are coordinated with the schedule.

Local Service

Local service throughout the City of Hercules is provided by eight bus routes and the Contra Costa College shuttle. Destinations include the Hilltop Mall Shopping Center, Richmond Parkway Transit Center, Contra Costa College, east Hercules, Rodeo, and Crockett. All routes run on weekdays only with the exception of Route 11 to Crockett/Rodeo and Route 19 to Hilltop Mall that also operate on Saturdays.

Railway System - Capitol Corridor Intercity Passenger Rail Line

The proposed Hercules ITC project would provide access to the Capitol Corridor intercity passenger rail line that runs immediately west of the project site. The Capitol Corridor line is 170 miles long and serves an area from Auburn, California (east of Sacramento) in the east, to Richmond, and San Jose/Diridon in the south. Capitol Corridor operates 16 stations in 8 Northern California counties: Placer, Sacramento, Yolo, Solano, Contra Costa, Alameda, San Francisco, and Santa Clara. Selected stations along the Capitol Corridor provide connection to the San Francisco BART system, Caltrain commuter rail line, and bus services. Twenty trains service the Capitol Corridor line each working day. Fares from San Francisco to Richmond (the first station past the Hercules ITC site) are $10 one-way and $165 for a monthly pass (Capitol Corridor 2010). BART provides day-to-day management support to the CCJPA, with input from Amtrak, the UPRR, Caltrans, and a variety of stakeholder agencies and communities.

Bicycle/Pedestrian System

In the vicinity of the project location, bicycle lanes are provided along San Pablo Avenue in Hercules. Sidewalks and curb ramps are provided throughout the residential neighborhood surrounding the proposed site, and pedestrian push button signals are provided at the signalized intersections along San Pablo Avenue.

The Bay Trail runs adjacent to the railroad tracks near the site. The Bay Trail is a planned recreational corridor that, when complete, will encircle San Francisco and San Pablo Bays with a continuous 500-mile network of bicycling and hiking trails. To date, approximately 290 miles of the alignment—over half the Bay Trail's ultimate length—have been completed. The Bay Trail stops to the southwest of the project site where Santa Fe meets Railroad Avenue and to the northeast near the Victoria by the Bay neighborhood in Hercules. Both sections are paved and serve recreational users.

Ferry System

Although the currently proposed project does not provide access to the Bay Area Ferry service, WETA has an active proposal to develop a ferry terminal adjacent to the Hercules ITC. Environmental effects associated with a new ferry terminal will be addressed in a separate, stand-alone environmental document and permitted as a separate project. If developed, the Hercules Ferry Terminal would provide passenger-only ferry service to downtown San Francisco and be an additional transportation alternative. Development of the ferry terminal is evaluated in the cumulative effects analysis for the currently proposed project.

Intersections in the vicinity of the Hercules Intermodal Transit Center and the corresponding existing levels of service are presented in **Table 3.1-2** and **Figure 3.1-2**. Intersection turning movement counts for the AM and PM peak hours were provided by City of Hercules staff.

According to the City of Hercules intersection LOS standards, all study intersections operate at acceptable levels of service.

Table 3.1-2
Existing Condition Level of Service Summary

Intersection Number	Intersection	AM Peak Hour		PM Peak Hour	
		v/c Ratio [a]	LOS [b]	v/c Ratio [a]	LOS [b]
1	Willow Avenue/I-80 WB off-ramp	0.208	A	0.280	A
2	Willow Avenue/Hawthorne Drive	0.284	A	0.219	A
3	San Pablo Avenue/Willow Avenue	0.244	A	0.438	A
4	San Pablo Avenue/John Muir Parkway	0.427	A	0.594	A
5	San Pablo Avenue/Sycamore Avenue	0.674	B	0.616	B
6	San Pablo Avenue/Hercules Avenue	0.507	A	0.430	A
7	San Pablo Avenue/Pinole Valley Road	0.378	A	0.476	A
8	San Pablo Avenue/Tennent Avenue	0.536	A	0.559	A
9	San Pablo Avenue/Appian Way	0.297	A	0.565	A
10	Sycamore Avenue/Willow Avenue	0.808	D	0.865	D

[a] *v/c – Volume-to-Capacity Ratio*
[b] *LOS – Level of Service*
Source: DKS Associates February 2010 (Appendix E)

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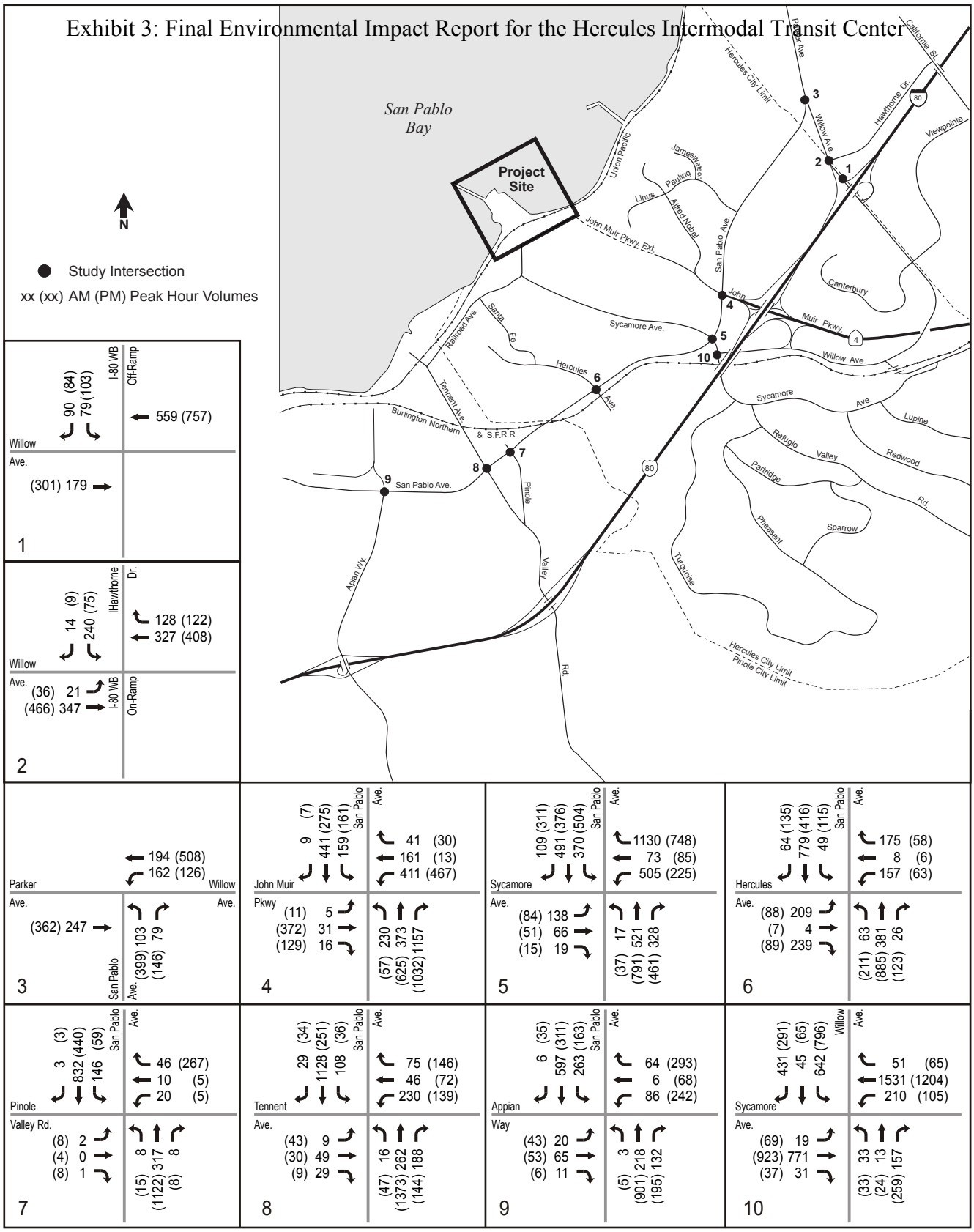

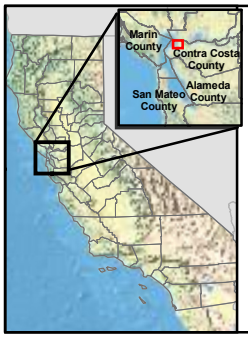

1 in = 3,200 ft (at letter layout)

N

0 200 400 800 Meters

0 800 1,600 3,200 Feet

Figure 3.1-2: Existing Conditions Peak Hour Volumes

City of Hercules
Hercules Intermodal Transit Facility
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources. No Warranty is made for its accuracy or completeness.
Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey.
Data is State Plane Feet, NAD83 Zone 3

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3.2. LAND USE, PLANS AND POLICIES

This section provides a description of the regulatory framework for land use plans, policies, and regulations on a federal, State, regional, and local level. It also describes the existing and surrounding land use designations within the proposed project area.

The City is located in Contra Costa County along the eastern edge of the San Pablo Bay, approximately 22 miles northeast of San Francisco and 57 miles southwest of Sacramento. Hercules is bounded by the unincorporated town of Rodeo to the north, the City of Pinole to the south, unincorporated Contra Costa land to the east, and the southeast shoreline of San Pablo Bay to the west. The various land uses found within the city include industrial, commercial, residential, mixed-use, and public and open space lands. The growth of the city is greatly influenced by the overall population growth in the Bay Area.

3.2.1. Regulatory Framework

The regulations that govern the review and analysis of land uses and zoning designations found within the study area are described below.

Federal

National Environmental Policy Act of 1972

The proposed project would be developed in consistency with the NEPA designated guidelines. NEPA is a federal process through which environmental effects are analyzed. Because the proposed project will be implemented, in part, through federal funding, NEPA regulations apply, with the FTA acting as the federal lead agency.

State

California Environmental Quality Act

The CEQA and CEQA Guidelines require project proponents to analyze the potential impacts of a proposed project to the environment and the project's consistency with local plans including the local general plan, existing zoning plans, and other applicable land use controls (CEQA Guidelines Section 15125).

The General Plan Guidelines published by the State Office of Planning and Research (OPR 2003) define consistency as follows: "An action, program, or project is consistent with the General Plan if, considering all its aspects, it will further the objectives and policies of the General Plan and not obstruct their attainment." Therefore, the standard for analysis used in this EIR/EIS is based on general agreement with the policy language and furtherance of the policy intent (as determined by a review of the policy context). A project does not have to be in exact agreement with a policy for a project to be consistent with it.

Local

San Francisco Bay Plan - San Francisco Bay Conservation and Development Commission

The development along the city's shoreline is subject to the policies and regulations of the Bay Conservation and Development Commission (BCDC) as designated in the San Francisco Bay Plan (Bay Plan), as amended in 2008. The BCDC and the Bay Plan are the overseeing authorities in charge of the protection and conservation of the San Francisco Bay and its shorelines as a valuable natural resource. The BCDC jurisdiction is defined as the band of land 100 feet inland from the line of highest tidal action, estimated to be 6.2 feet National Geodetic Vertical Datum 29, and specified tributary creeks. The BCDC was granted regulatory permitting power within the shoreline areas in its jurisdiction by the state-legislated authority of the McAteer-Petris Act.

In accordance with the City's, development in the Hercules Point area and along the shoreline within the BCDC jurisdiction would require review by the BCDC Design Review Board, BCDC's approval of a development permit prior to any construction activity, and the city's review and approval process.

City of Hercules General Plan

The California State Legislature, pursuant to Government Code Section 65300, requires each city in the state to prepare a local general plan. The general plan is the primary planning document that establishes policies to regulate the development, function, and use of land within the boundaries of each city or county jurisdiction. With respect to the proposed project, the enhancement of an existing terminal or the development of a new one must conform to the policies of the local general plan.

Land Use Element

The Land Use Element designates the proposed general distribution, location, and extent of land uses for housing, business, industry, open space, education, public buildings and grounds, waste disposal facilities, and other categories of public and private land uses.

The City's Land Use Element provides general direction and guidance for the physical development of Hercules. The following policies apply to the proposed project sites located within the City.

- Policy 1A –Encourage and only allow development that is consistent with the Land Use Diagram, Land Use Categories, and objectives, policies and programs of the Land Use Element.

- Policy 2A –Commercial and industrial development shall be consistent with gross intensity ranges in the Land Use Diagram and Land Use Categories. Higher intensity may be considered if such development is consistent with the City's goals and policies. However, each project with a proposed higher density would be subject to site-specific environmental analysis to determine incremental impacts.

- Policy 2B –Develop non-residential Land Use Categories, which reduce the need for residents to leave the community by providing a variety of shopping and service opportunities.

- Policy 8A – Preserve and enhance the historic district area.

  - Program 8A.2 - A detailed study of the Historic Town Center and adjoining area (including Hercules Point) shall be prepared as part of the Planned Development application for properties within this area in order to define the appropriate mix of public and private land uses, design guidelines, preservation of key buildings, vegetation (e.g., trees) and trails.

  - Program 8A.3 - Designate the Hercules Properties, Inc. parcels as a "special study area" requiring a "planned development" for mixed use and residential development. The planned development plan shall address:

    - Historic significance and existing historic buildings
    - Opportunities for and location of commuter rail station
    - Drainage and hydrology issues
    - Bay frontage location
    - Diversity of land uses
    - Coordination with adjacent properties needed due to diversity of land uses and complex infrastructure requirements.

- Policy 15A –Public, semi-public and non-profit uses may be allowed in commercial and industrial land use categories, if the type of use and level of activity is compatible with uses and activities allowed where industrial uses are allowed.

Land use designations within the project area include Public Park, Historic Town Center Waterfront Commercial, and Planned Commercial/ Residential. The Hercules Waterfront District Master Plan Initiative (discussed below) amended the land use designation of Hercules Point from Waterfront Commercial to Open Space and amended the permissible uses for Planned Commercial/Residential by increasing residential density to 40 units per acre and increasing allowable building height to a maximum of eight stories.

Open Space Element

Objective 1 *- Provide adequate recreation, park and open space resources as the community expands.*

- Policy 1.a- Expand the community's park, trail and open space system to meet the demands of future growth. The comprehensive park, trail and open space system shall provide linkages between developed and developing areas.

City of Hercules Zoning Ordinance – Waterfront District Master Plan

The WDMP serves as the zoning regulations for the Waterfront District, which includes the project site. The WDMP is a form based zoning code that facilitates and regulates development of the waterfront area, including the proposed project site. The vision for development under the WDMP is to create a fully functional pedestrian and transit-oriented community, where a multi-modal transit station, comprised of water ferry, train and bus transit, is the center of the plan. The WDMP envisions the multi-modal transit adjacent to Refugio Creek. The WDMP acknowledges that the construction of the rail platform will require the realignment of Refugio Creek. In addition, the WDMP plans for the John Muir Parkway extension and construction of the Transit Loop and Bayfront Boulevard.

The project site, located entirely within the WDMP area, is subject to the following land use objectives, policies, and guidelines:

A WDMP for a 167-acre planning area was originally adopted by the City in July 2000 and has been amended several times, since its adoption. The overall intent of the WDMP is to facilitate development of the entire 167-acre Waterfront District "as a fully master planned and integrated community" (WDMP, section 1.2, p.3). The WDMP established five "Planning Sub-Districts." These Planning Sub-Districts are: Historic Town Center, Transit Village, Central Neighborhood, Refugio Neighborhood, and Hercules Point. The project site is within the Historic Town Center Sub-District.

As paraphrased below, the stated specific land use purposes of the WDMP are to:

- Recognize, preserve, and re-use the historic structures of the Hercules Powder Company town site;
- Provide a network of public spaces that have access to views of Hercules Point and San Pablo Bay;
- Provide access along the Bay shoreline while preserving its natural resources;
- Provide a location for an intercity rail station with adjacent mixed-use development;
- Provide a variety of complementary office and retail uses;
- Accommodate both residential and commercial uses in a well-planned, mixed-use development;
- Provide a balanced mix of public spaces and facilities;
- Allow lower cost live-work opportunities for start-up businesses that are compatible with the District's residential and commercial uses;
- Provide the opportunity for upper floor residential over ground-floor commercial uses;
- Provide careful design review to maximize the benefits of mixed-use development while minimizing its negative impacts; and
- Provide the opportunity for housing affordable to moderate- and low-income households.

By mid-2008, the Central (Promenade) Neighborhood and Refugio (Baywood) Neighborhood sub-districts of the 167-acre WDMP planning area and reached full build-out. On July 22, 2008, the Hercules City Council adopted a Waterfront NOW Initiative. The Initiative made amendments to the General Plan, Zoning Ordinance, and the WDMP. The changes were intended to further guide and facilitate build-out of the remaining undeveloped WDMP sub-districts, including the 42.36-acre Hercules Bayfront Project site and adjacent Intermodal Transit Center project site, both within the Historic Town Center sub-district, and the adjacent Hercules Point sub-district. The adopted WDMP Initiative lists the following City land use objectives for these remaining undeveloped WDMP sub-districts:

- Promote and enhance the unique waterfront character and scenic resources of the Waterfront District through development of a transit-oriented neighborhood that includes walkable streets, a variety of dwelling types and businesses, and public plazas with views of San Francisco and San Pablo Bays;
- Implement the final stages of the WDMP through adoption of design and development guidelines for the Historic Town Center, Transit Village, and Hercules Point sub-districts that encourage a transit-oriented and pedestrian-oriented mix of uses along the Bayfront in the City of Hercules;
- Implement the goals and objectives of the WDMP by providing for the location of a Multi-Modal Transit System linking together rail service, a connection to downtown San Francisco via a ferry terminal, and bus service via WestCAT, making Hercules home to the first train, ferry, and bus center in California;
- Preserve and reuse existing historic structures within the Historic Town Center Sub-District—the Clubhouse and Administration buildings of the old Hercules Powder Company—and weave these historic buildings into the fabric of an architecturally cohesive and harmonized downtown Bayfront area;
- Assist the City of Hercules in meeting its housing needs for all economic segments of the population, while promoting the planning principles of New Urbanism and Smart Growth, by adopting detailed design and development standards for those areas within the Waterfront District that have not yet been developed;
- Amend the City of Hercules General Plan as necessary to provide for establishment of a transit-oriented, traditional neighborhood project that includes residential, commercial, retail, and public uses of unique architectural character within the Hercules Waterfront District;
- Enter into a Development Agreement, consistent with California law, providing for the long term planning and development of the Hercules Waterfront District; and
- Ensure that prior to further development of the Hercules Waterfront District, the City of Hercules, at the developer's expense, evaluates the environment impacts associated with such development, as required by the CEQA.

The estimated build out of the remaining WDMP area includes 1,329 residential units, 134,000 sq. ft. of flex space, 81,000 sq. ft. of office, and 74,500 sq. ft. of retail.

The transit center is proposed to be located within the Historic Town Center district. The Historic Town Center district includes not only the transit center but also a mix of residential, retail and commercial uses.

City of Hercules Waterfront District Master Plan Initiative

The Hercules Waterfront District Master Plan Initiative was adopted by the City Council on July 22, 2008, and became effective in August 2008. Originated as voter petition in 2008 to have the Waterfront District Master Plan be considered by the City Council, the initiative garnered greater than the 15 percent of registered voter signatures. As a result, the City Council adopted the initiative as an ordinance in July 22, 2008. The Initiative also modified the City's General Plan, Zoning Ordinance, and the WDMP and facilitates completion of the Hercules waterfront area as a transit-oriented mixed-use project by:

- Amending the General Plan, Zoning Ordinance, and WDMP to:

    1. Designate the Hercules Point as Open Space and allow both active and passive uses subject to any needed remediation;
    2. Allow mixed use neighborhood and residential uses and a multi-modal transit station within the Historic Town Center planning area;
    3. Add the Administration Building of the former Hercules Powder Company to the buildings to be retained for public or private use or access;
    4. Add marina use, including boat slips and docks, to the permissible uses for submerged and tidal land to the north and south of Hercules Point and permit inclusion of public rest room facilities within areas designated as Waterfront Commercial (WC);
    5. Increase allowable residential density to 40 units per acre and permissible building height to no more than eight stories within areas designated as Planned Commercial-Residential (PC-R); and
    6. Rezone property within various designated sub-districts, including bringing the Civic Arts building property and the Masonic building property within the Central Hercules Plan area.

- Amending the Waterfront District Master Plan by adding a Section 4 to establish a form-based code to regulate and provide detailed development and design standards for the currently undeveloped portions of the Historic Town Center, Transit Village, and Hercules Point sub-districts. The form-based code will only apply to those specific areas. The existing Waterfront Master Plan will continue to apply to other portions of the Waterfront Master Plan Area. The initiative will not apply to property that has already been developed within the WDMP Area or to land exempted from local regulation by State or Federal law.

City of Hercules Redevelopment Plan - Dynamite Redevelopment Project Area

The Dynamite Redevelopment Project Area includes goals to guide development and uses planned within the project area. Those goals relevant to the proposed project include:

- The assembly of land into parcels suitable for modern, integrated development with improved pedestrian and vehicular circulation in the project area.
- The replanning, redesign and development of undeveloped areas, which are stagnant or improperly utilized.
- The strengthening of retail and other commercial functions in the project area.
- The strengthening of the economic base of the project area and the community by the installation of needed site improvements to stimulate new commercial/industrial expansion, employment, and growth.
- The establishment and implementation of performance criteria to assure high site design standards and environmental quality and other design elements, which provide unity and integrity to the entire project.
- The expansion and/or improvement of the community's supply of low-and moderate-income housing.
- The preservation and restoration of historic structures.

3.2.2. Existing Conditions

The proposed project site includes: a small portion of Hercules Point; approximately 4,000 linear feet of shoreline to the northeast, along the UPRR right-of-way; and an upland area east and west of Refugio Creek, extending from the rail line south to Bayfront Boulevard. In addition, the project site extends down Refugio Creek between the proposed John Muir Parkway Extension to the east and Sanderling Drive to the west from Bayfront Boulevard to the Waterfront District Boundary. The UPRR tracks and easement cross through the proposed project site in a northwesterly direction. The site is bordered on the north and west by San Pablo Bay, on the east by open land designated for residential and commercial development, and on the south by residential and commercial development.

General Plan Land Use Designations within the project area and zoning designations include Public Park, Planned Commercial/Residential, Historic Town Center, Waterfront Commercial, Public – Open Space, and General Commercial. The intent of these designations is to develop the proposed project site and surrounding areas as a transit-oriented community. **Figure 3.2-1**, City of Hercules Land Use and Zoning Map, shows the existing land use designations and zoning for the proposed project site and surrounding area.

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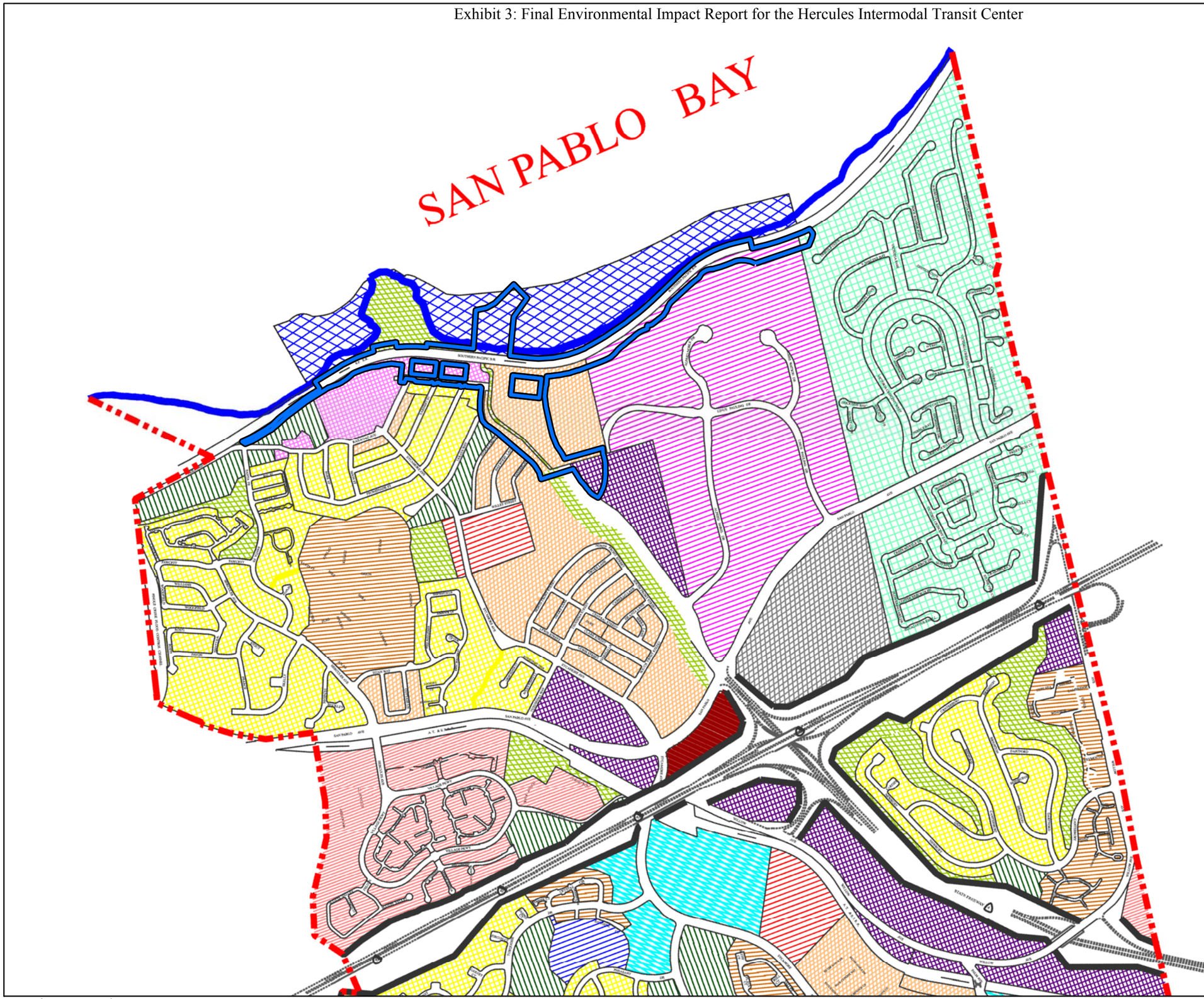

Legend

- PROJECT BOUNDARY
- FRANKLIN CANYON AREA
- PUBLIC OPEN SPACE
- PUBLIC PARK
- PLANNED COMMERCIAL RESIDENTIAL
- SINGLE FAMILY ESTATE
- RESIDENTIAL MULTI FAMILY LOW DENSITY
- COMMUNITY COMMERCIAL
- NEW PACIFIC PROPERTIES SPECIFIC PLAN AREA
- GENERAL COMMERCIAL
- PLANNED OFFICE RESEARCH AND DEVELOPMENT
- RESIDENTIAL SINGLE FAMILY LOW DENSITY
- WATER FRONT COMMERCIAL
- HISTORIC TOWN CENTER
- PUBLIC CITY
- COMMERCIAL PUBLIC
- RESIDENTIAL MULTI FAMILY MEDIUM DENSITY
- HERCULES INDUSTRIAL
- HERCULES PUBLIC SCHOOLS

1 in = 1,000 ft (at tabloid layout)

N

0 125 250 500 Meters

0 500 1,000 2,000 Feet

Figure 3.2-1: City of Hercules Land Use Map

City of Hercules
Hercules Intermodal Transit Facility
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources.
No Warranty is made for its accuracy or completeness. Land Use data from City of Hercules.
Data is State Plane Feet, NAD83 Zone 3

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3.3. SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

3.3.1. Regulatory Framework

Socioeconomics

Socioeconomic effects are not typically assessed in a CEQA document, unless these effects are linked to impacts to the physical environment. Under NEPA, however, potential project related impacts to the social and economic environment are to be addressed in environmental documents. Social and economic effects typically addressed in NEPA environmental documents include changes to:

- Population
- Employment
- Tax Base
- Local Businesses
- Housing
- Communities and Community Cohesion
- Community Facilities

Environmental Justice

Environmental documents subject to review under NEPA frequently evaluate the potential for the project to generate "disproportionately high and adverse human health or environmental effects" on minority or low-income populations. The analysis of disproportionate effects on minority and/or low-income populations, known as an environmental justice analysis, is done in response to Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations*, dated February 11, 1994. The Council on Environmental Quality (CEQ) *Environmental Justice Guidance Under the National Environmental Policy Act* states that minority populations should be "identified where either: (a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis." The CEQ definition of environmental justice populations has been selected for this project.

Issues typically addressed in an environmental justice analysis include:

- Adverse effects to human health;
- Destruction or disruption of man-made or natural resources;
- Diminution of aesthetic values, disruption of community cohesion;
- Adverse employment effects, displacement of persons;
- Adverse effects on businesses or farms from increased traffic congestion; and
- Isolation or separation of low-income or minority individuals within a given community or from the broader community.

3.3.2. Existing Conditions

Socioeconomics

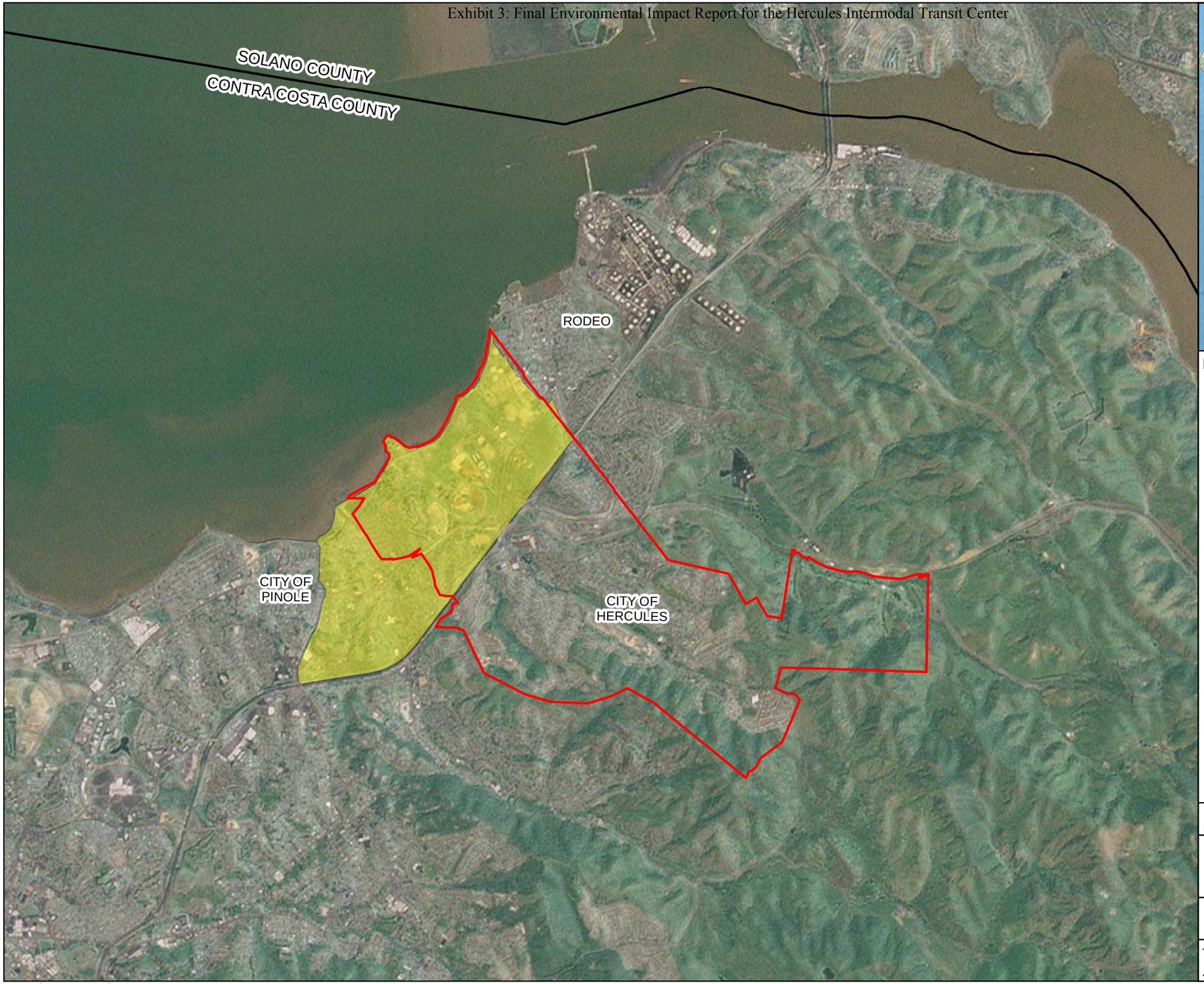
The Hercules ITC site is located within the San Francisco Bay metropolitan area, on the eastern shore of San Pablo Bay, which is part of the larger San Francisco Bay. The project site is currently undeveloped and no economic activity takes place on-site, although it was previously used for explosives and fertilizer production. Bayfront Boulevard and Sanderling Drive are the only public roads through the site. A UPRR track traverses the western edge of the site, but no trains stop in Hercules. The area south of the project site has been recently redeveloped as a mixed-use development. The area immediately north of the project site is a developed research facility (Bio-Rad Corporation) and office park (North Shore Business Park). The area immediately to the east is currently undeveloped and the area approximately one-half mile to the east (adjacent to San Pablo Boulevard) is used for auto-oriented retail.

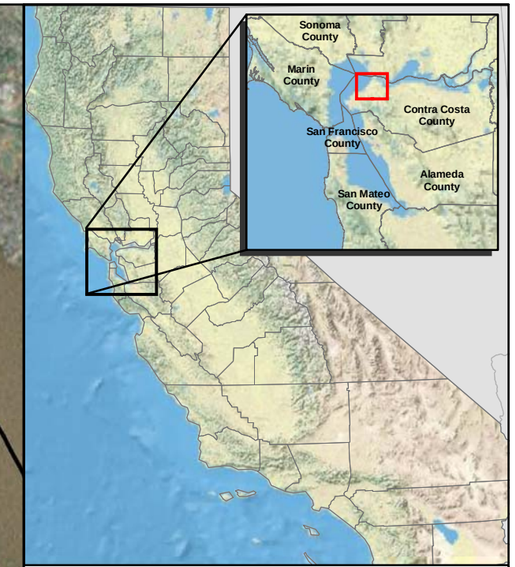
Environmental Justice

For this analysis, it is reasonable to expect that any potential social effects would be limited to the project site, the new residential units located within one-half mile of the Hercules ITC and, to a lesser extent, the surrounding City and portions of Pinole. This constitutes the project site and the general "draw area" for Hercules ITC users and would make up the potential impact/study area for the social analysis. The area consists of U.S. Census Tract 3591.01 of Contra Costa County including the project site, the rest of the City and portions of the city of Pinole. Considering other census tracts would make the analysis inclusive of nearly all of the expected riders, but would also include a large number of residents who are outside the ridership "draw area" for the project.

The study area for environmental justice (Census Tract 3591.01 of Contra Costa County) is highlighted in the project vicinity map shown on **Figure 3.3-1**. Published population and income data for the project area do not have a high degree of accuracy or certainty because the 770 residential units situated immediately south of the Hercules ITC site were constructed after the 2000 Census. Census data do not, therefore, accurately reflect the current income or racial composition of the area. Information prepared after the 2000 Census, such as the U.S. Census Community Profiles prepared in 2007 and 2008, do not include these recent residents because the Community Profiles use growth projections based on the 2000 Census data.

As shown in **Table 3.3-1**, the best available data for the area and communities surrounding the project area are that the study area (Census Track 3591.01 in Contra Costa County shown in Figure 3.3-1) has a minority population of 57.0 percent and the white population comprises 43.0 percent of the total. Filipinos comprise over half (14.7 percent of the total population) of the Asian population (27.8 percent of the total population. The minority population percentage is less than the total for the City as a whole (75.6 percent) but more than the total for Contra Costa County (28.3 percent).





Legend

- City of Hercules Corporate Limit
- Census Tract 3591.01
- County Boundaries

N

1 in = 4,000 ft (at tabloid layout)

0 500 1,000 2,000 Meters

0 2,000 4,000 8,000 Feet

Figure 3.3-1: Project Vicinity and Environmental Justice Area of Potential Effect

City of Hercules
Hercules Intermodal Transit Facility
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources.
No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey.
Data is State Plane Feet, NAD83 Zone 3

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Table 3.3-1
Hercules Intermodal Transit Center, Race and Ethnicity

Race/Ethnicity	Contra Costa County [1]		Hercules City [2]		Census Tract 3591.01 [3]	
	Population	Percentage	Population	Percentage	Population	Percentage
White	738,297	71.7	5,665	24.4	4,105	43.0
Black or African American	99,881	9.7	4,844	20.8	1,693	17.7
American Indian and Alaska Native	8,237	0.8	62	0.3	46	0.5
Asian	141,069	13.7	10,552	45.4	2,653	27.8
Native Hawaiian and Other Pacific Islander	5,149	0.5	275	1.2	38	0.4
Persons Reporting Two or More Races and/or Other Races	37,069	3.6	2,758	11.7	1,009	10.6
Total Population	1,029,703	100	24,156	100	9,544	100
Hispanic or Latino (of Any Race)	235,802	22.9	3,378	14.0	1,094	11.5

[1] U.S. Census Community Profile, 2008
[2] U.S. Census Community Profile, 2007
[3] U.S. Census, 2000

The Hispanic population in the area of potential effect (APE) (11.5 percent in Census Tract 3591.01) is less than either Contra Cost County (22.9 percent) or the City (14.0 percent).

As with the other U.S. Census data, income and poverty data does not capture the dramatic increase in residential housing since the data were collected. However, based on the best available data presented in **Table 3.3-2**, poverty is less prevalent in the project area and the City than in Contra Costa County or the State of California.

Table 3.3-2
Poverty Levels

	California [1]	Contra Costa County [1]	City of Hercules [2]	Census Tract 3591.01 [3]
Population	36,756,666	1,029,703	24,156	9,485 [4]
Persons in Poverty	4,557,827	89,584	773	455
Percentage of Population below Poverty Level	12.4	8.7	3.2	4.8

[1] U.S. Census Community Profile, 2008
[2] U.S. Census Community Profile, 2007
[3] U.S. Census, 2000
[4] Poverty status could not be determined for every person within the census tract and those individuals for whom poverty status was indeterminable were not included in the totals. This is why the population figures for race and ethnicity and poverty are different.

3.4. CULTURAL RESOURCES

This section discusses potential impacts to cultural resources (historic properties) associated with the Hercules ITC project. A discussion of the regulatory framework is presented along with a discussion of the APE. The prehistoric and historic period context sections provide information that allows for basic interpretation of cultural resources that occur in the area. The results of an institutional record search of the files of the Northwest Information Center (NWIC) and Native American Heritage Commission (NAHC) are presented as well as the results of a pedestrian survey.

3.4.1. Regulatory Framework

Federal

Section 106 of the National Historic Preservation Act of 1966 (NHPA) requires federal agencies to take into account the effects of their undertakings on historic properties, and afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment. The historic preservation review process mandated by Section 106 is outlined in ACHP revised regulations, "Protection of Historic Properties" (36 CFR Part 800). The Section 106 process involves several steps. These include initiation of the process, identification of historic properties, assessment of effects and resolution of effects. To initiate the Section 106 compliance process, the federal lead agency first determines whether it has an undertaking. An undertaking is any type of activity that could affect historic properties, if they exist. Historic properties may include archaeological sites, buildings, structures, traditional cultural properties and objects those that are included in the National Register of Historic Places or that meet the criteria for eligibility to that National Register. The lead federal agency initiates consultation with the SHPO after defining the area of potential effects (APE) and determining if any historic properties exist within the APE. To identify historic properties the agency reviews background information, consults with the State Historic Preservation Office, Tribes and others, and conducts studies as necessary. The federal lead agency provides appropriate documentation of its determination to the SHPO and, if no objection occurs within 30 days, proceeds with the undertaking having fulfilled its Section 106 compliance responsibilities.

To assess effects and the need for mitigation, a property must be determined either eligible or not eligible for the NRHP. If the property is eligible, then a determination of effect must be provided in accordance with 36 CFR 800. If a property is evaluated as not eligible, and the State Historic Preservation Officer (SHPO) concurs with the finding, then no mitigation measures may be warranted.

Eligibility for the NRHP is assessed using four evaluation criteria, as listed in 36 CFR 60.4. Eligibility rests on level of significance as measured and considered under these criteria. The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures and objects of state and local importance that possess integrity of location, design, setting, materials, workmanship, feeling, and association and that:

- Are associated with events that have made a significant contribution to the broad patterns of our history;

- Are associated with the lives of persons significant in our past;
- Embody the distractive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- Have yielded, or may be likely to yield, information important in prehistory or history.

Application of these evaluation criteria are used to determine what properties should be protected from destruction or damage resulting from project-related activities (36 CFR 60.2). Identification, evaluation and management of sites also encompass Native American values. The American Indian Religious Freedom Act, 42 United States Code (USC) 1996, has been enacted to protect Native American religious practices, ethnic heritage sites and land uses of federally recognized Native Americans.

State

CEQA also provides for the management and treatment of cultural resources. CEQA, Appendix K, provides guidance that is somewhat parallel with Section 106 responsibilities; however, terminology and approaches differ. CEQA [Public Resources Code (PRC) Sections 21000 et seq.] requires that before approving most discretionary projects, the lead agency must identify and examine the significant adverse environmental effects which may result from that project. Where a project may adversely affect a unique archaeological resource, Section 21083.2 requires that the lead agency treat that effect as a significant environmental effect and prepare an EIR. When an archaeological resource is listed in or eligible to be listed in the California Register of Historical Resources (CRHR), Section 21084.1 requires that any substantial adverse effect to that resource be considered a significant environmental effect.

To enable consideration of impact significance under CEQA, the significance of a resource must be determined. Consideration of significance as an “important archaeological resource” is assessed under cultural resource provisions of CEQA Sections 15064.5 and 15126.4, and criteria for eligibility for the CRHR. Criteria for eligibility for the CRHR are similar to NRHP criteria. A property that is eligible for the NRHP is also eligible for the CRHR. The evaluation criteria are established in CEQA Section 15064.5 and are defined as any resource that:

- Is associated with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage;
- Is associated with lives of persons important in our past;
- Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic value or,
- Has yielded, or may be likely to yield, information important in prehistory or history.

CEQA uses the term "unique archaeological resource" to refer to an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets one of the following criteria:

- The archaeological artifact, object, or site contains information needed to answer important scientific questions, and there is a demonstrable public interest in that information;
- The archaeological artifact, object, or site has a special and particular quality, such as being the oldest of its type or the best available example of its type; or
- The archaeological artifact, object, or site is directly associated with a scientifically recognized important prehistoric or historic event or person.

The term "non-unique archaeological resource" is used for an archaeological artifact, object, or site that does not meet the above criteria. Impacts to non-unique archaeological resources and resources which do not qualify for listing on the CRHR are not considered further.

In accordance with CEQA, Section 15064.5, a project would potentially have significant impacts if it would cause substantial adverse change in the significance of one of the following:

- A historical resource (i.e., a cultural resource eligible for the CRHR);
- An archaeological resource (a "unique archaeological resource" which does not meet CRHR criteria); or
- A unique paleontological resource or unique geologic feature.

If a resource cannot be avoided, then the resource is evaluated to determine if it is an "important" or "unique archaeological resource". In order to make this evaluation, research, excavation and analysis may be necessary. Potential impacts are considered if the resource is an "important" or "unique archaeological resource" under CEQA Sections 15064.5 and 15126.4 and CRHR eligibility criteria. Mitigation must address impacts to values for which it is considered important or unique. To achieve impact mitigation it must be determined what elements make a site eligible for the CRHR.

Under CEQA, Section 15064.5 special importance is given to human remains. Special procedures are implemented when Native American remains are discovered. These are presented in Public Resource Code, Section 21083.2.

Additional applicable sections of the California Public Resource Code include the following:

- PRC Section 5097.5 states that any unauthorized removal of archaeological resources located on public lands is a misdemeanor. As applied in the section, "public lands" means lands owned by, or under the jurisdiction of, the state, or any city, county, district, authority or public corporation, or any agency thereof.

- PRC Section 5097.98 prohibits and sets penalties for obtaining or possessing Native American artifacts or human remains taken from a grave or cairn.

The California Health and Safety Code (CHSC) is also applicable with respect to the discovery of human remains. Section 7050.5 states that "Every person who knowingly mutilates or disinters, wantonly disturbs, or willfully removes any human remains in or from any location other than a dedicated cemetery without authority of law is guilty of a misdemeanor, except as provided for in PRC Section 5097.99." The mitigation measures presented in Section 7050.5 of the CHSC and PRC Section 5097.98 are considered standard in the event that human remains are accidently discovered during construction activities.

City of Hercules General Plan

The Land Use Element of the Hercules General Plan contains the following objectives, policies, and programs relevant to considerations of the cultural and historic resource impacts of the proposed project:

- Preserve Hercules history while developing its future. (Objective 8)
- Preserve and enhance the historic district area. (Policy 8A)
- Develop plans to preserve and rehabilitate key historic buildings but not the former plant equipment and manufacturing structures related to former industrial areas. (Program 8A.1)
- Designate the Hercules Properties, Inc. parcels as a "special study area" requiring a "planned development" for mixed used use [sic] and residential development. The planned development plan shall address:
    - Historic significance of existing historic buildings
    - Opportunities for and location of commuter rail station
    - Drainage and hydrology issues
    - Bay frontage location
    - Diversity of land uses
    - Coordination with adjacent properties needed due to diversity of land uses and complex infrastructure requirements.

  The Hercules Properties, Inc. parcels may be developed differently from the conceptual land uses depicted in the Land Use Diagram. (Program 8a.3)

In addition, the Open Space/Conservation Element of the Hercules General Plan contains the following objectives, policies, and programs relevant to the consideration of the cultural and historic resource impacts of the proposed project:

- Protect and preserve important historic and prehistoric resources. (Objective 12)
- Prehistoric resources shall be identified and preserved to the extent feasible. If previously unknown subsurface cultural resources are discovered during excavation activities on

identified parcels or elsewhere in the study area, excavation would be temporarily halted and an archaeologist consulted as to the importance of the resources. Should the archaeologist determine that the resources are important, the project sponsor would follow the procedures described in Program 12a.2. (Policy 12a)

- Prior to development on Parcels [sic] in archaeologically sensitive areas identified within the Land Use Plan EIR, an attempt shall be made through a combination of archival research and in-field testing to identify areas that may have been use by Native American populations. Areas containing prehistoric deposits will be mapped; evaluation of their significance will follow only in those areas where future development might affect the resources. (Program 12a.1)

City of Hercules Waterfront District Master Plan

The WDMP does not contain addition specific policies or other provisions specifically relevant to cultural and historic resources. The WDMP Initiative, section 2 (Purpose and Findings), includes the following relevant purpose:

- 4. To preserve and reuse existing historic structures within the Historic Town Center Sub-District—the Clubhouse and Administration buildings of the old Hercules Powder Company—and to weave these historic buildings into the fabric of an architecturally cohesive and harmonized downtown Bayfront area.

3.4.2. Area of Potential Effect

The City is proposing to develop an ITC project in the City in the waterfront area (**Figure 3.4-1**). The project would include a new passenger train station on the existing Capitol Corridor line, a transit bus terminal, access roadways, and parking facilities. The project would serve commuters, visitors, students, and recreational users who desire an alternative way to travel to and from the City, the Bay Area and the Sacramento area to access employment, entertainment, and recreational destinations. Additionally, the transit center would provide connection to future development of ferry service within the Bay Area. The project would receive funding from the FTA. As a federally funded project, the project must comply with NEPA and the NHPA and its implementing regulations 36 CFR 800.

The project area lies adjacent to the existing UPRR grade along the southern shoreline of San Pablo Bay. It includes a portion of Refugio Creek, which flows north/south through the central portion of the project area, drains through a culvert and a bridge under the railroad, and enters the San Francisco Bay. The UPRR right-of-way is 100 feet wide with two tracks approximately nine feet apart. There are signals, utilities and pipelines, including a high pressure fuel pipeline, fiber optic and telephone cables, and electrical lines buried along the south side of the right-of-way. Realignment of some track will also be part of the project. Much of the project area is devoid of native vegetation. Other areas are covered with non-native grasses and weeds. There are no apparent natural unaltered contours within the project area. A substantial portion of the project area is Holocene and historically placed fill (Welch 1977).

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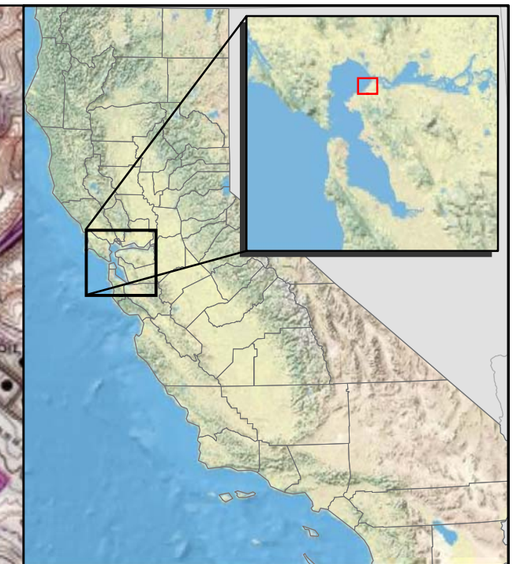

Legend

- EIR/EIS Project Boundary (APE)
- Track Option B Boundary (APE)
- 1/8 Mile Buffer of APE

* Project located within Pinole - Martinez Land Grant area.

N

1 in = 2,000 ft (at tabloid layout)

0 250 500 1,000 Meters

0 1,000 2,000 4,000 Feet

Figure 3.4-1: Cultural Resource Study Area and Area of Potential Effect (APE)

City of Hercules
Hercules Intermodal Transit Facility
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources.
No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey.
Data is State Plane Feet, NAD83 Zone 3

HDR 2365 Iron Point Road, Suite 300
Folsom, CA 95630-8709

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The horizontal APE is congruent to project area boundaries, which includes the boundaries for Track Option B. The undertaking will involve surface grading and demolition and removal of an existing small lift station. The vertical APE for the project will involve a range of depths. Utility emplacement will contribute to subsurface disturbance. The outlet for Refugio Creek would be straightened and channelized. The existing built environment is limited to the railroad and railroad bridge, an earth and rubble foot bridge and a lift station. The entire area has been filled and severely disturbed since the late 1870s. Also, the project area has been heavily surcharged with compacted, engineered dirt fill placed within the APE during grading for an adjacent residential development. Structures related to earlier use of the property such as the dynamite factory, and then a later chemical factory, have been demolished and/or removed.

3.4.3. Setting

Paleoenvironment

The project area is situated within the Coast Range geomorphic province, which extends from Oregon to the north and the Santa Ynez fault to the south. The project area lies on the San Pablo Bay southern shoreline west of the Carquinez Straits. Much of the Coast Range is composed of marine and terrestrial sedimentary deposits underlain by either granitic rock or, as in the case of the project area, the Jurassic to upper Cretaceous Franciscan formation (Graymer et al. 1994). The section of rocks along the southern shoreline between Pinole and Vallejo includes six of the most widespread divisions of sedimentary series in the Coast Range region. The formations or groups represented are the Chico (Upper Cretaceous), Martinez (Eocene), Monterey (earlier Miocene), San Pablo (later Miocene, Pinole tuff [Pliocene]) and overlying Pleistocene deposits. The project area is largely covered with both Holocene and recent period fill. However, at Hercules, broken shale of the Monterey group is exposed in a railroad cut. Fossils occur in all the formations of the San Pablo Bay section and at least six different faunas are reported. Pleistocene shale in the San Pablo section contains abundant marine shellfish remains as well as a variety of mammal bones representing elephant, horse, camel, bison, ground sloth, antelope, lion, wolf and other forms (Lee et al. 1916).

The Bay Area environment changed substantially over time. A relatively rapid sea-level rise occurred between 9,000 and 6,000 B.C. forming San Francisco Bay from the Francisco Valley. San Pablo Bay is part of San Francisco Bay. After 4,000 B.C. rising sea-level slowed and marshes developed around San Francisco Bay (Bickel 1978). Marshes are rich in food resources, including shellfish, fish and fowl. During this period numerous shell middens developed as a consequence of prehistoric period shellfish exploitation. Many of the marshlands surrounding the San Francisco Bay were established no more than 3,000 years ago (Moratto 1984). Due to the continually rising sea levels, most earlier-period sites may have been submerged or destroyed. The most dramatic changes occurred during the 1855-1884 period of hydraulic gold mining in the Sierra Nevada. Mining-related sediments washed into many streams and a considerable amount of fine silt was carried into San Pablo Bay resulting in mud flat deposition and shoaling. Submerged prehistoric sites may have been buried during the siltation process. The nature of prehistoric period marshes and associated sites can only be inferred because of the substantial changes resulting from siltation.

During the prehistoric period, the Bay Area featured a mosaic of plant communities ranging from salt marsh to redwood forest to grassland to mixed-evergreen woodland. The east bay plain was predominantly grass covered, with patches of brush and coast live oak groves. Vegetation was most dense along freshwater drainages which supported willow, California laurel, buckeye and oaks. Each community sustained its own array of animals, and game was generally abundant (Moratto 1984). For at least the last 10,000 years, with its abundant water supply and readily available food resources, the Bay Area would have been a favorable location for prehistoric period Native American occupation.

Prehistory

It is unknown when people first arrived in the Bay Area, but it is probable that occupation occurred at least 10,000 years ago. However, dramatic geomorphologic changes have occurred in the Bay Area landscape. Many of the landforms originally available for human habitation were either submerged beneath the sea as it rose to flood the Franciscan Valley, and/or were buried by sediments widely deposited around the margins of the Bay-Delta estuary and in the many inland valleys of the region (Nichols and Wright 1971, Meyer and Rosenthal 2007). There is, then, a bias in the recorded archaeological record. A significant portion of the archaeological record is simply not available for consideration or study. With a few important exceptions, archaeological sites dating older than a few thousand years have rarely been discovered in the Bay Area. Less than 15% of the radiocarbon-dated sites in this region are older than 4,000 years, and less than 5% are older than 6,000 years (Meyer and Rosenthal 2007).

Many of the early archaeological investigations in the Bay Area conducted between 1906 and 1908 by N. C. Nelson yielded the initial documentation of nearly 425 “earth mounds and shell heaps” along the littoral zone of the Bay (Nelson 1909). A number of these sites, also known as middens, were later excavated. Some notable sites include the Emeryville shell mound (CA-ALA-309), the Ellis Landing Site (CA-CCO-295) in Richmond, and the Fernandez Site (CA-CCO-259) in Rodeo Valley. These sites date less than 4,000 years old.

In 1948, Beardsley introduced the first regional chronology for the Bay Area (Beardsley 1948 and 1954). The chronology was originally devised to temporally organize sites in Central California, the Sacramento-San Joaquin Delta (Delta), and the northern San Joaquin Valley. Over time Beardsley refined his chronology and it became known as the Central California Taxonomic System (CCTS). The system relies on identification of particular patterns, such as burial configuration, shell bead and stone tool types and the tendency of sites to occur in certain settings. The system was later adapted for application in the Bay Area (Heizer 1954). Beardsley’s time periods or “Horizons” are listed below:

Paleoindian	earlier than 8,000 years ago
Early Horizon	8,000 to 2,500 years ago
Middle Horizon	2,500 to 1,100 years ago
Late Horizon	1,100 to 200 years ago
Historic	200 years ago or less

The CCTS does not work perfectly and some have debated its merits. Other scholars (Fredrickson 1973) have envisioned an alternative framework that groups sites differently:

Windmiller Pattern	4,500 to 2,500 years ago
Berkeley Pattern	2,500 to 1,500 years ago
Augustine Pattern	1,500 to 150 years ago

Windmiller Pattern sites are often situated in riverine, marshland and valley floor settings that offer a variety of plant and animal resources. These sites may contain burials that are extended ventrally and oriented to the west. Burial artifacts include a variety of fishing tools such as net weights, spear points and bone hooks as well as large and small mammal remains. Windmiller Pattern sites may be associated with an influx of peoples from outside California who brought with them an adaptation to river-wetland environments (Moratto 1984).

Berkeley Pattern sites are much more common and well documented and are better understood than earlier sites. Although a riverine focus is common, Berkeley Pattern sites are distributed in more diverse environmental settings. Sites may include deeply stratified midden assemblages, which contain extensive milling tools and smaller, lighter projectile points. Assemblages may often have slate pendants, steatite beads, stone tubes and ear ornaments. Another distinguishing characteristic includes a shift in burial patterns including variable directional orientation, flex body positioning, and a general reduction in mortuary goods.

Augustine Pattern sites are characterized by evidence indicating intensive hunting, fishing, and gathering, a focus on acorn processing, large population increases, intensified trade and exchange networks, more complex ceremonial and social attributes than earlier patterns, and the practice of cremation in addition to flexed burials. Allan et al. (1997) indicate that certain artifacts also typify this Pattern including bone awls for use in basketry manufacture, small notched and serrated projectile points, the introduction of the bow and arrow, occasional pottery, clay effigies, bone whistles, and stone pipes.

Ethnohistory

When first discovered by Europeans, the Bay Area was found to be occupied by peoples the Europeans referred to “Costanos” since they lived along the coast (Kroeber 1925). The Project area was probably once occupied by Costanoans, however, the term Ohlone is preferred by their descendants. The Ohlone had a common language base, but were not a single political group. They did not have a single term in their language by which they referred to themselves as a whole (Levy 1978). The basic unit of Ohlone political organization was the tribelet, consisting of one or more socially-linked villages and smaller settlements within a recognized territory. The project area is located within the Chochenyo linguistic territory. Either the Huchiun or Karkin tribelets possibly occupied the Hercules area; boundaries between the two are uncertain (Shipley 1978).

Based on archaeological and linguistic evidence, it is believed that Penutian-speaking peoples entered the Bay Area from the Delta region, displacing or replacing speakers of earlier Hokan stock languages of the Bay Area, such as Esselen (Kroeber 1925, Shipley 1978, Moratto 1984). The proto-Ohlone homeland was possibly located in the east Bay Area, possibly extending to the Carquinez Straits vicinity. By around 1,500 B.C., the Ohlone occupied most of the east shore of

San Francisco Bay. Principle villages were typically established at the junctures of two or more biotic communities. Ohlone people had an intimate knowledge of their local environments and subsisted through a variety of activities including gathering berries, greens and bulbs, harvesting seeds and nuts, of which acorn was the most important, hunting for elk, deer, pronghorn and smaller animals, collecting shellfish, and taking various fishes in stream, bay, lagoon or open coastal waters (Moratto 1984).

History

The Spanish Period in the east Bay Area begins with the Pedro Fages expeditions in 1770 and 1772. He traveled from Monterey to the vicinity of the Berkeley Hills and described the Indians he met along the way. Cross cultural contact and the missionization activities of the Spanish led to the death of many Indians and the disintegration of Native American cultural lifeways. By 1810 it is reported that the traditional Ohlone villages had ceased to exist in the region (Levy 1978; Milliken 1995). Actual Spanish occupation of Hercules and the surrounding area is not recorded. Lands now encompassing the Project area were administered by the Mission Delores in San Francisco between 1776 and 1823.

During the Mexican Period, Ygnacio Martinez obtained lands in 1824, which include the Project area. He received a land grant in 1842 and formed Rancho El Pinole (General Land Office 1868). His ranch, including what was to become Hercules, covered some 17,800 acres and extended between Point Pinole and Martinez. The first building in the area was the Martinez Adobe, which was situated in Pinole Valley to the southwest of the Project area (Bowman 1951)

The American Period begins in 1846 with the American victory in the Mexican-American war. Immigrants began to settle on rancho lands during and following the 1849 California gold rush. As with most Mexican land grants in Northern California, squatters and settlers began taking quasi-legal title to parcels of ranchland because American courts denied title to original Mexican grantees. With increasing population growth in and near Pinole in the 1850s-1870s, it became viable to construct wharfs, warehouse facilities, and a railroad to serve the area. Further, it also became viable to develop commercial and manufacturing facilities. The Burlington Northern Railroad Company constructed their line between Emeryville and Martinez in 1878 and built a station at the Pinole wharf. The Burlington Northern line was absorbed by the Southern Pacific Railroad Company in 1898. Transportation and shipping connections facilitated by the railroad allowed for continuing local growth and development.

The manufacture of explosives initiated the creation of the City. The California Powder Works (later to become Company) manufactured black powder, an explosive used mostly for the production of ammunition. In 1861 they opened their first plant near Santa Cruz and then opened a second plant near Golden Gate Park in 1869. With the growing population of San Francisco and the dangerous nature of their product, the company was forced to find a more rural location. In 1879, the California Powder Works Company selected lands which include the project area as a factory location due to its excellent transportation links, proximity to services in nearby Pinole, and the site's relatively isolated location. By 1881 a complex factory had been constructed and operations began in the Project area. The company provided homes and dormitories for its workers and a small company town developed at the location that later became the town of Hercules. The town incorporated in 1900. The company was purchased by the du Pont de

Nemours Company in 1906, but in 1912 the purchase was overturned due to conflicts with the Sherman Anti-trust Act. The Company then became known as the Hercules Powder Company (Kyle et al. 1990, Holman & Associates 1993, Emanuels 1993).

In the first 38 years of operation in Hercules, 59 lives were lost due to accidental explosions. The nitroglycerine house and the building, in which dynamite was produced, were the primary location of the blasts. In the largest explosion in its history, on February 1908, a total of 24 men, mostly Chinese workers, were killed in a single blast. The plant produced explosives, dynamite and trinitrotoluene (TNT) and provided these products during both World Wars. During World War I the Company was the largest such plant in the country, however, after the war, the demand for munitions plummeted. By 1964 a large facility had been constructed for the production of fertilizer and other chemicals. The company changed its name to Hercules, Incorporated, and stopped producing explosives and began producing fertilizers. Excess safety buffer zone lands were sold off since they were no longer needed. The fertilizer operation was closed in 1977 and many facilities were demolished (Holman and Associates 1993, W.A. Slocum & Co. and J.P Munro-Fraser 2000).

In 1977, the City commissioned an architectural evaluation of remaining company buildings (Woodbridge 1979) and, as a result, the Hercules Village historic district was created in 1980 (Record #80000799). This district lies just south of the Project Area. No standing buildings or structures related to the Company remain intact within the APE.

3.4.4. Record Search and Survey Methodology

A record and literature search and pedestrian survey were completed to aid in identification of cultural resources within the study area. The record and literature search was performed at the California Historical Resources Information System (CHRIS), NWIC, California State University, Sonoma. The record search was conducted by Richard Norwood, senior archaeologist representing HDR|DTA on December 16, 2009. The record search was completed for the plotted area of potential effect encompassed by a 1/8 mile wide radius or buffer zone. The combined APE and buffer zone are designated as the study area. Research was performed by identifying and reviewing reports relevant to the study area, site record forms, historic period maps, and National Register of Historic Places and California Register of Historic Resources listings, and other publications. Studies are on-going to field verify Track Option B.

In accordance with revised implementing regulations of the NHPA, Title 36 CFR Part 800.4(a)(4), HDR|DTA contacted the NAHC on January 3, 2010, to request a review of its Sacred Lands file and to obtain a list of individuals or tribes that the NAHC believes should be contacted regarding information or concerns related to the project.

The purpose of an archaeological survey is to verify locations of previously recorded cultural resources, to assess their current conditions, and to examine all accessible lands not previously surveyed or which were surveyed to less than adequate standards to identify previously unrecorded archaeological sites that may be present in the APE. Archaeological surveys were completed on December 3, 2009 and March 3, 2010 by two qualified, professional archaeologists, who meet the Secretary of the Interior's Standards for professional

archaeologists. The team participated in daily tailgate safety meetings prior to conducting the pedestrian survey.

Crew members walked parallel transects spaced no more than 15 meters apart. Visibility was excellent in some locations due to bare surfaces or scanty vegetation. Where vegetation prevented visibility or access, crew members they scraped the surface with a trowel to view exposed soil. All artifacts encountered during the field survey were left in place; no artifacts were collected.

Newly discovered cultural resources were fully documented. Previously recorded cultural resources were verified and re-recorded only when their existing site records or other documentation did not meet current standards for recording, or if the condition and/or integrity of the property had changed since the previous recordings. All cultural resources recorded during the survey were documented following the recordation procedures outlined in Instructions for Recording Historical Resources (OHP 1995), which utilizes State of California, Department of Parks and Recreation (DPR) forms DPR 523 A-L. This included preparation of scaled site sketch maps and photographic documentation of each site using digital photography. The locations of all archaeological sites and isolates were plotted onto the appropriate United States Geological Survey (USGS) 7.5-minute topographic maps both by hand and with a Global Positioning System (GPS) receiver using the Universal Transverse Mercator (UTM) coordinate system.

Record Search Results

Review of these reports indicates that less than 10 percent of the APE has been previously surveyed for cultural resources. Two previously recorded prehistoric period cultural resources were identified within the study area. These are described below:

P-07-000443, (CA-CCO-370): The site was recorded in 1978 by Michele Muse. The site record indicates that the site consists of a scatter of shell, bone, and charcoal. The sketch map indicates that a midden deposit is present. The site is in a highly disturbed area associated with roads and buildings. There is no indication on the site record whether or not the deposit is of prehistoric or historic origin. This site is partially within the study area, but outside of the APE.

P-07-002570, (CA-CCO-750): This buried prehistoric period site was identified during a fiber optic trench monitoring project and recorded by Tremaine and Associates in 2000. The site is within the study area. According to the site record:

> *"The site is a buried shell midden composed of very dark, wet clayey soil containing high density of mussel fragments. It was discovered during monitoring of the Long Haul Fiber Optic Project noted in a backhoe trench sidewall at 104-140cm below present ground surface. No other constituents were identified during limited dry screening through ¼" mesh. The areal extent of the site was not able to be determined. The deposit appears to be intact, but this too is difficult to determine for certain without extensive testing. It is possible that this midden was secondarily deposited during construction of the railroad grade. Level 3 Communications, the fiber optic company, was required to bore beneath the site to avoid additional damage. Before boring, it was necessary to locate buried*

> *utilities. These were found by various means, including using compressed air with a vac-truck and hand excavation. Spoils were wet-screened through ¼" mesh. Two Monterrey chert flakes were found along with a number of bird bone fragments, several fish vertebrae, miscellaneous bone fragments and one worked bone fragment. The site was eventually bored under to install the fiber optic cable. During boring several fractures occurred, forcing bentonite mud slurry through site fractures to the surface. These muds were screened but only fragments of shell was recovered"* (Cervantes and Tremaine, 2000).

One excavation unit was also completed near the original trench find, confirming the presence of buried midden. Since the find is a buried phenomenon, its exact horizontal extent is unknown and it may or may not extend into the APE. This site occurs within 100 feet of the APE boundary.

The study area and APE encompass a portion of the historic period location of the Company, an explosives-producing firm operating in Hercules between 1881 and 1964. The location has not been formally identified as a historic archaeological site at the NWIC, but this is inferred as a result of an earlier building inventory (Myers, ed. 1977, Woodbridge 1988). Many buildings and structures were once located within the study area, but these are now demolished or removed. There may be buried remnants of the plant, including foundations or other buried factory related deposits. Nearby Hercules Village is listed on the National Register of Historic Places (Record Number 290075), and on the CRHR (4547-0003-9999), but does not include any buildings within the APE (State of California Department of Parks and Recreation 1976, 2009). The location is recorded Contra Costa Historic Society as Historical Point of Interest #161 (Contra Costa County Historical Society 1994). Photos of historic-period Hercules are available at the Hercules Historical Society's website at www.herculeshistoricalsociety.org.

The UPRR (previously Southern Pacific, previously Central Pacific) grade that runs through the APE has not been formally recorded at the NWIC. Today the line is heavily used and maintained as a segment of the Capitol Corridor Rail System, however, a railroad has existed in this location since 1879. The railroad route through Hercules is shown on 1881 and 1887 maps (Rand McNalley & Co. 1881, G.W. & G.R. Colton & Co. 1887). Long term use and continuing maintenance have resulted in a road grade and tracks that are essentially modern features. However, the occurrence of bridges, signals, and other railroad-related sites or features over 50 years of age may occur along the margins of the present railroad grade.

The NAHC responded on January 20, 2010 with negative results for its search of the Sacred Lands file and a list of eight recommended contacts.

Survey Results

Some surface evidence of earlier land use was found which is summarized below. The finds all relate to either the Company or the UPRR. No evidence of prehistoric occupation was identified within the APE.

Hercules Powder Company Loci

HER-02-PC; Foundation, pipe channel: The feature is situated in an area of dense vegetation. There are twin, but non-matching, poured concrete abutments forming a channel, through which a 12" diameter ceramic pipe and a parallel cast iron pipe have been laid. There are an apparent valve and smaller steel pipes associated with the concrete abutments. Vegetation density obscures visibility and makes it difficult to interpret this feature. The weathered condition of the cement and associated fixtures suggest that the feature is over 50 years of age.

HER-03-PC; Retaining wall: The feature is a wall made of mortared brick and is exposed along the southern margin of a chain link fence at the outside southern edge of the railroad grade. The wall is four courses high and approximately 42 feet long. The wall is eroding out along its base and is broken off on one end. The wall may have been the edge of a loading dock or storage yard. The age of the feature is indeterminate, but it may be older than 50 years.

HER-05-PC; Culvert/foot bridge: The locus is situated in Refugio Creek bed. It consists of two large diameter riveted sheet steel pipes of approximately four-foot diameter covered on top with earth and cement rubble. The rubble covering is made up of soil and stacked concrete slab chunks and octagonally-shaped concrete pipe segments. There is no apparent prepared road or trail on top of, or adjacent to, the feature. The age of this feature is indeterminate, but its components look older than 50 years of age.

HER-06-PC; Pilings: There are 6 wooden pilings driven into the bed of Refugio Creek. The pilings are set in a rectangular fashion within an area approximately 8' x 10'. The pilings rise about 3' higher than the water level. The pilings may have supported a small bridge, but no fittings or mounting bolts were noted. The feature is about 10' from either shore of the creek, which has standing water. The age of the feature is indeterminate.

HER-08-PC; Construction debris: The locus consists primarily of broken concrete and red brick in a pile approximately 6 inches in diameter and less than 1-inch tall. A recent period auto tire was also noted. Some of the brick and concrete may be older than 50 years of age, but the pile itself appears to be recent.

HER-09-PC; Abutment: The concrete feature is on a hillside bank south of, and adjacent to, the railroad road bed. The feature is a 10-foot-long concrete mass with a 22-inch steel plate mounted on its southwest end. The feature is at the approximate location of a now-demolished pier depicted on the 7.5-minute USGS quadrangle map for this area. It appears on a 1958 aerial photo so this feature is over 50 years of age. Based on examination of 1968 and 1980 aerial maps, the pier was demolished sometime between these two dates. The concrete feature is battered and weathered.

HER-13-PC; Pole stubs and construction debris: The find is situated in a branch of Refugio Creek. It consists of two rotted-off wooden pole stubs situated 32' apart. There is an associated light scatter of broken red bricks. This feature is of inderminant function or age.

HER-14-PC; Road, trail: This feature is a segment of the bayside trail (undeveloped Bay Trail), which runs south of the railroad road bed between the western margins of the project area to a point just southwest of the Hercules Wharf. The single-lane road/trail is mostly asphalt-

paved. It may have once been an access road to the Company and is visible in 1958 aerial photographs. The road is of unknown age.

HER-24-PC; Pier remnant: This feature is a concentration of very large pieces of concrete rubble. It extends northward about 20 feet from the railroad grade into San Pablo Bay. It is about 15 feet wide. The area appears to be used by fishermen, who have erected a plywood shelter and chairs on the pier remnant. There is also evidence of recent camp fires. The feature lies just north of find HER-09-PC, an in-situ abutment. These two features may have been a support element of a pier that is shown on the current Mare Island 7.5-minute USGS map, but has since been demolished and removed.

Union Pacific (formerly Southern Pacific) Railroad-related Loci

HER-01-RR; Foundation and slab: This feature with two elements lies adjacent to the railroad grade bed. It consists of a poured concrete slab and an adjacent, long, narrow but larger concrete foundation with wall footings. The large foundation measures 12 feet by 56 feet. The smaller poured slab measures 5'4" wide x 12'. The larger foundation has strips of heavy steel plate set into it. It also has an inset steel access box with steel cover. The larger foundation's interior is covered with gravel. The smaller slab has wall delineations and inset wall mounting bolts. It also has inset plate mountings patched-in sometime after initial construction. One mounting plate has surrounding patch concrete, dated August 21, 1957. The 4-inch inset pipe within the smaller slab goes down into a hollow chamber at least 3 inches in depth. The feature is probably a utilities vault and is over 50 years old.

HER-04-RR; Foundation: The feature is adjacent to the railroad grade. The foundation is a 3' 6" square concrete slab. The structure's framing, now lying flat, is made of 14-inch steel I - beams. There is evidence of recent welding on one of the beams. The feature is of apparent recent age as it lacks substantial corrosion.

HER-10-RR; Foundation, railroad signal mount: This roughly 3-foot-square feature is south of, but near the railroad road bed. The feature is made up of concrete posts stacked to support concrete frames. The top of the feature has four mounting bolts. It is of indeterminate age.

HER-11-RR; Foundation, railroad signal mount: The feature is very much like RR-10, but smaller. It is close to the railroad grade and is essentially 18 inches square and has 4¾-inch mounting bolts. It is of indeterminate age.

HER-15-RR; Wooden railroad bridge: This feature is intact, and today supports the modern day railroad as it crosses Refugio Creek. The railroad bridge is 30 feet long and is supported by wooden pilings. The superstructure is made of heavy milled lumber. It is at least 100 feet wide and now supports two set of railroad tracks. Part of the structure on the south side is not currently in use and is partially exposed through erosion. A bridge is indicated at this location on 1958 aerial photographs.

HER-25-RR; Signal mounts and survey marker: The locus consists four two foot x two foot concrete blocks. Two are on the north side of the double tracks in the location and two are on the north. The blocks are 10 feet apart and each has four inset mounting bolts. The blocks probably once supported an overhead track signal. The location is adjacent to an in-use signal

house referred to as "CP RV 020/PINOLE". One of the blocks has an inset brass survey marker embossed "U S COAST & GEODETIC SURVEY," and dated 1936.

HER-26-RR; Abandoned utility line: A number of sawn-off wooden utility pole stubs were noted along the north side of the railroad. Two standing by badly weathered poles were noted in a marshy area west of Hercules Point. The pole stubs are about 10 to 12 inches in diameter.

Paleontology Locality

HER-29-PAL, The project area has exposures of the middle Miocene Hanbre Sandstone (Th), artificial fill (af) and the Miocene Cierbo Sandstone (Tc). Fossilized bivalves and a gastropod were noted in a railroad cut and bayshore exposure near the eastern portion of the project area. No evidence of vertebrate fossils was noted. Formations were identified using The Geological Map and Map Database of Northeastern San Francisco Bay Region, California (Graymer et. al. 2002).

3.5. VISUAL AND AESTHETIC RESOURCES

This section provides a description of the regulatory framework for visual and aesthetic resources on a local and regional level. It denotes if there are controlling regulations that restrict or guide the design of new infrastructure in terms of height and bulk, materials, visual setbacks, obstruction of scenic vistas, degradation of the visual quality of the site, and the effects of light and glare. It also describes the visual quality of the area around the proposed project site, including views and viewpoints, depth of perspective, and color and texture of the visual setting.

3.5.1. Regulatory Framework

City of Hercules

The following goals, objectives, policies, and programs in the General Plan relevant to visual quality would apply to the proposed project.

Open Space/Conservation Element

Objective 1.d: Plan for the preservation and enhancement of visual qualities as viewed from scenic routes.

Objective 13: Preserve and enhance scenic views within the community.

Policy 13a: Development proposals shall be reviewed in terms of natural objects in the vicinity that have aesthetic significance. This may include open space, eucalyptus groves, or vegetation that serves as a view corridor or has important visual attributes. Development proposals shall be sited to ensure that these features are retained or replaced to the extent feasible, resulting in minimal view impairment.

Policy 13b: Plantings that serve to screen views of residential development, or that help to maintain a natural-appearing landscape, shall be retained to the extent feasible. Such plants could be thinned selectively if thinning would improve view corridors. If specific trees are to be removed, such as eucalyptus trees, replace with trees, preferably native species, that will provide suitable screening while retaining important view corridors, especially along San Pablo Avenue which is a designated scenic corridor.

Policy 13d: Development shall preserve important view corridors, where feasible, by identifying and preserving the attributes of the view corridor that characterize its significance (e.g., framing elements, surface water reflections, presence or absence of impinging details) as seen from roadways, pedestrian paths, or other public vantage points to avoid view obstruction. Buildings shall be sited so as to minimize view obstruction from sensitive viewpoints.

Program 13d.1: The following views, from publicly accessible viewpoints, shall be preserved to the maximum extent feasible as the City evaluates new development on a parcel-specific basis as identified within the Land Use Plan EIR:

iv. San Pablo Avenue views of specimen oak tree stands and, where feasible, eucalyptus;

v. views of San Pablo Bay, Hills of Marin, Sonoma and Napa Counties, and inland of the Briones Hills.

Policy 13e: New development shall be designed to minimize light and glare impacts.

Program 13e.1: The City shall evaluate the light and glare potential of new development on a parcel-specific basis and apply the following measures:

- Screening of parking areas by using vegetation or trees. This will reduce the amount of glare generated from painted and chrome automobile surfaces and prevent expanses of stationary and moving automobiles.
- Hooded lights for nighttime illumination should be used for parking areas, shipping and receiving docks, and industrial development. Hooded lights direct the light beam towards the ground, which if a dark pavement, will not reflect light and cause spillage into neighboring uses.
- Regular windows should be used instead of the glass walls or massive reflective windows often used for research and development and office park developments.

Land Use Element

Objective 7: Achieve a pattern of development that is consistent with the City's desired image.

Program 7.A.1: Provide landscaping along major regional streets and highways.

This landscaping should soften the appearance of traffic and parking along those routes, while allowing view corridors to retail and other businesses.

Objective 9: Promote attractively designed and economically feasible development.

Objective 13: Attain compatible land uses within existing and planned development areas.Circulation Element

Objective 2: Plan for the preservation and enhancement of visual qualities as viewed from designated scenic routes.

Policy 2d: Proposed elements within view of designated scenic routes in the City should be reviewed in terms of their visual impact.

Hercules Zoning Ordinance

<u>Scenic Road and Highway Overlay District (Chapter 25)</u>

The purposes of the Scenic Road and Highway Overlay District of the City’s Zoning Ordinance are to implement the scenic road and highway designations of the General Plan; review the visual impact of development proposals within view of designated scenic routes; and encourage aesthetically attractive architecture, design, landscaping, and signage for new or expanded

development. The Overlay District requires that a number of specific performance standards be met for architecture and design, landscaping, and signage. Performance standards for architecture and design include, but are not limited to, the clustering of structures around a common plaza or other open space entry feature, and to articulate elevations to reduce the visual impact of building mass and bulk. Desirable landscape and hardscape qualities consist of front and side yards landscaped with groundcover and trees that soften building edges, landscaped and screened parking areas, and plazas or other open space entry features. Finally, a sign plan is required for all new or expanded development within the overlay district. Signage should be attractive and low profile, fitting into the design theme of the buildings and landscape. The nearest designated scenic roads to the project site are San Pablo Boulevard and SR-4.

Performance Standards (Chapter 31)

This chapter establishes specific performance standards for development, uses for certain zoning districts, and general performance standards that apply to all zoning districts. The performance standards relevant to aesthetics require potential light and glare from new development to be attenuated on a parcel-specific basis. The measures listed below help to keep glare on site and prevents it from "spilling over" to adjacent uses.

- Screen parking areas with vegetation or trees to reduce the amount of glare generated from painted and chrome automobile surfaces.

- Use hooded lights for nighttime illumination at parking areas, shipping and receiving docks, and industrial development. Hooded lights direct the light beam towards the ground where dark pavement will not reflect light and cause spillage into neighboring uses.

Design Review (Chapter 42)

The “Design Review” chapter has the following purposes:

- Improve the general standards of orderly development in the City through design review of individual buildings, structures, and their environs.

- Improve and augment planning and building controls to promote development that is in the best interest of public health, safety, and welfare.

- Establish standards and policies that promote and enhance good design, site relationships, and other aesthetic considerations in the City.

- Preserve and enhance property values and the visual character of the City.

The “Design Review” chapter requires that the Hercules Planning Commission approve the design of a public or private building, fence, structure, or sign prior to the issuance of any construction permit. The Planning Commission's design review approval must be supported by a number of findings: the approval is in the best interest of public health, safety, and general welfare; general site considerations (layout, open space, orientation, and location of buildings, setbacks, height, walls, fences, etc.) have been designed to provide a desirable environment; general architectural considerations have been incorporated to ensure the development's

compatibility with its design concept and the character of adjacent buildings; and general landscape considerations have been taken to ensure visual relief, compliment buildings and structures, and provide an attractive environment for the enjoyment of the public.

Waterfront District Master Plan

The WDMP serves as the zoning regulations for the project site. The WDMP is a form based zoning code that facilitates and regulates development of the waterfront area, including the proposed project site. The vision for development under the WDMP is to create a fully functional pedestrian and transit-oriented community where a multi-modal transit station, comprised of water ferry, train and bus transit, have been the center of the planning. The WDMP envisions the multi-modal transit adjacent to Refugio Creek at the Alternative 1 site. The WDMP acknowledges that the construction of the rail platform will cause Refugio Creek to be realigned and improved as it enters into San Pablo Bay. In addition, the WDMP plans for the John Muir Parkway extension, Transit Loop and Bayfront Boulevard.

The transit center is proposed to be located within the Historic Town Center (HTC) district. The HTC district is not only planned for the transit center, but also for mixed use neighborhood and residential uses, and retail and commercial uses.

The WDMP was amended in 2008 by the Waterfront Now Initiative to include provision applicable to the undeveloped areas of the waterfront area, including the project site. The WDMP includes urban and architectural regulations, development standards and design guidelines.

Bay Area Conservation and Development Commission

One of the BCDC primary roles is to review proposed development or changes to the shoreline and the first 100 feet inland from the bay, for their aesthetic and visual impact as outlined under the Bay Plan. The BCDC maintains public access design guidelines for the San Francisco Bay called “Shoreline Spaces,” which provide direction for the design of gathering and seating areas, site furnishings, and signage along bay; shoreline projects are examined on a case-by-case basis.

Policy 4 of the BCDC’s San Francisco Bay Plan, Findings and Policies – Transportation states,. “Transportation projects on the bay shoreline and bridges over the bay or certain waterways should include pedestrian and bicycle paths that will either be a part of the Bay Trail or connect the Bay Trail with other regional and community trails. Transportation projects should be designed to maintain and enhance visual and physical access to the bay and along the bay shoreline.”

3.5.2. Existing Conditions

The proposed project site is located near the southern shore of San Pablo Bay, in the City of Hercules. San Pablo Bay is a part of San Francisco Bay, and each is a major scenic resource, with broad vistas of water, islands, urban skylines, bridges, and mountains available from many parts of the Bay Area. The shoreline of the bay is characterized by a mix of open land and commercial, maritime, industrial, residential, and recreational land uses. Hills and mountains surround the bay, creating both scenic backdrops to views from the lowlands or water and

extensive viewing locations of the bay and surroundings from higher elevations. The project site served as part of the Hercules Powder Works in the early 1900s, at which time buildings and munitions bunkers were located. However, all the structures associated with this facility have since been removed from the project site.

The existing visual setting of the proposed project site includes views of a broad, low-lying floodplain adjacent to the undeveloped shoreline on San Pablo Bay to the north and east of the site. Views also include Hercules Point; approximately 4,000 linear feet of shoreline to the northeast, along the UPRR right of way; and an upland area east and west of Refugio Creek, extending from the railroad track south to Bayfront Boulevard (**Figures 3.5-1, 3.5-2, 3.5-3a** and **3.5-3b**). The UPRR tracks and easement cross through the proposed project site in a northwesterly direction. Railroad signals are situated above the trestle bridge across Refugio Creek.

Hercules Point extends out approximately 1,200 feet into San Pablo Bay from the shoreline along the north side of the UPRR tracks. The point itself is scattered with rubble and other debris from the former Hercules Powder Company factory. A chain-link fence surrounds the edge of the point, and the partially sunken remains of the historic wooden wharf extend northwest from the end of the point. The visual quality of the point itself would be considered low, due to the litter and other debris associated with the demolition of the former factory. Views from the point, however, include striking panoramas of the bay shore. These views include those of skyline, hills and development of eastern Marin County. The Hercules General Plan has designated the point to become a public park and open space.

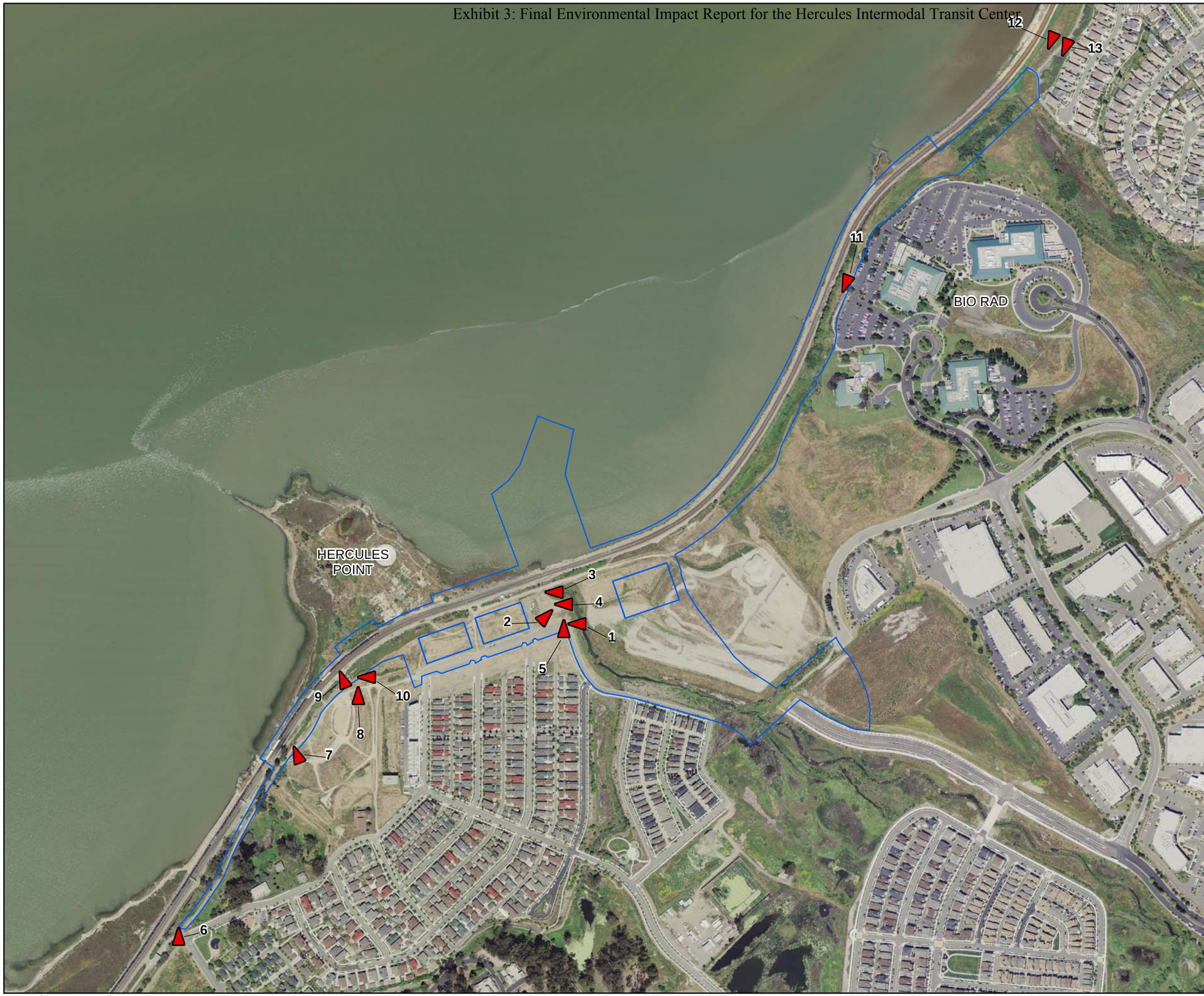
Lands east of Hercules Point primarily consist of low lying shoreline parallel to the UPRR tracks. An existing segment of the Bay Trail is located east of the Bio-Rad property and is part of the Victoria by the Bay subdivision. Residents of this subdivision and users of the Bay Trail have similar views of the bay shore and distant skyline of Marin County as those visible from other areas of the project.

The mouth of Refugio Creek is situated immediately east of Hercules Point. The creek flows through a narrow, steep-sided channel and intersects with the bay through a culvert beneath a wooden trestle UPRR bridge. The deep, narrow stream channel and bank vegetation screen views of the creek itself and it is not readily visible from most locations on the project site or in nearby areas.

Existing sources of light and glare on or near the project site include vehicles traveling on Bayfront Boulevard, train headlights along the UPRR track, and street and exterior lighting from nearby residential areas.

The land uses on parcels located to the south and southwest of the proposed project site are generally characterized as other undeveloped land, or residential and neighborhood commercial areas. Lands to the east and northeast of the project site include the undeveloped land designated for the Bayfront Development for mixed-use development, which are about 300 feet south of the residential and neighborhood commercial uses further to the south. The nearest residential development is the Bayfront Development, which is located about 300 feet south of the proposed project site. Further to the east and northeast of the proposed project site are the Bio-Rad

Corporation, a corporate research and development facility, as well as the North Shore Business Park (office, research and light industrial.



Legend

Approximate Location and Direction of Photos

Project Boundary

N

1 in = 500 ft (at tabloid layout)

0 62.5 125 250 Meters

0 250 500 1,000 Feet

Figure 3.5-1: Existing Conditions; Site Photo Points and Directions

City of Hercules
Hercules Intermodal Transit Facility
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources.
No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey.
Data is State Plane Feet, NAD83 Zone 3

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Photo point	Photo number	View Direction	Photo point location	Approximate View	Notes
1	IMG_0018	west	Bayfront Blvd.	proposed HITC site	
2	IMG_0019	northeast	near proposed transit loop	proposed transit loop and future parking garage	
3	IMG_0020	west	near proposed transit loop	proposed HITC site	without train
4	IMG_0021	west	near proposed transit loop	proposed HITC site	with train
5	IMG_0023	north	Bayfront Blvd.	existing UPRR bridge	
6	IMG_0024	north	Railroad Ave.	existing trail near Railroad Ave	
7	IMG_0025	west of north	south side of bowl	Hercules point and area near the western extent of the proposed track realignment	
8	IMG_0026	north	north side of bowl	proposed HITC location	
9	IMG_0027	west of north	north side of bowl	Hercules Point open space	
10	IMG_0028	west	north side of bowl	RR track and proposed trail location	
11	IMG_0030	west of south		proposed HITC location	
12	IMG_0031	west of south	Bay trail near Victoria by the Bay subdivision	UPRR tracks and proposed HITC location	
13	IMG_0032	west of south	Bay trail near Victoria by the Bay subdivision	UPRR tracks and proposed HITC location	

Figure 3.5-2: Existing Conditions Photo Points Key

City of Hercules
Hercules Intermodal Transit Facility
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources.
No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey.
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Figure 3.5-3a: Existing Conditions Photo Points

City of Hercules
Hercules Intermodal Transit Facility
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources. No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey. Data is State Plane Feet, NAD83 Zone 3

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Figure 3.5-3b: Existing Conditions Photo Points (cont.)

City of Hercules
Hercules Intermodal Transit Facility
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources.
No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey.
Data is State Plane Feet, NAD83 Zone 3

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3.6. PARKLANDS AND RECREATIONAL FACILITIES

This section provides the regulatory framework for parklands and recreational facilities on a federal, state, regional, and local level. It also presents a description of the existing conditions of the project area as they relate to parks and recreation.

3.6.1. Regulatory Framework

Federal

United States Department of Transportation Act of 1966 - Section 4(f)

Section 4(f) of the U.S. Department of Transportation (U.S. DOT) Act of 1966 stipulates that U.S. DOT agencies, including the FTA, cannot approve the use of land from any publicly owned parks, recreation areas, wildlife or waterfowl refuge, or public and private historic sites listed or eligible for the National Register of Historic Places unless the following conditions apply:

- There is no feasible and prudent alternative to the use, and
- The action includes all possible planning to minimize harm to the property resulting from use.

Section 4(f) requires that the U.S. DOT agency either (1) determine that the impacts to Section 4(f) properties are *de minimis*, or (2) undertake a 4(f) evaluation to identify a feasible and prudent alternative that either avoids Section 4(f) properties or select the alternative that causes the least overall harm. A *de minimis* impact is one that will not adversely affect the activities, features, or attributes of the property. Where there is no feasible and prudent avoidance alternative available, the lead DOT agency can approve a project that causes the least overall harm to the Section 4(f) property. Factors considered to make the determination of least overall harm are detailed in 23 CFR 7774.3 (c) and includes the ability to mitigate adverse impacts to Section 4(f) property; and the relative significance of each Section 4(f) property.

Use of a Section 4(f) property occurs: (1) when land is permanently incorporated into a transportation facility; or (2) when there is a temporary occupancy of land that is adverse in terms of the statute's preservation purpose; or (3) when there is a construction use (a project's proximity impacts are so severe that the protected activities, features, or attributes of a property are substantially impaired).

'Officials having jurisdiction' are the officials of the agency owning or administering the land. If the authority has been delegated or relinquished to another agency, that agency must be contacted to determine the major purpose(s) of the land. The final decision on applicability of Section 4(f) to a particular property of type of land is made by FTA after consultation with the officials having jurisdiction over the Section 4(f) property.

United States Department of Interior Section 6(f) Lands

The Department of Interior Land and Water Conservation Fund Act (LWCFA) of 1965 established the land and water conservation fund, a matching assistance program that provides

grants which pay half the acquisition and development cost of outdoor recreation sites and facilities. Section 6(f) of the act requires that all lands acquired or developed with LWCFA assistance be maintained in public outdoor recreation use. If the selected alternative directly or indirectly affects LWCFA funded parklands, consultation and approval must be obtained from the Department of Interior's National Park Service.

Regional and Local

San Francisco Bay Plan

BCDC is the federally-designated State coastal management agency for the San Francisco Bay segment of the California coastal zone. This designation empowers the BCDC to use the authority of the federal Coastal Zone Management Act to ensure that federal projects and activities are consistent with the policies of the Bay Plan and State law. BCDC has the authority to issue or deny permit applications for placing fill, extracting minerals, or changing the use of any land, water, or structure within the San Francisco Bay and associated shoreland areas. The San Francisco Bay Plan, adopted in 1968 by BCDC and last amended in 2008, includes policies to guide future uses of the Bay and shoreline and includes a set of maps which show where the policies should apply to the present Bay and its shoreline areas.

East Bay Regional Park District General Plan 1997

The East Bay Regional Park District (EBRPD) Master Plan 1997 defines the vision and the mission of the EBRPD and sets priorities for the future. It explains the EBRPD's multi-faceted responsibilities and provides policies and guidelines for achieving the highest standards of service in resource conservation, management, interpretation, public access, and recreation. The Master Plan 1997 is designed to maintain a careful balance between the need to protect and conserve resources and the recreational use of parklands for all to enjoy now and in the future. The Master Plan was prepared with the active participation of the EBRPD's citizen-based Park Advisory Committee and with extensive review and comment from the community. The Master Plan is revised and updated periodically to reflect new circumstances to which the EBRPD must respond.

City of Hercules General Plan

Land Use Element

The Land Use Element of the General Plan identifies parklands, recreational facilities, and open spaces. The Land Use Element identifies Hercules Point (10.9 acres) as public open space.

Open Space/Conservation Element

The Open Space/Conservation Element of the General Plan includes objectives, policies, and programs related to parklands and recreational resources. Objectives, policies, and programs applicable to the project are listed below.

Objective 1
Provide adequate recreation, park, and open space resources as the community expands.

Policy 1a
Expand the community's park, trail, and open space system to meet the demands of future growth. The comprehensive park, trail and open space system shall provide linkages between developed and developing areas.

Program 1a.1. Public Open Spaces
The General Plan has been designed to preserve most of the existing high quality vegetation, wildlife habitat and landforms within the public open spaces and conservation areas. Public open spaces are classified into the following areas: riparian, chaparral, oak groves, salt marsh, and greenways.

Riparian Areas

The major riparian system is Refugio Creek from the easterly city limits to the Bay. Most of the creek east of I-80 will be maintained in a natural condition. The wildlife habitat will be enhanced by planting appropriate vegetation. Small ponds designed to reduce the velocity of water and possible erosion will also encourage wildlife in the riparian areas.

West of I-80, the existing low flow channel will be modified to the south in a multi-use open space corridor. The drainage facility will be designed and landscaped so as to have a natural appearance and enhance wildlife habitat. Some of the draws have springs which can be developed with watering holes and planting to support small animals.

Policy 1c
The City shall ensure that new development funds its share of costs associated with the provision of park facilities by attaching project-specific mitigation as conditions of approval.

- Standards: The standards for the provision of parks and open space in Hercules are:
    - A minimum of 1.75 acres of neighborhood parks shall be provided for each 1,000 residents.
    - A minimum of 3.25 acres of community park space shall be provided for each 1,000 residents.

Objective 5
Preserve salt marsh zones along San Pablo Bay.

Policy 5a
The city shall review development proposals for consistency with minimizing impacts to salt marsh zones. Buildings shall be located on existing developed or graded areas, where practicable.

Policy 5a.1
The City shall work with CDFG, BCDC, EBRPD, and the USACE to determine appropriate buffer zones along the Bay to protect tidal habitat when designing a Bay access trail linkage between Pinole and Rodeo. Public access and pedestrian pathways shall be limited within the

buffer zone, and when possible, located along the edges of the buffer zone. Bicycles shall be encouraged to stay on bike paths through the use of signage and fencing.

Land Use Element

Objective 1
Achieve a level of population and employment which preserves and enhances the desired character of the community.

Policy IA
Encourage and only allow development that is consistent with the Land Use Diagram, Land Use Categories; and objectives, policies and programs of the Land Use Element.

Program 1A.1
Procedures to evaluate development applications for consistency with the Land Use Diagram, Land Use Categories; and objectives, policies and programs of the Land Use Element shall be incorporated into the application review procedures of the Zoning Ordinance. Applications shall also be evaluated in relation to the capacity of infrastructure and schools to serve the proposed development.

Waterfront District Master Plan Initiative – Form-based Code

The Hercules City Council adopted the WDMP Initiative in 2008, which amended the Land Use, Open Space/Conservation, Growth Management, Hazardous Waste elements, and the Zoning Ordinance. The Initiative also amends the WDMP by adding a Section 4 to establish a form based code to regulate and provide detailed development and design standards solely for the undeveloped portions of the Historic Town Center, Transit Village, and the Hercules Point sub-districts.

The Civic Space Standards of the form-based code describes the design framework for public spaces in the undeveloped portions of the Historic Town Center, Transit Village, and the Hercules Point sub-districts, which includes the Bayfront/Creekside Parks, the Bay Trail, and the Creekside Trail.

3.6.2. Existing Conditions

Parklands and Recreational Facilities

City of Hercules

The City Recreation and Community Services Department (Department) operates and maintains eight parks and provides a wide variety of recreational, educational, and social activities for all citizens (**Figure 3.6-1**). Summary descriptions of the individual City-operated park facilities by the City are provided below:

- Refugio Valley Park is 55 acres in size and contains seven picnic tables, two BBQ pits, four tennis courts, 37 parking spaces, a jogging trail, a lake, restrooms, a par course, multi-use field, a drinking fountain, and a children's tot lot.

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Figure 3.6-1: City of Hercules Parks

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- Ohlone Park includes eight picnic tables, 12 BBQ pits, an open field, a nature trail, restrooms, and amphitheater community garden.
- Woodfield Park includes a children's tot lot, two basketball courts, one softball field, one multi-use field, two tennis courts, and restrooms.
- Foxboro Park and Tennis Courts includes a recreation building, children's tot lot, two tennis courts, one basketball court, four picnic tables, four BBQ pits, one multi-use field, a jogging trail, restrooms, drinking and fountain,
- Railroad Park includes four BBQ pits, four picnic tables, and a play area.
- Hanna Ranch Park includes a softball field, restrooms, and a multi-use field with bleachers, a soccer field, a jogging trail, and parking.
- Frog Pad Park includes a playground (ages 5-12), a children's tot lot, four picnic tables, and a drinking fountain.
- Bayside Park includes a children's tot lot, drinking fountain, and approximately a half-acre of grass playing field.

The Hercules Point area is a privately owned parcel on the northern boundary of the proposed project site that is planned to eventually become open space and a designated public park on 10.96 acres. The site is the former location of the Hercules Powder explosives plant facilities that has been cleared of its structures. The site is presently vacant and access is restricted. To date, no specific design plan for its reuse has been adopted.

East Bay Regional Park District

The EBRPD manages over 95,000 acres within Alameda and Contra Costa Counties, including 65 regional parks, recreational areas, wilderness, shorelines, preserves, and land bank areas. The EBRPD properties within the vicinity of the Hercules ITC site include San Pablo Bay Regional Park, Lone Tree Park, and Pinole Point Regional Shoreline. The Pinole Point Regional Shoreline is located just south of the Hercules ITC project site.

The Bay Trail

An undeveloped segment of the Bay Trail passes through the project site. The Bay Trail was initiated in 1987 by Senate Bill 100, which directed the Association of Bay Area Governments (ABAG) to develop a plan for this "ring around the Bay," including a specific alignment for the Bay Trail. The Bay Trail Plan, adopted by ABAG in July 1989, includes: a proposed alignment; a set of policies to guide the future selection, design and implementation of routes; and strategies for implementation and financing. The Bay Trail is now a collaborative project by Bay Area cities, park agencies [California Department of Parks and Recreation (CDPR) and EBRPD], regional agencies (ABAG and BCDC), and transportation agencies (Caltrans and MTC) to create a multi-use trail around the Bay. The Bay Trail Plan enjoys widespread support in the Bay Area, The City and the majority of the jurisdictions along the Bay Trail alignment has passed

resolutions in support of the Bay Trail and has incorporated it into their respective general plans. The WDMP's form based code (2008) identifies the Bay Trail as an important recreation feature and connection to regional paths and biking trails and specifies that its development adhere to ABAG's standards. On May 30, 2007, EBRPD entered a Settlement Agreement with Bio-Rad Laboratories, Inc., pursuant to which Bio-Rad donated an easement to EBRPD for the purpose of facilitating alignment of the portion of the Bay Trail - Hercules Segment along and upon property within the City owned by Bio-Rad, and adjacent to the proposed project site.

In order to properly integrate the design and construction of the Hercules ITC and the Bay Trail - Hercules Segment, the City of Hercules is willing to undertake the design and construction of the Bay Trail - Bio-Rad Segment. The EBRPD would allow the City to undertake the design and construction of the Bay Trail - Bio-Rad Segment, subject to the terms of their mutual agreement. The agreement between the City and EBRPD is anticipated to be fully executed and adopted in September, 2010.

In the vicinity of the northeast portion of Track Option B, a 2,065 ft. length of existing segment of the Bay Trail is located in the Victoria by the Bay subdivision. The meandering trail is located between the UPRR right-of-way and the edge of the subdivision. When complete, the Bay Trail will be a continuous 400-mile recreational corridor that will encircle the entire Bay Area, connecting communities to each other and to the Bay. It will link the shorelines of all nine counties in the Bay Area and 47 of its cities. The Bay Trail represents an important element in linking the noncontiguous parts of the Eastshore Park Project to each other and to adjacent municipal recreational facilities. To date, 240 miles of the Bay Trail, or more than half its ultimate length, have been developed.

3.7. AIR QUALITY

This section presents existing air quality conditions in the project area (including the project site, applicable air district jurisdiction, and air basin) and provides a description of the regulatory framework for air quality management on a federal, state, regional, and local level.

The analysis of air quality impacts is based on air quality regulations administered by the USEPA, the California Air Resources Board (CARB), and the Bay Area Air Quality Management District (BAAQMD) with each agency responsible for different aspects of the proposed project's activities. The roles of these agencies are discussed in detail in Section 3.7.1, Regulatory Framework. Other sources used in the assessment include the BAAQMD CEQA Guidelines [for] Assessing the Air Quality Impacts of Projects and Plans (BAAQMD 1999); and the Bay Area 2005 Ozone Strategy (BAAQMD 2006).

Public and agency comments related to air quality received in response to the Notice of Preparation/Notice of Intent are summarized below.

- CARB submitted a comment regarding the implementation of all feasible measures to reduce emissions of oxides of nitrogen (NO_X), reactive organic gases (ROG), and carbon monoxide (CO) to the maximum extent possible.

3.7.1. Regulatory Framework

Federal, State, and Local Air Quality Agencies

Air quality within the San Francisco Bay Area Air Basin (SFBAAB) is addressed through the efforts of various federal, state, regional, and local government agencies. These agencies work jointly as well as individually to improve air quality through legislation, regulations, planning, policymaking, education, and a variety of programs. The agencies primarily responsible for improving the air quality within the basin are discussed below along with their individual responsibilities.

U.S. Environmental Protection Agency

The USEPA is responsible for enforcing the Federal Clean Air Act (CAA) and the National Ambient Air Quality Standards (NAAQS). The NAAQS identify levels of air quality for seven criteria pollutants that are considered the maximum levels of ambient (background) air pollutants considered safe, with an adequate margin of safety, to protect public health and welfare. The seven criteria pollutants are O_3, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead. Particulate matter is the general term used for a mixture of solid particles and liquid droplets found in the air. For air quality purposes, these particles are classified by size: fine particulates (i.e., $PM_{2.5}$) have a diameter less than or equal to 2.5 micrometers, and respirable or coarse particulates (i.e., PM_{10}) have a diameter less than or equal to 10 micrometers. The federal ambient air quality standards and the relevant health effects of the criteria pollutants are summarized in **Table 3.7-1**.

The basin is currently classified by the USEPA as a nonattainment/marginal area for the 8-hour standard for O_3 (the 1-hour standard was revoked as of June 15, 2005). The basin was also recently designated nonattainment for the fine particulate matter ($PM_{2.5}$) standard. Additionally,

it has been designated as an attainment/maintenance area for the 1-hour and 8-hour standards for CO, and has been designated attainment/unclassifiable for the annual standard for NO_2 and the 24-hour PM_{10} standard. The basin has been designated as an attainment area for the quarterly and the 3-month rolling lead standards and the 24-hour and annual SO_2 standards. In response to its enforcement responsibilities, the USEPA requires each state to prepare and submit a State Implementation Plan (SIP) describing how the state will achieve the federal standards by specified dates, depending on the severity of the air quality within the state or air basin. Air quality attainment plans are discussed in further detail below.

The status of the SFBAAB with respect to attainment with the NAAQS is summarized in **Table 3.7-1**.

Table 3.7-1
National Ambient Air Quality Standards and Status –
San Francisco Bay Area Air Basin

Pollutant	Averaging Time	Designation/ Classification
Ozone (O3)	8 Hour	Nonattainment/Marginal
Carbon Monoxide (CO)	1 Hour, 8 Hour	Attainment/Maintenance
Nitrogen Dioxide (NO2)	Annual Arithmetic Mean	Attainment/Unclassifiable
Sulfur Dioxide (SO2)	24 Hour, Annual Arithmetic Mean	Attainment
Respirable Particulate Matter (PM10)	24 Hour	Attainment/Unclassifiable
Fine Particulate Matter (PM2.5)	24 Hour, Annual Arithmetic Mean	Nonattainment
Lead (Pb)	Calendar Quarter, 3-Month Rolling	Attainment
Source: Environmental Protection Agency 2010b		

Hazardous Air Pollutants

Regulation of hazardous air pollutants (HAPs) under federal regulations is achieved through federal and state controls on individual sources. Federal law defines HAPs as noncriteria air pollutants with short-term (acute) and/or long-term (chronic or carcinogenic) adverse human health effects. The 1990 federal CAA Amendments offer a comprehensive plan for achieving significant reductions in both mobile and stationary source emissions of HAPs. Under the 1990 CAA Amendments, a total of 189 chemicals or chemical families were designated HAPs because of their adverse human health effects. Title III of the 1990 federal CAA Amendments amended Section 112 of the CAA to replace the former program with an entirely new technology-based program. Under Title III, the USEPA must establish maximum achievable control technology emission standards for all new and existing “major” stationary sources through promulgation of National Emission Standards for Hazardous Air Pollutants (NESHAP). Major stationary sources of HAPs are required to obtain an operating permit from the BAAQMD pursuant to Title V of the 1990 CAA Amendments.

California Air Resources Board

CARB, a branch of the California Environmental Protection Agency (Cal/EPA), oversees air quality planning and control throughout California. It is primarily responsible for ensuring implementation of the 1988 California Clean Air Act (CCAA) for responding to the federal CAA requirements, and for regulating emissions from motor vehicles and consumer products within the state. CARB has established emission standards for vehicles sold in California and for various types of equipment available commercially. It also sets fuel specifications to further reduce vehicular emissions.

Like the USEPA, CARB has established ambient air quality standards for the state (i.e., CAAQS). These standards apply to the same seven criteria pollutants as the federal CAA and also address sulfates (SO_4), visibility-reducing particles, hydrogen sulfide (H_2S) and vinyl chloride (CH_2=CH-C1). The CCAA standards are more stringent than the federal standards and, in the case of PM_{10} and SO_2, far more stringent. The CCAA requires air pollution control districts to achieve the state standards by the earliest practicable date. The California ambient air quality standards and the relevant health effects of the criteria pollutants are summarized in Table 4.2-1.

Based on monitored pollutant levels, the CCAA divides O_3 nonattainment areas into four categories—moderate, serious, severe, and extreme—to which progressively more stringent planning and emission control requirements apply.

The basin is a nonattainment area for the California 1-hour and 8-hour ozone standard. In regard to particulate matter, the basin is designated as nonattainment for the California 24-hour and annual PM_{10} standards, as well as the California annual $PM_{2.5}$ standard. The basin is designated as attainment or unclassifiable for all other CAAQS. The ozone precursors, ROG and NO_X, in addition to PM_{10} and $PM_{2.5}$, are the pollutants of concern for projects located in the basin. The status of the basin with respect to attainment with the CAAQS is summarized in **Table 3.7-2**, California Ambient Air Quality Standards and Status – San Francisco Bay Area Air Basin

<u>Toxic Air Contaminants</u>

California law defines toxic air contaminants (TAC) as air pollutants having carcinogenic or other health effects. Assembly Bill (AB) 1807 (the Tanner Bill, passed in 1983) established the State Air Toxics Program and the methods for designating certain chemicals as TACs. A total of 245 substances have been designated TACs under California law; they include the federal HAPs adopted as TACs in accordance with AB 2728. The Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588) seeks to identify and evaluate risk from air toxics sources, although AB 2588 does not directly regulate air toxics emissions. Under AB 2588, sources emitting more than 10 tons per year of any criteria air pollutant must estimate and report their toxic air emissions to the local air districts. Local air districts then rank facilities on the basis of emissions, and high priority facilities are required to submit a health risk assessment and communicate the results to the affected public. Depending on risk levels, emitting facilities are required to implement varying levels of risk reduction measures. The BAAQMD is responsible for implementing AB 2588 in the basin.

Table 3.7-2
California Ambient Air Quality Standards and Status
San Francisco Bay Area Air Basin

Pollutant	Averaging Time	Designation/ Classification
Ozone (O3)	1 Hour, 8 Hour	Nonattainment1
Carbon Monoxide (CO)	1 Hour, 8 Hour	Attainment
Nitrogen Dioxide (NO2)	1 Hour	Attainment
Sulfur Dioxide (SO2)	1 Hour, 24 Hour	Attainment
Respirable Particulate Matter (PM10)	24 Hour, Annual Arithmetic Mean	Nonattainment
Fine Particulate Matter (PM2.5)	Annual Arithmetic Mean	Nonattainment
Lead (Pb)2	30 Day Average	Attainment
Sulfates (SO4)	24 Hour	Attainment
Hydrogen Sulfide (H2S)	1 Hour	Unclassified
Vinyl Chloride2	24 Hour	Unclassified
Visibility-Reducing Particles	8 Hour (10 AM–6 PM)	Unclassified

Source: California Air Resources Board 2010b.

[1] CARB has not issued area classifications based on the new state 8-hour standard. The previous classification for the 1-hour ozone standard was Serious.

[2] CARB has identified lead and vinyl chloride as "toxic air contaminants" with no threshold level of exposure for adverse health effects determined.

The BAAQMD is currently working to control the effects of TACs from local hot spots and ambient background concentrations. The control strategy involves reviewing new sources to ensure compliance with required emission controls and limits, maintaining an inventory of existing sources to identify major TAC emissions and developing measures to reduce TAC emissions. The BAAQMD publishes the results of the various control programs in an annual report, which provides information on the current TAC inventory, AB 2588 risk assessments, TAC monitoring programs, and TAC control measures and plans.

One of the TACs being controlled by the BAAQMD is particulate matter (PM) from diesel-fueled engines, also known as diesel exhaust particulate. In 1998, CARB identified diesel exhaust particulate as a TAC. Compared to other TACs, diesel exhaust particulate emissions are estimated to be responsible for about 70 percent of the total ambient air toxics risk in the basin. On a statewide basis, the average potential cancer risk associated with these emissions is over 500 potential cancer cases per million exposed people. In addition to these general risks, diesel exhaust particulate can also present elevated localized or near-source exposures.

Bay Area Air Quality Management District

Management of air quality in the basin is the responsibility of the BAAQMD. The BAAQMD is responsible for bringing and/or maintaining air quality in the basin within federal and state air quality standards. Specifically, the BAAQMD has responsibility for monitoring ambient air pollutant levels throughout the basin and developing and implementing attainment strategies to ensure that future emissions will be within federal and state standards.

Clean Air Plans

As discussed previously, the CAA and CCAA require preparation of plans to reduce air pollution to healthful levels. The BAAQMD has responded to this requirement by preparing a series of Clean Air Plans (CAP), the most recent and rigorous of which was approved in December 2000. The 2000 CAP continues the air pollution reduction strategy established by the 1991 CAP and represents the third triennial update to the 1991 CAP, following previous updates in 1994 and 1997. The 2000 CAP is designed to address attainment of the state standard for O_3.

The 1997 CAP contained stationary and mobile source control measures, which included developing rules to reduce vehicle trips to and from major residential developments, shopping centers and other indirect sources; encouraging cities and counties to plan for high-density development; and clustering development with mixed uses in the vicinity of mass transit stations. The 2000 CAP includes changes in the organization and scheduling of some existing control measures, some new stationary source control measures, revisions to previous stationary source measures and deletion of some control measures deemed no longer feasible by BAAQMD staff. The transportation control measures (TCM) in the 2000 CAP are unchanged from the 1997 CAP. The 2000 CAP continues to discourage urban sprawl while strongly endorsing high-density mixed-use developments near transit centers that reduce the need for commuting by personal vehicles.

Currently, the BAAQMD is developing the 2009 CAP that will update the 2005 Ozone Strategy (discussed below) and consider the impacts of ozone control measures on particulate matter, air toxics, and greenhouse gases in a single, integrated plan. The 2009 CAP is also expected to review progress in improving air quality in recent years and establish emission control measures to be implemented in the 2009-2012 timeframe.

2001 Ozone Attainment Plan

The BAAQMD developed the 2001 Ozone Attainment Plan as a guideline to achieve the federal 1-hour ozone standard. The 2001 Attainment Plan was approved by CARB in 2001 and by the USEPA in 2003. In April 2004, the USEPA determined the SFBAAB had attained the federal 1-hour ozone standard. Due to the attainment status of the basin, the 1-hour ozone requirements set forth in the 2001 Ozone Attainment Plan were no longer required. A year later, in 2005, the federal 1-hour ozone standard was revoked by the USEPA for a new and more health-protective 8-hour standard. The SFBAAB was designated as marginal nonattainment for the federal 8-hour ozone standard. Although designated as nonattainment, areas designated as marginal nonattainment or less were not required to submit new attainment plans. Nonetheless, the control measures and strategies described in the 2001 Ozone Attainment Plan for the 1-hour standard will also help achieve attainment with the 8-hour standard.

2005 Ozone Strategy

The 2005 Ozone Strategy is a comprehensive document mapping how the SFBAAB will achieve attainment of the state 1-hour ozone standard as expeditiously as possible and how the basin will reduce transport of ozone and ozone precursors to neighboring air basins. The 2005 Ozone Strategy was prepared by the BAAQMD in cooperation with the Metropolitan Transportation Commission (MTC) and the Association of Bay Area Governments (ABAG). The document

outlines how the basin will meet the CCAA planning requirements and transport mitigation requirements through implementation of control measures and strategies. The 2005 Ozone Strategy describes its plans to implement stationary source control measures through District regulations; mobile source control measures through incentive programs; and transportation control measures through transportation programs in cooperation with MTC, transit agencies, and local governments.

BAAQMD Rules and Regulations

The BAAQMD is responsible for limiting the amount of emissions that can be generated throughout the basin by stationary sources. Specific rules and regulations have been adopted that limit emissions that can be generated by various uses and/or activities and identify specific pollution reduction measures that must be implemented in association with various uses and activities. These rules regulate not only the emissions of the state and federal criteria pollutants, but also the emissions of toxic air contaminants. The rules are also subject to ongoing refinement by the BAAQMD.

Some emission sources subject to these rules are regulated through the BAAQMD's permitting process. Through this permitting process, the BAAQMD also monitors the amount of stationary emissions being generated and uses this information in developing the CAP.

BAAQMD CEQA Guidelines

In April 1996, the BAAQMD prepared its BAAQMD CEQA Guidelines as a guidance document to provide lead government agencies, consultants, and project proponents with uniform procedures for assessing air quality impacts and preparing the air quality sections of environmental documents for projects subject to CEQA. The BAAQMD CEQA Guidelines were last revised in December 1999, although the document is in the process of being updated. The most recent draft of the revised BAAQMD CEQA Guidelines was issued in December 2009, with public hearings scheduled for April 2010. The BAAQMD CEQA Guidelines document describes the criteria that the BAAQMD uses when reviewing and commenting on the adequacy of environmental documents, such as this Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS). The BAAQMD CEQA Guidelines recommend thresholds for use in determining whether projects would have significant adverse environmental impacts, identify methodologies for predicting project emissions and impacts, and identify measures that can be used to avoid or reduce air quality impacts. The BAAQMD CEQA Guidelines revisions are underway and are expected to be finalized later in 2010.

Association of Bay Area Governments

The ABAG is a council of governments for the counties of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Sonoma, and Solano. ABAG is a regional planning agency and serves as a forum for regional issues relating to transportation, the economy, community development, and the environment. ABAG also serves as the regional clearinghouse for projects requiring environmental documentation under federal and state law. In this role, ABAG reviews proposed projects to analyze their impacts on ABAG's regional planning efforts.

Although ABAG is not an air quality management agency, it is responsible for several air quality planning issues. Specifically, as the designated Metropolitan Planning Organization (MPO) for the nine counties, it is responsible, pursuant to Section 176(c) of the 1990 Amendments to the federal CAA, for providing current population, employment, travel, and congestion projections for regional air quality planning efforts. ABAG is required to quantify and document the demographic and employment factors influencing expected transportation demand, including land use forecasts. ABAG is also responsible for preparing and approving the portions of the basin's CAP relating to demographic projections and integrated regional land use, housing and employment, as well as transportation programs, measures, and strategies.

Global Climate Change and Greenhouse Gas Regulations

Greenhouse Effect. The greenhouse effect is a natural process by which some of the radiant heat from the sun is captured in the lower atmosphere of the earth. The gases that help capture the heat are called greenhouse gases (GHG). Some GHGs occur naturally in the atmosphere, while others result from human activities. Naturally occurring GHGs include water vapor, carbon dioxide, methane, nitrous oxide, and ozone. Certain human activities add to the levels of most of these naturally occurring gases. While GHGs are not normally considered air pollutants, the effect of these gases have been identified as causing a warming of the earth's atmosphere and oceans above naturally occurring temperatures.

Greenhouse Gases. The following gases are considered to be the primary GHGs and, with the exception of water vapor, are regulated under the Kyoto Protocol (discussed in detail below):

- ***Water Vapor (H2O(g))*.** Although water vapor has not received as much scrutiny as the other GHGs, it is the primary contributor to the greenhouse effect. Water vapor and clouds contribute 66 to 85 percent of the greenhouse effect (water vapor alone contributes 36 to 66 percent) (Schmidt 2005). Natural processes such as evaporation from oceans and rivers and transpiration from plants contribute 90 percent and 10 percent of the water vapor in our atmosphere, respectively (USGS 2007). The primary human-related source of water vapor comes from fuel combustion in motor vehicles; however, this is not believed to contribute a significant amount (less than 1 percent) to atmospheric concentrations of water vapor (Energy Information Administration 2008). Therefore, the control and reduction of water vapor emissions is not within reach of human actions. The Intergovernmental Panel on Climate Change (IPCC) has not determined a Global Warming Potential (GWP), discussed below, for water vapor.
- ***Carbon Dioxide (CO_2)*.** Carbon dioxide is generated primarily by fossil fuel combustion from stationary and mobile sources. Due to the emergence of industrial facilities and mobile sources over the past 250 years, the concentration of carbon dioxide in the atmosphere has increased 35 percent. Carbon dioxide is the most widely emitted GHG and is the reference gas (GWP of 1) for determining the GWPs of other GHGs. In 2004, 83.8 percent of California's GHG emissions were carbon dioxide (California Energy Commission 2006).
- ***Methane (CH_4)*.** Methane is emitted from biogenic sources, incomplete combustion in forest fires, landfills, manure management, and leaks in natural gas pipelines. In the United States, the top three sources of methane are landfills, natural gas systems, and enteric fermentation

(USEPA no date [a]). Methane is the primary component of natural gas, which is used for space and water heating, steam production, and power generation. The GWP of methane is 21.

- ***Nitrous Oxide (NO_2).*** Nitrous oxide is produced by both natural and human-related sources. Primary human-related sources include agricultural soil management, animal manure management, sewage treatment, mobile and stationary combustion of fossil fuel, adipic acid production, and nitric acid production. The GWP of nitrous oxide is 310.

- ***Hydrofluorocarbons (HFC).*** HFCs typically are used as refrigerants in both stationary refrigeration and mobile air conditioning. The use of HFCs for cooling and foam blowing is growing particularly as the continued phaseout of chlorofluorocarbons (CFC) and hydrochlorofluorocarbons (HCFC) gains momentum. The GWP of HFCs range from 140 for HFC-152a to 6,300 for HFC-236fa.

Perfluorocarbons (PFC). Perfluorocarbons are compounds consisting of carbon and fluorine. They are primarily created as a byproduct of aluminum production and semiconductor manufacturing. Perfluorocarbons are potent GHGs with a GWP several thousand times that of carbon dioxide, depending on the specific PFC. Another area of concern regarding PFCs is their long atmospheric lifetime (up to 50,000 years) (Energy Information Administration n.d.). The GWPs of PFCs range from 5,700 to 11,900.

- ***Sulfur Hexafluoride (SF_6).*** Sulfur hexafluoride is a colorless, odorless, nontoxic, nonflammable gas. It is most commonly used as an electrical insulator in high voltage equipment that transmits and distributes electricity. Sulfur hexafluoride is the most potent GHG that has been evaluated by the IPCC with a GWP of 23,900. However, its global warming contribution is not as high as the GWP would indicate due to its low mixing ratio, as compared to carbon dioxide (4 parts per trillion [ppt] of SF6 in 1990 versus 365 parts per million

- ***Hydrochlorofluorocarbons (HCFC).*** HCFCs are solvents, similar in use and chemical composition to CFCs. The main uses of HCFCs are for refrigerant products and air conditioning systems. As part of the Montreal Protocol, all developed countries that adhere to the protocol are subject to a consumption cap and gradual phaseout of HCFCs. The United States is scheduled to reduce its HCFC consumption to the allowed cap by 2030. The GWPs of HCFCs range from 93 for HCFC-123 to 2,000 for HCFC-142b (USEPA 1996).

- ***1,1,1-trichloroethane.*** 1,1,1-trichloroethane or methyl chloroform is a solvent and degreasing agent that was commonly used by manufacturers. In 1992, the USEPA issued Final Rule [ppm] of CO_2) (USEPA no date [b]).

In addition to the primary GHGs discussed above, many other compounds have the potential to contribute to the greenhouse effect. Some of these substances previously were identified as stratospheric ozone depletors; therefore, their gradual phaseout currently is in effect. Some of the noteworthy compounds are discussed below:

- **57 FR 33754,** which scheduled the phaseout of methyl chloroform by 2002 (USEPA 2007b). This was later accelerated to a 1995 phaseout. The GWP of methyl chloroform is 110 times that of carbon dioxide (USEPA no date [c]).[1]

- ***Chlorofluorocarbons (CFC).*** CFCs are used as refrigerants, cleaning solvents, and aerosol spray propellants. CFCs also were part of the USEPA's Final Rule 57 FR 33754 and were phased out in 1995. Currently, CFCs have been replaced by HFCs in cooling systems and a variety of alternatives for cleaning solvents. Nevertheless, CFCs remain suspended in the atmosphere, contributing to the greenhouse effect. CFCs are potent GHGs with GWPs ranging from 4,600 for CFC-11 to 14,000 for CFC-13 (USEPA 2006).

- ***Ozone (O_3).*** Ozone occurs naturally in the stratosphere [2]where it is largely responsible for filtering harmful ultraviolet (UV) radiation. In the troposphere (i.e., the lowest portion of the Earth's atmosphere), ozone acts as a GHG by absorbing and re-radiating the infrared energy emitted by the Earth. As a result of the industrial revolution and rising emissions of oxides of nitrogen and volatile organic compounds, both of which act as ozone precursors, the concentrations of ozone in the troposphere have increased (Intergovernmental Panel on Climate Change no date). Due to the short life span of ozone in the troposphere, its concentration and contribution to global climate change is not well established. However, the greenhouse effect of tropospheric ozone is considered small, as the radiative forcing[3] of ozone is 25 percent of that of CO_2 (Intergovernmental Panel on Climate Change 2007).

Scientists have established a GWP for each GHG based on its ability to absorb and re-radiate long-wave radiation. The GWP of a gas is determined using CO_2 as the reference gas with a GWP of 1. As an example, a gas with a GWP of 10 is 10 times more potent than CO_2 over a specified time period (typically 100 years) with respect to its ability to absorb and re-radiate long-wave radiation. The use of GWP allows GHG emissions to be reported using CO_2 as a baseline. The sum of each GHG multiplied by its associated GWP is referred to as carbon dioxide equivalents (CO2e). This essentially means that 1 metric ton of a GHG with a GWP of 10 is equivalent to 10 metric tons of CO_2 over a specified time period.

The BAAQMD has prepared a GHG emissions inventory for the Bay Area using 2007 as the base year. The BAAQMD estimated that 102.6 million metric tons (MMT) of CO_2e GHGs were emitted from anthropogenic (human activity) sources in the Bay Area in 2007. Fossil fuel consumption in the transportation sector (on-road motor vehicles) accounted for approximately 41 percent. Stationary sources, including industrial and commercial sources, power plants, oil refineries, and landfills were responsible for approximately 49 percent. Residential fuel usage accounted for approximately 7 percent. Construction and mining equipment was estimated to account for approximately 3 percent of the total anthropogenic GHG emissions (BAAQMD 2008).

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[1] United States Environmental Protection Agency, "Protection of Stratospheric Ozone."

[2] The stratosphere is defined as the layer of the Earth's atmosphere above the troposphere from approximately 10 to 12 miles up to 30 to 35 miles. The ozone layer is located in the stratosphere.

[3] Radiative forcing, measured in Watts/m^2, is an externally imposed perturbation (e.g., stimulated by greenhouse gases) in the radiative energy budget of the Earth's climate system (i.e., energy and heat retained in the troposphere minus energy passed to the stratosphere).

Climate Change Effects in California. According to the 2006 California Climate Action Team (CAT) report (Cal/EPA 2006) , the following climate change effects are predicted in California over the course of the next century:

- A diminishing Sierra snowpack declining by 70 percent to 90 percent, threatening the state's water supply.
- Increasing temperatures from 8 to 10.4 degrees Fahrenheit under the higher emission scenarios, leading to a 25 to 35 percent increase in the number of days ozone pollution levels are exceeded in most urban areas.
- Coastal erosion along the length of California and sea water intrusion into the Delta from a 4- to 33-inch rise in sea level. This would exacerbate flooding in already vulnerable regions.
- Increased vulnerability of forests due to pest infestation and increased temperatures.
- Increased challenges for the state's important agriculture industry from limited water supply, increasing temperatures, and saltwater intrusion into the Delta.
- Increased electricity demand, particularly in the hot summer months.

International and Federal Greenhouse Gas Regulations

Globally, the overarching treaty that was developed to respond to global climate change and reduce GHG emissions is known as the Kyoto Protocol. The Kyoto Protocol was negotiated in December 1997 and came into force on February 16, 2005. For the protocol to have entered into force, no less than 55 countries must have ratified the treaty and these minimum of 55 needed to have together accounted for at least 55 percent of the total carbon dioxide emissions for 1990 of industrialized countries, referred to as "Annex I countries." Participating nations are separated into Annex 1 (i.e., industrialized countries) and Non-Annex 1 (i.e., developing countries) countries, each with differing requirements for GHG reductions. The United States has not ratified the Protocol.

The federal government has recently begun to address global climate change. In Massachusetts vs. EPA, the Supreme Court held that USEPA has the statutory authority under Section 202 of the CAA to regulate GHGs from new motor vehicles. The Court did not hold that the USEPA was required to regulate GHG emissions; however, it indicated that the agency must decide whether GHGs from motor vehicles cause or contribute to air pollution that is reasonably anticipated to endanger public health or welfare. Upon the final decision, President Bush signed Executive Order 13432 on May 14, 2007, directing the USEPA, along with the Departments of Transportation, Energy, and Agriculture, to initiate a regulatory process that responds to the Supreme Court's decision. The order requires the USEPA to coordinate closely with other federal agencies and to consider the president's Twenty-in-Ten Plan in this process, which would establish a new alternative fuel standard that would require the use of 35 billion gallons of alternative and renewable fuels by 2017.

The Energy Independence and Security Act of 2007 sets a mandatory Renewable Fuel Standard (RFS) requiring fuel producers to use at least 36 billion gallons of biofuel in 2022 and sets a national fuel economy standard of 35 miles per gallon by 2020. The Act also contains provisions for energy efficiency in lighting and appliances and for the implementation of green building technologies in federal buildings.

On May 19, 2009, President Obama announced increases in national fuel efficiency standards for all new cars and trucks sold in the United States. The announcement resulted in a Proposed Rulemaking by the USEPA and the National Highway Traffic Safety Administration on September 19, 2009. The proposed rules cover model years 2012 through 2016 and will require an average fuel economy of 35.5 miles per gallon in 2016, with a fuel economy gain averaging more than 5 percent per year. The resulting reduction in GHGs is estimated at 950 MMT. This surpasses the average fuel economy standard implemented in 2007 with the Energy Independence and Security Act.

Beginning in 2010, large emitters of GHGs are required to report annual emissions to the USEPA, under new rules finalized in September 2009. The mandatory reporting requirements will cover approximately 85 percent of the nation's GHG emissions and will apply to roughly 10,000 facilities. The first report will be required in 2011 and will cover the 2010 calendar year. Although the mandatory reporting requirements will not directly result in GHG reductions, it will provide the USEPA with a better understanding of GHGs sources and will guide development of policies and programs to reduce emission in the future.

Most recently, on December 7, 2009, the USEPA issued two distinct findings regarding GHGs under Section 202(a) of the CAA. The USEPA Administrator found, first, that GHGs threaten public health and welfare or current and future generations, and second, that GHG emissions from new motor vehicles contribute to the GHG pollution which threatens public health and welfare. Essentially, the findings will allow EPA to regulate GHG emissions from motor vehicles.

State Greenhouse Gas Regulations

Assembly Bill 1493

California AB 1493 (Pavley) was enacted on July 22, 2002. It requires CARB to develop and adopt regulations that reduce GHG emitted by passenger vehicles and light duty trucks. Regulations adopted by CARB apply to 2009 and later model year vehicles. CARB estimates that the regulation will reduce climate change emissions from the light duty passenger vehicle fleet by 18 percent in 2020 and by 27 percent in 2030 (CARB 2004). CARB applied to the federal government for a "waiver" to allow it to implement AB 1493. After some delay, the USEPA finally granted CARB's waiver request on June 30, 2009. As a result of the delay, CARB approved amended regulations in September 2009 that will apply to 2012 through 2016 model year vehicles, resulting in a reduction of 30 percent in GHG emissions by 2016.

Executive Order S-3-05

California Governor Arnold Schwarzenegger announced on June 1, 2005, through Executive Order S-3-05, the following GHG emission reduction targets:

- By 2010, reduce GHG emissions to 2000 levels;
- By 2020, reduce GHG emissions to 1990 levels;
- By 2050, reduce GHG emissions to 80 percent below 1990 levels (CA 2005).

The California CAT's report to the Governor contains recommendations and strategies to help ensure the targets in Executive Order S-3-05 are met (CAT 2006).

Assembly Bill 32

In furtherance of the goals established in Executive Order S-3-05, the Legislature enacted AB 32 (Nuñez and Pavley), the California Global Warming Solutions Act of 2006, which Governor Schwarzenegger signed on September 27, 2006. AB 32 represents the first enforceable statewide program to limit GHG emissions from all major industries with penalties for noncompliance.

CARB is responsible for carrying out and developing the programs and requirements necessary to achieve the goals of AB 32—the reduction of California's GHG emissions to 1990 levels by 2020. The first action under AB 32 resulted in CARB's adoption of a report listing three specific early action greenhouse gas emission reduction measures on June 21, 2007. On October 25, 2007, CARB approved an additional six early action GHG reduction measures under AB 32. The early action measures are divided into three categories:

- Group 1 - GHG rules for immediate adoption and implementation
- Group 2 - Several additional GHG measures under development
- Group 3 - Air pollution controls with potential climate co-benefits

The original three adopted early action regulations meeting the narrow legal definition of "discrete early action GHG reduction measures" are:

- A low-carbon fuel standard to reduce the "carbon intensity" of California fuels;
- Reduction of refrigerant losses from motor vehicle air conditioning system maintenance to restrict the sale of "do-it-yourself" automotive refrigerants; and
- Increased methane capture from landfills to require broader use of state-of-the-art methane capture technologies.

The additional six early action regulations adopted on October 25, 2007, also meeting the narrow legal definition of "discrete early action GHG reduction measures," are:

- Reduction of aerodynamic drag, and thereby fuel consumption, from existing trucks and trailers through retrofit technology;
- Reduction of auxiliary engine emissions of docked ships by requiring port electrification;

- Reduction of perfluorocarbons from the semiconductor industry;
- Reduction of propellants in consumer products (e.g., aerosols, tire inflators, and dust removal products);
- Requirement that all tune-up, smog check, and oil change mechanics ensure proper tire inflation as part of overall service in order to maintain fuel efficiency; and
- Restriction on the use of sulfur hexafluoride (SF_6) from non-electricity sectors if viable alternatives are available.

As required under AB 32, on December 6, 2007, CARB approved the 1990 greenhouse gas emissions inventory, thereby establishing the emissions limit for 2020. The 2020 emissions limit was set at 427 MMT CO_2e. The inventory revealed that in 1990, transportation was the largest single sector with 35 percent of the state's total emissions, followed by industrial emissions at 24 percent, imported electricity at 14 percent, in-state electricity generation at 11 percent, residential use at 7 percent, agriculture at 5 percent, and commercial uses at 3 percent. AB 32 does not require individual sectors to meet their individual 1990 GHG emissions inventory; rather, it requires that the total statewide emissions meet the 1990 threshold by 2020.

In addition to the 1990 emissions inventory, CARB also adopted regulations requiring the mandatory reporting of GHG emissions for large facilities on December 6, 2007. The mandatory reporting regulations require annual reporting from the largest facilities in the state, which account for approximately 94 percent of greenhouse gas emissions from industrial and commercial stationary sources in California. About 800 separate sources fall under the new reporting rules and include electricity-generating facilities, electricity retail providers and power marketers, oil refineries, hydrogen plants, cement plants, cogeneration facilities, and industrial sources that emit over 25,000 tons of carbon dioxide each year from on-site stationary combustion sources. Transportation sources, which account for 38 percent of California’s total greenhouse gas emissions, are not covered by these regulations but will continue to be tracked through existing means. Affected facilities begin tracking their emissions in 2008 and began reporting them in 2009, although a phase-in process allows facilities to develop reporting systems and train personnel in data collection. Reported emissions data for 2008 may be based on best available emission data. Beginning in 2010, however, emissions reporting requirements will be more rigorous and will be subject to third-party verification. Verification will take place annually or every three years, depending on the type of facility.

As indicated above, AB 32 requires CARB to adopt a scoping plan indicating how reductions in significant GHG sources will be achieved through regulations, market mechanisms, and other actions. After receiving public input on their discussion draft of the Proposed Scoping Plan released in June 2008, CARB released the Climate Change Proposed Scoping Plan in October 2008 that contains an outline of the proposed state strategies to achieve the 2020 greenhouse gas emission limits. The CARB Governing Board approved the Proposed Scoping Plan on December 11, 2008. Key elements of the Scoping Plan include the following recommendations:

- Expanding and strengthening existing energy efficiency programs, as well as building and appliance standards;

- Achieving a statewide renewable energy mix of 33 percent;
- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system;
- Establishing targets for transportation-related greenhouse gas emissions for regions throughout California and pursuing policies and incentives to achieve those targets;
- Adopting and implementing measures pursuant to existing state laws and policies, including California's clean car standards, goods movement measures, and the Low-Carbon Fuel Standard (LCFS); and
- Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the state's long-term commitment to AB 32 implementation.

Under the Scoping Plan, approximately 85 percent of the state's emissions are subject to a cap-and-trade program where covered sectors are placed under a declining emissions cap. The emissions cap incorporates a margin of safety, whereas the 2020 emissions limit will still be achieved even in the event that uncapped sectors do not fully meet their anticipated emission reductions. Emissions reductions will be achieved through regulatory requirements and the option to reduce emissions further or purchase allowances to cover compliance obligations. It is expected that emission reduction from this cap-and-trade program will account for a large portion of the reductions required by AB 32.

Executive Order S-1-07

Executive Order S-1-07 was approved by the Governor on January 18, 2007. The order mandates that a statewide goal shall be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020. It also requires that an LCFS for transportation fuels be established for California. The LFCS rulemaking was approved by the Office of Administrative Law and the regulation became effective on January 12, 2010.

Senate Bill 375

There has also been California legislative activity acknowledging the relationship between land use planning and transportation sector GHG emissions. The California Legislature passed SB 375 (Steinberg) in August 2008 and it was signed by the Governor on September 30, 2008. SB 375 requires CARB to set regional greenhouse gas reduction targets after consultation with local governments. Reductions in GHG emissions would be achieved by, for example, locating housing closer to jobs, retail, and transit. Under the bill, each MPO would be required to adopt a sustainable community strategy to encourage compact development so that the region will meet a target, created by CARB, for reducing GHG emissions. Additionally, SB 375 reforms the environmental review process to create incentives to implement the strategy, especially transit priority projects. CARB's Regional Targets Advisory Committee (RTAC) issued its recommendations for regional GHG reduction targets on September 29, 2009. CARB is required

to act on those recommendations and propose draft targets by June 30, 2010, and adopt final targets by September 30, 2010.

Title 24

California Code of Regulations Title 24 Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings were first established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. In October 2005, amendments were made to require new homes to use half the energy they used only a decade ago. Energy-efficient buildings require less electricity, and electricity production by fossil fuels results in greenhouse gas emissions. On July 18, 2008, the building code was further amended to include green building requirements. Such requirements mandate reduction in building energy use, conservation of potable water, job-site erosion control, recycling of construction waste, and a range of steps to improve indoor air quality.[4] Increased energy efficiency results in decreased greenhouse gas emissions. Those amendments went into effect on January 1, 2010.

CARB Proposal for Significance Thresholds for GHGs under CEQA

On October 24, 2008, CARB staff released a Preliminary Draft Staff Proposal: Recommended Approaches for Setting Interim Significance Thresholds for Greenhouse Gases under CEQA for determining whether the emissions related to proposed new projects are significant impacts under CEQA. While the proposal is focused on helping lead agencies determine under which conditions a project may be found exempt from the preparation of an EIR, the proposal also provides a guide for establishing significance thresholds for projects for which EIRs would be prepared regardless of the project's climate change impact. According to this proposal, the threshold for determining whether a project's emissions are significant is not zero emissions, but must be a stringent performance-based threshold to meet the requirements of AB 32. If the project meets certain specific yet to be developed performance standards for several categories of emissions, including construction emissions, building energy use, water use, solid waste, and transportation, and the project emits no more than a certain yet to be determined amount of metric tons of carbon equivalents (MT CO_2e) per year, the project's impact would not be significant. According to CARB, California Energy Commission Tier II building energy use standards are proposed to be used, which generally require a reduction in energy usage of 30 percent beyond Title 24 building code requirements. CARB has also proposed a 7,000 MT CO_2e threshold for industrial projects, but has not yet proposed thresholds for residential and commercial projects. The annual threshold does not explicitly include emissions associated with construction- and transportation-related activities.

2009 SB 97 Rulemaking – CEQA Guideline Amendments

On December 30, 2009, the Natural Resources Agency (Agency) adopted CEQA Guidelines amendments for analysis of greenhouse gases (GHGs) required by SB 97 of 2007 (PRC §21083.05). The full text of the GHG amendments and supporting Statement of Reasons can be

[4] California Green Building Standards Code. http://www.documents.dgs.ca.gov/bsc/prpsd_stds/combined_ green_et_7_08.pdf.

found at http://ceres.ca.gov/ceqa/guidelines/. The Statement of Reasons provides information useful for both interpreting the adopted amendments, and explaining why other issues were not addressed in the amendments. Practical implications include the following:

- ***Methods for Determining the Significance of GHG Emissions.*** The GHG amendments require a good-faith effort, based on scientific and factual data to the extent possible, to describe, calculate, or estimate a project's GHG emissions. The Lead Agency has discretion to quantify GHG emissions, or rely on a qualitative analysis or performance standards.

- ***Mitigating the Impacts of GHG Emissions***. The GHG amendments give the Lead Agency the option of adopting either on-site mitigation measures, or various types of off-site mitigation measures, including offsets and carbon sequestration.

- ***Streamlining and Tiering the Analysis of GHG Emissions***. GHG amendments are included that promote the streamlining and tiering of GHG emissions.

- ***Analyzing Traffic Congestion and Parking Impacts***. A shift in CEQA's approach to traffic and parking impacts is included in amendments to the Appendix G Initial Study checklist.

- ***Impacts of Climate Change on the Project; Adaptation***. The amendments modify §15126.2(a) so that it more clearly addresses risks to the project from climate change. This section now requires an EIR to analyze any potentially significant impacts of locating development in hazard areas (e.g., floodplains, coastlines, wildfire risk areas), as identified in hazard maps, risk assessments, or land use plans (see Section 3.10, below).

Local

City of Hercules General Plan

The adopted Open Space and Conservation Element contain the following policies related to air quality and pertinent to consideration of the air quality impacts of the proposed Project:

- Development within the City shall be condition to reduce air quality impacts during construction and subsequent operation. (Policy 11a)

- Incorporate BAAQMD recommendations into General Plan policies for directing regional growth and development. (Program 11a.1)

- Implement a dust abatement program for new development [that includes BAAQMD CEQA Guidelines Feasible PM10 Dust Control Measures]. (Program 11b.1)

3.7.2. Existing Conditions

The project area is located in the City, which is located in western Contra Costa County within the boundaries of the San Francisco Bay Area Air Basin (SFBAAB or the basin). The topography and climate of the basin combine to make it an area in which poor air quality could occur. The climate of the Bay Area is Mediterranean in character, with mild, rainy winter weather from November through March and warm, dry weather from June through October. In

summer, the Pacific high-pressure system typically remains near the coast of California. The subsidence of warm air over the cooler marine air associated with the Pacific high creates frequent summer atmospheric temperature inversions. Subsidence inversions may be several hundred to several thousand feet deep, effectively trapping pollutants in a stagnant volume of air near the ground with little dispersion ability. Typically, May through October is considered the ozone smog season. Transport studies have shown precursor emissions generated in the East Bay are often transported to other regions of the Bay Area and beyond (e.g., Central Valley) that are more conducive to the formation of ozone. In winter, the Pacific high-pressure system moves southward, allowing ocean-formed storms to move through the region. The frequent storms and infrequent periods of sustained sunny weather are not conducive to ozone formation. Radiational cooling during the evening, however, sometimes creates thin inversions and concentrations of air pollutant emissions near the ground.

The prevailing wind direction in the project area is from the southwest. Sea breezes dominate the area during the spring and summer months. Maximum wind speeds in the area reach approximately 9 to 10 miles per hour during the summer months. The dominance of the sea breeze results in a mild, relatively cool climate. Low clouds and fog are common in spring and summer. The project site often experiences persistent afternoon winds in the spring and summer months.

Regional Air Quality

The determination of whether a region's air quality is healthful or unhealthful is made by comparing contaminant levels in ambient air samples to national and state standards. Health-based air quality standards have been established by California and the federal government for the following criteria air pollutants: ozone (O_3), CO, nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable particulate matter less than 10 microns in diameter (PM_{10}), fine particulate matter less than 2.5 microns in diameter ($PM_{2.5}$), and lead (Pb). These standards were established to protect sensitive receptors with a margin of safety from adverse health effects due to exposure to air pollution. California has also established standards for sulfates, visibility-reducing particles, hydrogen sulfide, and vinyl chloride. The state and national ambient air quality standards for each of the monitored pollutants and their effects on health are summarized in **Table 3.7-3**, Ambient Air Quality Standards.

A region's air quality is considered to be in attainment of the state standards if the measured ambient air pollutant levels for O3, CO, SO_2, NO_2, PM_{10}, $PM_{2.5}$, and visibility-reducing particles are not exceeded, and all other standards are not equaled or exceeded at any time in any consecutive three year period. The National Ambient Air Quality Standards (NAAQS) for CO, SO_2, and NO_2 are not to be exceeded more than once per year. The NAAQS for O_3, PM_{10}, and $PM_{2.5}$ are based on statistical calculations over one- to three-year periods, depending on the pollutant. The project site is located within the SFBAAB, which includes all of Alameda, Contra Costa, Marin, Napa, San Mateo, San Francisco, and Santa Clara counties as well as the southern half of Sonoma County and the southwestern portion of Solano County. The region is named for its geographical formation surrounding the San Francisco Bay. The air quality in the basin is affected by the pollutants generated within dense population centers, heavy vehicular traffic, and industry. However, as mentioned above, coastal sea breezes tend to transport pollutants generated within the SFBAAB to inland locations such as the Central Valley.

Table 3.7-3
Ambient Air Quality Standards

Air Pollutant	State Standard	Federal Primary Standard	Most Relevant Health Effects
Ozone	0.070 ppm, 8-hr. avg. 0.09 ppm, 1-hr. avg.	0.075 ppm, 8 hr avg. (3 year average of annual 4th-highest daily maximum)	(a) Short-term exposures: (1) Pulmonary function decrements and localized lung edema in humans and animals; and (2) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (b) Long-term exposures: Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (c) Vegetation damage; and (d) Property damage
Carbon Monoxide	9.0 ppm, 8-hr avg. 20 ppm, 1-hr avg.	9 ppm, 8-hr avg. 35 ppm, 1-hr avg.	(a) Aggravation of angina pectoris and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) Impairment of central nervous system functions; and (d) Possible increased risk to fetuses
Nitrogen Dioxide	0.18 ppm, 1-hr avg. 0.030 ppm, annual arithmetic mean	0.053 ppm, annual arithmetic mean	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; and (c) Contribution to atmospheric discoloration
Sulfur Dioxide	0.04 ppm, 24-hr avg. 0.25 ppm, 1-hr. avg.	0.030 ppm, annual arithmetic mean 0.14 ppm, 24 hr avg.	(a) Bronchoconstriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in person with asthma
Respirable Particulate Matter (PM^{10})	20 µg/m3, annual arithmetic mean 50 µg/m^3, 24-hr avg.	150 µg/m^3, 24-hr avg.	(a) Excess deaths from short-term exposures and exacerbation of symptoms in sensitive patients with respiratory disease; and (b) Excess seasonal declines in pulmonary function, especially in children
Fine Particulate Matter ($PM^{2.5}$)	12 µg/m^3, annual arithmetic mean	15 µg/m3, annual arithmetic mean (3-year average) 35 µg/m3, 24 hr avg. (3-year average of 98th percentile)	(a) Increased hospital admissions and emergency room visits for heart and lung disease; (b) Increased respiratory symptoms and disease; and (c) Decreased lung function and premature death
Sulfates	25 µg/m^3, 24-hr avg.	None	(a) Decrease in ventilatory function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardio-pulmonary disease; (d) Vegetation damage; (e) Degradation of visibility; and (f) Property damage

Air Pollutant	State Standard	Federal Primary Standard	Most Relevant Health Effects
Lead[1]	1.5 µg/m^3, 30-day avg.	1.5 µg/m^3, calendar quarterly average 0.15 µg/m^3, rolling 3-month average	(a) Increased body burden; and (b) Impairment of blood formation and nerve conduction
Visibility-Reducing Particles	In sufficient amount to produce extinction coefficient of 0.23 per kilometer due to particles when relative humidity less than 70%, 8-hour average (10 a.m. to 6 p.m.)	None	Visibility impairment on days when relative humidity is less than 70 percent
Hydrogen Sulfide	0.03 ppm, 1 hr avg	None	Odor annoyance
Vinyl Chloride[1]	0.01 ppm, 24-hr avg.	None	Known carcinogen

Source: BAAQMD 2010c
µg/m3 = microgram per cubic meter.
ppm = parts per million by volume.

[1] *CARB has identified lead and vinyl chloride as "toxic air contaminants" with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.*

The air pollutants within the basin are primarily generated by two categories of sources: stationary and mobile. Stationary sources are known as "point sources" which have one or more emission sources at a single facility, or "area sources" which are widely distributed and produce many small emissions. Point sources are usually associated with manufacturing and industrial uses and include sources such as refinery boilers or combustion equipment that produce electricity or process heat. Examples of area sources include residential water heaters, painting operations, lawn mowers, agricultural fields, landfills, and consumer products, such as barbecue lighter fluid or hair spray. Mobile sources refer primarily to operational and evaporative emissions from motor vehicles.

To identify ambient concentrations of the criteria pollutants, the BAAQMD operates 31 air quality monitoring stations throughout the basin. The nearest monitoring station is approximately three miles southwest of the project site, located at 865 D Rumrill Boulevard in San Pablo. This monitoring station measures CO, O_3, NO_2, SO_2, and PM_{10}.

Table 3.7-4, Ambient Pollutant Concentrations Measured near the Project Site by Year, lists the concentrations registered and the exceedances of California Ambient Air Quality Standards (CAAQS) and the NAAQS that have occurred at this monitoring station from 2004 through 2008. During this period, the station registered one day above the state 1-hour ozone standard in 2004, along with a total of five days above the state 24-hour PM_{10} standard, one in 2004 and two each in 2006 and 2007. At the closest monitoring station that monitors $PM_{2.5}$ (Treat Boulevard station in Concord, approximately 14 miles east of the project site), the federal 24-hour $PM_{2.5}$ standard was exceeded once in 2004. No other exceedances of the state or federal standards for NO_2, CO, or SO_2 were registered at these stations between 2004 and 2008.

Table 3.7-4
Ambient Pollutant Concentrations Measured Near the Project Site by Year

Pollutant	Standards [1]	Year				
		2004	2005	2006	2007	2008
OZONE (O_3)						
Maximum 1-hour concentration (ppm)		0.105	0.066	0.061	0.074	0.084
Maximum 8-hour concentration (ppm)		0.069	0.057	0.050	0.051	0.064
Number of days exceeding state 1-hour standard	0.09 ppm	1	0	0	0	0
Number of days exceeding federal 8-hour standard[2]	0.075 ppm	0	0	0	0	0
CARBON MONOXIDE (CO)						
Maximum 1-hour concentration (ppm)		3.2	2.8	2.5	2.4	2.5
Maximum 8-hour concentration (ppm)		1.8	1.3	1.4	1.2	1.3
Number of days exceeding state 8-hour standard	9.0 ppm	0	0	0	0	0
Number of days exceeding federal 8-hour standard	9 ppm	0	0	0	0	0
Maximum 1-hour concentration (ppm)		0.055	0.054	0.055	0.052	0.062
Annual Average (ppm)		0.013	0.012	0.013	0.012	0.010
Number of days exceeding state 1-hour standard[3]	0.18 ppm	0	0	0	0	0
SULFUR DIOXIDE (SO_2)						
Maximum 1-hour concentration in ppm		0.019	0.025	0.017	0.017	0.018
Maximum 24-hour concentration in ppm		0.005	0.006	0.005	0.005	0.004
Annual arithmetic mean concentration (ppm)		0.002	0.002	0.002	0.002	0.001
Number of days exceeding state 1-hour standard	0.25 ppm	0	0	0	0	0
Number of days exceeding state 24-hour standard	0.04 ppm	0	0	0	0	0
Number of days exceeding federal 24-hour standard	0.14 ppm	0	0	0	0	0
PARTICULATE MATTER (PM_{10})						
Maximum 24-hour concentration ($\mu g/m^3$)[5]		63.7	41.6	61.5	57.4	44.3
Maximum 24-hour concentration ($\mu g/m^3$)[6]		62.0	40.2	58.2	54.4	41.8
Annual arithmetic mean concentration ($\mu g/m^3$)[6]		21.0	18.4	20.5	19.8	20.1
Number of samples exceeding state 24-hour standard	50 $\mu g/m^3$	1	0	2	2	0
Number of samples exceeding federal 24-hour standard	150 $\mu g/m^3$	0	0	0	0	0
PARTICULATE MATTER ($PM_{2.5}$)[4]						
Maximum 24-hour concentration ($\mu g/m^3$)		73.7	48.9	62.1	46.2	60.3
Annual arithmetic mean concentration using federal methods ($\mu g/m^3$)		10.8	9.1	9.5	8.4	8.7
98th percentile of the 24-hour values		38.1	33.4	33.6	34.9	31.1
Number of samples exceeding federal 24-hour standard[7]	65/35 $\mu g/m^3$	1	0	0	0	0

Pollutant	Standards [1]	Year				
		2004	2005	2006	2007	2008

Sources:

(i) California Air Resources Board 2010a

(ii) USEPA Air Quality Database (USEPA 2007c).

na = Insufficient or no data available to determine value.

[1] *Parts by volume per million of air (ppm), micrograms per cubic meter of air (µg/m^3) or annual arithmetic mean (aam).*

[2] *The federal 8-hour ozone standard was changed to 0.075 ppm in 2008.*

[3] *The state NO_2 standard was revised to 1-hour average of 0.18 ppm and a new annual arithmetic mean standard of 0.030 ppm was adopted in March 2008. Statistics shown are based on the previous 1-hour standard of 0.25 ppm. The federal standard is annual arithmetic mean (AAM) of 0.053 ppm.*

[4] *Data are from the monitoring station in Concord at Treat Boulevard, the closest monitoring that that monitors that fine particulate pollutant.*

[5] *Using state methods for sampling.*

[6] *Using federal methods for sampling.*

[7] *The federal $PM_{2.5}$ standard was revised from 65 to 35 µg/m^3 in September 2006. Exceedances for regulatory purposes are based on the 98th percentile value, rather than the maximum 24-hour value and are shown for the current federal $PM_{2.5}$ standard.*

NOTES:

Sulfates are monitored at Arkansas Street Station, San Francisco. Sulfates have not exceeded the state standard of 25 µg/m^3 for more than 20 years.

Lead is not monitored in Contra Costa County. Limited (i.e., 2004 or 2005) data are available from the Whitney Circle station in San Francisco

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3.8. NOISE AND VIBRATION

3.8.1. Airborne Noise

The following provides an overview of the existing noise environment, including relevant regulations related to both project construction and operations. This section relies in part on earlier studies conducted by Illingworth and Rodkin (2009). People define noise as unwanted sound. Noise is usually objectionable because it is disturbing or annoying. The objectionable nature of sound could be caused by its pitch or its loudness. Pitch is the height or depth of a tone or sound, depending on the relative rapidity (i.e., frequency) of the vibrations by which it is produced. Higher pitched signals sound louder to humans than sounds with a lower pitch. Loudness is the amplitude of sound waves combined with the reception characteristics of the ear. Amplitude may be compared with the height of an ocean wave.

In addition to the concepts of pitch and loudness, there are several noise measurement scales which are used to describe noise in a particular location. A decibel (dB) is a unit of measurement which indicates the relative amplitude of a sound. The zero on the decibel scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Sound levels in decibels are calculated on a logarithmic basis. An increase of 10 dBs represents a ten-fold increase in acoustic energy, while 20 dBs is 100 times more intense, 30 dBs is 1,000 times more intense, etc. There is a relationship between the subjective noisiness or loudness of a sound and its decibel level. Each 10-dB increase in sound level is perceived as approximately a doubling of loudness over a fairly wide range of intensities. Technical terms for noise are defined in **Table 3.8-1**.

There are several methods of characterizing sound. The most common in California is the A-weighted sound level (dBA). All sound levels discussed in this section utilize the A-weighting scale. This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Representative outdoor and indoor noise levels in units of dBA are shown in **Table 3.8-2**. Because sound levels can vary markedly over a short period, a method for describing either the average character of the sound or the statistical behavior of the variations must be utilized. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events. This energy-equivalent sound/noise descriptor is termed Leq. The most common averaging period is hourly, but Leq can describe any series of noise events of arbitrary duration.

The scientific instrument used to measure noise is the sound level meter. Type 1 sound level meters, the most common type used for environmental noise measurements, can accurately measure noise levels to within approximately plus or minus 1 dBA. Various computer models are used to predict environmental noise levels from sources, such as roadways, airports, and rail lines. The accuracy of the predicted models are greater for receptors close to the noise source. The models are accurate to within approximately 2 dBA for receptors within about 500 feet from the noise source, but are less accurate at greater distances, primarily because of the unpredictable influences of atmospheric and terrain effects.

Since the sensitivity to noise increases during the evening and at night because excessive noise interferes with the ability to sleep, 24-hour descriptors were developed that incorporate artificial noise penalties added to quiet-time noise events. The CNEL is a measure of the cumulative noise

exposure in a community, with a 5-dB penalty added to evening (i.e., 7:00 p.m. - 10:00 p.m.) noise levels and a 10-dB penalty added to nighttime (10:00 p.m. - 7:00 a.m.) noise levels. The Day/Night Average Sound Level, Ldn, is essentially the same as CNEL, with the exception that the evening time period is dropped and all occurrences during this three-hour period are grouped into the daytime period.

Table 3.8-1
Definitions of Acoustical Terms

Term	Definitions
Decibel (dB)	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20 micropascals (µPa).
Sound pressure level	Sound pressure is the sound force per unit area, usually expressed in micropascals (micronewtons per square meter), where 1 pascal is the pressure resulting from a force of 1 newton exerted over an area of 1 square meter. The sound pressure level is expressed in decibels. Sound pressure level is measured by a sound level meter.
Frequency (Hz)	The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sound are below 20 Hz and Ultrasonic sounds are above 20,000 Hz.
A-weighted sound level (dBA)	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Equivalent noise level (L_{eq})	The average A-weighted noise level during a given measurement period. The hourly Leq is denoted as Leq[h].
Community Noise Equivalent Level (CNEL)	The average A-weighted noise level during a 24-hour day, obtained after the addition of a 5-dBA penalty for evening noise from 7:00 PM to 10:00 PM and a 10–dBA penalty for nighttime noise from 10:00 PM and 7:00 AM.
Day/Night Noise Level (L_{dn})	The average A-weighted noise level during a 24-hour day, obtained after the addition of a 10-dBA penalty for nighttime noise from 10:00 PM and 7:00 AM.
L10, L50, L90	The A-weighted noise levels that are exceeded 10%, 50%, or 90% of the time during the measurement period.
Ambient noise level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, time of occurrence, the tonal or informational content, as well as the prevailing ambient noise level.

Table 3.8-2
Typical Noise Levels in the Environment

Common Outdoor Noise Source	Noise Level (dBA)	Common Indoor Noise Source
	120	
Jet fly-over at 300 meters		Rock concert
	110	
Pile driver at 20 meters	100	
		Night club with live music
	90	
Large truck pass by at 15 meters		
	80	Noisy restaurant
		Garbage disposal at 1 meter
Gas lawn mower at 30 meters	70	Vacuum cleaner at 3 meters
Commercial/Urban area daytime		Normal speech at 1 meter
Suburban expressway at 90 meters	60	
Suburban daytime		Active office environment
	50	
Urban area nighttime		Quiet office environment
	40	
Suburban nighttime		
Quiet rural areas	30	Library
		Quiet bedroom at night
Wilderness area	20	
	10	Quiet recording studio
Threshold of human hearing	0	Threshold of human hearing

Vibration

Ground vibration consists of rapidly fluctuating motions or waves with an average motion of zero. Several methods are typically used to quantify the amplitude of vibration including peak particle velocity (PPV) and root mean square (RMS) velocity. PPV is defined as the maximum instantaneous positive or negative peak of the vibration wave. RMS velocity is defined as the average of the squared amplitude of the signal. PPV and RMS are both used to evaluate human response to vibration.

The reaction of humans and effects on buildings from continuous levels of vibration is shown on **Table 3.8-3**. As discussed previously, annoyance is a subjective measure and vibrations may be found to be annoying at much lower levels than those shown, depending on the level of activity or the sensitivity of the individual. To sensitive individuals, vibrations approaching the threshold of perception can be annoying.

Low-level vibrations frequently cause irritating secondary vibration, such as a slight rattling of windows, doors or stacked dishes. The rattling sound can give rise to exaggerated vibration complaints, even though there is very little risk of actual structural damage. In high noise

environments, which are more prevalent where ground-borne vibration approaches perceptible levels, this rattling phenomenon may also be produced by loud airborne environmental noise causing induced vibration in exterior doors and windows.

Construction activities can cause vibration that varies in intensity depending on several factors. The use of pile driving and vibratory compaction equipment typically generates the highest construction related ground-borne vibration levels. Because of the impulsive nature of such activities, the use of the peak PPV has been routinely used to measure and assess ground-borne vibration and almost exclusively to assess the potential of vibration to induce structural damage and the degree of annoyance for humans.

Table 3.8-3
Reaction of People and Damage to Buildings for Continuous Vibration Levels

Vibration Level, PPV (in/sec)	Human Reaction	Effect on Buildings
0.006 to 0.019	Threshold of perception: Possibility of intrusion	Vibration unlikely to cause damage of any type
0.08	Vibrations readily perceptible	Recommended upper level of the vibration to which ruins and ancient monuments should be subjected
0.10	Level at which continuous vibrations begin to annoy people	Virtually no risk of “architectural” damage to normal buildings
0.20	Vibrations annoying to people in buildings	Threshold at which there is a risk of “architectural” damage to normal dwellings such as plastered walls or ceilings.
0.4 to 0.6	Vibrations considered unpleasant by people subjected to continuous vibrations	Vibration at this level would cause “architectural” damage and possibly minor structural damage.
Source: Caltrans 2002		

The two primary concerns with construction-induced vibration, the potential to damage a structure and the potential to interfere with the enjoyment of life, are evaluated against different vibration limits. Studies have shown that the threshold of perception for the average person is a PPV in the range of 0.2 to 0.3 millimeters per second (mm/sec) (0.008 to 0.012 inches per second). Human perception to vibration varies with the individual and is a function of physical setting and the type of vibration. Persons exposed to elevated ambient vibration levels, such as people in an urban environment, may tolerate a higher vibration level.

Vibration damage to buildings can be classified as cosmetic only, such as minor cracking of building elements, or may elevate to the level of structural damage, which could threaten the integrity of the building. Safe vibration limits that can be applied to assess the potential for damaging a structure vary by researcher and there is no general consensus as to what amount of vibration may pose a threat for structural damage to the building. Construction-induced vibration that can be detrimental to a building is very rare and has only been observed in instances where the structure is at a high state of disrepair and the construction activity occurs immediately adjacent to the structure.

Train Vibration

Railroad operations are a potential source of substantial ground vibration, depending on the distance, type and speed of trains and the type of railroad track. Typical vibration background levels in residential areas are 50VdB or lower, well below the threshold of perception for most humans. Internal sources include HVAC systems and human activities such as foot traffic and shutting/opening doors. However, train traffic is one potential external source. There are differences in the potential for vibration related effects between freight and passenger trains, primarily due to the duration. Passenger trains generally pass more quickly than freight trains due to length of the train (seconds v. minutes) and the potential for vibration annoyance is therefore greater with freight train traffic.

3.8.2. Regulatory Framework

Federal, state, and local regulations and policies are established to limit noise exposure at noise sensitive land uses.

Federal Regulations

U.S. Environmental Protection Agency

The USEPA, pursuant to the Noise Control Act of 1972, established guidelines for acceptable noise levels for sensitive receivers such as residential areas, schools, and hospitals. The levels set forth are 55 dBA Ldn for outdoor use areas, and 45 dBA Ldn for indoor use areas. These provide guidance for local jurisdictions, but do not have regulatory enforceability.

U.S. Department of Housing and Urban Development

The U.S. Department of Housing and Urban Development (HUD) has also established guidelines for acceptable noise levels for sensitive receivers such as residential areas, schools, and hospitals. The HUD noise levels include a two-pronged guidance, one for the desirable noise level and the other for the maximum acceptable noise level. The desirable noise level established by HUD conforms to the USEPA guidance of 55 dBA Ldn for outdoor use areas of residential land uses and 45 dBA Ldn for indoor use areas of residential land uses. The secondary HUD standard establishes a maximum acceptable noise level of 65 dBA for outdoor use areas of residential areas. These standards are enforceable through eligibility for HUD funding and project support. Residential developments with noise levels exceeding the maximum acceptable HUD standard have restricted eligibility for HUD funding and loan programs, including Federal Housing Administration loans.

Occupational Safety and Health Administration

The Occupational Safety and Health Administration (OSHA) regulates noise levels in industrial environments under the Department of Labor. OSHA regulations require that the time-averaged noise level of any work environment be limited to 90 dBA for any 8-hour period. Work environments exceeding 85 dBA for an 8-hour period require a hearing conservation program for workers.

Federal Transit Administration

The FTA has set guidelines for transit projects to control future project related-noise level increases at sensitive land uses such as residential areas, schools, recreation areas, hospitals, etc. Noise impacts from transit projects are to be evaluated using the FTA *Transit Noise and Vibration Impact Assessment* manual (FTA 2006). **Figure 3.8-1** shows the FTA's noise impact criteria. The FTA has divided the land uses into three categories. Category 1 includes land where quiet is an essential element for operation such as outdoor amphitheaters, Category 2 includes residences and areas where people generally sleep, and Category 3 includes institutional buildings where quiet is important such as for schools, libraries, and churches. Figure 3.8-1 shows that for a residential land use with an Ldn between 60 dBA and 70 dBA, an increase greater than 5 dBA would be considered severe. In addition to providing guidance for assessing noise impacts, the FTA manual details procedures for assessing vibration impacts from transit projects.

California Regulations

California Government Code Section 63502(g)

The State of California Department of Health Services, Environmental Health Division, has published recommended guidelines for noise and land use compatibility referred to as the Guidelines for Noise and Land Use Compatibility (the State Guidelines). The State Guidelines, illustrated in **Table 3.8-4**, indicate that residential land uses and other noise-sensitive receptors generally should be located in areas where outdoor ambient noise levels do not exceed 65 to 70 dBA Ldn (or CNEL). The Department of Health Services does not mandate application of this compatibility matrix to development projects. However, each jurisdiction is required to consider the State Guidelines when developing its general plan noise element and when determining acceptable noise levels within its community.

Under the State Guidelines, an exterior noise level of 70 dBA Ldn/CNEL is typically the dividing line between an acceptable and unacceptable exterior noise environment for all noise-sensitive uses, including schools, libraries, churches, hospitals, day care centers, and nursing homes of conventional construction. This standard also applies to residential uses. Noise levels below 75 dBA Ldn/CNEL are typically acceptable for office and commercial buildings, while levels up to 80 dBA Ldn/CNEL are typically acceptable for industrial uses.

Title 24, California Code of Regulations

California has established noise standards in Title 24 of the California Code of Regulations—the State of California Noise Insulation Standards. These standards state that the "interior CNEL attributable to exterior sources shall not exceed an annual CNEL of 45 dBA in any habitable room," and that multi-family residential buildings or structures to be located near an existing or adopted major thoroughfare, railroad, rapid transit line, or industrial noise source within exterior CNEL contours of 60 dBA or greater shall require an acoustical analysis showing that the building has been designed to limit interior noise to a CNEL of 45 dBA.

Local Regulations

City of Hercules General Plan – Noise Element

Policy 2: New non-residential land development projects shall meet acceptable exterior noise level standards set forth in Table 6 of the Noise Element, which lists land use compatibility for community noise environments in the City. The noise contour map on file at City Hall shall be used to screen projects to determine, if acoustical studies will be required.

Policy 3: Protect existing noise-sensitive land uses from long-term noise impacts generated by new projects. The city shall use the following criteria to judge the significance of long-term noise impacts on existing noise-sensitive land uses:

- Noise level increases resulting from traffic associated with new projects will be considered significant if: (1) the noise level increase is 5 dBA Ldn or greater and the future noise level is less than 60 dBA Ldn; or (2) the noise level increase is 3 dBA Ldn or greater and the future noise level is 60 dBA Ldn or greater.

Policy 6: Control the level of noise at noise-sensitive land uses generated by construction activities through implementation of the following measures:

- For construction near noise-sensitive areas, as determined by the Community and Business Development Department, require that noisy construction activities (including truck traffic) be scheduled for periods, according to construction permit, to limit impact on adjacent residents or other sensitive receptors.

- Develop a construction schedule that minimizes potential cumulative construction noise impacts and accommodates particularly noise-sensitive periods for nearby land uses (e.g., for schools, churches, etc.)

- Where feasible, require that holes for driven piles be pre-drilled to reduce the level and duration of noise impacts.

- Where feasible, construct temporary solid noise barriers between source and sensitive receptor(s) to reduce offsite propagation of construction noise. This measure could reduce construction noise by up to 5 decibels.

- Require internal combustion engines used for construction purposes to be equipped with a properly operating muffler of a type recommended by the manufacturer. Also, require impact tools to be shielded per manufacturer's specifications.

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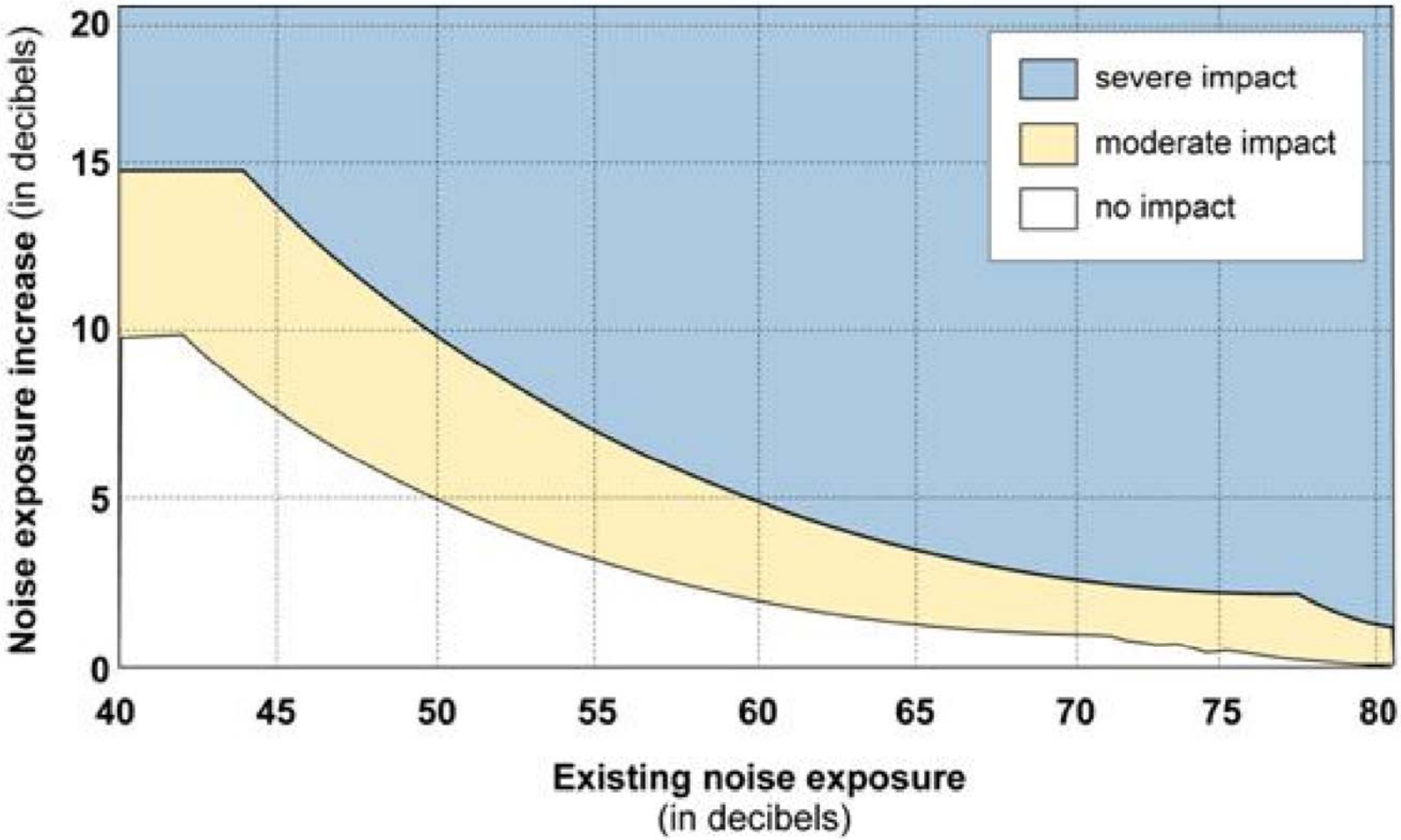

Note: Noise exposure is in terms of $L_{eq}(h)$ for Category 1 land uses and L_{dn} for Category 2 land uses.

Figure 3.8-1: Federal Transit Administration Noise Impact Criteria for Transit Projects

City of Hercules
Hercules Intermodal Transit Facility
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources.
No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey.
Data is State Plane Feet, NAD83 Zone 3

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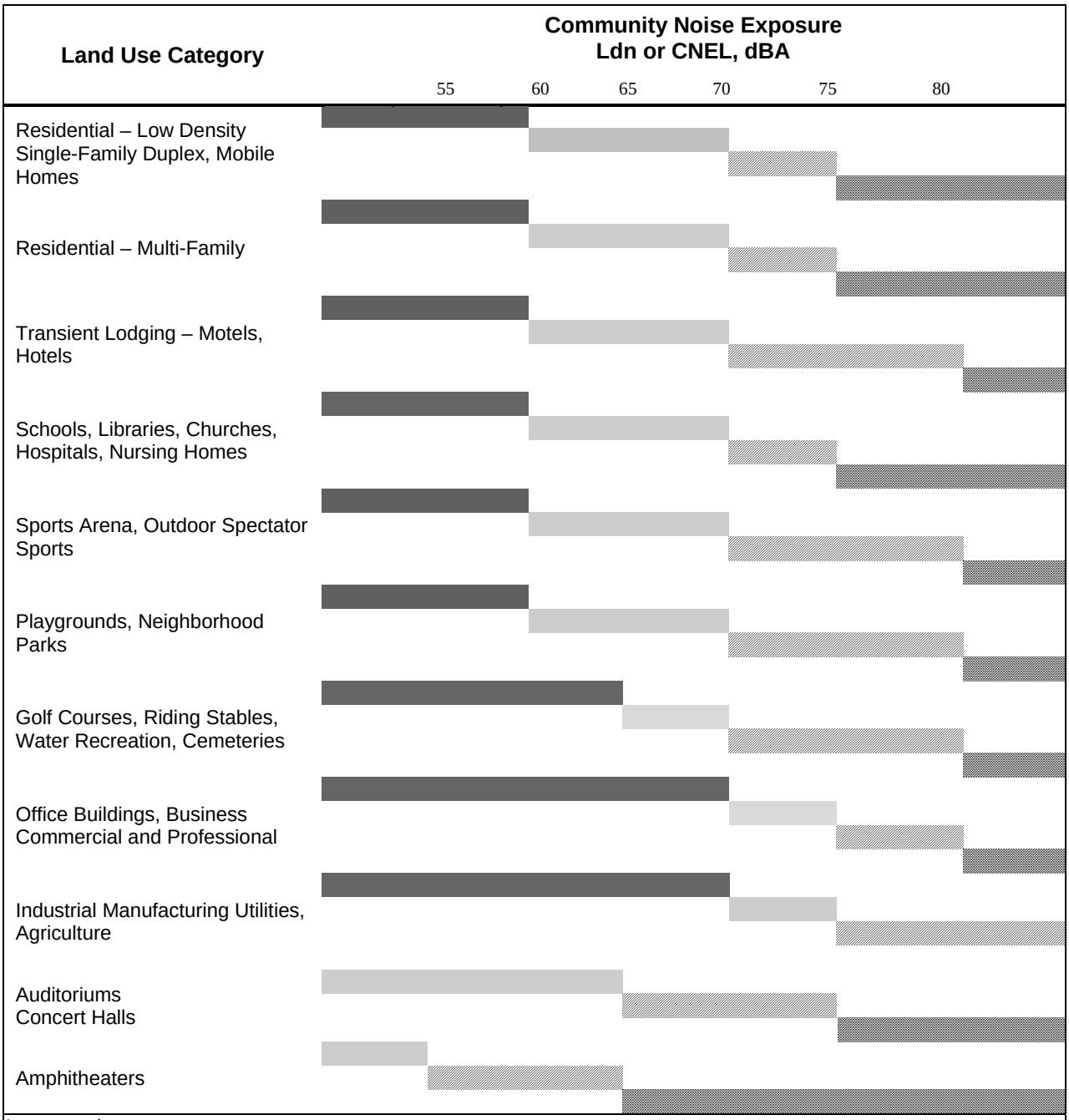
Table 3.8-4
Land Use Compatibility for Community Noise Environments



Interpretation

Normally Acceptable: Specified land use is satisfactory based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

Normally Unacceptable: New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

Clearly Unacceptable: New construction or development should generally not be undertaken.

Source: California, State of. Governor's Office of Planning and Research. 2003

3.8.3. Existing Conditions

Existing Noise Sources

The primary noise sources in the City are transportation-related, including motor vehicle traffic and trains. The major roadways in the vicinity of the project area include I-80, SR-4, San Pablo Avenue, and Sycamore Avenue. The vehicle mix on I-80 and SR-4 is characterized by a substantial number of medium and heavy trucks, which generate more noise than automobiles. Two rail lines extend through the city, the UPRR line that runs along the shoreline of San Pablo Bay and the Atchison, Topeka and Santa Fe (AT&SF) line that runs through the City in an east-west orientation.

Noise monitoring conducted for the General Plan Noise Element indicates that the AT&SF Railroad produces noise levels of approximately 75 dBA Ldn at 100 feet and the UPRR produces noise levels of approximately 68 dBA Ldn at 100 feet. Individual train passages could produce episodic noise levels of 80 to 85 dBA. According to the General Plan, the relatively high Ldn levels are a result of late night and early morning train passages (due to the 10-dBA penalty given to sounds occurring between 10 p.m. and 7 a.m.).

Sensitive Receptors

Some land uses are more sensitive to noise levels than others, due to the amount of noise exposure (in terms of both time and insulation from noise) and the types of activities typically involved. Residences, motels and hotels, schools, libraries, churches, hospitals, nursing homes, auditoriums, and parks and outdoor recreation areas are more sensitive to noise than are commercial and industrial land uses. Based on this definition, future workers and users of the proposed project would not be considered sensitive receptors, however, the open space/riparian corridors along Refugio Creek and Hercules Point would be considered noise-sensitive land uses.

Existing Noise Environment

The project site borders San Pablo Bay on the north and west, open land designated for residential and commercial development on the east, and residential and commercial development on the south. The dominant noise sources in the area are freight and passenger train pass-bys.

Noise Measurement Locations in the City of Hercules

Illingworth & Rodkin, Inc. (2009) conducted a noise monitoring survey on Monday, January 26, 2009 from about 1:00 p.m. to about 12:00 p.m. on Thursday, January 28, 2009. The monitoring times and days were selected as “typical” of a normal workday and to fit into the project delivery schedule. Noise levels were measured along the UPRR right-of-way and noise-sensitive off-site locations in the vicinity of the project site. The off-site locations were chosen to represent residential land uses. The noise measurement location along the UPRR right-of-way was selected to measure exiting noise levels at the project site. The noise monitoring survey included seven locations at the project site and its vicinity as shown in **Figure 3.8-2**. Three of the noise measurements were 48 hours in duration (LT-1, LT-2, and LT-3). The other four noise measurements were 10 minutes in duration (ST-1, ST-2, ST-3, and ST-4).

Legend

- Noise Measurement Locations
- Project Boundary

N

1 in = 500 ft (at tabloid layout)

0 62.5 125 250 Meters

0 250 500 1,000 Feet

Figure 3.8-2: Noise Measurement Locations in Hercules

City of Hercules
Hercules Intermodal Transit Facility
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources.
No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey.
Data is State Plane Feet, NAD83 Zone 3

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Noise measurement location LT-1 was made to quantify ambient noise levels in the project vicinity. The noise measurement was located about 160 feet from the center of the UPRR Railroad tracks along the Pinole Creek Trail. This location was approximately 400 feet from an at-grade crossing, requiring passing trains to sound their warning horns. Train pass-bys and horns were the major sources of environmental noise at this location. Maximum instantaneous levels were typically between 75 and 85 dBA Lmax. The data indicate 45 to 50 events during a 24-hour period. Hourly average noise levels typically ranged from about 52 to 65 dBA Leq during daytime hours and from about 39 to 67 dBA Leq at night. Hourly average noise levels containing train events, especially during the nighttime, controlled the day-night average noise level calculated for the measurement period. The calculated day-night average noise level at location LT-1 was 68 dBA Ldn.

Noise measurement location LT-2 was selected to quantify ambient noise levels at the residences along Sycamore Avenue and Promenade Street. The noise measurement was located about 25 feet from the center of Sycamore Avenue at Promenade Street. Vehicular traffic along Sycamore Avenue and distant train pass-bys were the major sources of environmental noise at this location. Hourly average noise levels typically ranged from about 58 to 74 dBA Leq during daytime hours and from about 47 to 57 dBA Leq at night. The calculated day-night average noise level at location LT-2 was 61 dBA Ldn.

Noise measurement LT-3 was located at South Front Street near Cabrillo Lane. Distant train pass-bys were the primary sources of environmental noise at this location, while vehicle traffic on nearby streets was a secondary source of noise. Hourly average noise levels typically ranged from about 50 to 72 dBA Leq during daytime hours and from about 47 to 58 dBA Leq at night. The calculated day-night average noise level at location LT-3 was 61 dBA Ldn.

Short-term noise measurement locations ST-1, ST-2, ST-3, and ST-4 completed the noise monitoring survey. Short-term measurements (10-minute duration) were intended to characterize peak-hour traffic noise levels near roadways, as opposed to the long-term measurements (48-hour duration), which were intended to characterize overall ambient noise levels in the project vicinity. The data are summarized in **Table 3.8-5**. At location ST-1 the dominant source of noise during the measurement was traffic along Sycamore Avenue. At location ST-2, the primary source of noise was also vehicular traffic along Sycamore Avenue. The third short-term noise measure (ST-3) was conducted at the intersection of Bayfront Boulevard and Earnest Street, and about 330 feet from the railroad tracks. Measurement ST-4 was made at the intersection of Sanderling Drive and Sanderling Drive. The primary noise source at these locations was traffic on nearby streets.

An additional long-term noise measurement was made at location (LT-4) from 4:00 p.m. on January 26, 2009 to 2:00 p.m. on January 28, 2009 at a site located about 140 feet from the UPRR tracks near the Martinez Amtrak Station (**Figure 3.8-3**). Although there are substantial design differences between the Martinez Station and the proposed Hercules ITC, this site was selected to obtain noise readings similar to the conditions expected after the proposed Hercules ITC is constructed. This noise measurement location was about 175 feet south of the at-grade railroad crossing. Railroad train events, including train warning whistles, substantially increased noise levels at this location. Maximum instantaneous levels were typically 90 to 105 dBA Lmax. The data reflect the same train events monitored in the City of Hercules. Train warning horns

and bus traffic at the bus station located about 400 feet from this noise measurement location were the major sources of environmental noise. Hourly average noise levels typically ranged from about 63 to 78 dBA Leq during daytime hours and from about 45 to 75 dBA Leq at night. Hourly average noise levels containing train events, especially during the nighttime, controlled the day-night average noise level calculated for the measurement period. The calculated day-night average noise level at location LT-4 was 76 dBA Ldn.

Table 3.8-5
Summary of Short-Term Noise Data

Noise Measurement Location	L1 (dBA)	L10 (dBA)	L50 (dBA)	L90 (dBA)	Leq (dBA)
ST-1 – On South Front Street, ~100 feet from the center of Sycamore Avenue. Dominant noise source during noise measurement was vehicular traffic along Sycamore Avenue.	58	53	49	46	50
ST-2 – Southeast corner of Sycamore Avenue and Promenade Street. Dominant noise source during noise measurement was vehicular traffic along Sycamore Avenue.	67	60	43	36	55
ST-3 – At the intersection of Bayfront Boulevard and Earnest Street. ~330 feet from the railroad Tracks. Primary noise sources during measurent were vehicular traffic along Bayfront Boulevard and Earnest Street.	63	53	44	38	50
ST-4 – At the intersection of Sanderling Drive and Sanderling Drive. Dominant noise sources during noise measurement were vehicular traffic and a motorcycle.	61	52	41	38	51
ST-5 – Park across from Martinez Amtrak Station, ~ 540 feet south of railroad Tracks. Primary noise sources during noise measurement were bus traffic, train pass-bys, and train warning whistles.[5]	76	63	52	46	63
ST-6 – Same location as LT-4. Same sources of noise as ST-5.	86	66	49	44	72

Short-term noise measurements ST-5 and ST-6 were made to document the noise sources in the vicinity of the station. Noise measurement location ST-5 was made for a period of one hour beginning at 1:30 p.m. on January 28, 2009, at a distance of about 540 feet south of the railroad tracks and about 5 feet above the ground. The dominant source of noise at this location during the measurement was bus traffic and intermittent train whistles. Noise measurement ST-6 was made for a period of 1 hour starting at 1:27 p.m. on January 28, 2009, at a distance of about 140 feet from the railroad tracks. The primary noise sources at this location were bus traffic in the station, train pass-bys, and intermittent train whistles. Table 4.10-6 shows a summary of the noise data acquired at these sites.

Maximum noise level at LT-4 was measured as high as 105 dBA as a result of train warning whistles. During the 1-hour observation on January 28, 2009, instantaneous maximum noise

[5] [5] The site near the Martinez Amtrak Station was selected because operational noise levels near the Hercules ITC are expected to be similar, although substantial design differences prevent direct comparisons.

levels measured at 140 feet from the railroad tracks were about 76 dBA as a result of train whistles while waiting at the station, and about 68 dBA during train pass-bys. The intermodal station proposed in Hercules, California would not have an at-grade railroad crossing, but trains would be expected to sound their horns as they approach the station, particularly through trains such as freights.

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Legend

Noise Measurement Locations

N

1 in = 200 ft (at tabloid layout)

0 25 50 100 Meters

0 100 200 400 Feet

Figure 3.8-3: Noise Measurement Locations at the Station in Martinez

City of Hercules
Hercules Intermodal Transit Facility
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources.
No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey.
Data is State Plane Feet, NAD83 Zone 3

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3.9. BIOLOGICAL RESOURCES

This section outlines the regulatory setting for the Hercules ITC project with respect to biological resources; describes the general environmental setting in which the project is located; describes the biological habitats present within the Environmental Study Limit (ESL; areas within and adjacent to the project site); and describes biological resources that may be affected by implementation of the proposed project, including species granted special management considerations by state, federal, and local regulations (commonly referred to as "special-status") as well as habitats and species of regional importance such as commercially and/or recreationally important fisheries. The information presented in this section is summarized from the "Biological Resources Information for the Hercules Intermodal Transit Center Project" (HDR 2010a; **Appendix G**, which provides a background for the information presented in this section. Information on species distribution, species occurrence, and habitat types present within the ESL that is presented in this section relies in part on previous biological studies that were prepared for the proposed project between December 2003 and April 2008 by Vollmar Consulting (Vollmar), Wetlands and Water Resources, Inc. (WWR), Wetland Wildlife Associates (WWA), and Condor Country Consulting under contract with the City.

3.9.1. Regulatory Framework

Federal

Federal Endangered Species Act

The United States Fish and Wildlife Service (USFWS) and the National Oceanographic and Atmospheric Administration's National Marine Fisheries Service (NMFS) enforce the provisions stipulated within the Federal Endangered Species Act of 1973 (hereafter, "FESA," 16 USC Section 1531 et seq.). Threatened and endangered species on the Federal list (50 CFR Section 17.11, and 17.12) are protected from take, defined as direct or indirect harm, unless a Section 10 permit is granted to an entity other than a federal agency or a Biological Opinion with incidental take provisions is rendered to a federal lead agency via a Section 7 consultation. Pursuant to the requirements of FESA, an agency reviewing a proposed project within its jurisdiction must determine whether any federally listed species may be present in the study area and determine whether the proposed project will have a potentially significant impact upon such species. Under FESA, habitat loss is considered to be an impact to a species. In addition, the agency is required to determine whether the project is likely to jeopardize the continued existence of any species that is proposed for listing under FESA or to result in the destruction or adverse modification of critical habitat proposed to be designated for such species (16 USC 1536[3], [4]). Therefore, project related impacts to these species or their habitats would be considered significant and would require mitigation. Other federal agencies (i.e., U.S. Forest Service, Bureau of Land Management) designate species of concern (species that have the potential to become listed), which are evaluated during environmental review although they are not otherwise protected under FESA. Project related impacts to such species would also be considered a significant impact and may require mitigation.

Executive Order 11990: Protection of Wetlands

Executive Order 11990, signed May 24, 1997, directs federal agencies to refrain from assisting in or giving financial support to projects that encroach on publicly or privately owned wetlands. It further requires that federal agencies support a policy to minimize the destruction, loss, or degradation of wetlands. A project that encroaches on wetlands may not be undertaken unless the agency has determined that (1) there are no practicable alternatives to construction, (2) the project includes all practicable measures to minimize harm to wetlands affected, and (3) the impact will be minor.

Executive Order 13186: Migratory Bird Treaty Act

Under the Migratory Bird Treaty Act of 1918 (16 USC Subsection 703-712), migratory bird species and their nests and eggs are protected from injury or death; these species are listed on the federal list (50 CFR Section 10.13). Project related disturbances must be reduced or eliminated during the nesting cycle.

Bald and Golden Eagle Protection Act

When first enacted in 1940, the Bald and Golden Eagle Protection Act prohibited the take, transport, or sale of bald eagles, their eggs or any part of an eagle except where expressly allowed by the Secretary of the Interior. The Bald and Golden Eagle Protection Act was amended in 1962 to extend the prohibitions to the golden eagle as well.

Executive Order 13112: Invasive Species Prevention

On Feb 3, 1999, Executive Order 13112 was signed establishing the National Invasive Species Council. Executive Order 13112 required that each Federal agency whose actions may affect the status of invasive species shall, to the extent practicable and permitted by law, (1) identify such actions; (2) subject to the availability of appropriations, and within Administration budgetary limits, use relevant programs and authorities to: (i) prevent the introduction of invasive species; (ii) detect and respond rapidly to and control populations of such species in a cost-effective and environmentally sound manner; (iii) monitor invasive species populations accurately and reliably; (iv) provide for restoration of native species and habitat conditions in ecosystems that have been invaded; (v) conduct research on invasive species and develop technologies to prevent introduction and provide for environmentally sound control of invasive species; and (vi) promote public education on invasive species and the means to address them; and (3) not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species in the U.S. or elsewhere unless, pursuant to guidelines that it has prescribed, the agency has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species; and that all feasible and prudent measures to minimize risk of harm will be taken in conjunction with the actions. In addition, it requires that Federal agencies shall pursue the duties set forth in this section in consultation with the Invasive Species Council, consistent with the Invasive Species Management Plan and in cooperation with stakeholders, as appropriate, and, as approved by the Department of State, when Federal agencies are working with international organizations and foreign nations.

Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) establishes a management system for national marine and estuarine fishery resources. This legislation requires that all federal agencies consult with NMFS regarding all actions or proposed actions permitted, funded, or undertaken that may adversely affect "essential fish habitat (EFH)." EFH is defined as "waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." The Magnuson-Stevens Act states that migratory routes to and from anadromous fish spawning grounds are considered EFH. The phrase "adversely affect" refers to the creation of any impact that reduces the quality or quantity of EFH. Federal activities that occur outside of EFH, but which may have an impact on EFH must be considered in the consultation process. The Magnuson-Stevens Act applies to Pacific salmon, groundfish, and several pelagic species found in the Pacific.

Marine Mammal Protection Act

The Marine Mammal Protection Act (MMPA) (16 USC 1361-1421h), adopted in 1972, makes it unlawful to take or import any marine mammals and/or their products. Under Section 101(a)(5)(D) of this act, an incidental harassment permit may be issued for activities other than commercial fishing that may impact small numbers of marine mammals. An incidental harassment permit covers activities that extend for periods of not more than 1 year and that will have a negligible impact on the impacted species. Amendments to this act in 1994 statutorily defined two levels of harassment: (1) level A harassment is defined as any act of pursuit, torment, or annoyance that has the potential to injure a marine mammal in the wild; and (2) level B harassment is defined as harassment having potential to disturb marine mammals by causing disruption of behavioral patterns including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering.

Estuary Protection Act

The Estuary Protection Act (16 USC 1221-1226), adopted in 1968, outlines the value of estuaries and the need to conserve their natural resources. This act authorizes the Secretary of the Interior, in cooperation with other Federal agencies and the States, to study and inventory estuaries in the U.S. and to determine whether such areas should be acquired by the Federal Government for protection. This statute also authorizes the Secretary of the Interior to enter into cost-sharing agreements with the States for permanent management of estuarine areas. Federal agencies are required to assess the impacts of commercial and industrial developments on estuaries and the Secretary of the Interior is required to establish conditions to ensure the permanent protection of estuaries.

State

California Endangered Species Act/ California Environmental Quality Act

The California Endangered Species Act (CESA) of 1970 (CDFG Code Section 2050 et seq., and CCR Title 14, Subsection 670.2, 670.51) prohibits the take (interpreted to mean the direct killing of a species) of species listed under CESA (14 CCR Subsection 670.2, 670.5). Under CESA, State agencies are required to consult with the California Department of Fish and Game (CDFG)

when preparing CEQA documents. Consultation ensures that proposed projects or actions do not have a negative effect on state-listed species. During consultation, CDFG determines whether take would occur and identifies "reasonable and prudent alternatives" for the project and conservation of special-status species. CDFG can authorize take of a state-listed species if an incidental take permit is issued by the Secretary of the Interior or Commerce in compliance with FESA, or if the director of CDFG issues a permit under Section 2080 in those cases where it is demonstrated that the impacts are minimized and mitigated. A CESA permit must be obtained if a project will result in the take of listed species, either during construction or over the life of the project. Under CESA, CDFG is responsible for maintaining a list of threatened and endangered species designated under state law (CDFG Code 2070). CDFG also maintains lists of species of special concern, which serve as "watch lists." Pursuant to the requirements of CESA, a state or local agency reviewing a proposed project within its jurisdiction must determine whether any state-listed species may be present in the project area and determine whether the proposed project will have a potentially significant impact upon such species. Project related impacts to species on the CESA list would be considered significant and would require mitigation. Impacts to species of concern would be considered significant under certain circumstances.

The CEQA of 1970 (Subsections 21000-21178) requires that CDFG be consulted during the CEQA review process regarding impacts of proposed projects on rare or endangered species. These "special-status" species are defined under CEQA Guidelines subsection 15380(b) and (d) as those listed under FESA and CESA, and species that are not currently protected by statute or regulation, but would be considered rare, threatened, or endangered under these criteria, or by the scientific community. Therefore, species that are considered rare or endangered are addressed in this study regardless of whether they are afforded protection through any other statute or regulation. The California Native Plant Society (CNPS) inventories the native flora of California and ranks species according to rarity (CNPS 2009); plants on Lists 1A, 1B, and 2 are considered special-status species under CEQA.

Although threatened and endangered species are protected by specific federal and state statutes, CEQA Guidelines Section 15380(d) provides that a species not listed on the federal or state list of protected species may be considered rare or endangered if it can be shown to meet certain specified criteria. These criteria have been modeled after the definition in FESA and the section of the California Fish and Game Code dealing with rare or endangered plants and animals. Section 15380(d) allows a public agency to undertake a review to determine if a significant effect on species that have not yet been listed by either the USFWS or CDFG (i.e., candidate species) would occur. Thus CEQA provides an agency with the ability to protect a species from the potential impacts of a project until the respective government agency has an opportunity to designate the species as protected, if warranted.

California Native Plant Protection Act

The California Native Plant Protection Act of 1977 (CDFG Code Section 1900-1913) requires all state agencies to use their authority to carry out programs to conserve endangered and otherwise rare species of native plants. Provisions of the act prohibit the taking of listed plants from the wild and require the project proponent to notify CDFG at least 10 days in advance of any change in land use, which allows CDFG to salvage listed plants that would otherwise be destroyed.

Nesting Birds

California Fish and Game Code Subsections 3503, 3503.5, and 3800 prohibit the possession, incidental take, or needless destruction of birds, their nests, and eggs. California Fish and Game Code Section 3511 lists birds that are "fully protected": those that may not be taken or possessed except under specific permit.

Streams, Lakes and Riparian Habitat

Streams and lakes, as habitat for fish and wildlife species, are subject to jurisdiction by CDFG under Sections 1600-1616 of the CDFG Code. Alterations to or work within or adjacent to streambeds or lakes generally require a Section 1602 Lake and Streambed Alteration Agreement. Removal of riparian vegetation also requires a Section 1602 Lake and Streambed Alteration Agreement from CDFG.

Waters of the State

The term "Waters of the State" is defined by the Porter-Cologne Act as "any surface water or groundwater, including saline waters, within the boundaries of the state." The Regional Water Quality Control Board (RWQCB) protects all waters in its regulatory scope, but has special responsibility for wetlands, riparian areas, and headwaters. RWQCB jurisdiction includes "isolated" wetlands and waters that may not be regulated by the USACE under Section 404. "Waters of the State" are regulated by the RWQCB under the State Water Quality Certification Program, which regulates discharges of fill and dredged material under Section 401 of the CWA and the Porter-Cologne Water Quality Control Act. Projects that require an USACE permit, or fall under other federal jurisdiction, and have the potential to impact "Waters of the State," are required to comply with the terms of the Water Quality Certification determination. If a proposed project does not require a federal permit, but does involve dredge or fill activities that may result in a discharge to "Waters of the State," the RWQCB has the option to regulate the dredge and fill activities under its state authority in the form of Waste Discharge Requirements or Certification of Waste Discharge Requirements.

McAteer-Petris Act (California Government Code 66600-66682)

The McAteer-Petris Act created the San Francisco Bay Conservation and Development Commission (BCDC) in 1965. BCDC's mission is the preservation of San Francisco Bay from indiscriminate filling. BCDC's first task was compilation of a comprehensive study of the Bay and determining how future development of the Bay should occur. This effort resulted in the San Francisco Bay Plan in 1968. In 1969 the findings and policies of the Bay Plan were incorporated into the McAteer-Petris Act which was amended to make BCDC a permanent state agency. The Bay Plan continues to evolve and remains the guiding document for BCDC's actions. Section 66610 of the McAteer-Petris Act establishes the boundaries of San Francisco Bay in relation to BCDC's jurisdiction. Essentially, all areas below the mean high tide line and an area within a shoreline band that extends landward for 100 feet from the mean high tide line are subject to their jurisdiction. Section 66632 of the McAteer-Petris Act establishes the permitting process for projects which would place fill in, on, or over any part of BCDC's

jurisdiction as defined in Section 66610. Portions of the project that would be in the water or within the shoreline band are subject to BCDC's jurisdiction.

Wetlands and Other Waters of the U.S.

Any person, firm, or agency planning to alter or work in "waters of the U.S.", including the discharge of dredged or fill material, must first obtain authorization from the USACE under Section 404 of the CWA (CWA; 33 USC 1344). Permits, licenses, variances, or similar authorization may also be required by other federal, state, and local statutes. Section 10 of the Rivers and Harbors Act of 1899 prohibits the obstruction or alteration of navigable waters of the U.S. without a permit from USACE (33 USC 403). The CDFG requires notification prior to commencement, and possibly a SAA pursuant to California Fish and Game Code Subsection 1601-1603, 5650F, if a proposed project will result in the alteration or degradation of a stream, river, or lake in California. The Regional Water Quality Control Board may require State Water Quality Certification (CWA Section 401 permit) before other permits are issued.

Waters of the U.S. are defined as: all waters used in interstate or foreign commerce; all interstate waters including interstate wetlands; all other waters such as intrastate lakes, rivers, streams (including intermittent and ephemeral streams), mudflats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes or natural ponds, where the use, degradation, or destruction of which could affect interstate commerce; impoundments of these waters; tributaries of these waters; or wetlands adjacent to these waters (33 CFR Part 328). With non-tidal waters, in the absence of adjacent wetlands, the extent of USACE jurisdiction extends to the ordinary high water mark (OHWM) – the line on the shore established by fluctuations of water and indicated by a clear, natural line impressed on the bank, shelving, changes in soil character, destruction of terrestrial vegetation, or the presence of litter and debris. Wetlands are defined as:

> "*…those areas that are inundated or saturated by surface or ground water at a frequency and duration to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.*"

Local Policies, Programs and Plans

City of Hercules General Plan

The General Plan provides open space and conservation objectives and policies in order to protect natural resources and their uses within the City. The objective of the conservation element of the General Plan is for the conservation, development, and utilization of natural resources, including water and its hydraulic force, forests, soils, rivers and other waters, harbors, fisheries, wildlife, minerals, and other natural resources.

Land Use Element

- Require a minimum 50-foot setback between development and the "top of bank" of the lower Refugio Creek and Rodeo Creek corridors, except that the setback may be reduced for the west branch of Refugio Creek, if the 50-foot setback proves infeasible. This buffer will be included as part of any enhancements required by regulatory agencies or proposed by the

developer. Riparian areas which are culverted or underground will be excluded from the buffer requirement. (Program 14A.4)

Open Space/Conservation Element

Policy 3a: Design of building footprints along any riparian corridors shall be outside the CDFG- and/or USACE-pre-approved buffer zone. Sensitive riparian habitats shall be marked by a qualified biologist to deter any destruction by equipment during construction.

Program 3a-1: Prior to construction in areas of riparian corridors or wetlands, the City shall support CDFG and USACE permitting process. A Streambed Alteration Agreement from CDFG and/or a Section 404 USACE permit shall be obtained by the project applicant prior to any development within any creek or discharge of fill into any creek.

Program 3a-2: Development along any riparian corridor shall incorporate measures to avoid impacts during construction, including:

1. Construction of any access bridge shall be limited to the bridge footprint area only.

2. Parking of large equipment shall be on the upland grassland area or on the paved street. Construction workers cars shall have designated parking areas.

3. Basins for oil leaks from the equipment shall be installed if equipment is parked onsite over night.

Policy 4a: The City shall require project proponents to design facilities to prevent degradation of riparian and wetland communities from urban pollutants in storm runoff.

Program 4a-1: To minimize pollution downstream from sedimentation, the City shall require installation of sedimentation and grease basins in the storm drain system in parking lots in accordance with NPDES regulations and shall require that property owners maintain the basins annually, or as required by NPDES regulations. Parking lots shall be swept periodically to decrease the amount of debris that could potentially contaminate the riparian or wetland habitat.

Policy 5a: The City shall review development proposals for consistency with minimizing impacts to salt marsh zones. Buildings shall be located on existing developed or graded areas, where practicable.

Policy 5b: The City shall work with CDFG, BCDC, East Bay Regional Park District, and the USACE to determine appropriate buffer zones along the Bay to protect tidal habitat when designing a bay access trail linkage between Pinole and Rodeo. Public access and pedestrian pathways shall be limited within the buffer zone, and when possible, located along the edges of the buffer zone. Bicycles shall be encouraged to stay on bike paths through the use of signage and fencing.

Policy 6a: The City shall continue to utilize environmental review under CEQA to review development projects that are not exempt from the CEQA for impacts on sensitive species and their habitat.

Policy 6b: The City shall require that development within the General Plan area incorporates features to preserve habitat for sensitive species.

Program 6b.1: Areas that could provide habitat for sensitive species shall be surveyed by qualified biologists provided by project sponsors prior to project design. Surveys in sensitive areas shall be conducted prior to any development. Sensitive areas within the study area includes eucalyptus groves, freshwater wetlands, and adjacent trees, open grasslands, ponds and creeks, and buildings which are abandoned or slated for destruction. If any species is present, coordination with the CDFG will be required for mitigation of impacts and redesigning of the project footprint to avoid any sensitive species or sensitive habitat. If avoidance is unavailable, coordination with the CDFG will be required for relocation of these species and for determining replacement of habitat.

Policy 6c: As much open space as possible within sites proposed for development shall be retained as information open space for wildlife habitat, rather than as formal, landscaped parks or grounds.

The City shall require that native plants from the local area be used in landscaping, and in areas with a lower water table, native drought tolerant species shall be used in landscaping.

Program 6c.1: Development, subdivision and planned development plan applications shall be reviewed and conditioned to implement the following: i) Wildlife areas shall be revegetated with native or non-native grassland and native species of shrubs requiring no irrigation and little management beyond the first year after planting; ii) Wildlife habitat shall be consolidated into "preserves" that are as large as possible; iii) Habitats on adjoining parcels shall be as contiguous as possible, to create wildlife corridors; iv) Wildlife open space shall be placed adjacent to other wildlife habitat, to preserve the greatest ecological value: v) Public access to wildlife habitat shall be minimized by placing trails close to buildings so as to provide the largest area of habitat possible with the least amount of impact from the public; vi) Open space areas shall be designed into the footprint of proposed projects and shall be located adjacent to existing open space areas, providing a larger continuous area for wildlife to use; vii) Open space areas, if disturbed during construction, shall be landscaped with native species; viii) Trails, if any, shall be placed close to buildings so as not to disturb wildlife nesting/denning areas.

Program 14A.3: Continue to improve and protect Refugio Creek as a major environmental amenity.

Program 14A.4: Require a minimum 50 foot setback between development and the "top of bank" of the lower Refugio Creek and Rodeo Creek corridors, except that the setback may be reduced for the west branch of Refugio Creek, if the 50 foot setback proves infeasible. This buffer will be included as part of any enhancements required by regulatory agencies or proposed by the developer. Riparian areas which are culverted or underground will be excluded from the buffer requirement.

<u>Hercules Tree Removal Ordinance</u>

The City's 'tree ordinance,' i.e., the adopted City ordinance regarding "Removal of Mature Trees" (Ordinance No. 1331), serves to prohibit the removal of trees on undeveloped land except

when permitted as part of a development application. The ordinance was adopted to prevent the uncontrolled removal or destruction of mature trees on undeveloped or partially developed land in the City. Trees with trunk diameters of 12-inches or greater are protected under the provisions of the ordinance, which prohibits their removal except as allowed under emergency situations or approved as part of a development project. A tree replacement plan is required under the ordinance as a condition of approval when tree removal is unavoidable.

San Pablo Bay Watershed Restoration Program

The San Pablo Bay Watershed Restoration Program (SPBWRP) was developed by the USACE, the Coastal Conservancy, and The Bay Institute over a period of about two years. The SPBWRP provides technical and financial assistance to individuals, organizations and government agencies who undertake ecological restoration projects within the San Pablo Bay watershed. The purpose of the SPBWRP is to promote revitalization of the watershed's wetlands, rivers, lakes and streams, and to improve the health of San Pablo Bay itself. The SPBWRP was established in response to the growing awareness that the ecological integrity of the watershed is essential to the long-term health of both human and wildlife communities (Coastal Conservancy and USACE 2000).

3.9.2. Existing Conditions

The project site is located in the City, which lies along the I-80 corridor, approximately 22 miles northeast of San Francisco and 57 miles southwest of Sacramento. The City is in northwestern Contra Costa County and within the greater Bay Area. The City is generally bounded by the southeast shoreline of San Pablo Bay to the west, the unincorporated town of Rodeo to the north, unincorporated Contra Costa County land to the east, and the City of Pinole to the south. The Hercules area is generally characterized by flatland areas along the San Pablo Bay shore and rolling hills inland.

The project site is located mostly in the Refugio Creek watershed, with a small portion of Pinole Creek to the southern end of the project site. The Refugio Creek Watershed is one of a series of roughly parallel, northwest trending valleys and ridges in west Contra Costa County. The upper watershed is bordered by large, open space areas including the Muir Heritage Land Trust’s Fernandez Ranch, East Bay Municipal Utility District’s watershed lands, and open space owned by local homeowners associations. The lower watershed is bordered by San Pablo Bay. Prevalent habitats in the watershed include ruderal, eucalyptus, mixed oak/bay woodland, annual grassland, mixed riparian forest, and freshwater marsh (City of Hercules 2009c).

The ESL consists primarily of UPRR ROW, which parallels the shore of San Pablo Bay, privately owned bay front parcels planned for future commercial development, and a segment of Refugio Creek that flows through the ESL and empties into San Pablo Bay via culverts underneath the railroad tracks. The elevation in the ESL trends from sea level on the north to approximately 12 feet above mean sea level (amsl) near the railroad embankment, and up to 40 feet amsl closer to Bayfront Boulevard. Several protected areas that are managed by local, state and federal agencies for natural resources are located within San Pablo Bay and in the general project region (southwest of the ESL), including San Pablo Bay Regional Park, Pinole Shores

Regional Park, and Point Pinole Regional Shoreline. The Historic Town Center is located south of the ESL.

The UPRR ROW runs along the shoreline of San Pablo Bay and is 100 feet wide with two main tracks approximately 13 to 14 feet apart; the tracks are elevated slightly above the sub-grade. At the west end there is an additional track (house track) located on the water side. Along the tracks, there are signals, utilities and pipelines, including a high-pressure fuel pipeline, fiber-optic and telephone cables, and electrical lines located along the southeast side of the ROW. The ROW ranges in elevation from near sea level to approximately 20 feet above msl near the northern limit of the ESL.

The privately owned undeveloped parcels are located between Bayfront Boulevard and the UPRR ROW and are situated at an elevation ranging from six to ten feet amsl. They are partially covered with vegetation consisting mainly of weeds and non-native grasses, and do not presently contain any structures. The area has been heavily surcharged with compacted, engineered dirt fill placed during grading for the adjacent residential development.

Refugio Creek is a channelized stream and a low-flow tributary of San Pablo Bay that traverses the UPRR ROW east of Hercules Point. The creek passes beneath the UPRR tracks through a culvert with three pipes that are approximately eight feet in diameter prior to discharging into San Pablo Bay. The Refugio Creek channel is about 30 feet wide (measured from the tops of the banks) in the ESL. A pedestrian bridge crosses the creek channel approximately 300 feet southeast of the project site. The closest existing road access points across the creek are at Tsushima Drive, approximately 0.4 mile southeast of the ESL, and at Sycamore Avenue and San Pablo Avenue, approximately 0.75 mile southeast of the ESL.

The segment of Refugio Creek channel from the proposed project's southern (upstream) boundary northward (downstream) to immediately north of the proposed Bayfront Bridge includes approximately more than 1,200 linear feet of tidal channel. As a result of historic filling, the creek banks have very steep to vertical profiles. The creek banks within the ESL range in height from 8 to 14 feet from creek bed to top-of-bank. Part of the lower creek area is within the 100-year flood zone identified by the Federal Emergency Management Agency (FEMA) FIRM revised July 21, 2005. In the study segment of the creek, the existing low-flow creek channel varies in width (top-of-bank to top-of-bank) from approximately 20 feet in the upstream portion to about 40 feet in the downstream portion. At the downstream end (beyond the project boundary), the creek flows through culverts under a service road and then under a railroad bridge to San Pablo Bay. A non-tidal tributary, referred to as the North Channel, enters the main creek channel from the northeast near the southern (upstream) project boundary. An additional non-tidal tributary (referred to as the Central Channel) enters the main creek channel from the south approximately in the middle of the main channel length on the ESL.

Wetland restoration may be completed on a portion of the Chelsea Wetlands as compensatory mitigation to offset adverse effects to wetlands resulting from the construction of the Hercules ITC. The Chelsea Wetlands, adjacent to Pinole Creek, have vegetation communities similar to those present within the Hercules ITC ESL. A wetland delineation of the Chelsea Wetlands is available in the Conceptual Restoration Plan included in Appendix J.

Habitat Types/Vegetation Communities

This section discusses the habitat types found within the ESL. Habitat types or vegetation communities are assemblages of plant species that typically coexist in the same area. Vegetation communities are classified based upon the life form of the dominant species within that community and their associated flora. Where possible, habitat nomenclature follows the CDFG Vegetation Classification and Mapping Program. A habitat map of is included as **Figure 3.9-1**.

Terrestrial Habitat Types

Four types of terrestrial habitat types occur within the ESL: ruderal, railroad, riprap, and willow riparian forest. The majority of the ESL is ruderal, both on Hercules Point and inland of the railroad tracks. The railroad bisects the ESL and is unvegetated. Riprap includes areas where the coastline has been stabilized with rip-rap or rubble, and spans most of the ESL's shoreline. Willow riparian forest occurs in three patches on the ESL.

Ruderal

The vast majority of the ESL has been altered by development. Adjacent to the project are the former site of a dynamite factory and the current sites of residential and commercial developments. The ESL is traversed by an active railroad. A portion of the ESL is currently being prepared for development, with large stockpiles of dirt in place to compact the ground. The stockpiles are unvegetated and of little value to wildlife. The areas that are not currently developed, but have been altered or disturbed by development, are ruderal. The vegetated portion of the ruderal habitat in the ESL is dominated primarily by non-native grasses and forbs. Ruderal habitat occupies 68.86 acres of the ESL.

Dominant plant species include non-native grasses, such as ripgut brome, Italian ryegrass (*Lolium multiflorum*), and wild oats (*Avena fatua*, *A. barbata*), and non-native forbs, such as bristly ox-tongue (*Picris echioides*), black mustard (*Brassica nigra*), wild radish (*Raphanus sativus*), redstem filaree (*Erodium cicutarium*), cutleaf geranium (*Geranium dissectum*), hairy vetch (*Vicia villosa*), poison hemlock (*Conium maculatum*), and rose clover (*Trifolium hirtum*). Coyote brush (*Baccharis pilularis*), a native shrub often found in disturbed areas, is scattered in the ruderal habitat. Also scattered throughout the ruderal habitat are cultivated varieties of trees, such as blue gum eucalyptus (*Eucalyptus globulus*), blackwood acacia (*Acacia melanoxylon*), black walnut (*Juglans californica*), and palm trees.

The western portion of the ruderal habitat has been highly disturbed by stockpiling of dirt, previous road and trail-building, on-going railroad operation, and on- and off-trail foot traffic. Vegetation in this part of the project site is low-growing and, on the stockpiles, non-existent. This part of the project site provides limited value to wildlife.

The eastern portion of the project site follows a slope that connects a bluff to the San Pablo Bay coastline. A strip of ruderal habitat, less than 200 feet wide, follows the slope. Vegetation is not frequently disturbed in this strip; however, on-going railroad operation provides frequent disturbance to wildlife. The eastern portion of the ruderal habitat provides limited value to wildlife.

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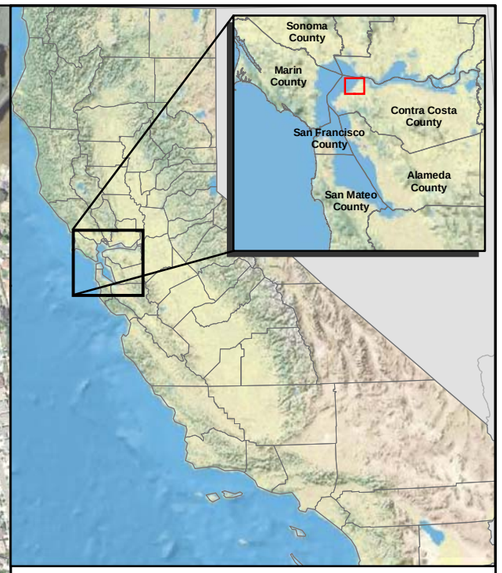

Legend

- Project Boundary
- Track Option B Boundary
- Temporary Area of Disturbance (Development not Part of This Project)
- Environmental Study Limit
- Freshwater Intermittent Drainage
- Pickleweed Brackish Marsh
- Brackish Stream
- Freshwater Wetland Swale
- Seasonal Wetland
- Cattail Marsh
- Unvegetated Ponded Depression (not subject to 404 or Porter Cologne)*
- California Cordgrass Tidal Marsh
- Intertidal Mudflats
- Pickleweed Tidal Marsh
- Willow Riparian Forest
- Ruderal
- Riprap
- Railroad
- Open Water

* These Unvegetated Ponded Depressions do not meet the USACE three-parameter test to qualify as wetlands and are not considered jurisdictional.

1 in = 700 ft (at tabloid layout)

N

0 100 200 400 Meters

0 350 700 1,400 Feet

Figure 3.9-1: Habitat Map

City of Hercules
Hercules Intermodal Transit Facility
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources. No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey. Data is State Plane Feet, NAD83 Zone 3

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A portion of ruderal habitat flanks Refugio Creek and its associated wetlands. The ruderal habitat surrounding Refugio Creek is in part dominated by horticultural plantings, and in part dominated by nonnative annual grasses and forbs with scattered shrubs. During a November 2009 site visit by HDR biologists, raccoon (*Procyon lotor*) and black-tailed deer (*Odocoileus hemionus*) tracks were seen in this area. It provides a small area of foraging habitat for raccoon, black-tailed deer, and other disturbance-adapted wildlife such as domestic cat (*Felis catus*), white-crowned sparrow (*Zonotrichia leucophrys*), house finch (*Carpodacus mexicanus*), and European starling (*Sturnus vulgaris*).

Railroad

An active UPRR railroad crosses the ESL immediately adjacent to the San Pablo Bay shore. The railroad ROW consists of ballast rock and highly compacted dirt, and is mostly unvegetated. A number of seasonal puddles occur within the railroad ROW. The puddles are described below as Unvegetated Ponded Depressions. Due to the heavy activity and highly disturbed condition of the railroad ROW, the area provides limited habitat value for wildlife. Railroad occupies 5.20 acres of the ESL.

Riprap

Where the railroad ROW passes immediately adjacent to the San Pablo Bay shore, a riprap revetment is in place to stabilize the shore. Additionally, cement and other rubble, presumably from the Hercules powder plant, line much of the shore of Hercules Point. The lower elevation riprap may provide habitat for marine invertebrates. While marine mammals such as harbor seal (*Phoca vitulina*) and California sea lion (*Zalophus californianus*) haul out on rocky shorelines, they most commonly do so in areas that are separated from human activity. No haul-out sites are known in the area. It is very unlikely that marine mammals would make use of the riprap. Riprap occupies 2.56 acres of the ESL.

Willow Riparian Forest

Three patches of habitats with willow riparian forest characteristics occur in the ESL: one within the railroad ROW, one in the northeastern extent of the ESL, and one on the Northern Channel of Refugio Creek. All patches are linear features. They are isolated patches and not part of a larger forest. The dominant trees in the patches are red willow (*Salix laevigata*) and arroyo willow (*Salix lasiolepis*). These areas contain brackish marsh or freshwater wetland swale features with willow riparian forest characteristics. The willow riparian forest provides habitat for numerous animal species, such as those found along Refugio Creek. Willow riparian forest occupies 1.27 acres of the ESL.

Annual Grassland

Annual grasslands (9.078 ac) cover the majority of the Chelsea mitigation site. Non-native grasses, including wild oats (*Avena* sp.) and creeping wildrye (*Leymus triticoides*) are abundant. Other dominant herbaceous vegetation includes spreading hedge parsley (*Torilis arvensis*) garden vetch (*Vicia sativa*), ripgut brome (*Bromus diandrus*), and cutleaf geranium. Large stands of field mustard (*Brassia rapa*) and scattered patches of curly dock (*Rumex crispus*), Harding

grass (*Phalaris aquatica*), and saltgrass (*Distichlis spicata*) occur within the grassland. Annual grassland occupies 9.078 acres of the Chelsea mitigation site (WWR 2009b).

Aquatic Habitat Types

Aquatic habitat types/vegetation communities in the ESL include California cordgrass tidal marsh, pickleweed tidal marsh, intertidal mudflat, pickleweed brackish marsh, brackish stream including Refugio Creek, cattail marsh, seasonal wetland, freshwater wetland swale, freshwater intermittent drainage, and unvegetated ponded depression. Freshwater seasonal wetlands and unvegetated ponded depressions occur within the railroad ROW and other ruderal habitats. The California cordgrass tidal marsh and pickleweed tidal marsh are located on the perimeter of Hercules Point, with California cordgrass tidal marsh at slightly lower elevation than pickleweed tidal marsh. The California cordgrass tidal marsh and pickleweed tidal marsh together form northern coastal salt marsh, a Natural Community of Special Concern. The intertidal mudflat occurs along the San Pablo Bay shoreline on the waterside of the railroad tracks. Refugio Creek is a perennial stream with some adjacent wetlands. Cattail marshes and freshwater intermittent drainages occur adjacent to Refugio Creek, within willow riparian forest habitats, and along the eastern side of the site.

California Cordgrass Tidal Marsh

California cordgrass tidal marsh grows patchily along the perimeter of Hercules Point. As is typical, it is the habitat type growing closest to the open water of the San Pablo Bay. California cordgrass (*Spartina foliosa*) dominates the habitat type, growing in dense homogenous stands. Based on size and structure, all of the cordgrass at the ESL appears to be the native California cordgrass and not among the invasive species of cordgrass. California cordgrass tidal marsh provides habitat for relatively few species; however, it does provide important habitat for the Federal and state listed California clapper rail (*Rallus longirostris obsoletus*). California cordgrass tidal marsh occupies 3.33 acres of the ESL.

Pickleweed Tidal Marsh

Pickleweed tidal marsh grows patchily along the perimeter of Hercules Point, in the mid-tidal zone. It grows immediately inland of California cordgrass tidal marsh. Pickleweed dominates the pickleweed tidal marsh. Several other plants are patchily dominant, along with pickleweed. These plants include alkali bulrush (*Bolboshoenus maritimus*), fleshy jaumea (*Jaumea carnosa*), saltgrass, and marsh gumplant (*Grindelia stricta* var. *angustifolia*). Pickleweed tidal marsh provides habitat for several common and special-status species, such as the San Pablo vole (*Microtinus californicus sanpabloensis*), salt-marsh wandering shrew (*Sorex vagrans halicoetes*), the Federal and state listed salt-marsh harvest mouse (*Reithrodontomys raviventris*) and the state listed black rail (*Laterallus jamaicensis*). Pickleweed tidal marsh occupies 2.87 acres of the ESL.

Intertidal Mudflat

Intertidal mudflats occur within the offshore portions of the ESL. These sparsely vegetated intertidal areas occur from approximately mean lower low water (MLLW) to mean tide level (MTL). Intertidal mudflats provide habitat for many species of invertebrates, including diatoms,

polychaetes, oligochaetes, amphipods, isopods, and crustaceans. During low tide, mudflats provide foraging and roosting areas used by numerous shorebirds during the spring migration. Shorebirds frequently found on mudflats in the Bay include western sandpiper (*Calidris mauri*), least sandpiper (*Calidris minutilla*), dunlin (*Calidris alpina*), long- and short-billed dowitcher (*Limnodromus griseus* and *L. scolopaceus*, respectively), long-billed curlew (*Numenius americanus*), whimbrel (*Numenius phaeopus*), and American avocet (*Recurvirostra americana*). During high tide, mudflats provide foraging habitat for fish, including longfin smelt (*Spirinchus thaleichthys*), staghorn sculpin (*Leptocottus armatus*), starry flounder, and leopard shark (*Triakis semifasciata*). Intertidal mudflat occupies 62.55 acres of the ESL.

Brackish Stream

The ESL contains Refugio Creek and an unnamed stream to the east; both of which are tidally influenced and contain brackish marsh vegetation. Brackish stream occupies 0.68 acres of the ESL.

Refugio Creek is a tidally influenced perennial stream that flows directly into San Pablo Bay. It was altered in the early 1990s from a natural channel into a straightened, deepened, channeled waterway. At its downstream end, Refugio Creek flows through culverts under a railroad bridge. During high flows, the creek backs up from the culverts. The stream's downstream end is characterized by salt-tolerant plants, such as pickleweed and saltgrass. Its upstream end is characterized by less salt-tolerant plants, such as cattails (*Typha* sp.) and common tule (*Schoenoplectus acutus*).

The unnamed brackish stream flows through the far northeastern portion of the ESL. It is tidally influenced and supports brackish vegetation such as pickleweed, saltgrass, and alkali bulrush. A portion of the stream in the ESL is cement-lined. Beyond the ESL, the stream flows under the railroad through a three-foot culvert and into the San Pablo Bay.

Pickleweed Brackish Marsh

Pickleweed brackish marsh habitat occurs adjacent to the brackish stream habitats within the ESL or have hydrology that may be augmented by wicking from adjacent surcharge activity. These marsh habitat types are primarily created during periods of high flow and/or high tide in their respective creeks. They contain salt-tolerant vegetation, such as pickleweed, saltgrass, or alkali bulrush. Pickleweed brackish marsh occupies 0.87 acres of the ESL.

Cattail Marsh

Several freshwater perennial wetland features occur within the site, primarily in the vicinity of Refugio Creek. Cattail marshes near Refugio Creek are dominated by cattails and generally have little other vegetation. Cattail marsh occupies 3.06 acres of the ESL.

Seasonal Wetland

Several non-tidal freshwater seasonal wetlands occur in shallow depressions throughout upland portions of the ESL. The depressions are located near Refugio Creek and along the eastern portion of the railroad ROW. Many of the depressions are the result of human activities. In

shallower depressions, vegetation is dominated by bristly ox-tongue, Italian ryegrass, and curly dock. Deeper depressions, often bounded by soil deposit berms, support more hydrophytic species, such as rabbitsfoot grass (*Polypogon monspeliensis*) and rough cocklebur (*Xanthium strumarium*). Seasonal wetland occupies 1.57 acres of the ESL.

Freshwater Wetland Swale

One freshwater wetland swale occurs within the northeastern portion of the ESL. The swale runs through a patch of willow riparian forest. Vegetation includes willow trees and understory herbaceous vegetation such as tall flatsedge (*Cyperus eragrostis*) and creeping wildrye (*Leymus triticoides*). Freshwater wetland swale occupies 0.32 acres of the ESL.

Freshwater Intermittent Drainage

Four freshwater intermittent drainage features occur within the ESL. One drains into Refugio Creek. Refugio Creek's Northern Channel flows through the ESL, supporting a willow riparian forest and, in its downstream reach, supporting salt-tolerant plants such as pickleweed, saltgrass, and alkali bulrush. Another is between the willow riparian and brackish stream habitat, and another between the cattail marsh and the same brackish stream on the eastern portion of the ESL. Freshwater Intermittent Drainage occupies 0.08 acres of the ESL.

Unvegetated Ponded Depression

Several seasonally ponded depressions, or "puddles", occur within the railroad ROW and adjacent to the railroad ROW. The puddles occur within depressions in compacted dirt and gravel. They are generally devoid of vascular vegetation. The puddles reach a maximum depth of six inches in the winter, with most not exceeding three inches in depth. Puddles in the eastern portion of the ESL were surveyed for federally-listed vernal pool branchiopods by Vollmar Consulting in 2007; and puddles in the west were surveyed by Condor Country Consulting in 2003. The puddles provide habitat for aquatic invertebrates, such as versatile fairy shrimp (*Branchinecta lindahli*), daphnia (*Cladocera*), seed shrimp (*Ostracoda*), water boatmen (*Corixidae*), midge larvae (*Chironomidae*), and mosquito larvae (*Culicidae*). The puddles provide poor habitat for vertebrates and listed invertebrates. To date, few vertebrates and no federally-listed vernal pool branchiopods have been found. Unvegetated ponded depression occupies 0.40 acres of the ESL.

Pickleweed Wetland

Pickleweed wetlands are dominated by pickleweed and occur in low-lying portions of the Chelsea Mitigation site in the southern end of the Project. These areas pond water following rain events and likely have remnant soil salinities, which favor the establishment of salt-tolerant vegetation. Some of the lower elevation areas receive occasional spillover of brackish water from the channel adjacent Chelsea by the Bay housing development during extreme high tides and storm events. Pickleweed wetland occupies 0.855 acre of the Chelsea mitigation site (WWR 2009b).

Salt-Alkali Marsh

Salt-alkali marsh habitat is found in the first 1,000 ft of the tidal channel traversing the southern project boundary (starting from the culvert on Pinole Creek), immediately adjacent to the Chelsea by the Bay housing development. California cordgrass and alkali bulrush occur within lower portions of the channel, transitioning into a matrix of pickleweed, saltgrass, and marsh gumplant. Plant species bordering the channel include Harding grass, wild radish (*Raphanus raphanistrum*), and various non-native annual grasses. Salt-alkali marsh occupies 0.377 acres of the Chelsea mitigation site (WWR 2009b).

Brackish Bulrush-Cattail Wetland

Brackish bulrush-cattail wetlands (0.084 ac) occur in the on-site channel, upstream of the first 1,000 ft, in the Chelsea Mitigation site east of the southern-end of the Project boundary for Track Option B. The vegetation in the channel is dominated by cattails and California bulrush (*Schoenoplectus californicus*) and transitions into a matrix of more salt-tolerant species at higher elevations (saltgrass, pickleweed, marsh gumplant). This transition to salt tolerant species is likely due to remnant soil salinity and intrusion of brackish water during storm events. Brackish bulrush-cattail wetland occupies 0.084 acres of the Chelsea mitigation site (WWR 2009b).

Open Water

The Open Waters are defined as the permanently submerged portions of San Pablo Bay. These dynamic mixing areas are influenced by the inflow of saline ocean water entering via the Golden Gate on twice-daily flood tides, and the outflow of freshwater from the Delta through the Carquinez Strait (WWR 2007a). A large, natural central channel divides the open water habitat. Depths in this main channel often exceed 50 feet, with the majority of the outlying shoal regions less than 10 feet deep. Open waters are the predominant aquatic habitat in the study area, providing unique biological benefits to an array of aquatic animals (WWR 2007a). Open water occupies 0.10 acres of the ESL.

Previous Biological Studies

Several biological studies, including habitat evaluation technical memorandums and presence/absence survey reports, have been prepared in support of the proposed project and earlier versions of the proposed project. Previous biological studies for the Hercules ITC were prepared between December 2003 and April 2008 by Vollmar, WWR, WWA, and Condor Country Consulting under contract with the City. Previously prepared biological documents that were used in the development of this biological resources section are listed and described in Appendix G.

3.9.3. Sensitive Biological Resources

Sensitive biological resources within the ESL include sensitive natural communities, special-status wildlife and plant species, commercially/recreationally important fisheries, and potential waters of the U.S., including wetlands and other special aquatic sites.

Special-Status Species and Sensitive Natural Communities Potentially in the Project Area

Based on the special-status species evaluation described in Section 3.9.2, special-status species and sensitive natural communities that were determined to have the potential to occur in the ESL and/or be impacted by the proposed project are listed in **Table 3.9-1**, the Project Study Area Sensitive Species/Natural Communities Table. The table includes the scientific name, common name, listing status, and a discussion of presence/absence of the species and its habitat in the ESL. Appendix G includes life history descriptions for special-status species.

Sensitive Natural Communities

Vegetation communities (habitats) are generally considered "sensitive" if: (a) they are considered rare within the region by various agencies including USFWS, CDFG, and other local agencies; (b) if they are known to support sensitive animal or plant species; and/or (c) they are known to serve as important wildlife corridors. Sensitive habitats are typically depleted throughout their known ranges, or are highly localized and/or fragmented. The project site contains four sensitive natural communities as defined under definitions (a) through (c) discussed above: Coastal Brackish Marsh, Northern Coastal Salt Marsh, eelgrass beds, and intertidal mudflat.

Coastal Brackish Marsh

Coastal Brackish Marsh is similar to Coastal Salt Marshes, but is brackish from freshwater input. It is usually found at the interior edges of coastal bays and estuaries or in coastal lagoons. It is most extensively developed around Suisun Bay at the mouth of the Delta. Salinity may vary considerably, and may increase at high tide or during seasons of low freshwater runoff or both. Coastal Brackish Marshes usually intergrade with Coastal Salt Marshes toward the ocean and occasionally with Freshwater Marshes at the mouths of rivers, especially in the Delta. The habitat type is dominated by perennial, emergent, herbaceous monocots to two meters tall. Cover is often complete and dense (Holland 1986).

Coastal Brackish Marsh covers the banks of Refugio Creek. It is dominated by pickleweed, saltgrass, alkali heath, and creeping wildrye (*Leymus triticoides*). This sensitive natural community is represented by pickleweed brackish marsh in the ESL. The Coastal Brackish Marsh is considered a sensitive natural community because it foraging, cover, nesting, and roosting habitat for a variety of birds, mammals, reptiles, and amphibians. Some species are year around residents to this habitat and other are winter visitors that rely on these habitats for cover and foraging. In addition, a number of species from adjacent uplands visit the wetlands to feed (CWHR 2009d).

Table 3.9-1
Project Study Area Sensitive Species/Natural Communities Table

Scientific Name/ Common Name	Federal/State/ CNPS Status	Habitat Present/ Absent	Likelihood of Occurrence	Rationale
Amphibians				
California red-legged frog *Rana draytonii*	FT/SSC/--	P	Low	No breeding habitat for CRLF is present in the ESL. Areas adjacent to the southern-end of the project boundary for Track Option B do not provide favorable habitat. However, it is possible that CRLF could disperse into or through these areas from nearby populations. No CRLF have been observed in either locations.
Invertebrates				
Vernal pool fairy shrimp *Branchinecta lynchi*	FT/--/--	P	Low	Marginal habitat is present in the freshwater wetlands on-site. One complete set of wet season presence/absence surveys has been conducted (Appendix G). Vernal pool fairy shrimp were not found. A second set of wet season surveys is in process. Areas adjacent to the southern-end of the project boundary for Track Option B are also unlikely to contain this species due to the area being historically a tidal marsh and there no known observations of this species in this area.
Birds				
Cooper's hawk (nesting) *Accipiter cooperi*	--/--/G5, S3	P	Medium	Nesting and foraging habitat for this species is present in the ESL and adjacent to the southern-end of the project boundary for Track Option B, but it has not been observed in either location.
Tricolored blackbird *Agelaius tricolor*	--/SSC/--	P	Low	Suitable nesting habitat occurs adjacent to the ESL and suitable foraging habitat occurs in the ESL. This species has not been observed in the ESL.
Burrowing owl *Athene cunicularia*	--/SSC/--	P	Low	Marginal wintering habitat occurs in the ESL; however no suitable habitat is present adjacent to the southern-end of project boundary for Track Option B. One burrowing owl was observed on Hercules Point in 2007 but subsequent protocol surveys did not detect any burrowing owls. The burrowing owl sighted in 2007 is presumed to be a random visitor. Burrowing owl is believed to be currently absent from the ESL.
Northern harrier *Circus cyaneus*	--/SSC/--	P	Low	Suitable nesting habitat occurs adjacent to the ESL and adjacent to the southern-end of the project boundary for Track Option B. Suitable foraging habitat occurs in the ESL. This species has not been observed in the ESL.
White-tailed kite (Nesting) *Elanus leucurus*	--/SFP/--	P	Low	Marginal nesting habitat occurs in the ESL and foraging habitat is also present. A pair of white-tailed kites was observed on Hercules Point during surveys in

Scientific Name/ Common Name	Federal/State/ CNPS Status	Habitat Present/ Absent	Likelihood of Occurrence	Rationale
				2007, but no nests were observed (Appendix G). This species frequently forages in areas adjacent to the southern-end of the project boundary for Track Option B. White-tailed kite is believed to be currently absent from the ESL.
Saltmarsh common yellowthroat *Geothlypis trichas sinuosa*	--/SSC/--	P	Low	Suitable nesting habitat for this species occurs in the ESL and adjacent to the southern-end of the project boundary for Track Option B, but it has not been observed in the ESL. Saltmarsh common yellowthroat is believed to be currently absent from the ESL.
California black rail *Laterallus jamaicensis coturniculus*	--/ST/--	P	Low	Suitable nesting habitat for this species occurs in the ESL and areas adjacent to the southern-end of the project boundary for Track Option B. It has not been observed in the ESL during protocol surveys in 2007 (Appendix G). It was documented in the nearby tidal marsh in 2001 (adjacent to the southern-end of the project boundary for Track Option B. California black rail is believed to be currently absent from the ESL and areas adjacent to the southern-end of the project boundary for Track Option B.
San Pablo song sparrow *Melospiza melodia samuelis*	--/SSC/--	P	High	Suitable nesting habitat for this species occurs in the ESL, and seven to nine pairs were been observed in the ESL during protocol surveys in 2007 (Appendix G).
Alameda song sparrow *Melospiza melodia pusillula*	--/SSC/--	P	High	This species has been observed displaying nesting behavior near the southern-end of the project boundary for Track Option B. Suitable nesting habitat is also present within this area.
Osprey *Pandion haliaetus*	--/SSC/--	P	High	This species is regularly observed foraging near the southern-end of the project boundary for Track Option B and could nest on or near this area.
California clapper rail *Rallus longirostris obsoletus*	FE/SE/--	P	Low	Marginal nesting habitat for this species occurs in the ESL and areas adjacent to the southern-end of the project boundary for Track Option B. This species was not been observed in the ESL during protocol surveys in 2007 (Appendix G). California clapper rail is believed to be currently absent from the ESL and areas adjacent to the southern-end of the project boundary for Track Option B.
Other raptors, migratory birds, and nesting birds	1	P	Medium	Suitable nesting habitat for migratory birds and other bird species occurs in the ESL. Numerous migratory birds were observed on site during biological surveys, but no nests were observed. Areas south of the southern-end of the project boundary for Track Option B also contain areas suitable for foraging and nesting, and birds have been observed in this area (e.g., great egret and great blue heron).
Mammals				
Pallid bat	--/SSC/--	P	Low	Marginal roosting habitat for this species is present in the ESL, but it has not

Scientific Name/ Common Name	Federal/State/ CNPS Status	Habitat Present/ Absent	Likelihood of Occurrence	Rationale
Antrozous pallidus				been observed in the ESL.
Hoary bat *Lasiurus cinereus*	--/--/G5, S4	P	Medium	Marginal roosting habitat for this species is present in the ESL, but it has not been observed in the ESL.
San Pablo vole *Microtus californicus sanpabloensis*	--/SSC/--	P	Medium	Marginal habitat for this species is present in the ESL, but it has not been observed in the ESL.
Salt-marsh harvest mouse *Reithrodontomys raviventris*	FE/SE,FP/--	P	Low	Marginal habitat for this species is present in the ESL and areas adjacent to the southern-end of the project boundary for Track Option B, but this species has not been observed. Salt-marsh harvest mouse is presumed absent from the these areas due to low habitat quality and isolation from other suitable habitats.
Salt-marsh wandering shrew *Sorex vagrans halicoetes*	--/SSC/--	P	Medium	Marginal habitat for this species is present in the ESL, but it has not been observed in the ESL.
Fish				
North American green sturgeon, southern DPS *Acipenser medirostris*	FT/SSC/--	P	High	This species has the potential to occur in San Pablo Bay and could be present in or directly adjacent to the intertidal mudflats in the ESL during certain times of the year.
Delta smelt *Hypomesus transpacificus*	FT/--/--	P	High	This species has the potential to occur in San Pablo Bay and could be present in or directly adjacent to the intertidal mudflats in the ESL during certain times of the year.
River lamprey *Lampetra ayresi*	--/SSC/--	P	High	This species has the potential to occur in San Pablo Bay and could be present in or directly adjacent to the intertidal mudflats in the ESL during certain times of the year.
Sacramento splittail *Pogonichthys macrolepidotus*	--/SSC/--	P	High	This species has the potential to occur in San Pablo Bay and could be present in or directly adjacent to the intertidal mudflats in the ESL during certain times of the year.
Central California Coast Coho salmon *Oncorhynchus kisutch*	FE/SE/--	P	High	This species has the potential to occur in San Pablo Bay and could be present in or directly adjacent to the intertidal mudflats in the ESL during certain times of the year.
Central Valley Steelhead DPS *O. mykiss*	FT/--/--	P	High	This species has the potential to occur in San Pablo Bay and could be present in or directly adjacent to the intertidal mudflats in the ESL during certain times of the year.

Scientific Name/ Common Name	Federal/State/ CNPS Status	Habitat Present/ Absent	Likelihood of Occurrence	Rationale
Central Coastal California steelhead *O. mykiss*	FT/--/--	P	High	This species has the potential to occur in San Pablo Bay and could be present in or directly adjacent to the intertidal mudflats in the ESL during certain times of the year.
Central Valley fall-/late fall-run Chinook salmon *O. tshawytscha*	--/SSC/--	P	High	This species has the potential to occur in San Pablo Bay and could be present in or directly adjacent to the intertidal mudflats in the ESL during certain times of the year.
Central Valley spring-run Chinook salmon *O. tshawytscha*	FT/ST/--	P	High	This species has the potential to occur in San Pablo Bay and could be present in or directly adjacent to the intertidal mudflats in the ESL during certain times of the year.
Sacramento River winter-run Chinook salmon *O. tshawytscha*	FE/SE/--	P	High	This species has the potential to occur in San Pablo Bay and could be present in or directly adjacent to the intertidal mudflats in the ESL during certain times of the year.
Longfin smelt *Spirinchus thaleichthys*	--/ST/--	P	High	This species has the potential to occur in San Pablo Bay and could be present in or directly adjacent to the intertidal mudflats in the ESL during certain times of the year.
Plants				
Point Reyes bird's-beak *Cordylanthus maritimus ssp. palustris*	--/--/1B.2	P	Low	This species was not observed in the ESL during focused botanical surveys.
Soft bird's-beak *Cordylanthus mollis ssp. mollis*	--/--/1B.2	P	Low	This species was not observed in the ESL during focused botanical surveys.
Mason's liliaeopsis *Lilaeopsis masonii*	--/SR/1B.1	P	Low	This species was not observed in the ESL during focused botanical surveys.
Sensitive Natural Communities				
Coastal Brackish Marsh	--/--/G2, S2.1	P	NA	Coastal brackish marsh occurs in the ESL along the banks of Refugio Creek.
Northern Coastal Salt Marsh	--/--/G3, S3.2	P	NA	Northern coastal salt marsh occurs in the ESL along the San Pablo Bay shoreline in the vicinity of Hercules Point.
Eelgrass (*Zostera marina*) and widgeongrass (*Ruppia*		*		Surveys were conducted for eelgrass and widgeongrass beds. Surveys did not detect any eelgrass or widgeongrass; however, eelgrass or widgeongrass may

Scientific Name/ Common Name	Federal/State/ CNPS Status	Habitat Present/ Absent	Likelihood of Occurrence	Rationale
maritime) beds				colonize the intertidal mudflats of San Pablo Bay (Appendix G).

1 Raptors, migratory birds, and nesting birds are protected by a variety of Federal and State laws. See Chapter 1.3.1.3 and 1.3.2.3 for discussion.

Absent [A] means no further work needed. Present [P] means general habitat is present and species may be present. Status: Federal Endangered (FE); Federal Threatened (FT); Federal Proposed (FP); Federal Candidate (FC), Federal Species of Concern (FSC); State Endangered (SE); State Threatened (ST); State Fully Protected (SFP); State Rare (SR); State Species of Special Concern (SSC); CNPS List 1B (1B); CNPS List 2 (2).

Note: Track Option B was evaluated based on aerial photography, existing biological documents (e.g., WWR 2009b), and known current conditions of the areas. No known information is available for review for the northern-end of the project boundary for Track Option B. Studies are underway to ground- truth aerial photography and habitat conditions either suitable/non-suitable to sensitive species. Permits will be secured before construction begins.

Northern Coastal Salt Marsh

Northern Coastal Salt Marsh is a natural community that typically crosses an elevation and vegetation gradient. Stands of cordgrass typically grow at the lowest elevation, nearest the open water; stands of pickleweed grow in the mid-elevation; and a richer mixture of plant species typically grows in the higher elevation, farthest from open water. At the project site, the community is best represented by California Cordgrass Tidal Marsh and Pickleweed Tidal Marsh. Northern Coastal Salt Marsh occurs at the project site in patches along the margin of Hercules Point.

Northern Coastal Salt Marsh is found in the sheltered inland margins of bays, lagoons, and estuaries, from the California-Oregon border south to Pt. Conception. It is most extensively developed in the San Francisco Bay. It is a highly productive community of herbaceous and suffrutescent, salt-tolerant hydrophytes forming moderate to dense cover and growing to one meter tall. Most species are active in the summer and dormant in the winter. Plant species are usually segregated horizontally with cord grass nearer the open water, pickleweed at mid-littoral elevations, and a richer mixture closer to high ground (Holland 1986).

Northern Coastal Salt Marsh is present along the margin of Hercules Point. A small amount of the community occurs within the project site. Within and adjacent to the project site, the community is best represented by California Cordgrass Tidal Marsh and Pickleweed Tidal Marsh. This habitat type provides similar habitat value for wildlife as Coastal Brackish Marsh but can also provide habitat for fish species that utilize shallow areas for foraging.

Pickleweed Wetland and Brackish Bulrush-Cattail Wetland

As described above, pickleweed wetland and brackish bulrush-cattail wetland are present in the Chelsea mitigation site. Though stands of pickleweed occur in this area, they are patchily distributed within an annual grassland matrix (also described above) and do not provide a large extent of contiguous pickleweed habitat. WWR (2009b) reports that the Chelsea mitigation site was historically a tidal marsh altered by the construction of a berm and deposition of fill material. Furthermore, the City reports that the biological value of these remnant pickleweed wetlands has been substantially diminished.

Eelgrass Beds

Eelgrass is a marine plant that grows in clear, well-lit, shallow soft-bottom coastal waters and provides shelter, nursery habitat, and food for a variety of fish birds, and invertebrates (Merkel & Associates 2000). Eelgrass meadows occur within the shallow bay habitats and in the more saline brackish water interfaces of the San Francisco Bay estuary (Merkel & Associates 2000).

Eelgrass clarifies water through sediment trapping and habitat stabilization. More specifically, it stabilizes shorelines by reducing wave impacts to the shoreline, thus reducing erosion. It also provides benefits of nutrient transformation and water oxygenation (Merkel & Associates 2000). Eelgrass beds are considered a Special Aquatic Site by the USACE and are regulated under Section 404 of the CWA. Eelgrass beds are also subject to BCDC jurisdiction under Section 66605 of the McAteer-Petris Act and are afforded special management considerations by CDFG,

USFWS, and NMFS. Eelgrass surveys conducted in the ESL during March 2007 (Appendix G) and April 2010 did not detect any eelgrass or widgeongrass (WWR 2007b and HDR 2010c).

Intertidal Mudflats

Intertidal mudflats provide habitat for many species of invertebrates, and during low tide provide foraging and roosting areas used by numerous shorebirds during the spring migration. Intertidal mudflats are considered a Special Aquatic Site by the USACE and are therefore regulated under Section 404 of the CWA. Intertidal mudflats are also subject to BCDC jurisdiction under Section 66605 of the McAteer-Petris Act.

Regionally Occurring Marine Mammals

Seven species of marine mammals reportedly occur in San Francisco Bay (**Table 3.9-2**) (NMFS 2007). The harbor seal, California sea lion, harbor porpoise (*Phocoena phocoena*), and the Eastern Pacific stock of the gray whale (*Eschrichtius robustus*) are the most common marine mammal species in the Bay (NMFS 2007). Habitat association of marine mammals in San Francisco Bay generally is related to distribution of their prey species (NMFS 2007).

Table 3.9-2
Common Marine Mammals in San Francisco Bay

Scientific Name	Common Name
Phoca vitulina	Harbor seal
Zalophus californianus	California sea lion
Eumetopias jubatus	Steller sea lion
Eschrichtius robustus	Gray whale
Megaptera novaengliae	Humpback whale
Phocoena phocoena	Harbor porpoise
Enhydra lutra	Southern sea otter

Pinnipeds. As reported by NMFS (2007), harbor seals are the only year-round resident of San Francisco Bay, using the area for breeding, pupping, foraging, and refugia. Harbor seals haul out onshore at specific locations within San Francisco Bay, utilizing mostly rocks and mud flats exposed at low tides, sloughs, islands, and beaches, likely in proximity to food resources and distant from human activities (Allen 1991, as cited in NMFS 2007). The primary harbor seal colonies within San Francisco Bay are at Castro Rocks in the San Pablo Bay, Yerba Buena Island in Central Bay and Mowry Slough in the South Bay (NMFS 2007). Some colonies are only accessible at medium to high tides, such as the tidal mudflats and pickleweed marshes of Mowry and Newark Sloughs. Seals have abandoned several locations used in the past (e.g., Strawberry Spit) within San Francisco Bay due to human activities (Allen 1991, as cited in NMFS 2007). The harbor seal is the largest mammal found in association with mudflats and tidal salt marshes of San Pablo Bay (Coastal Conservancy and USACE 2000). Surveys estimate the resident San Francisco Bay population to be between 500 and 700 individuals (NMFS 2007).

The average number of seals counted during the 2002 breeding/molt seasons was 117.5 at Castro Rocks, 96.6 at Yerba Buena Island and 147.6 at Mowry Slough (NMFS 2007).

As reported by NMFS (2007), California sea lions use San Francisco Bay for refugia and foraging, but do not breed or pup within the Bay. California sea lions are most abundant within the Bay while migrating to and from their primary breeding areas on the Farallon and California Channel Islands, and when Pacific herring and salmon are spawning in the bay. Sea lions can travel far up into the Delta, but most concentrate feeding in the Central Bay and where herring spawn (NMFS 2007). Similar to harbor seals, sea lions haul-out onshore, often utilizing anthropogenic structures such as boat docks and navigational buoys, although individuals may also haul out also on islands within San Francisco Bay, such as Alcatraz and Angel Islands. The largest California sea lion haul-out in San Francisco Bay is at the Port of San Francisco Pier 39, where up to 800 sea lions have been counted. Sea lions often float on the surface in large groups of 10 to 20 after feeding (NMFS 2007).

As reported by NMFS (2008), Steller sea lions are distributed throughout the North Pacific Ocean from California to Japan. The Eastern Distinct Population Segment of Steller sea lions (inhabiting California, Oregon, British Columbia and Southeast Alaska) are listed as threatened under the FESA, and are considered to be depleted under the MMPA. Steller sea lion rookeries are normally located on remote, offshore islands or reefs and require adequate areas above high water levels where young pups can survive most weather conditions and adequate prey is available on a consistent basis within the foraging range of lactating females (NMFS 2008). Steller sea lions historically occupied five major rookeries and haulouts in California (San Miguel Island, Año Nuevo Island, the Farallon Islands, Sugarloaf Island/Cape Mendocino, and Saint George Reef), however, several rookery and haulout sites along the California coast, primarily south of Año Nuevo, have been abandoned, as well as a documented rookery at Seal Rocks near San Francisco (NMFS 2008). Numbers of non-pup Steller sea lions at the two central California sites, Año Nuevo and the Farallon Islands, are currently only about 20% of the levels reported between 1927 and 1964 (NMFS 2008). Pacific herring is a major prey item for Steller sea lions that are drawn to the Bay (NMFS 2007).

Cetaceans. Seasonally migrating cetaceans, such as the gray whale and humpback whale, enter the Central Bay during their migrations to feed (NMFS 2007). The Eastern Pacific gray whale migrates between calving grounds in Baja, Mexico to primary feeding grounds in Alaska and Canada on an annual basis. Gray whales are commonly sighted near the Golden Gate during peak migration periods (northward migration in spring and southward migration in winter), and annually a few individuals are observed within the Bay (Green et al. 2006, as cited in NMFS 2007). Gray whales prey mostly on invertebrates that live on or in soft sediments, while humpback whales primarily feed on krill and various small fish species. Humpback whales are currently listed under the FESA as endangered, and are designated as depleted under the MMPA. Gray whales were delisted from the FESA in 1994.

The harbor porpoise is a near-shore species, commonly observed near the Golden Gate Bridge and areas of the Central Bay (NMFS 2007). However, there are no confident harbor porpoise population estimates (NMFS 2007). Harbor porpoise eat mostly small schooling fish and invertebrates, and along with seals and sea lions, will feed on herring and anchovies (NMFS 2007).

Southern sea otter. Southern sea otters are listed as threatened under the FESA, designated as depleted under the MMPA, and are designated as a fully protected mammal under California state law (CDFG Code 4700) (USFWS 2008). The 2007 3-year running average (2006-2008) is 2,826 individuals (USFWS 2008). Based on three-year running averages of the annual spring counts, the mainland southern sea otter population increased by an average of about three percent per year from 2003 to the present (USFWS 2008). A major oil spill from a tanker in the waters in the vicinity of the range of the southern sea otter has traditionally been considered to be the most serious potential threat to the species (USFWS 2003). However, since its listing under the ESA, pollution and incidental take in fisheries have also been recognized as substantial problems (USFWS 2003). Sea otters may occupy nearshore waters along the mainland coastline of California from San Mateo County to Santa Barbara County. However, the northern limit of their distribution is reported to be at Point Año Nuevo, near Half Moon Bay (USFWS 2003). Sea otters occupy hard- and soft-sediment marine habitats from the littoral zone to depths of less than 100 meters (330 feet), including protected bays and exposed outer coasts (USFWS 2003). Most individuals occur between shore and the 20-meter (65-foot) depth contour (USFWS 2003).

Regional Fisheries Resources

Regional fisheries resources in the ESL and vicinity include the waters of San Pablo Bay and Refugio Creek. Fish species in the project region utilize several different habitats, including open waters, tidal wetlands, intertidal mudflats, and creeks. The following paragraphs discuss fisheries resources present within the San Pablo Bay region followed by a discussion of fisheries resources present in Refugio Creek.

San Pablo Bay Region

The San Pablo Bay watershed, approximately 900 square miles in area, includes those lands in the northern reaches of the Bay Area whose streams flow into San Pablo Bay; the watershed is a major drainage basin for Marin, Sonoma, Solano, and Contra Costa counties (USACE 1999). This watershed is a component of the much larger San Francisco Bay-Delta Estuary, which includes the Sacramento and San Joaquin Rivers. The San Pablo Bay watershed lies between the Suisun Bay to the east and the San Francisco Bay to the south (Coastal Conservancy and the USACE 2000).

Numerous factors (i.e., tidal inflows from San Francisco Bay, freshwater flows from the Delta and its own watershed, the topography of the land and the climate) influence the hydrology of the San Pablo Bay watershed (Coastal Conservancy and the USACE 2000). Twice daily, the saline waters from San Francisco Bay flow into San Pablo Bay. The effects of the tides extend well upstream into the freshwater tributaries to San Pablo Bay (Coastal Conservancy and the USACE 2000). The interaction between the fresh and saline water has a major influence on the circulation of water in the San Pablo Bay itself (Coastal Conservancy and the USACE 2000), and on temperature fields in the bay, which have an important influence on the ecology of the aquatic resources and the distribution of species in San Pablo Bay (WWR 2007). More than 50 fish species inhabit the San Pablo Bay watershed (Coastal Conservancy and the USACE 2000). **Table 3.9-3** present's common fish species that have been encountered in San Pablo Bay (in the project vicinity). Life history descriptions for special-status fish species are provided in Appendix G.

Table 3.9-3
Common Fish Species in San Pablo Bay

Common Name	Scientific Name	Native (N) or Nonnative (I)	Fishery Management Plan Designation
Northern Anchovy	*Engraulis mordax*	N	FMP – Coastal Pelagic
Longfin Smelt	*Spirinchus thaleichthys*	N	--
Pacific Herring	*Clupea pallasii*	I	CDFG has initiated a FMP
Striped Bass	*Morone saxitilis*	I	--
American Shad	*Alosa sapidissima*	I	--
Shiner Perch	*Cymatogaster aggregate*	N	--
Plainfin Midshipman	*Porichthys notatus*	N	--
Topsmelt	*Atherinops affinis*	N	--
Jacksmelt	*Athernopsis californiensis*	N	--
Threadfin Shad	*Dorosoma petenense*	I	--
White Croaker	*Genyonemus lineatus*	N	--
Starry Flounder	*Platichthys stellatus*	N	FMP – Groundfish
Pacific Tomcod	*Microgadus proximus*	N	--
Yellowfin Goby	*Acanthogobius flavimanus*	I	--
Whitebait Smelt	*Allosmerus elongatus*	N	--
Delta Smelt	*Hypomesus tanspacificus*	N	--
Pacific Staghorn Sculpin	*Leptocottus armatus*	N	--
Sacramento River winter-run Chinook salmon	*Oncorhynchus tshawytscha*	N	--
Central Valley spring-run Chinook salmon	*O. tshawytscha*	N	--
California coastal ESU Chinook salmon	*O. tshawytscha*	N	--
Pacific Pompano	*Peprilus simillimus*	N	--
Splittail	*Pogonichthys macrolepidotus*	N	--
Bat Ray	*Myliobatus californica*	N	--
Brown Smoothound	*Mustelus henlei*	N	--
White Seaperch	*Phanerodon furcatus*	N	--
Threespine Stickback	*Gasterosteus aculeatus*	N	--
Walleye Surfperch	*Hyperprosopon argenteum*	N	--
Night Smelt	*Spirinchus starski*	N	--

Common Name	Scientific Name	Native (N) or Nonnative (I)	Fishery Management Plan Designation
White Sturgeon	*Acipenser transmontanus*	N	--
English Sole	*Parophrys vetulus*	N	FMP – Groundfish
California Grunion	*Leuresthes tenuis*	N	--
Surf Smelt	*Hypomesus pretiosus*	N	--
Speckled Sandab	*Citharichthys stigmaeus*	N	--
Big Skate	*Raja binoculatus*	N	FMP – Groundfish
Pacific Sardine	*Sardinops sagax*	N	FMP – Coastal Pelagic
Bay Goby	*Lepidogobius lepidus*	N	--
Spiny Dogfish	*Squalus acanthias*	N	FMP – Groundfish
Coastal California Steelhead	*Oncorhynchus mykiss*	N	--
Central Valley Steelhead	*O. mykiss*	N	--
Pile Perch	*Rhacochilus vacca*	N	--
Pacific Sanddab	*Citharichthys sordidus*	N	--
Green Sturgeon	*Acispenser medirostris*	N	--
Pacific Lamprey	*Lampetra tridentata*	N	--
Leopard Shark	*Triakus semifasciata*	N	FMP – Groundfish
Inland Silverside	*Menidia beryllina*	I	--
River Lamprey	*Lampetra ayresi*	N	--
Arrow Goby	*Clevelandia ios*	N	--
Diamond Turbot	*Pleuronichthys guttulatus*	N	--
Chameleon Goby	*Tridentiger trigonocephalus*	I	--
California Halibut	*Paralichthys californicus*	N	--
Bay Pipefish	*Syngnathus leptorhynchus*	N	--
White Sea Bass	*Atractoscion nobilis*	N	--
Sacramento Pikeminnow	*Ptychocheilus grandis*	N	--
Rock Sole	*Lepidopsetta bilineata*	N	--
Pacific Halibut	*Hippoglossus stenolepis*	N	--
Tule Perch	*Hysterocarpus traskii*	N	--
Shimofuri Goby	*Tridentiger bifasciatus*	I	--
Rubberlip Seapeach	*Rhacochilus toxotes*	N	--
Prickly Sculpin	*Cottus asper*	N	--
Longjaw Mudsucker	*Gillichthys mirabilis*	N	--
Sand Sole	*Cynoglossus capensis*	I	FMP – Groundfish
Sources: Modified from WWR 2007, Coastal Conservancy and USACE 2000, NMFS 2007.			

Regionally Important Commercial and/or Recreational Fisheries

Several species of fish occur in San Pablo Bay that are managed under a Fishery Management Plan and have designated EFH because they provide regionally important commercial fisheries; however, they do not otherwise have a special-status designation. In addition, several species of fish and shellfish occurring in San Pablo Bay provide important commercial and/or recreational fisheries but do not have a special-status designation and are also not managed under a Fishery Management Plan and have no designated EFH. These regionally important commercial and/or recreational fisheries are listed in **Table 3.9-4** and are discussed in further detail in Appendix G.

Table 3.9-4
Regionally Important Commercial and/or Recreational Fisheries

Common Name	Scientific Name	Fishery Management Plan
Northern Anchovy	*Engraulis mordax*	Coastal Pelagic
Starry Flounder	*Platichthys stellatus*	Groundfish
Chinook/Coho salmon	*Oncorhynchus tshawytscha/O. kisutch*	Pacific Coast Salmon
English Sole	*Parophrys vetulus*	Groundfish
Big Skate	*Raja binoculata*	Groundfish
Pacific Sardine	*Sardinops sagax*	Coastal Pelagic
Spiny Dogfish	*Squalus acanthias*	Groundfish
Leopard Shark	*Triakis semifasciata*	Groundfish
Sand Sole	*Cynoglossus capensis*	Groundfish
California Halibut	*Paralichthys californicus*	--
Pacific Halibut	*Hippoglossus stenolepis*	--
Pacific herring	*Clupea pallasii*	--
Dungeness Crab	*Cancer magister*	--
Sources: NMFS Website 2009		

Refugio Creek

A perennial and tidally influenced stream, Refugio Creek drains an area of 4.87 square miles of Northwestern Contra Costa County into the San Pablo bay. The mainstem of Refugio Creek is 4.52 miles long (WWR 2007a). The creek's various tributaries, including its two largest, Ohlone Creek and the north tributary, add nearly five more miles of stream length for a total watershed channel length of 9.17 miles (CCCCDD 2003 in City of Hercules 2009b).

Refugio Creek in the project area is low in gradient, confined, and shows significant man-made manipulations (WWR 2007a). The channel was deepened and straightened in the early 20th century by the Company property owners. Large areas of the creek banks have been stabilized with sandbags and do not contain vegetation.

Refugio Creek only contains two documented fish species; the mosquito fish (*Gambusia affinis*) and the threespine stickleback (*Gasterosteus aculeatus*) (Leidy 2007). These two species are not designated threatened, endangered, or of concern by federal or state resource agencies. Biological information characterized from a single general fish distribution survey of Refugio Creek (study completed by Robert Leidy in conjunction with CDFG in 1981), found no evidence of historical or current use of the Refugio Creek by steelhead or salmon (Leidy et al. 2005). Furthermore, Leidy et al. (2005) state that "*The small relative size of the watershed and condition as assessed by CDFG staff indicate that it is not of regional significance to the native O. mykiss population*".

Invasive Species

The upland portions of the project site are disturbed and contain primarily nonnative species, many of which are considered invasive by the California Department of Food and Agriculture and the California Invasive Pest Plant Council. However, these species are ubiquitous to disturbed habitats in the region. Nonnative aquatic nuisance species such as cordgrass are currently absent from the project site. California cordgrass dominates the habitat type, growing in dense homogenous stands. Based on size and structure, all of the cordgrass at the project site appears to be the native California cordgrass and not among the invasive species of cordgrass.

Waters of the U.S., Including Wetlands

Wetlands and other waters have been delineated within the ESL. These areas potentially fall under the jurisdiction of USACE or BCDC. All USACE-jurisdictional areas that are within the coastal zone are here considered BCDC-jurisdictional. Additionally, BCDC may take jurisdiction over some areas that do not meet all three parameters necessary for USACE jurisdiction. **Table 3.9-5** presents acreages of wetlands and other waters that may fall under USACE or BCDC jurisdiction.

Table 3.9-5
Acreages of Potentially Jurisdictional Wetlands and Other Waters in the Environmental Study Limit

Feature	USACE Jurisdiction *Area (acres)	BCDC Jurisdiction *Area (acres)
Wetland Features		
Pickleweed Tidal Marsh	2.87	2.52
California Cordgrass Tidal Marsh	3.33	3.33
Pickleweed Brackish Marsh	0.87	0.25
Cattail Marsh	3.06	0.05
Freshwater Wetland Swale	0.32	0.00
Seasonal Wetland	1.57	0.43
**Willow Riparian Woodland	0.00	0.37
Wetland Feature Subtotal	**12.02**	**6.95**
Other Waters		
Intertidal Mudflat	62.55	62.55
Brackish Stream	0.68	0.21
Freshwater Intermittent Drainage	0.08	0.00
Open Water	0.10	0.10
Other Waters Subtotal	63.41	62.86
Total Acreage of Potentially Jurisdictional Wetlands and Other Waters in the Environmental Study Limit	**75.43**	**69.81**

** Acreage calculations were rounded to the nearest hundredth of an acre.*

***Willow Riparian Forest refers to those riparian areas that do not meet all three parameters for USACE jurisdiction. Those riparian areas that meet all three parameters and exhibit willow riparian characteristics, are described in other categories (i.e., Freshwater Wetland Swale, Freshwater Seasonal Wetland, and Brackish Marsh).*

3.10. WATER RESOURCES

This section describes the existing surface and groundwater resources and the associated regulatory framework for implementation of the Hercules ITC.

3.10.1. Regulatory Framework

This section describes the federal, state, and local laws regulatory context to be considered for the proposed project.

Federal Regulations

Clean Water Act of 1977 (33 USC 1251 et seq.)

The CWA established the basic structure for regulating discharges of pollutants into the waters of the U.S. and gave the USEPA the authority to implement pollution control programs such as setting wastewater standards for industry. The CWA sets water quality standards for all contaminants in surface waters. The statute employs a variety of regulatory and non-regulatory tools to sharply reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. The major sections of the CWA that apply to the activities potentially occurring as part of the proposed project include dredging and discharge activities (Sections 401 and 404) and the NPDES (Section 402).

Section 404. Section 404 of the CWA establishes a program to regulate the discharge of dredged and fill material into waters of the U.S., including wetlands. Activities in waters of the U.S. that are regulated under this program include fills for development, water resource projects (e.g., dams and levees), infrastructure development (e.g., highways and airports), and conversion of wetlands to uplands for farming and forestry. Under Section 404, any person or public agency proposing to locate a structure, excavate, or discharge dredged or fill material into waters of the U.S. or to transport dredged material for the purpose of dumping it into ocean waters must obtain a permit from the USACE. The USACE has jurisdiction over all waters of the U.S. including, but not limited to, perennial and intermittent streams, lakes, ponds, as well as wetlands in marshes, wet meadows, and side hill seeps. The City will be required to apply for a Section 404 permit for the project.

Section 401. Under Section 401 of the CWA, every applicant for a federal permit or license for any activity which may result in a discharge to a water body must obtain State Water Quality Certification that the proposed activity will comply with state water quality standards. The City will need a Section 401 water quality certification, issued by the San Francisco Bay Regional Water Quality Control Board (RWQCB), for project work permitted under the Section 404 process.

Section 402. Section 402 of the CWA authorizes the NPDES permit program. Stormwater discharges associated with construction activities are regulated under the Construction Activities General Stormwater Permit adopted by the state on August 19, 1999 (WQO 99-08 DWQ, NPDES Permit No. CAS000002). Under this permit, owners of land where a construction activity occurs that disturbs more than 1 acre of land must submit a NOI, develop a SWPPP,

conduct monitoring and inspections, retain records of the monitoring, report incidences of noncompliance, and submit annual compliance reports.

The 1987 amendments to the CWA (Section 402[p] recognized the need to address nonpoint source stormwater runoff pollution and expanded the NPDES program to operators of municipal separate storm sewer systems (MS4s), construction projects, and industrial facilities. Contra C Contra Costa County Flood Control and Water Conservation District, Contra Costa County, and 16 incorporated cities in the County, including the City, participate in a joint MS4 (NPDES Permit No. CA0029912) issued by the San Francisco Bay RWQCB. This MS4 permit establishes the Stormwater Management Plan (SWMP) for the Contra Costa Clean Water Program. The plan strives to protect the beneficial uses of receiving waters, which are identified by the San Francisco Basin Plan for the Bay and tributary waters.

Section 303(d). In June 2007, USEPA Region 9 issued the final 2006 CWA Section 303(d) list of water quality limited ("impaired") segments requiring total maximum daily loads (TMDLs) (USEPA 2007a). San Pablo Bay is currently listed as impaired for exotic species and various constituents under Section 303(d) of the CWA (**Table 3.10-1**). Refugio Creek is not included on the 2006 303(d) list.

Table 3.10-1
Section 303(D) Listed Constituents of Concern for San Pablo Bay

Pollutant/Stressor	Potential Source	Estimated Area Affected	Proposed TMDL Completion
Chlordane	Nonpoint Source	68,349 acres	2008
DDT	Nonpoint Source	68,349 acres	2008
Dieldrin	Nonpoint Source	68,349 acres	2008
Dioxin Compounds	Atmospheric Deposition	68,349 acres	2019
Exotic Species	Ballast Water	68,349 acres	2019
Furan Compounds	Atmospheric Deposition	68,349 acres	2019
Mercury	Municipal Point Sources, Resource Extraction, Atmospheric Deposition, Natural Sources, Nonpoint Source	68,349 acres	2006
Nickel	Source Unknown	68,349 acres	2019
PCBs	Unknown Nonpoint Source	68,349 acres	2006
PCBs (Dioxin-Like)	Unknown Nonpoint Source	68,349 acres	2019
Selenium	Industrial Point Sources, Agriculture, Natural Sources, Exotic Species	68,349 acres	2019
Source: USEPA 2007a			

Rivers and Harbors Act of 1899 (33 USC 401 et seq.)

The USACE is authorized to regulate the construction of any structure or work within navigable waters under sections 9 and 10 of the Rivers and Harbors Act. The Rivers and Harbors Act

authorizes the USACE to regulate the construction of such diverse activities as wharves, breakwaters, or jetties; bank protection or stabilization projects; permanent mooring structures, vessels, or marinas; intake or outfall pipes; canals; boat ramps; aids to navigation; or other modifications affecting the course, location condition, or capacity of navigable waters. The USACE' jurisdiction under the Rivers and Harbors Act is limited to "navigable waters," or waters subject to the ebb and flow of the tide shoreward to the mean high water mark that may be used to transport interstate or foreign commerce. The USACE must consider the following criteria when evaluating projects within navigable waters: (1) the public and private need for the activity; (2) reasonable alternative locations and methods; and (3) the beneficial and detrimental effects on the public and private uses to which the area is suited. The City will be required to apply for a Section 10 permit for the project.

State Regulations

Porter-Cologne Water Quality Control Act (California Water Code Section 13000 et seq.)

The Porter-Cologne Water Quality Control Act (Porter-Cologne Act) defines water quality objectives for California as the limits or levels of water constituents that are established for reasonable protection of beneficial uses. The Porter-Cologne Act requires the RWQCBs to establish water quality objectives, while acknowledging that water quality may be changed to some degree without unreasonably affecting beneficial uses. Beneficial uses, together with the corresponding water quality objectives, are defined as standards, per Federal regulations. Therefore, the regional plans form the regulatory references for meeting state and federal requirements for water quality control. Changes in water quality are only allowed if the change is consistent with the maximum beneficial use of the State, does not unreasonably affect the present or anticipated beneficial uses, and does not result in water quality less than that prescribed in the water quality control plans.

California Toxics Rule

The USEPA has developed water quality criteria for priority toxic pollutants and other provisions for water quality standards to be applied to inland surface waters, enclosed bays, and estuaries in the State of California. This rule was developed to address a gap in California's water quality standards that was created when the state's water quality control plans containing water quality criteria for priority toxic pollutants were overturned in 1994. The established numerical standards were deemed necessary to protect human health and the environment. The rule includes ambient aquatic life criteria for 23 priority toxic pollutants, ambient human health criteria for 57 priority toxics, and a compliance schedule.

State Lands Commission (Public Resources Code Section 6001 et seq.)

Projects involving use of state lands may require lease or permitting from the State Lands Commission, which is charged with managing California's sovereign lands for purposes consistent with the public trust.

Local Regulations

Water Quality Control Plan for San Francisco Bay Basin

The project site is located within the southern portion of the San Francisco Bay Basin, which is governed by the San Francisco Bay RWQCB. The San Francisco RWQCB has adopted a basin plan in accordance with criteria in the Porter-Cologne Act, the CWA, and other pertinent state and federal laws and regulations.

The San Francisco Bay Basin Plan identifies surface waters in the region as consisting of inland surface water (freshwater lakes, rivers, and streams), estuaries, enclosed bays, and ocean waters. Historic and ongoing waste loads contributed to the surface water bodies in the region come from upstream discharges carried into the region via Delta outflow, direct input in the forms of point and nonpoint sources, and indirect input via groundwater seepage (SFBRWQCB 2007). The Basin Plan describes the water quality control measures that contribute to the protection of the beneficial uses of the Bay watershed and identifies beneficial uses for each segment of the Bay and its tributaries, water quality objectives for the reasonable protection of the uses, and an implementation plan for achieving these objectives.

McAteer-Petris Act (Public Resources Code 66600 et seq.)

The San Francisco Bay Conservation and Development Commission (BCDC) is responsible for implementing the McAteer-Petris Act. The Act directs the BCDC to exercise its authority to issue or deny permit applications for placing fill, extracting minerals, or changing the use of any land, water, or structure within the area of its jurisdiction (the Bay waters and 100 feet above the shoreline). The BCDC also carries out determinations of consistency with the Federal Coastal Zone Protection Act for federally-sponsored projects.

City of Hercules General Plan

The General Plan lists the following relevant objectives and policies related to water resources.

Land Use Element

- **Objective 13:** Attain compatible land uses within existing and planned development areas.
    - **Policy 13B:** Design of the flood control improvements along Refugio Creek should be done in a manner to function as a transition area between land uses.

Safety Element

- **Objective 4:** Reduce flood hazards through flood channel improvements and development standards.
    - **Policy 4A:** Refugio Creek Channel should be improved for existing drainage so that adequate capacity for expected flood flow is provided.

- **Policy 4B:** New development should be located and designed to minimize generation of and exposure to flood hazards.

Open Space/Conservation Element

- **Objective 4:** Protect riparian and wetland communities from degradation through introduction of urban pollutants in stormwater runoff.
  - **Policy 4a:** The City shall require project proponents to design facilities to prevent degradation of riparian and wetland communities from urban pollutants in storm runoff.
  - **Program 4a.**1: To minimize pollution downstream from sedimentation, the City shall require installation of sedimentation and grease basins in the storm drain system in parking lots in accordance with NPDES regulations and shall require that property owners maintain the basins annually, or as required by NPDES regulations. Parking lots shall be swept periodically to decrease the amount of debris that could potentially contaminate the riparian or wetland habitat.
- **Objective 9:** Improve surface runoff water quality
- **Objective 10:** Reduce flooding potential within floodprone areas.
  - **Policy 10a:** Ensure that adequate drainage facilities and pollution prevention and control infrastructure are built to accommodate the increase in runoff from newly developed areas.
  - **Program 10a.2:** For each proposed development project, runoff calculations for the parcel at full build-out shall be measured against estimates of existing runoff to ensure that no flooding will result.

Safety Element

- **Objective1:** Consider potential flood hazards and introduce adequate safety measures in development plans and proposals.
  - **Program 1A.1 Item 1:** Planned development plans must be prepared and adopted for all new development projects. Safety measures will be incorporated into these planned development plans to provide adequate protection from seismic, geologic, flood and fire hazards.
  - **Program 1A.1 Item 2:** The review and approval of zoning applications, tentative maps, and planned development plans shall include consideration of safety policies and standards contained in the General Plan and other area plans.
  - **Program 1A.2 Item 1:** The subdivision, zoning and grading regulations govern the subdivision of land, and the design and construction of site improvements. Seismic, geologic, flood and fire hazards shall be considered in the review and approval of tract maps, grading and improvement plans.

- **Objective 4:** Reduce flood hazards through flood channel improvements and development standards.
  - **Policy 4A:** Refugio Creek Channel should be improved to provide adequate capacity for expected flood flows.
  - **Program 4A.1:** Development projects along the stream channel shall include plans to improve drainage flows consistent with protection of riparian habitats and wetlands as approved by the CDFG and Corps.
  - **Policy 4B:** New development shall be located and designed to minimize generation of and exposure to flood hazards.
  - **Program 4B.1:** Subdivision and planned development plan applications shall include measures to promote flood safety. These measures shall be evaluated during application review and implemented through adoption as conditions of approval for the project.
    1. Review of any significant project proposals for areas, which are not presently in flood zones should include an evaluation of increased downstream flows resulting from the project.
    2. Finished floor elevation for all developments must be one foot about the 100-year flood elevations prescribed on the Flood Insurance Rate Map.
    3. In order to protect lives and property, intensive development should not be permitted in reclaimed areas unless food control protection in such areas is constructed to the standards of the Flood Disaster Protection Act of 1973.

City of Hercules Flood Damage Prevention Ordinance

The City's storm water management and discharge control ordinance (Title 5, Chapter 8 of the Hercules Municipal Code) protects and enhances water quality in the City's watercourses pursuant to and consistent with the Porter-Cologne Water Quality Control Act (Water Code Section 13000 et seq.) and the Federal Clean Water Act (33 U.S.C. Section 1251 et seq.). It also carries out mitigation requirements set forth in the City NPDES permit.

The ordinance requires that every application for a development project subject to the development runoff requirements in the City's NPDES permit be accompanied by a storm water control plan that meets the criteria in the most recent version of the Contra Costa Clean Water Program Stormwater C.3 Guidebook. The ordinance establishes best management practices and standards that address both short-term construction activities and long-term, ongoing operations. The ordinance also establishes prohibitions against unlawful discharges into receiving waters.

City of Hercules Flood Damage Prevention Ordinance

The City's flood damage prevention ordinance (Title 10, Chapter 7 of the Hercules Municipal Code) seeks to protect public health safety, and general welfare and to minimize public and

private losses due to flood conditions in specific areas through legally enforceable regulations applied uniformly to flood-prone, mudslide (i.e., mudflow), or flood-related erosion areas.

The ordinance establishes a procedure by which a floodplain administrator (City's public works director) reviews applications for development in flood hazard areas identified on FEMA's Flood Insurance Rate Maps to verify that local, stat, and federal permit requirements have been met; that the site is reasonably safe from flooding; and that the proposed development would not adversely affect carrying capacities (i.e., the cumulative effect of the proposed development when combined with all other existing and anticipated development would not increase the water surface elevation of the base flood more than one foot at any point within the City of Hercules).

The ordinance also establishes specific construction standards for various types of development in flood hazard areas.

3.10.2. Existing Conditions

Regional Hydrology

The City is located in the Contra Costa County Watershed Management Area (CCCWMA), which is one of eight counties in the San Francisco Bay Hydrologic Region (HR). The San Francisco HR encompasses approximately 2.88 million acres (4,500 square miles). Characteristics of the region include significant geological features and sensitive habitat areas located in close proximity to densely populated urban centers. Regionally significant geologic features of the San Francisco Bay HR that influence drainage and hydrology are the valleys of Santa Clara, Napa, Petaluma, Livermore, Sonoma, and Suisun-Fairfield; the peninsulas of Marin and San Francisco; the bays of San Francisco, San Pablo, and Suisun; the mountain ranges of Santa Cruz, Diablo, Bolinas Ridge; and the Vaca Mountains of the Coast Range.

The CCCWMA can be further defined as being located within National Hydrography Dataset (NHD) 1805002. The NHD is a USGS database that contains geospatial information about the nation's surface water. An NHD includes hydrologic surface water features such as the watershed boundary, water bodies, watercourses, and water basins/subbasins. The CCCWMA contains 17 municipalities and unincorporated county territory within the limits of this watershed. The City is one of these municipalities.

The CCCWMA is further subdivided into three geographic areas within the watershed area boundary. These geographic areas are the West, Central, and East counties. The City is located within the West county portion of the CCCWMA. The West county portion of the watershed contains 27 percent of the urbanized land in the County and is composed of residential, commercial, and industrial uses. "Dirty" industrial uses such as the former Hercules Powder Works were established in this area, including petroleum refineries and chemical companies. The major watercourses that traverse this watershed are Wildcat Creek and San Pablo Creek, which both discharge to San Pablo Bay.

San Pablo Bay

San Pablo Bay is a shallow tidal estuary that forms part of the San Francisco Bay-Delta Estuary (Estuary), which also includes San Francisco Bay, Suisun Bay, and the Delta. The Estuary watershed drains more than 40 percent of California's surface area.San Pablo Bay lies between the less salty Suisun Bay and the saltier San Francisco Bay. Salinity in San Pablo Bay ranges from 18 to 30 parts per thousand (USACE and Coastal Conservancy 1999).

San Pablo Bay consists of a 30-foot-deep ship channel surrounded by wide shallow shoals, especially north of the channel. The average depth of San Pablo Bay is approximately 9 feet Mean Lower Low Water (MLLW) and approximately 57 percent of the total are of the bay is shallower than about 7 feet (USGS 1984).

Tidal inflows from San Francisco Bay, freshwater flows from the Delta and its watershed, the topography of the land and the climate all influence the hydrology of the San Pablo Bay. Twice daily, the saline waters from San Francisco Bay flow into San Pablo Bay. The effects of the tides extend well upstream into the freshwater tributaries to San Pablo Bay. The freshwater flows are continuous, but vary on a seasonal basis due to their dependence on rainfall. The major source of freshwater to San Pablo Bay is inflow from the Delta (over 90 percent on an annual basis). The degree of mixing depends on seasonally varying river inflow. The timing and magnitude of the highly seasonal river inflow modulates permanent estuarine circulation, which is largely maintained by salinity controlled density differences between river and ocean waters.

San Pablo Bay is at the confluence of several major environmental stressors/contaminants. These include sediment loads and pesticide residues from California's Central Valley, the Sierra Nevada, and the coastal range; industrial waste from the Bay Area (including several oil refineries); and the site of the Mare Island Naval Shipyard (now closed).

Beneficial uses of San Pablo Bay include commercial and sport fishing, estuarine habitat, industrial water supply, fish migration, navigation, industrial process water supply, preservation of rare and endangered species, contact and non-contact water recreation, shellfish harvesting, fish spawning, and wildlife habitat (SFBRWQCB 2007).

Since 1993, the San Francisco Estuary Institute has administered a Regional Monitoring Program (RMP) for the RWQCB and major Bay dischargers. The RMP measures concentration of trace constituents in water, sediment, and transplanted bivalves at various locations in the Estuary. RMP data presented in the Annual Report 2004-2005 (SFEI 2006a) and *Pulse of the Estuary* 2006 (SFEI 2006b) summarize trends and issues in the Estuary. The *Pulse of the Estuary* summarizes the status of chemical contamination in the Estuary using RMP results and indicates top contamination as follows:

- High levels of mercury and polychlorinated biphenyls (PCBs) in fish and water;
- Water quality objectives for cyanide, copper, and nickel;
- Pyrethroid insecticides from the Delta that are highly toxic to fish; and

- Brominated flame retardant (PBDEs) and fluorinated stain repellants (PFCs) that appear in water and sediment.

Local Hydrology

The City is located mostly in the Refugio Valley along San Pablo Bay, on the northeast side of the Bay area. Much of the Refugio Valley has elevations ranging from 7.5 to 14.3 feet above mean sea level (msl); however, the high ground surrounding portions of it rises to over 200 feet msl in the project area and more than 500 feet above msl on the surrounding ridge lines. Mean annual precipitation is approximately 20 inches, and mean annual runoff is about three inches (City of Hercules 1998b). The general trend of drainage in the area is to the northwest into San Pablo Bay.

The project site is located in Hercules on the undeveloped southeastern shoreline of San Pablo Bay and along both sides of Refugio Creek. The Refugio Creek outfall to San Pablo Bay is located on the project site immediately east of Hercules Point. Refugio Creek and its tributaries drain the bulk of the City and also a significant basin upstream of the City.

Refugio Creek

The Refugio Creek watershed drains 4.87 square miles of northwestern Contra Costa County into San Pablo Bay. Ninety-seven percent of the watershed is within the City (CCC 2003). The main stem of Refugio Creek is 4.52 miles long. The creek's various tributaries, including its two largest, Ohlone Creek and the north tributary, add nearly five more miles of stream length for a total watershed channel length of 9.17 miles (CCC 2003). The estimated mean daily flow of Refugio Creek is 4.2 cubic feet per second (cfs). Roughly 83 percent of the channel banks are natural, while 15 percent are concrete-lined; the remainder is constructed earth.

Refugio Creek is the primary surface water source within the City. Refugio Creek is a perennial stream that flows north and northwesterly through the project site and then passes through three 72-inch culverts beneath the UPRR right-of-way before discharging into San Pablo Bay. Immediately before crossing under the UPRR railroad, Refugio Creek makes two ninety-degree turns before discharging into San Pablo Bay.

The segment of Refugio Creek channel from the proposed project's southern (upstream) boundary northward (downstream) to immediately north of the proposed Bayfront Bridge includes approximately more than 1,200 linear feet of tidal channel. In this portion of the creek, the existing low-flow creek channel varies in width (top-of-bank to top-of-bank) from approximately 20 feet in the upstream portion to about 40 feet in the downstream portion. A non-tidal tributary, referred to as the North Channel, enters the main creek channel from the northeast near the southern (upstream) project boundary. An additional non-tidal tributary (referred to as the Central Channel) enters the main creek channel from the south approximately in the middle of the main channel length on the project site.

Refugio Creek in the project area is low gradient and confined, and shows significant man-made alterations. The channel was deepened, straightened, and channelized in the early 1900s by the Hercules Powder Company. Fill has been placed up to the creek edge, resulting in creek banks

that are range in height from eight to 14 feet high from creek bed to top-of-bank. The channel is about 30 feet wide (measured from the tops of the banks) in the vicinity of the site.

Little information exists on the water quality in Refugio Creek. However, the Contra Costa Clean Water Program initiated a program to assess water bodies in Contra Costa County. As part of the program, Refugio Creek was sampled in March-April 2004 and 2005 for benthic macroinvertebrates and water quality (Contra Costa Clean Water Program 2004 and 2005). The 2004 report stated that the station nearest the project site was suboptimal with notable sedimentation. Specific conductance was 2,530 microsiemens per centimeter (µS/cm), pH was 8.1, and dissolved oxygen was 9.4 milligrams/liter. In 2005, the water quality was similar: specific conductance was >1,990 µS/cm, pH 8.1, and dissolved oxygen was 8.5 milligrams/liter. The macroinvertebrate community was characterized as moderately tolerant to pollution.

Floodplain Risk

The project site is within the 100-year flood zone identified by the Flood Insurance Rate Map (FIRM) for Contra Costa County, California, Map Number 06013C0043F effective June 16, 2009. A 0.2 percent chance of flood discharge (500-year flood) is contained in the three 72-inch culverts beneath the UPRR right-of-way that discharge into San Pablo Bay.

Refugio Creek is the main surface drainage within the City. Stormwater flooding of Refugio valley occurs during periods of heavy rainfall and runoff, coincident with high tides affecting Refugio Creek. A backwater effect is created that prevents effective flood water discharge to San Pablo Bay. Under current conditions, the UPRR tracks and the trestle bridge crossing of Refugio Creek constrict stormwater flows resulting in occasional overflows onto low lying areas along the south side of the tracks.

As part of the City's Creek Maintenance Program, man-made debris is removed at all choking points and culverts and excessive vegetation is cleared along Refugio Creek. The program is performed annually prior to the winter storm season.

Groundwater

The City lies within the San Francisco Bay HR. However, due to low elevations, proximity to San Pablo Bay, and the underlying bedrock, Hercules and the surrounding communities are not within a groundwater basin identified by the California Department of Water Resources (DWR 2003).

Groundwater underlies Refugio Valley at relatively shallow depths and is not a source of potable water. There are likely several distinct bearing zones in the bedded sediments in the valley, including a very shallow, but discontinuous perched zone. Throughout the lower valley, especially west of I-80, the winter water table is typically less than two to three feet deep, and declines to five to six feet during most summer months. Groundwater in the very shallow zone may be only six inches deep in the winter months of wet years. Refugio Creek is thus fed by tides and surface water runoff during winter months and by groundwater discharge during the summer months (City of Hercules 1998b).

Sea Level Rise and Climate Adaptation

The State of California recognizes that climate change is already resulting in changes in sea levels, increased erosion and pressure on the state's infrastructure, water supplies and natural resources. Executive Order S-13-08, issued in November 2008, initiated development of the state's adaptation policy. The Executive Order required:

- The Agency to complete a California Sea Level Rise Assessment Report by December 1, 2010
- Prior to release of this Report, state agencies planning construction in vulnerable areas to analyze 2050 and 2100 sea level rise scenarios, and reduce risks and increase resiliency to sea level rise
- The Agency to coordinate preparation of a California Climate Adaptation Strategy by June 30, 2009 (this deadline has been extended)
- The Office of Planning and Research to provide state land use planning guidance related to sea level rise and other climate change impacts (the guidance had not been issued as of early August 2009)

In response to EO S-13-08, the Agency issued the 2009 California Climate Adaptation Strategy. Adaptation is a relatively new concept but essentially refers to the efforts that are utilized to respond to the impacts of climate change. Among the relevant strategies identified in the 2009 CCAS is:

- Consider project alternatives that avoid significant new development in areas that cannot be adequately protected from flooding due to climate change. State agencies should generally not plan or build any new significant structure in places requiring significant protection from sea-level rise, storm surges, or coastal erosion during the expected life of the structure. State agencies should incorporate this policy into their decisions, and other levels of government are encouraged to do so. Exceptions should be made for development with regionally significant values, and for in-fill development.
- Develop transportation design and engineering standards to minimize climate change risks to vulnerable transportation infrastructure.

Sea levels are anticipated to rise as much as 1.4 meters in the San Francisco Bay by 2100 and would put 33 percent or more of land at risk from flood-related inundation.

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3.11. GEOLOGY AND SOILS

3.11.1. Regulatory Framework

This section briefly summarizes the regulatory requirements that govern proposed projects within the City, including those specifically affecting the Hercules ITC.

State

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act (PRC§2621 et seq.) (originally enacted in 1972) prohibits construction of most types of buildings intended for human occupancy across the traces of active faults and strictly regulates construction along active faults. The act is intended to reduce the hazard to life and property from surface fault ruptures during earthquakes; it is not directed toward other earthquake hazards.

Before a project can be permitted, cities and counties must require a geologic investigation to demonstrate that potential buildings will not be constructed across active faults. An evaluation and written report of a specific site must be prepared by a licensed geologist. If an active fault is found, a structure for human occupancy cannot be placed over the trace of the fault and must be set back from the fault (generally 50 feet).

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act of 1990 (PRC §§2690–2699.6) addresses non-surface fault rupture earthquake hazards, including liquefaction, strong ground shaking, and seismically induced landslides. Intended to reduce damage resulting from earthquakes, the Seismic Hazards Mapping Act contains provisions conceptually similar to those of the Alquist-Priolo Act. The State is responsible for identifying and mapping areas at risk of strong ground shaking, liquefaction, landslides, and other earthquake and geologic hazards, and affected cities and counties must regulate development in mapped seismic hazard zones. The Seismic Hazards Mapping Act allows the lead agency to withhold permits until geologic investigations are conducted and mitigation measures are incorporated into plans. The Seismic Hazards Mapping Act addresses not only seismically induced hazards but also expansive soils, settlement, and slope stability. The Seismic Hazards Mapping Act will be relevant to soil conditions at some future facility sites.

California Building Code

The California Building Code requires extensive geotechnical analysis and engineering for grading, foundations, retaining walls, and other structures, including criteria for seismic design. The Bay Area is located within Zone 4, which is expected to experience the greatest effects from earthquakes, and requires the most stringent requirements for seismic design. The proposed project must be designed according to the latest seismic design standards, and would be required to meet all relevant California Building Code requirements for seismic safety.

Local Regulations

City of Hercules General Plan

The General Plan of includes policies and implementing actions to ensure safety from seismic and geologic hazards. The following policies are relevant to the proposed project. The City conditions approval of individual development proposals on the following implementation programs.

- **Policy 2A.1.** For each proposal, require a feasibility study to determine whether any proposed critical facilities (emergency response centers, police stations, and hospitals) and schools could be sited in areas with lesser earthquake hazards. An alternative site feasibility assessment should include a consideration of sites in areas with lesser earthquake (and flood) hazards in addition to considerations of service area, accessibility, and economic considerations.

- **Policy 2B:** Projects proposed for all critical facilities including schools, high-population facilities (such as shopping malls) and industries using or generating significant amounts of hazardous materials within areas subject to very strong earthquake ground shaking or ground failure shall conduct geotechnical studies and structural design evaluations.

- **Program 2B.1:** If the alternative site feasibility study for a critical facility or school were to indicate that other less hazardous sites are not available for the critical facility, then geotechnical studies and structural design processes for the facility would be conducted in compliance with State of California requirements and recommendations of the Seismic Safety Commission. These should include detailed studies of the geologic materials at the site, seismic event response evaluations to identify design criteria, foundation design criteria, and dynamic method analyses of proposed structures.

- **Program 2B.2:** For the other types of facilities, the alternative site feasibility assessment would be an optional requirement of the City (an alternatives site evaluation may be required under CEQA). A rigorous geotechnical evaluation and structural design process would be required to ensure that the proposed structures would perform in major earthquakes without creating a life safety hazard to occupants or people in surrounding areas.

- **Policy 2C:** The City will update an Earthquake Preparedness and Emergency Response Plan as necessary to establish emergency access points to evaluate the comprehensiveness of the City's evacuation routes in relation to the specific effects of seismic-induced ground shaking, liquefaction, and lurching within the community.

- **Policy 2D:** The administration of subdivision and grading ordinances shall allow for flexibility in the review and approval of construction plans to permit sound engineering design in the solution of specific geological problems. Site-specific geotechnical investigations shall be required for every new development.

- **Program 2D.1:** Applications for subdivision and development projects shall include site-specific geotechnical investigations prepared by a California-certified engineering geologist documenting the geotechnical suitability of the site for the proposed development based on

soil and underlying substrate conditions; and the measures required to ensure public safety and protection of the property. The following shall be implemented through adoption as conditions of approval for the project.

- Loose or improperly compacted existing fills and backfills should be excavated from areas to be filled
- All areas to be graded should be stripped of vegetation and the top few inches of highly organic topsoil.
- Organic soil should be stripped and stockpiled and used for landscaping
- Lower valley areas where bay mud deposits are exposed or are blanketed by shallow thicknesses or poorly compacted fill will require detailed studies prior to site grading.
- Side hill “sliver” cuts and fills should be avoided.
- Special consideration should be given to slope stability in the steep hillside areas. Site new structures away from steep hillsides and the toes of existing landslide surfaces, reducing the potential for damage from landslide movement or burial.
- Steep side-slopes should be left in their natural condition where possible.
- Minimize the potential for creating new landslides or reactivating old ones. Set backs should be determined based on detailed soils investigations in individual cases opposite landslide prone slopes to reduce the potential for slide damage to improvements.
- Expansive soils should be considered in the design of road pavement sections.
- Site planning should consider the potential of different settlement where compressible soils exist, and employ appropriate approaches to reducing the hazard to an acceptable level of risk.
- Areas underlain by soft bay mud will require further detailed soil investigations.
- Slopes should be planted as soon as possible after completion of construction to develop a protective organic mat.
- Dense pockets of brush and trees located on steep slopes should be left intact where possible to prevent potential landslides.
- Development of the project sites should minimize the amount of native soils compacted by construction vehicles and structures, as well as the amount of soil disturbed through grading and excavation. As much as possible, native soils should be left undisturbed and used for open space and landscaping purposes.

- Development of the project sites should also maximize the use of pervious materials, including fill, and incorporate proper drainage structures capable of handling anticipated increases in surface runoff.

- Minimize amount of grading when building on hill sides. No grading should occur on slopes steeper than 30 percent, and cut slope angles no greater than 33 percent be maintained.

- **Program 2D.2:** Applications for subdivision and development projects shall include site-specific erosion control and hillside drainage plans, which shall address the following standards. These standards shall be implemented through adoption as conditions of approval for the project.

  - The use of silt fencing, sediment trapping basins, runoff diversion devices, and hydroseeding of barren slopes can minimize or prevent this impact.

  - Grading in the City should occur with no increase in discharge of sediments to wetlands, Refugio Creek, or San Pablo Bay.

3.11.2. Existing Conditions

Regional Geology

The City is located within the California Coast Ranges geomorphic province that parallels the boundary between two major tectonic plates – the Pacific and North American plates (City of Hercules 2009c), characterized by a series of northwest-trending valleys and mountain ridges (ENGEO 2009). Offshore areas to the north of the project are primarily shallow mud flats with vegetated wetland in the near-shore zone. The bedrock in this region has been folder and faulted in a tectonic setting that is experiencing translational and compressional deformations in the earth's crust (ENGEO 2009).

In this part of the Bay Area, the bedrock units include a series of Miocene-age marine sedimentary rocks ranging from about 5 to 20 millions years old (Graymer 1994 *as cited in* ENGEO 2009). These marine sedimentary bedrock units include: (1) the Cierbo sandstone; (2) the Briones formation; (3) the Rodeo shale; and (4) the Hambre Sandstone. A non-marine bedrock unit, the Montezuma Formation, is mapped in the western portion of the project area that is considered approximately 1 to 2 million years old (ENGEO 2009).

Recent Geologic History

San Francisco Bay is California's largest estuarine environment. Its configuration and the surrounding landscape have been shaped by a combination of tectonic activity, recent sea level changes, and human activities since 1850 (WTA 2003).

Since the formation of the Sacramento-San Joaquin drainage outlet through the Bay approximately 400,000 years ago, the environment of deposition has fluctuated between estuarine (periods of high sea level resulting from a warm global climate) and alluvial (periods of low sea level during periods of cold global climate) (Sloan 1992 *as cited in* WTA 2003).

The present Bay estuary formed less than 10,000 years ago as the global climate warmed and sea levels rose (WTA 2003). Marine water re-entered the Bay approximately 10,000 years ago and by about 4,000 years ago had reached its present level (WTA 2003). With the establishment of estuarine conditions, sedimentation in the Bay changed from alluvial sands and silts to dark-colored estuarine clays and silts, commonly called Bay Mud. Deposition of sandier sediment was confined to channels (WTA 2003).

Since about 1850, human activities have made enormous modifications to the Bay, causing changes in the patterns of circulation and sedimentation. Between 1856 and about 1900, hydraulic mining in the Sierra foothills deposited several feet of sediment throughout the Bay (WTA 2003). Starting in the 1800s, the construction of levees and dykes altered the patterns of drainage and annual flooding in the Delta (WTA 2003). Also, the placement of fill at numerous localities around the Bay margins has dramatically altered the shoreline profile during historic time (WETA 2003).

Site Geology

The project site is located on the shoreline of the San Francisco Bay, at the mouth of Refugio Valley, extending from the intersection of Santa Fe Drive and Railroad Avenue to the northeastern extent of the Bio-Rad property in Hercules, California.

ENGEO (2009) reviewed historic aerial photos, topographic maps as well as literature of the project site and area. The review shows that much of the Refugio Valley was formerly an intertidal marsh. The natural channel of Refugio Creek meandered across the marsh and emptied into the Bay east of the existing channel. The review also shows that by the early 1900s, the intertidal marsh and overlying sand bar had been filled to the outboard of the UPRR ROW. The review of historic topography and aerial photos shows various generations of structures, tanks, rail spurs, and equipment that have since been removed and replaced with residential communities and live-work buildings. Sometime prior to 1939, a portion of Refugio Creek had become a straight channel with crossings within the industrial complex (ENGEO 2009).

The northeastern segment of the site adjacent to the Bio-Rad property consists of steep cut slopes and undulating hills and swales covered with natural vegetation (ENGEO 2009). Elevations range from approximately 10 feet at the existing railroad to as high as 40 feet upslope at the Bio-Rad facility. The land east of Refugio Creek just west of Bio-Rad has irregular topography due to fill placement and ranges in elevation from approximately seven feet to as high as 30 feet. The upper portions of the fill are part of an unfinished surcharge program to mitigate future settlement of compressible bay deposits in the area (ENGEO 2009).

To the west of the existing Refugio Creek in the location of the proposed Station structure, graded building pads extend along the north side of Bayfront Boulevard. An existing sanitary-sewer lift station is located near the proposed Station structure. The lift station would be relocated as part of the proposed project.

At the corner of Railroad Avenue and Bayfront Boulevard, there is a graded surcharge fill pad associated with the future Railroad Plaza. The temporary pad is located at about elevation 30 feet with 2:1 (horizontal:vertical) slopes extending down to surrounding grades. West of this area,

site grades extend from an approximate elevation of eight to 10 feet at the railroad easement to an approximate elevation of 13 to 15 feet inland. The East Bay Regional Park trail on the western project extent consists of a flat paved path at the base of a steeply sloping swale. High pressure fuel pipelines and fiber optic cables exist along the southern limit of the UPRR corridor (ENGEO 2009).

Geologic Units

The following descriptions of geologic units are summarized from ENGEO (2009).

Existing Fill (Qaf)

The majority of the project site has been impacted by previous grading and is covered with variable amounts of man-made fill. The existing fills have been subdivided into the fills placed on the Bio-Rad property, fills associated with the railroad, fills associated with the recent residential developments in the Refugio Valley, and fills associated with the historic Hercules Powder Company.

Biorad Fills (Qaf1)

The Bio-Rad property is located in the eastern portion of the project area. Fills on the Bio-Rad property include engineered fills that were placed in the 1980s in conjunction with the current land use, as well as older fills that were placed in conjunction with previous land uses. The fills placed in the 1980s were derived from on-site sources and were placed as engineered fill that was observed and tested by Berlogar Geotechnical Consultants.

An older fill area exists on the Bio-Rad property, upslope of Railroad Station 3072. This fill, derived from nearby sources, was placed over colluvial soil deposits in a former swale without construction of a keyway or subdrains. The fill material consists of silty clay with some rock fragments.

Railroad Fills (Qaf2)

The alignment of the existing railroad tracks and adjacent access road is underlain by fill that typically ranges from about three to eight feet thick. Across the Refugio Valley tidal marsh, the railroad bed was built up with a heterogeneous mixture of imported fill materials and capped with railroad ballast.

In the eastern and western portions of the project site, the railroad bed was created by cuts into the shoreline bluffs and placement of fills in the intertidal zone. In the northern portion of the project area, the cuts along the shoreline bluff range up to 40 feet high. Fills along these sections of the railroad to produce the level railroad grade and trench backfill associated with the existing underground utilities. The fills associated with the railroad are well compacted; however, there are no records available to document that the fills were placed in a manner that is consistent with current standards for engineered fills.

Hercules Powder Company Fills (Qaf3)

The history of grading activity associated with the Hercules Powder Company spans many years and appears to have involved many episodes of grading. Fills associated with the Hercules Powder Company have been identified on both the east and west sides of the existing railroad. Much of this older fill was derived from on-site cuts, but debris, such as timber, brick, and concrete. There is no documentation regarding these fills, and generally, these fills have not been placed in a manner that is consistent with current standards for engineered fill. Within the development areas, these fills were removed to the extent feasible and replaced as engineered fill prior to placement of the existing engineered fills.

Development Fills (Qaf4)

Various engineered fills, surcharge fills, and stockpiles have been placed on the south side of the railroad tracks in conjunction with grading for residential developments in the Refugio Valley. Most of this fill material has been derived from cuts on the adjacent hillsides or was imported under the review of the State Department of Toxic Substance Control (DTSC) as previously discussed. Within the limits of the current project area, the fills placed in conjunction with recent residential developments have been documented as engineered or surcharge-fill. Surcharge fills were placed with reduced compactive effort and moisture conditioning.

Young Bay Mud (Qb)

The Young Bay Mud deposits are marine estuarine deposits that range up to a maximum of about 40 feet thick within the project site. The Young Bay Mud typically consists of soft and highly compressible organic-rich clay with interbedded peaty deposits.

Sand Bar Deposits (Qsb)

Near the mouth of Refugio Creek, a silt and sand deposit was encountered in numerous borings that appears to be a sand bar deposit. In some borings, the sand bar deposits were encountered directly underlying existing fills, whereas in other borings, the sand bar deposits were covered within a think layer of Bay Mud. Where encountered in borings, the sand bar deposits were found to be a maximum of about 15 feet thick. The sand bar deposits were found to be poorly graded and vary from fine to coarse grained. In some borings the sand bar deposits contained some silt or gravels. The sand bar deposits are typically medium dense to dense.

Older Bay Mud (Qob)

Underlying the Young Bay Mud, deposits are stiffer older marine sediments known as Old Bay Mud, which range from 20 to 70 feet thick. The Older Bay Mud consists predominantly of silty clay and contains only minor interbedded sandier beds, and varies from stiff to hard.

Colluvium (Qc)

Swales on the shoreline bluff are typically underlain by thicker accumulations of soil called colluviums. The colluvial deposits generally consist of stiff silty clay. The colluvial solids range up to 15 feet in thickness.

Landslide Debris (Qls)

Several landslide areas exist on the steep shoreline bluffs located in the eastern portion of the project site. It appears that the landslides have formed over the long term on the oversteepened cuts that were made to construct the existing railroad. Most of the landslides exhibit signs of recent activity including near-vertical head scarps that are bare of vegetation. The landslide deposits range up to about 10 feet thick.

Older Alluvium (Qoa)

Older alluvial deposits have been encountered in borings and exposed during grading on the northern side of the Refugio Valley. The older alluvial deposits generally consist of silty clay with variable amounts of sand and rock fragments. The older alluvium is typically stiff to very stiff.

Montezuma Formation (Qmz)

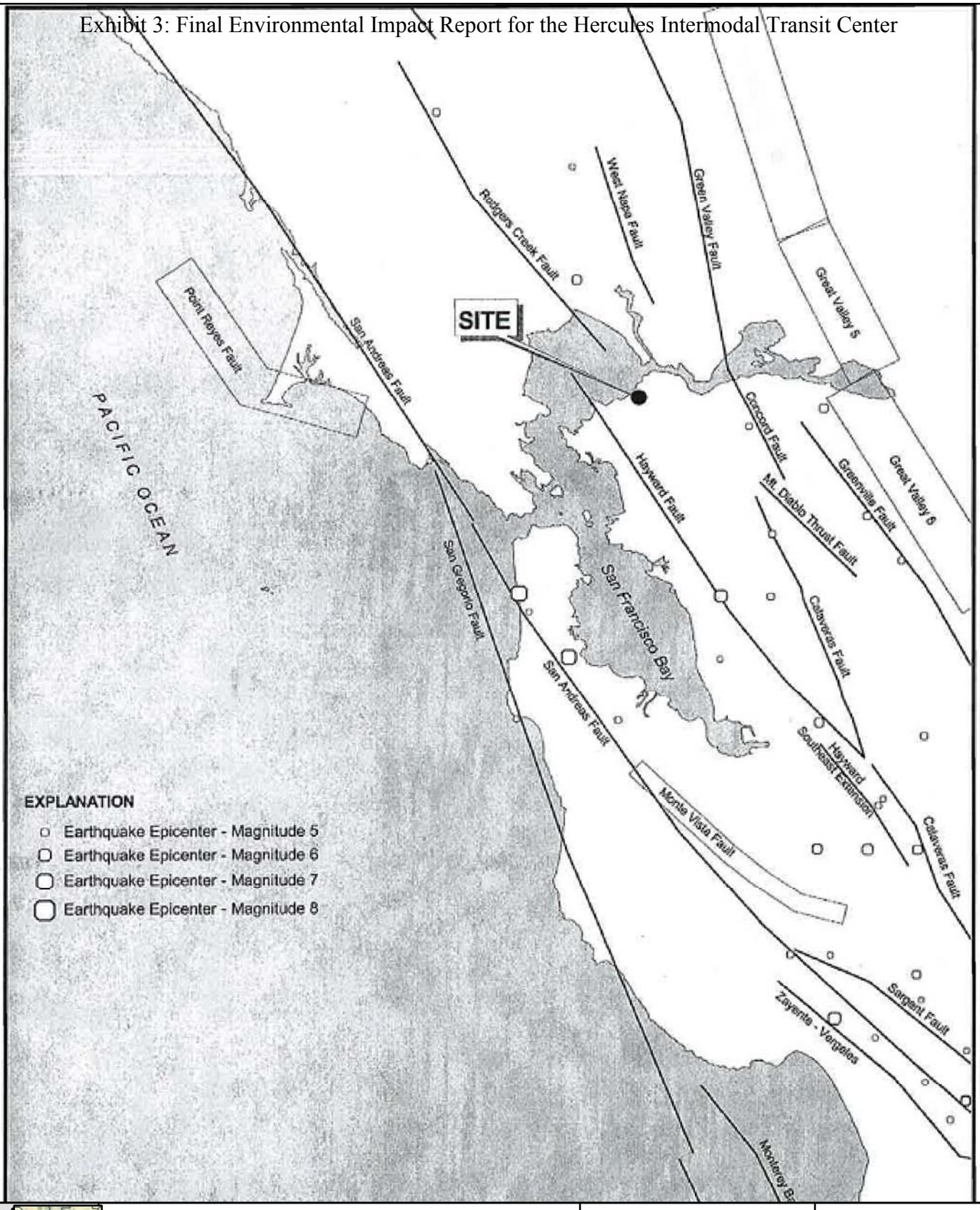
The Montezuma formation is a Pleistocene-age, non-marine sedimentary rock. The Montezuma formation was encountered on the eastern flank of the Refugio Valley and underlies a portion of the shoreline bluff on the Bio-Rad property. The Montezuma formation encountered consists of poorly indurated claystone, siltstone, and sandstone. This formation is typically weak and varies from thinly to thickly bedded.

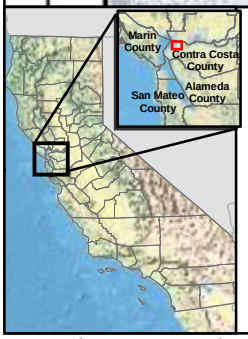
Seismicity and Faults

The project site is located in a region that contains numerous active faults[6] (ENGEO. 2009). The nearest known active fault is the Hayward Fault located about 3.5 miles southwest of the project site. The San Andreas Fault is located about 22 miles to the southwest, and the Concord Fault is located about 12 miles to the northeast. The Calaveras Fault is located about 18 miles to the southeast. **Figure 3.11-1** shows the relationship of the project site to known active faults.

Estimates of the maximum earthquake magnitudes for each fault are based on those reported by the Working Group on Northern California Earthquake Potential (WGNCEP 1996).

[6] An active fault is defined by the State Mining and Geology Board as one that has had surface displacement within Holocene time (about the last 10,000 years)(Hart 1994 *as cited in* ENGEO 2009).





1 in = 80,000 ft (at letter layout)

N

0 5,000 10,000 20,000 Meters

0 20,000 40,000 80,000 Feet

Figure 3.11-1: Regional Faulting and Seismicity

City of Hercules
Hercules Intermodal Transit Facility
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources. No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey.
Data is State Plane Feet, NAD83 Zone 3

HDR 2365 Iron Point Road, Suite 300
Folsom, CA 95630-8709

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San Gregorio Fault

The San Gregorio Fault is a major Holocene active fault that lies west of the San Andreas Fault. The fault is approximately 78 miles long, extending from the Big Sur area northward to the area offshore of Bolinas Bay. Most of the fault lies offshore; however, in several areas the fault lies onshore and has been actively investigated (Simpson *et al.* 1992 *as cited in* City of Pittsburg 2006). The fault has an estimated Quaternary slip rate of 5 millimeters per year (mm/yr). Paleoseismic estimates of earthquake recurrence intervals on the fault range from 350 to 680 years based on offset archeological remains at Seal Cove (Simpson *et al.* 1992 *as cited in* City of Pittsburg 2006). The San Gregorio Fault is located approximately 35 miles from the project site, and the maximum earthquake magnitude for the fault is estimated to be approximately Moment Magnitude (M_W) 7.3.[7]

San Andreas Fault

The San Andreas Fault is the largest active fault in California, and extends from the Gulf of California on the south approximately 750 miles to Cape Mendocino on the north. It was the source of the 1906 M_W 7.9 San Francisco earthquake (Wallace 1990 *as cited in* California Energy Commission 2008), which ruptured approximately 280 miles of the fault from San Juan Batista to Shelter Cove. The fault is about 16 miles southwest of the project site at its closest approach.

The San Andreas Fault can be divided into a number of segments, based on differences in geomorphology, geometry, paleoseismic chronology, seismicity, and historic displacements. In the Bay Area, these segments include the southern Santa Cruz Mountains, possible source of the 1989 M_W 7.0 Loma Prieta earthquake; the Peninsula segment; and the North Coast segment. These segments have been assigned maximum earthquakes of M_W 7, M_W 7.1, and M_W 7.9, respectively, by the WGNCEP (1996).

Hayward Fault

The Hayward Fault is about 62 miles long and has been divided into two fault segments: a longer southern segment, and a shorter northern segment. The fault demonstrates systematic right-lateral creep offset of cultural features along its entire length (Lienkaemper *et al*. 1991 *as cited in* California Energy Commission 2008). This structure is considered to be the most likely source of the next major earthquake in the Bay Area (WGNCEP 1996), and is located approximately three miles east of the project site.

The Local Magnitude (M_L) 6.8 event in October 1868 was the last major earthquake on the Hayward Fault, and occurred along the southern segment near Fremont. (M_L is based on the measurement of the earthquake from a distance of 100 kilometers from the epicenter.) WGNCEP (1996) has assigned maximum earthquakes of M_W 6.9 for both the northern and southern segments of the Hayward Fault.

[7] M_W is based on the amount of energy released by the earthquake

Rodgers Creek Fault

The Rodgers Creek Fault is a 38-mile-long northwest-striking, right-lateral strike-slip fault that extends northward from the projection of the Hayward Fault on the south side of San Pablo Bay. The Rodgers Creek Fault has a long-term geological slip rate similar to the Hayward Fault, and produced a large-magnitude historical earthquake in the late 1800s. Paleoseismic investigations by Schwartz *et al.* (1992 *as cited in* California Energy Commission 2008) identified evidence for three earthquakes in the last 925 to 1,000 years, yielding a preferred earthquake recurrence interval of 230 years for an earthquake of M_W 7.0. The fault is about five miles to the north of the project site at its closest approach.

Concord-Green Valley Fault Zone

The Concord-Green Valley Fault is a northwest-striking, right-lateral strike-slip fault zone that extends from the Walnut Creek area across Suisun Bay and continues to the north. The Concord Fault extends for approximately 12 miles, from the northern slopes of Mount Diablo to Suisun Bay. North of Suisun Bay, the Green Valley Fault continues to the north for about 28 miles (City of Pittsburg 2006). The Concord Fault is an actively creeping structure that has a long-term creep rate of approximately five millimeters per year (mm/yr) (California Energy Commission 2008).

It is estimated that rupture of both faults would produce a maximum earthquake of about M_W 6.9, with a recurrence interval of approximately 180 years (WGNCEP 1996). At its closest point, the Concord Fault is approximately 22 miles from the project site.

Greenville-Marsh Creek Fault

The Greenville-Marsh Creek Fault is a northwest-striking strike-slip fault of the San Andreas system in the northern Diablo Range, extending from Bear Valley to the east side of Mt. Diablo. This fault has a lower slip rate than other structures within the San Andreas system, with a long-term rate of approximately 1 to 3 mm/yr. This fault produced a moderate-magnitude earthquake in 1980 (City of Pittsburg 2006).

Research is currently being conducted on the fault zone to better constrain its slip rate and its history of past earthquakes. The WGNCEP (1996) assigned a maximum earthquake of M_W 6.9 to the Greenville Fault; the recurrence interval is estimated to be about 550 years. The fault is located approximately 36 miles east of the project site.

Seismic Hazards

Potential seismic hazards resulting for a nearby moderate to major earthquake can generally be classified as primary and secondary. The primary effect is ground rupture, also called surface faulting. Common secondary seismic hazards include ground shaking, ground lurching, soil liquefaction, lateral spreading landslides, tsunamis, and seiches. The following seismic hazard descriptions and references therein come directly come from ENGEO (2009) and City of Hercules (2009c).

Ground Shaking

An earthquake of moderate to high magnitude generated within the San Francisco Bay Region could cause considerable ground shaking at the project site. The degree of shaking is dependent on the magnitude of the event, the distance to its epicenter, local geologic conditions, and how the earthquake waves decrease or attenuate as they travel from their sources to the site in question. The Bay Area has experienced a number of large, damaging earthquakes during historical time (WTA 2003). Future strong ground shaking from nearby large-magnitude earthquakes is a virtual certainty. Seismic criteria would vary across the project site based on the wide range of soils encountered and the differing nature of site improvements.

Liquefaction

Liquefaction is a phenomenon in which saturated cohesionless soils are subject to a temporary loss of shear strength because of pore pressure build-up under the cyclic shear stresses associated with earthquakes. Soils most susceptible to liquefaction are generally loose, clean, saturated, uniformly graded, fine-grained sand and silt of low plasticity with a low percentage of fine-grained clay particles. Liquefaction typically occurs in areas where groundwater is shallow, and materials consist of clean, poorly consolidated, fine sands. The project site has been mapped within a State of California Liquefaction Hazard Zone, which calls for evaluation of the liquefaction hazard. In addition, in June 2007, the site was mapped by the Association of Bay Area Governments as an area that may have a high susceptibility to liquefaction.

Lateral Spreading

Lateral spreading is a failure within weak soils, typically due to liquefaction, which causes the soil mass to move toward an open channel, or down a gentle slope. Medium dense sand was found within the area of the former sand bar. The occurrence and magnitude of lateral spreading is evaluated based on the density of the sand, as measured by Cone Penetration Test (CPT) and Standard Penetration Test (SPT) results that are corrected for fines content. Based on the CPT, SPT, and fines content results; the sand bar soils are expected to experience some strength loss in response to cyclic ground motions associated with earthquake shaking. However, lateral displacement of the gently sloping shoreline extending into the project area is expected to be limited due to the limiting shear strains associated with the sand density of the sand (Idriss and Boulanger, 2008), as indicated by the CPT and SPT results.

Three different methods have been used to evaluate slope deformations (Youd et al. 2002; Bray and Travasarou 2007; ENGEO 2009). Each method yielded a predicted deformation of approximately eight inches. Due to the numerous uncertainties in this type of analysis, Bray and Travasarou (2007) recommend considering a range of four to 16 inches. Deformation of the magnitude predicted for the proposed project is considered to be small to moderate (ENGEO 2009).

Lateral spreading of larger magnitude may occur along the free face slopes associated with the existing shoreline and Refugio Creek. Deep foundation elements located in proximity to these slopes may experience additional kinematic lateral loading due to slope deformation unless ground improvement measures are implemented to strengthen the slopes.

Fault Rupture

No known active faults have been mapped within the project area, and the project site does not lie within a delineated State of California Earthquake Fault Zone; therefore, the potential for ground rupture is considered low.

Landslides

Several landslide areas have been mapped on the shoreline bluff in the northern portion of the project area. Most of these landslides exhibit signs of recent activity and, in general, the potential for continued movement is considered high. Preliminary project plans suggest that substantial portions of these landslides would be removed by the cuts that would be needed to construct the new track alignment, maintenance road, and trail.

Subsidence

Another potential seismic hazard is that of earthquake-induced subsidence or settlement. Buildings constructed on compressible sediment may be subject to differential settlement of soils during an earthquake, depending on the distribution of the building weight, the type of condition of the underlying sediment, and the intensity or style of ground shaking experienced at the site. Primary areas of concern regarding differential settlement include the Bay Mud present near San Francisco Bay and other areas of deep sediment deposits, as well as areas of poorly engineered fill. In addition, areas underlain by estuarine sediments, organic rubbish, or thick organic deposits may also be moderately to highly susceptible to subsidence. Settlement is discussed under liquefaction, above.

3.11.3. Mineral Resources

No significant mineral deposits have been identified by the California Department of Conservation, Division of Mines and Geology for the Hercules Area (City of Hercules 2009c). However, Hercules does have areas that have been identified as containing mineral deposits with a significance that cannot be evaluated from available data known as “MRZ-3 zones”.

MRZ-3 zones have been mapped for the hills to the north and south of SR-4, east of I-80, and the hilly area north of John Muir Parkway to the west of I-80 in the general vicinity of the Hill Town site. However, according to the General Plan, there is no information to suggest that these areas have extractable minerals of commercial value such that existing and planned land uses would reduce their benefit to the community and region (City of Hercules 1998a).

3.12. HAZARDOUS MATERIALS

This section provides an overview of the presence of hazardous materials within the project area, the potential for impacts during construction activities for the proposed project, and the regulatory setting applicable to environmental protection and health and safety. Issues related to public health and safety includes the transport, use, and storage of hazardous materials and disposal of hazardous wastes.

A material is considered hazardous if it appears on a list of hazardous materials prepared by a federal, state, or local agency, or if it has characteristics defined as hazardous by such an agency. Factors that influence the health effects of exposure to hazardous material include the dose to which the person is exposed, the frequency of exposure, the exposure pathway, and individual susceptibility.

The California Code of Regulations (CCR) defines a hazardous material as a substance that, because of physical or chemical properties, quantity, concentration, or other characteristics, may either: (1) cause an increase in mortality or an increase in serious, irreversible, or incapacitating, illness; or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported or disposed of, or otherwise managed. Hazardous wastes are defined in a similar manner. Hazardous wastes are hazardous materials that no longer have practical use, such as substances that have been discarded, discharged, spilled, contaminated, or are being stored prior to proper disposal.

This section describes the existing hazards and hazardous materials conditions in and near the project area. This includes the regulatory setting and the results of environmental database records searches conducted for the project area. Regulations governing the project area originate at both the Federal and State level, but many are implemented and enforced at the local or regional level. Most hazardous materials regulation and enforcement in Contra Costa County is managed by the Health Services, Hazardous Materials Program.

3.12.1. Regulatory Framework

Hazardous materials and health and safety are subject to numerous laws and regulations at federal, state, and local levels of government. Summaries of the applicable laws and regulations related to hazardous materials management are presented below.

Federal Regulations

Federal regulatory agencies include the USEPA, the OSHA, and the Department of Transportation (DOT). The following represent federal laws and guidelines governing hazardous substances.

- Pollution Prevention Act (42 United States Code (USC) 13101 et seq./40 Code of Federal Regulations (CFR))
- Clean Water Act (33 USC 1251 et seq./40 CFR)
- Oil Pollution Act (33 USC 2701-2761/30, 33, 40, 46, 49 CFR)

- Clean Air Act (42 USC 7401 et seq./40 CFR)
- Occupational Safety and Health Act (29 USC 651 et seq./29 CFR)
- Federal Insecticide, Fungicide, and Rodenticide Act (7 USC 136 et seq./40 CFR)
- Comprehensive Environmental Response Compensation and Liability Act (42 USC 9601 et seq./29, 40 CFR)
- Superfund Amendments and Reauthorization Act Title III (42 USC 9601 et seq./29, 40 CFR)
- Resource Conservation and Recovery Act (42 USC 6901 et seq./40 CFR)
- Safe Drinking Water Act (42 USC 300f et seq./40 CFR)
- Toxic Substances Control Act (15 USC 2601 et seq./40 CFR)

At the federal level, the principal agency regulating the generation, transport and disposal of hazardous substances is the USEPA, under the authority of Resource Conservation and Recovery Act (RCRA) of 1976. The RCRA established a federal hazardous substance regulatory program that is administered by the USEPA, which regulates the generation, transportation, treatment, storage and disposal of hazardous substances. Under RCRA, individual states may implement their own hazardous substance management programs as long as they are consistent with, and at least as strict as, RCRA.

The USEPA regulates hazardous substance sites under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, commonly referred to as Superfund. The purpose of CERCLA was to provide authorities with the ability to respond to uncontrolled releases of hazardous substances from inactive hazardous waste sites that endanger public health and the environment.

The OSHA is the agency responsible for ensuring worker safety, and sets federal standards for implementation of training in the work place, exposure limits, and safety procedures in the handling of hazardous substances (as well as other hazards). OSHA also establishes criteria by which each state can implement its own health and safety program.

The DOT regulates the interstate transport of hazardous materials and wastes through implementation of the Hazardous Materials Transportation Act. This act specifies driver-training requirements, load labeling procedures, and container design and safety specifications. Transporters of hazardous wastes must also meet the requirements of additional statutes such as RCRA.

State Regulations

The California Environmental Protection Agency (Cal/EPA) and Office of Emergency Services (OES) establish rules governing the use of hazardous substances. The Cal/EPA was created in 1991 to better coordinate state environmental programs, reduce administrative duplication, and address the greatest environmental and health risks. The Cal/EPA unifies the state's

environmental authority under a single accountable, cabinet-level agency. Cal/EPA oversees the following agencies: Air Resources Board (ARB), Integrated Waste Management Board, Department of Pesticide Regulation, State Water Resource Control Board (SWRCB), Department of Toxic Substances Control (DTSC), and Office of Environmental Health Hazard Assessment.

The following represent state laws and guidelines governing hazardous substances:

- Porter Cologne Water Quality Control Act (California Water Code Section 13000–14076/23 CCR)
- California Accidental Release Prevention Law (California Health and Safety Code Section 25531 et seq./19 CCR)
- California Building Code (California Health and Safety Code Section 18901 et seq./24 CCR)
- California Fire Code (California Health and Safety Code Section 13000 et seq./19 CCR)
- California Occupational Safety and Health Act (California Labor Code Section 6300–6718/ 8 CCR)
- Hazardous Materials Handling and Emergency Response "Waters Bill" (California Health and Safety Code Section 25500 et seq./19 CCR)
- Hazardous Waste Control Law (HWCL) (California Health and Safety Code Section 25100 et seq./22 CCR)
- Carpenter-Presley-Tanner Hazardous Substance Account Act "State Superfund" (California Health and Safety Code Section 25300 et seq./California Revenue and Tax Code Section 43001 et seq.)
- Hazardous Substances Act (California Health and Safety Code Section 108100 et seq.)
- Safe Drinking Water and Toxic Enforcement Act "Proposition 65" (California Health and Safety Code Sections 25180.7, 25189.5, 25192, 25249.5-25249.13/8, 22 CCR)
- California Air Quality Laws (California Health and Safety Code Section 39000 et seq./17 CCR)
- Aboveground Petroleum Storage Act (California Health and Safety Code Section 25270 et seq.)
- Pesticide Contamination Prevention Act (California Food and Agriculture Code Section 13141 et seq./3 CCR)
- Underground Storage Tank Law "Sher Bill" (California Health and Safety Code Section 25280 et seq./23 CCR)

The California OSHA (Cal/OSHA) assumes primary responsibility for developing and enforcing work place safety regulations within the State. Cal/OSHA regulations concerning the use of hazardous substances include requirements for safety training, availability of safety equipment, hazardous substance exposure warnings, and emergency action and fire prevention plan preparation.

California law requires that hazardous waste be transported by a state-registered hazardous waste transporter that meets specific registration requirements. State agencies with primary responsibility for enforcing federal and state regulations, and responding to hazardous materials transportation emergencies are the California Highway Patrol and Caltrans.

Local Regulations

City of Hercules

The City developed a Hazardous Waste Management Plan (HWMP) as an element of the General Plan (City of Hercules 1990). The City's HWMP was prepared to be consistent with the goals, objectives, and basic content of the County's HWMP, but to also meet the specific needs of the City. The overall goals of the HWMP are: to achieve the safe and effective management of hazardous waste within the City of Hercules, and to protect the health and safety of the public and the environment. Relevant Hercules City HWMP objectives regarding hazardous materials include:

- Accept responsibility and develop appropriate planning for the safe and responsible treatment and transfer or disposal of wastes within the city jurisdiction or in coordination with other jurisdictions.
- Designate prevention of deterioration of public health or the environment caused by hazardous waste as a primary goal of the city government.
- Adopt policies and targets which restrict further increases in and seek reductions in the volume and toxicity of hazardous waste committed to land disposal.
- Oppose increases of hazardous waste treatment, storage or disposal within the city limits unless such activities are consistent with this Plan, and laws and ordinances of the City of Hercules.
- Encourage recycling, reuse and on-site treatment as second priorities for hazardous waste management techniques.
- Provide strong direction and support to actively enforce laws, regulations and ordinances concerning issuance of permits, inspection, compliance and data availability concerning the generation, storage, transportation, treatment and disposal of hazardous waste or the generation, storage and transportation of hazardous materials.

3.12.2. Records Review

The objective of the records review is to obtain and review records that will help identify recognized environmental conditions at or potentially affecting the proposed project sites. Publicly available federal, state, and local regulatory agency records were reviewed for the proposed project. Environmental Data Resources, Inc. (EDR), a data-search firm, performed a search of all federal, state, local, and tribal databases for the proposed project site and surrounding area. A copy of the report entitled The EDR Radius Map Report with GeoCheck dated December 1, 2009, is included in Appendix H (EDR 2009). The results of the search are also summarized below, including the description and number of listings discovered within the defined search radius. The search radius distances for each database searched are based on the minimum distances established by the American Society for Testing and Materials (ASTM) and commonly used for environmental site assessments. Definitions and detailed descriptions of each database, and the standard search distance for each are included in the EDR report in Appendix H.

The following descriptions summarize the information reviewed in the federal, state, local, and tribal databases. The proposed project site is included on the following state databases: Hist Cal-Sites, Response, EnviroStor, and CA Bond Exp Plan. However, as described above, the proposed project site has been certified by the DTSC as having been remediated satisfactorily.

A description of the surrounding facilities that have been identified within the search radius is also provided below.

- Hist Cal-Sites: Formerly known as ASPIS, this database contains both known and potential hazardous substance sites. The source of the database is the DTSC; however, this database is no longer updated and has been replaced by the EnviroStor database. Including the proposed project site (2 listings), an additional two Hist Cal-Sites listings were identified in the database search: Bio-Rad Laboratories and Centex Homes of California. The Bio-Rad Laboratories site is located adjacent to and northeast of the proposed project site. As with the proposed project site, Bio-Rad Laboratories is also located on portions of the former Hercules Powder Works site. However, the Bio-Rad Laboratories site has been certified by the DTSC as having been remediated satisfactorily. The Centex Homes of California site is located over ½-mile from the proposed project site, and has also been certified by the DTSC as having been remediated satisfactorily. Based on information provided in the EDR report for these Hist Cal-Sites properties, no significant impact to the proposed project site is anticipated from these properties.

- Response: The Response database identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk. Including the proposed project site (2 listings), an additional two Response listings were identified in the database search: Bio-Rad Laboratories and Centex Homes of California. As described above, these sites have been certified by the DTSC as having been remediated satisfactorily. Based on information provided in the EDR report for these Response properties, no significant impact to the proposed project site is anticipated from these properties.

- EnviroStor: The DTSC's Site Mitigation and Brownfields Reuse Program database identifies sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites; State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in Cal-Sites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites. Including the proposed project site (2 listings), an additional three EnviroStor listings were identified in the database search: Bio-Rad Laboratories, Centex Homes of California, and Gelsar. As described above, these sites, with the exception of Gelsar, have been certified by the DTSC as having been remediated satisfactorily. The Gelsar site is located over ½ mile from the proposed project site, and was under a voluntary cleanup agreement which was completed in 2002 and certified in 2003. Based on information provided in the EDR report for these EnviroStor properties, no significant impact to the proposed project site is anticipated from these properties.

- CA Bond Exp Plan: The California Bond Expenditure Plan was developed by the Department of Health Services as a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. Two CA Bond Exp Plan listings were identified in the database search, both representing the proposed project site.

Orphan sites are those with incomplete address information and which could not be plotted. There were six properties identified on the Orphan Summary. Based on information provided in the report for the listed properties, their general locations, and the databases on which the properties were listed, no significant impact to the proposed project site is expected from these properties.

An environmental site assessment was prepared for portions of the proposed project in 2007 (ENGEO 2007). The results of this site assessment were also reviewed for the purpose of confirming site history and database search details.

3.12.3. Existing Conditions

Portions of the proposed project site are located within the site of the former 1,300-acre Hercules Powder Works facility. Operations at the Hercules Powder Works facility began in the 1880's with the production of explosives, and continued until the mid 1960's with the manufacture of dynamite, black powder, and nitroglycerin. During the 1960's, focus shifted from production of explosives to production of fertilizer products, and also non-fertilizer products such as rocket fuel propellant. In 1976 Hercules Properties, Inc. purchased three parcels totaling 167 acres, which included a portion of the proposed project site. All chemical manufacturing at the facility was ceased by 1977, and the site remained vacant until 1985, at which time the DTSC issued an order to the previous landowners to remove machinery, debris, and materials from the site. Testing performed at that time showed that soil, groundwater, and sediments contained hazardous levels of the heavy metals and chemicals that were used to manufacture the explosives and fertilizers. DTSC split the site into a two major Operable Units (OUs), OU-A and OU-B.

OU-A consisted of the site soils and was further subdivided into six sub-OUs (OU-1 through OU-6). OU-B consisted of Refugio Creek, bay sediments, and site groundwater and was further subdivided into two sub-OUs (OU-7 and OU-8).

Under DTSC oversight, remediation of the site included removal of contaminated soil and sediments through excavation and off-site disposal. Remediation of OU-A was completed in 1997, and all sub-OUs were remediated to residential standards with the exception of OU-3 (Hercules Point), which has a deed restriction (a Covenant to Restrict Use of Property filed with Contra Costa County Recorder's Office) that restricts this parcel to only industrial or commercial land uses. Other uses are not allowed without DTSC approval. DTSC conducts annual inspections of OU-3 to ensure that the OU continues to be protective of public health, safety, and the environment. Based on the results of toxicity studies, OU-7, OU-8, and site groundwater were approved for no further action in 1994, with 5-year reviews to be conducted for the metals in groundwater.

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3.13. UTILITIES

This section describes the existing public utilities and service systems that would support the proposed Hercules ITC. This section evaluates the utility service systems such as the electrical power, natural gas, water supply and distribution system; wastewater collection, conveyance, and treatment systems; solid waste services; and telecommunications services. The providers of these utility services are regulated under the authority of the California Public Utilizes Commission (CPUC). Information presented in the discussion and analysis presented below was drawn from consultation with local utility providers and from the City of Hercules (2009b) Updated Redevelopment Plan EIR and the WTA (2003) Program EIR.

3.13.1. Regulatory Framework

Federal Energy Regulations

Regulations for transportation energy consumption are generally directed toward fuel efficiency of motor vehicles. The federal Energy Policy and Conservation Act of 1992 established fuel economy standards for on-road vehicles in the U.S. This law places responsibility to the National Highway Traffic and Safety Administration (a part of the US DOT) for establishing vehicle standards and for revising existing standards. The USEPA administrates the Corporate Average Fuel Economy (CAFE) program, which determines vehicle manufacturers' compliance with existing fuel economy standards. The "California Greenhouse Bill" (AB 1493) signed into law in July 2002 is intended to reduce production of "greenhouse gases," and its implementation may also result in use of more energy-efficient vehicles.

CEQA and NEPA both require that a discussion of the potential energy impacts of a proposed project be addressed, with particular emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy.

State Energy Regulations

Urban Water Management Planning Act

California State AB 797 (California Water Code Section 10610, et seq.), adopted in 1983, requires every urban water supplier providing water for municipal purposes to more than 3,000 customers or more than 3,000 acre-feet of water on an annual basis to prepare an Urban Water Management Plan (UWMP). The intent of the UWMP is to assist water supply agencies in water resource planning given their existing and anticipated future demands. UWMPs must be updated every five years in years ending in the numbers of zero and five.

Senate Bill 610

Senate Bill (SB) 610 requires that projects subject to CEQA that would be supplied with water from a public water system that identifies groundwater as a source prepare a specified water supply assessment (WSA). These assessments must be furnished to local governments for inclusion in any environmental documentation for certain projects (as defined in Water Code 10912[a]) subject to CEQA. This legislation also expands the requirements for certain types of information in a UWMP, including an identification of any existing water supply entitlements,

water rights, or water service contracts held relevant to the water supply assessment for a proposed project, and a description of water deliveries received in prior years.

Under Sections 10910–10915 of the *California Water Code*, a WSA is required by law for any development that meets the following thresholds:

1. A proposed residential development of more than 500 dwelling units.
2. A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space.
3. A proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space.
4. A proposed hotel or motel, or both, having more than 500 rooms.
5. A proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area.
6. A mixed-use project that includes one or more of the projects specified in this subdivision.
7. A project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500-dwelling-unit project.

The proposed project does not meet with any of these thresholds.

Senate Bill 221

Senate Bill (SB) 221 prohibits approval of subdivisions consisting of more than 500 dwelling units unless there is verification of sufficient water supplies for the project from the applicable water supplier(s). This requirement also applies to increases of ten percent or more of service connections for public water systems with fewer than 500 service connections. The law defines criteria for determining "sufficient water supply," such as using normal, single-dry, and multiple-dry year hydrology and identifying the amount of water that the supplier can reasonably rely on to meet existing and future planned uses. The proposed project does not fall within the criteria established under SB 221.

Title 24

Buildings constructed after June 30, 1977, must comply with standards identified in Title 24 of the California Code of Regulations. Title 24 requires the inclusion of state-of-the-art energy conservation features in building design and construction, including the incorporation of specific energy-conserving design features, use of non-depletable energy resources, or a demonstration that buildings would comply with a designated energy budget.

California Integrated Waste Management Act

As many of the landfills in the state are approaching capacity and finding a location for new landfills becomes increasingly difficult, the need for source reduction, recycling, and composting has become apparent. In response to this increasing solid waste problem, in September 1989 the State Assembly passed AB 939, the California Integrated Waste Management Act. The act required every city and county in the state to prepare a Source Reduction and Recycling Element (SRRE) with its Solid Waste Management Plan that identifies how each jurisdiction will meet the mandatory state waste diversion goals of 25 percent by the year 1995 and 50 percent by the year 2000. Senate Bill 2202 mandates that jurisdictions continue 50 percent diversion on and after January 1, 2000. The purpose of AB 939 is to facilitate the reduction, recycling, and reuse of solid waste to the greatest extent possible. Noncompliance with the goals and timelines set forth within AB 939 can be severe, as the bill imposes fines of up to $10,000 per day on cities and counties not meeting these recycling and planning goals. The 2004 diversion rate for the City was 53 percent, which complies with the goals specified in AB 939.

Local Policies and Ordinances

The City's General Plan contains goals and policies regarding public services, utilities, and services systems. The following General Plan policies are relevant to the proposed project.

Land Use Element

Policy 9A: Development applications shall be reviewed to determine if adequate solid waste disposal capacity exists to serve the project and that the project includes adequate recycling facilities.

Open Space and Conservation Plan

Policy 7b: Ensure that the new development pays its share of the costs associated with the provision of facilities to conform to the East Bay Municipal Utilities District (EBMUD) requirements for water conservation by attaching project-specific mitigation requirements as conditions of approval.

Policy 8a: The City shall ensure that new development pays its share of the incremental capacity costs associated with the provision of wastewater treatment facilities by attaching project-specific mitigation as conditions of approval.

3.13.2. Existing Conditions

Water Supply

The City receives potable water service from the EBMUD. In 2005, EBMUD delivered an average flow of 210 million gallons per day (mgd) serving over 325,000 service accounts.

EBMUD draws its primary supply of water (approximately 90 percent) from the Mokelumne River in the Sierra Nevada Mountain Range. EBMUD delivers its water supply through a system of reservoirs, aqueducts, water treatment plants, pumping plants, and distribution facilities. The

City of Hercules is served by the 22.3-million-gallon Mahoney Reservoir located in the City of Pinole. Based on current projections of the UWMP, the Mokelumne watershed is of sufficient size to meet the near term water needs of the EBMUD and the City, including the proposed project area.

EBMUD Urban Water Management Plan

An urban water management plan (UWMP) is required for every urban water supplier providing more than 3,000 acre-feet of municipal water annually or providing water to more than 3,000 customers (see the Regulatory Environment discussion below). On November 26, 1985, EBMUD adopted its first UWMP. Since 1985 the plan has been revised and updated every five years. The most recent UWMP was adopted on November 22, 2005, by the EBMUD Board of Directors; the UWMP is a long-range planning document that reports on the current and projected water usage, water supply programs, and conservation and recycling programs. The 2005 UWMP summarizes EBMUD's demand and supply projections in five-year increments for a 25-year planning horizon (through 2030), and reflects the latest actual and forecast values. The UWMP presents water supply and availability, including the underlying assumptions, as derived from EBMUD's hydrologic model. It also contains planned upgrades to the water system to ensure that appropriate future levels of service are met.

EBMUD's water demand projections account for anticipated future water demands within the service boundaries of EBMUD, and for variations in demand attributed to changes in development patterns. The demand projections indicate both densification and land use changes in all existing land use classifications, thus increasing the overall demand. The UWMP projects water demand over time, accounting for estimated variations in demand usage less conservation and recycled supply sources. For planning purposes, the demands are estimated in five-year increments, but it is recognized that actual incremental amounts would occur in shorter increments as new users come on line. Periodically, EBMUD updates the demand projections to reconcile these variations, and the UWMP is updated as appropriate at each five-year cycle.

Demand Projections

Water consumption within the EBMUD service area has remained relatively stable in recent years in spite of population growth. Since the 1970s, water demand has ranged from 200 to 220 mgd in non-drought years. EBMUD has water rights permits and licenses that allow for delivery of up to a maximum 325 mgd from the Mokelumne River, subject to the availability of Mokelumne River runoff and the senior water rights of other users.

Supplemental Water Supply and Demand Management

The goals for meeting EBMUD projected water needs in the service area and increased water reliability rely on three components: supplemental supply, water conservation, and recycled water. The UWMP describes EBMUD's supplemental water supply project alternatives to meet its long-term water demand as well as supplemental water projects, including the development of groundwater storage within EBMUD's service area.

Wastewater Services

Wastewater in the proposed project area is collected primarily by sewer lines owned and maintained by the City. The collected wastewater is the treated at the Pinole/Hercules Wastewater Treatment Plant, which serves the City and the City of Pinole and is operated by the Pinole-Hercules Wastewater Joint Powers Authority (JPA). The treatment plant is located on Tennent Avenue in the City of Pinole. The collection system includes separate domestic and industrial sewers and related pumping facilities. Untreated wastewater is piped to the City's treatment plant through pipes, using both gravity flow and lift stations where appropriate. The Pinole/Hercules Wastewater Treatment Plant has the capacity to treat 4.06 mgd. The City of Hercules has implemented a wastewater-sampling program, including the implementation of a confined space entry program, to comply with OSHA regulations. In addition, the Cities of Pinole and Hercules are in the process of upgrading and planning future plant capacity).

The EBMUD's Urban Water Management Plan (UWMP) 2005 projects that in 2010 (i.e., project build-out year) the amount of collected and treated wastewater demand would be 3.6 mgd; therefore, it is anticipated by the UWMP 2005 that the Pinole/Hercules Wastewater Treatment Plant would have sufficient capacity to serve the city.

Stormwater

Storm water within the City of Hercules flows by way of sheet flow or the municipal storm drain system into creeks and then into the Bay without treatment. Stormwater from the project site flows by sheet flow into ditches and depressions along the UPRR rail line, from which it drains to Refugio Creek, or directly into Refugio Creek or the Bay. The nearest municipal storm drain inlet and drainage lines are in Bayfront Boulevard, adjacent to the project site.

Solid Waste

Richmond Sanitation is the solid waste service provider for the City. The City's solid waste is disposed of at the Potrero Hills Landfill, which is approximately 28.5 miles northeast of the City. The Potrero Hills Landfill opened in 1986 and owns 1,400 acres of property with 190 acres of waste area to date. The facility receives an average of 3,400 tons of fill daily.

Electrical Power and Natural Gas

Electricity is provided and distributed in the City by Pacific Gas and Electric (PG&E) and by the Hercules Municipal Utility (HMU). HMU would supply electricity to the proposed project area. Natural gas is also provided and distributed to the project site by PG&E.

Other underground utilities that cross the site include two privately held petroleum transport pipelines that will be relocated during construction. These lines run parallel and within the UPRR right-of-way.

Telecommunications

Telecommunications service in the City of Hercules is provided by AT&T. Existing telecommunications infrastructure on and around the project site include underground telephone

and fiber optic lines along nearby roadways and along the UPRR rail line that runs through the project site.

3.14. PUBLIC SERVICES

This section evaluates the environmental effects associated with any improvements required to meet increases in demand for public services, including fire protection, police, and schools as a result of implementation of the proposed Hercules ITC project.

3.14.1. Regulatory Framework

Local Plans and Policies

City of Hercules General Plan

The Safety Element and Open Space/Conservation Element of the General Plan include objectives, policies, and programs related to public services, including fire protection services and park and recreation services. Objectives, policies, and programs most applicable to the project are listed below.

Safety Element

Objective 1: Consider potential seismic, geologic, flood and fire hazards and introduce adequate safety measures in development plans and proposals.

Program 1A.4: An Emergency Operations Plan has been prepared and should be maintained to provide responsibilities and procedures in the event of a major disaster or emergency in the City. This plan is compatible with the State of California and the Office of Emergency Services. The Emergency Operations Plan designates emergency evacuation routes.

Objective 3: Ensure that adequate fire protection is provided throughout the city and that all new structures conform to current fire safety standards.

Policy 3A: The City should continually evaluate the alternatives for providing adequate fire service to meet the changing needs of the City in the most efficient manner.

Program 3A.1: The City shall assist the Rodeo-Hercules Fire Protection District in processing the collection of fire impact fees from all new development within the City.

Program 3A.2: The City shall work with the Rodeo-Hercules Fire Protection District to determine specific needs for fire protection when a particular development proposal is reviewed and ensure that these needs are met. Fire Stations shall be located in the City so that five minutes emergency response time may be achieved by first response unit for 90 percent of all emergency calls. Fire Stations shall be sized to accommodate a minimum of two engines/trucks and three-person 24-hour crews.

Policy 3B: New development shall be designed to minimize exposure to fire hazards.

Program 3B.1: Subdivision and planned development plan applications shall include measures to promote fire safety. These measures shall be evaluated during application review and implemented through adoption as conditions of approval for the project including:

1. Road circulation for fire access.

2. Access to structures and open spaces.

3. Fire flow needs and other peakload water flow needs for emergencies.

4. Landscape design.

Program 3B.2: Subdivision and planned development plan applications shall include open spaces measures to promote fire safety. These measures shall be evaluated during application review and implemented through adoption as conditions of approval for the project including:

1. A buffer of irrigated landscaping and/or plowed area maintained between open spaces and developed areas.

2. Fire access trails in major open spaces to allow fire equipment to penetrate. These trails should be part of the City-wide system of trails.

3. The use of fire resistant plant materials in open space landscaping.

4. Containment of potential fires where natural vegetation exists in open spaces.

5. Responsibilities for maintenance of fire trails, cleaning vegetated areas and maintaining fire breaks should be clearly defined in planned development and conditions of approval.

Open Space/Conservation Element

Policy 3a: Design of building footprints along any riparian corridors shall be outside the CDFG- and/or COE-pre-approved buffer zone. Sensitive riparian habitats shall be marked by a qualified biologist to deter any destruction by equipment during construction.

Program 3a-1: Prior to construction in areas of riparian corridors or wetlands, the City shall support CDFG and USACE permitting process. A Streambed Alteration Agreement from CDFG and/or a Section 404 USACE permit shall be obtained by the project applicant prior to any development within any creek or discharge of fill into any creek.

Program 3a-2: Development along any riparian corridor shall incorporate measures to avoid impacts during construction, including:

1. Construction of any access bridge shall be limited to the bridge footprint area only.

2. Parking of large equipment shall be on the upland grassland area or on the paved street. Construction workers cars shall have designated parking areas.

3. Basins for oil leaks from the equipment shall be installed if equipment is parked onsite over night.

Policy 4a: The City shall require project proponents to design facilities to prevent degradation of riparian and wetland communities from urban pollutants in storm runoff.

Program 4a-1: To minimize pollution downstream from sedimentation, the City shall require installation of sedimentation and grease basins in the storm drain system in parking lots in accordance with NPDES regulations and shall require that property owners maintain the basins annually, or as required by NPDES regulations. Parking lots shall be swept periodically to decrease the amount of debris that could potentially contaminate the riparian or wetland habitat.

Policy 5a: The City shall review development proposals for consistency with minimizing impacts to salt marsh zones. Buildings shall be located on existing developed or graded areas, where practicable.

Policy 5b: The City shall work with CDFG, BCDC, EBRPD, and the USACE to determine appropriate buffer zones along the bay to protect tidal habitat when designing a Bay access trail linkage between Pinole and Rodeo. Public access and pedestrian pathways shall be limited within the buffer zone, and when possible, located along the edges of the buffer zone. Bicycles shall be encouraged to stay on bike paths through the use of signage and fencing.

Land Use

Policy IA: Encourage and only allow development that is consistent with the Land Use Diagram, Land Use Categories; and objectives, policies and programs of the Land Use Element. Procedures to evaluate development applications for consistency with the Land Use Diagram, Land Use Categories; and objectives, policies and programs of the Land Use Element shall be incorporated into the application review procedures of the Zoning Ordinance. Applications shall also be evaluated in relation to the capacity of infrastructure and schools to serve the proposed development.

3.14.2. Existing Conditions

Fire Protection

The Rodeo-Hercules Fire District (RHFD) serves the proposed project site location. It is an autonomous fire district within Contra Costa County serving the City of Hercules and the unincorporated Town of Rodeo. The RHFD is a full-service fire department that employs a total of 21 full-time personnel and up to 20 reserve personnel and covers an area approximately 25 square miles. The RHFD serves a population of approximately 33,000 and responds to over 2,200 calls per year. The current average response time for emergencies is 6.4 minutes. The response time goal for the district is 5 minutes, 90 percent of the time. Responsibilities of the RHFD include:

- Responding to and providing fire/rescue services for all areas located within the City's boundaries;
- Providing all Emergency Medical Services (EMS), including Advanced Life Support (ALS) and Basic Life Support (BLS), to all areas located within the City's boundaries;
- Hazardous Material response and mitigation in all areas located with the City's boundaries;
- Urban Search and Technical rescues in all areas located within the City's boundaries;

- Planning and preparing for all contingencies in the event of disaster;
- Maintaining automatic aid and mutual aid with local cities, counties, and the state;
- All Fire Prevention inspection programs and public education; or all fire investigation.

The RHFD operates two fire stations: Rodeo Fire Station 75 (located at 326 Third Street, Rodeo) and Hercules Fire Station 76 (located at 1680 Refugio Valley Road, Hercules). The RHFD list of fire service equipment includes one 75-foot ladder quint, two type-one engines, two type-three engines, one medium rescue unit, one utility truck, and four staff vehicles.

The RHFD is also a participating agency within Battalion 7, which includes the two Rodeo-Hercules fire stations, two City of Pinole fire stations, and two Contra Costa County fire stations. The RHFD has an automatic aid agreement with the City of Pinole Fire Department as well, and has extensive resources available through mutual aid. 73 in Pinole also serves the project area . The 2007 budget was $4.9 million to serve a population of 33,000 people.

The RHFD employs 40 full-time and part-time staff, including one chief, one battalion chief, six captains, two engineer/paramedics, four engineers, six firefighter/paramedics, one administrative secretary, and 19 reserves. The RHFD does not provide transport of patients and the hazardous materials team is not fully equipped. The Contra Costa County Hazardous Materials Response Team (HMRT) provided by the Contra Costa County Health Department serves as the primary hazardous materials unit for the City. The San Ramon Fire HMRT and the Richmond Fire Department HMRT also provide backup to the RHFD upon request.

Law Enforcement

The City of Hercules Police Department (HPD) provides primary law enforcement and public safety services within the city. The HPD serves the proposed project site. The HPD is a full-service police department that provides general police protection, law enforcement, traffic enforcement, and all associated duties to the City of Hercules The HPD currently employs 29.5 personnel including 29 sworn officers, two part-time parking enforcement officers, one police assistant, one full-time office assistant, one part-time office assistant, and one administrative secretary. The HPD is authorized to have 32 sworn officers for a population of approximately 25,000 and is recruiting to fill three vacancies. The ratio of sworn personnel to population is 1.2 per 1,000 residents. Currently, the HPD has ten patrol cars, three motorcycles, a special response team van, and six unmarked vehicles. The average response time to emergency and non-emergency calls in Hercules is five to seven minutes, and is consistent with HPD's goals. The Hercules Police Department is located at 111 Civic Drive in Hercules, approximately two miles from the project site. Services available at the HPD office include obtaining and filing police reports, fingerprinting, and general services. The HPD offices are open from 8:00 AM to 5:00 PM Monday through Friday, although police officers are on duty 24 hours a day.

The Pinole Police Department provides backup services to the City of Hercules through a mutual aid agreement, in addition to protection services to the City of Pinole and surrounding communities. The Pinole Police Department is located at 880 Tennent Avenue, Pinole. Backup police services are also provided by the Contra Costa County Sheriff's Department.

Schools

The proposed project site is located within the West Contra Costa Unified School District (WCCUSD). WCCUSD covers 65 square miles and is one of seven unified school districts in Contra Costa County. WCCUSD serves 235,000 residents in the Cities of El Cerrito, Hercules, Pinole, Richmond, and San Pablo, and the unincorporated areas of Bay View–Montalvin Manor, East Richmond Heights, El Sobrante, Kensington, North Richmond, and Tara Hills. WCCUSD provides public education for kindergarten through 12th grade. The WCCUSD employs 1,763 employees, including 1,630 teachers, 128 pupil services staff (including counselors, librarians, psychologists, nurses, and speech/language/hearing specialists), and 135 administrators (including principals, vice and assistant principals, and district-level administrators). The WCCUSD administers 18 preschools, 38 elementary schools, one K–8 school, seven middle schools, six comprehensive high schools, ten alternative schools, 60 adult education sites, and nine operation sites serving over 31,500 students. Four WCCUSD schools are located within the proximity of the Sycamore Crossing and Hill Town sites: Hanna Ranch Elementary School, Lupine Hills Elementary School, Ohlone Elementary School, and the Hercules Middle-High School.

Public Libraries

The Hercules Public Library is located at 109 Civic Drive, at the corner of Civic Drive and Sycamore Avenue and it is open 45 hours a week. The Hercules Library is under the jurisdiction of the Contra Costa County Library (CCCL). The Hercules Library is the 24th CCCL-operated library. CCCL provides library service to all Contra Costa County cities except Richmond. CCCL also operates branches in unincorporated areas such as Crockett, El Sobrante, and Rodeo.

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4. ENVIRONMENTAL CONSEQUENCES

4.1. TRAFFIC AND TRANSPORTATION SYSTEMS

4.1.1. Methodology

Trip generation and distribution for each of the action alternatives would be very similar, except for the slight differences in road configuration and the movement of buses. Under Alternative 1, buses would turn off of John Muir Parkway, cross Refugio Creek on Transit Loop Drive, drop off/pick up passengers, cross the new bridge at Bayfront Drive, and turn right back onto John Muir Parkway. Figure 2.2-1 of this document shows the layout for Alternative 1. Figure 2.2-18 shows Alternative 2, in which buses would exit John Muir Parkway, drop-off/pick up passengers, and turn left back onto John Muir Parkway. Roadway configuration, traffic effects, and transportation conditions would be the same for either alternative beyond the intersection of Bayfront Boulevard and John Muir Parkway.

4.1.2. Significance Criteria

The impact of the proposed project on transportation and traffic would be considered significant if it would exceed the following Standards of Significance, in accordance with Appendix G of the CEQA Guidelines and the standards adopted by the City:

- Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections), as follows:
    - Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways, or exceed thresholds established by the City of Hercules as follows:
        - For any arterial street and signalized intersection, the impact would be considered significant if the project would cause the street segment or intersection to operate below LOS D during peak hours, or
        - For signalized intersections on San Pablo Avenue, the impact would be considered significant if the project would cause the intersection to operate below LOS E during peak hours;
        - Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks;
        - Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses;

- Result in inadequate emergency access; or
- Result in inadequate parking capacity.

4.1.3. Impacts and Mitigation

These scenarios evaluate the future baseline scenario traffic conditions plus project-generated traffic estimated for each of the action alternatives currently under consideration. The amount of traffic associated with a project is estimated using a three-step process: (1) trip generation, (2) trip distribution, and (3) trip assignment. Trip generation is the process of predicting the number of peak hour trips a proposed development would contribute to the roadways, and whether these trips would be entering or exiting the site. After the number of trips is determined, the distribution process projects the direction these trips use to approach and depart the site from a regional perspective. Trip assignment involves determining which specific roadways a vehicle would use to travel between its origin and destination.

No-Action Alternative (Future Baseline Conditions)

The analysis of Traffic and Transportation Systems effects differs from most of the other evaluations contained in environmental documents because the authors must estimate the expected change in conditions that happen over time rather than expected conditions to remain static. Traffic volumes can be expected to increase over time as more people move into an area and general background growth occurs. Traffic volumes would also increase as economic development occurs; whether it is building on undeveloped land, increasing density, or redeveloping land that was previously used for other purposes. The Hercules ITC future baseline traffic analysis considers background growth that is likely to occur in the vicinity of the project. The analysis also includes the traffic expected to be generated by other projects approved by the City or reasonably expected to occur prior to construction of the proposed project as well as those already built and occupied after the existing condition traffic counts were completed. The future baseline scenario also describes the transportation conditions that are likely to occur if the No-Action Alternative were selected.

Major projects currently under construction or expected to be completed prior to construction of the Hercules ITC project would add to the traffic in the study area. The approved or planned projects included in the future baseline condition include:

- Commercial building: 9,850 sf of commercial uses at Willow Avenue/I-80 (under construction).
- Sycamore Downtown: 96 units over 40,000 sf of retail commercial space on Sycamore Avenue between Front and Tsushima Street (approved).
- Hill Town: 640 multi-family units on a 44.2-acre site at San Pablo Ave, I-80, and SR 4 (development application).
- New Town Center (all three phases): 7 parcels on 34.95 acres along Willow Avenue east of I-80 and on San Pablo Avenue west of I-80. This project proposes 1,610,000 sf of residential uses, with 1,650 units; 196,250 sf of office space; 320,000 sf of retail space; 500 parking

spaces for public use; 2,475 parking spaces for residential uses; and 2,060 parking spaces for non-residential uses (development application).

- Bayfront Project: 1,392 residential units, including 209 affordable; 81,000 sf of office space; 74,500 sf of retail space; and 134,000 sf of flex space, on a 42.36-acre site located east of San Pablo Bay, north of Santa Fe, and south of Linus Pauling. This proposed project is intended to be a transit-oriented development and includes the Hercules ITC project site.

- Sycamore Crossing: 170 residential units, 192,500 sf of office space, 160,000 sf of retail space, 180-room hotel, and 1,516 parking spaces, located south of Sycamore Avenue and east of Tsushima.

- As envisioned in the General Plan, a vehicle accessible connection between John Muir Parkway and Linus Pauling Boulevard will be constructed at some time in the future.

The City is considering relocating the I-80/SR-4 ramp at Willow further to the east and, according to the recently released Redevelopment Plan, this would improve traffic conditions at this intersection. This improvement is not included in the analysis because the traffic study was done prior to the issuance of the document and the proposal has not been designed, permitted, or funded and therefore does not yet appear to be reasonably foreseeable.

To obtain the intersection turning movement volumes for the future baseline scenario, forecast results from the Contra Costa County Transportation Authority's (CCTA) countywide travel demand model were analyzed. The model-forecast results indicated that the growth factors for the intersection approaches on San Pablo Avenue and Sycamore Avenue were different from all other approaches, and these are summarized in **Table 4.1-1,** Future Baseline Scenario Link Demand Growth Factors. Using these growth factors, the 2006 intersection turning movement volumes were factored up to year 2010 levels using the following equation:

Future baseline scenario turning movement volumes = existing turning movement counts * (2010 model year link demand/2006 interpolated model year link demand).

Table 4.1-1
Future Baseline Scenario Link Demand Growth Factors

Street	2006 – 2010 Morning Annual Growth	2006 – 2010 Afternoon Annual Growth
San Pablo Avenue	6.4%	6.4%
Sycamore Avenue	9.2%	9.2%
Other Streets	1.5%	2.4%
Source: DKS Associates 2010.		

Figure 4.1-1, Future Baseline Conditions Peak Hour Volumes, illustrates the future baseline scenario peak hour volumes. Intersection operational levels of service, along with their associated delays and volume-to-capacity ratios, are summarized in **Table 4.1-2,** Future Baseline

Scenario – Study Intersection LOS Summary. Detailed calculation work sheets are provided in the Hercules ITC Traffic Impact Analysis, Appendix E of this document.

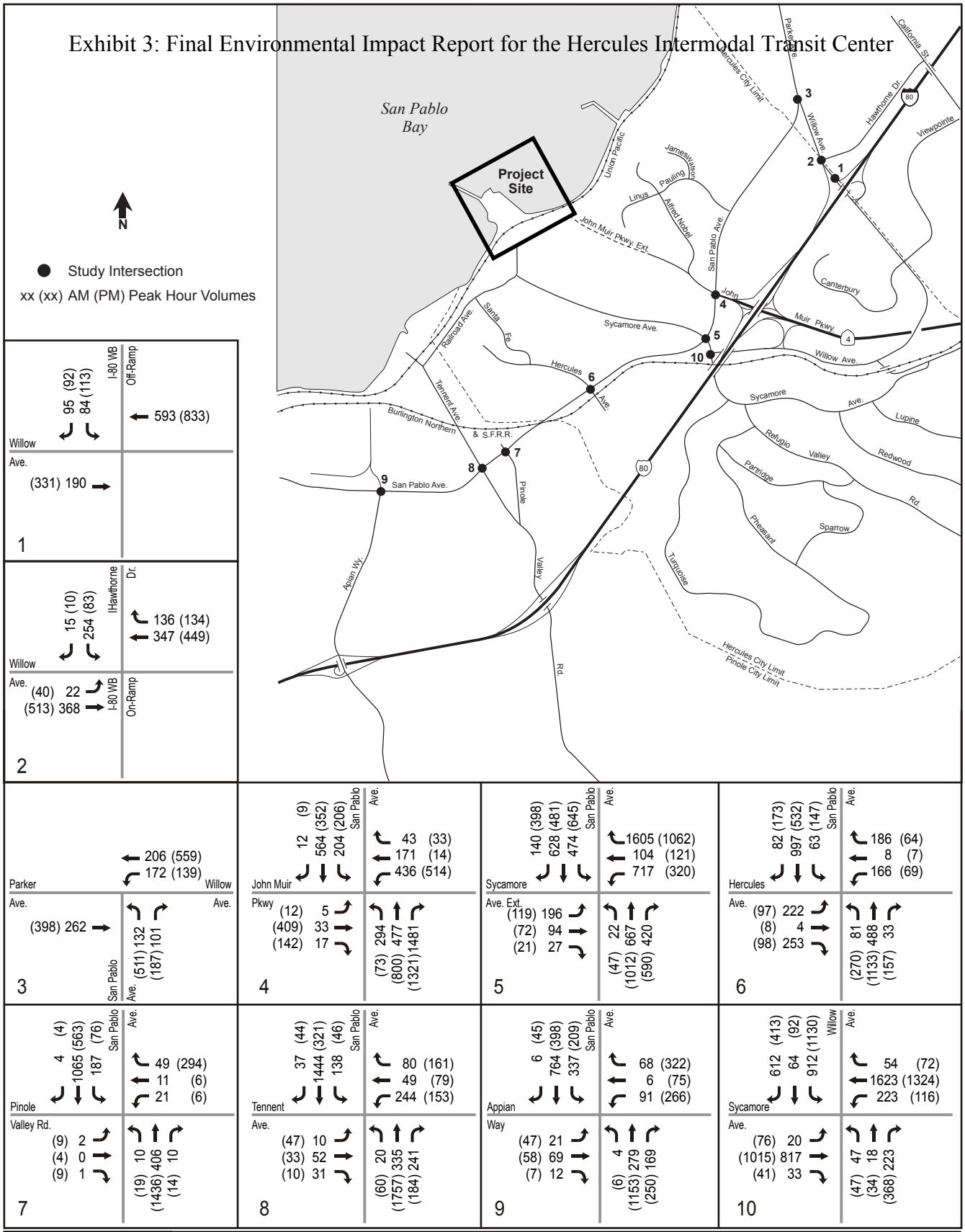
All study intersections would continue to operate at acceptable levels of service under the future baseline scenario with the exception of Sycamore Avenue/Willow Avenue, which would operate at LOS E during the morning peak hour and LOS F during the afternoon peak hour.

Table 4.1-2
Future Baseline (2010) Scenario – Study Intersection LOS Summary

Intersection Number	Intersection	Morning Peak Hour		Afternoon Peak Hour	
		V/C Ratio[1]	LOS [2]	V/C Ratio [1]	LOS [2]
1	Willow Avenue/I-80 WB off-ramp	0.221	A	0.308	A
2	Willow Avenue/Hawthorne Drive	0.301	A	0.241	A
3	San Pablo Avenue/Willow Avenue	0.218	A	0.442	A
4	San Pablo Avenue/John Muir Parkway	0.513	A	0.706	C
5	San Pablo Avenue/Sycamore Avenue	0.927	**E**	0.830	D
6	San Pablo Avenue/Hercules Avenue	0.598	A	0.534	A
7	San Pablo Avenue/Pinole Valley Road	0.480	A	0.582	A
8	San Pablo Avenue/Tennent Avenue	0.651	B	0.709	C
9	San Pablo Avenue/Appian Way	0.360	A	0.683	B
10	Sycamore Avenue/Willow Avenue	0.975	**E**	1.098	**F**

Source: DKS Associates 2010.
[1]Volume to Capacity Ratio
[2]LOS = level of service
Bold indicates an intersection operating at unacceptable LOS E or LOS F.

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center



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Alternative 1

Rail Boardings by Mode of Access

Table 4.1-3, 2035 Rail Boardings by Mode of Access, details how rail passengers are forecasted to access the intermodal transit center during the morning peak period. Note that the data for mode of access data are representative of the morning peak period (7:00 to 9:00 a.m.) and not peak hour as it is the critical peak for parking demand.

From the mode of access table, the peak period automobile trip generation, including park-and-ride and drop-off trips (sometimes called "kiss-and-ride" trips), can be forecasted and distributed onto the local roadway network based on prevailing travel patterns and land uses. Since Hercules and the surrounding areas of western Contra Costa County are for the most part a bedroom community, it was assumed that morning peak trips would originate in the Hercules area and that these same trips would return to the Hercules area during the afternoon peak (4:00 to 6:00 p.m.). It was also assumed that the mode of access shown in Table 4.1-3 would also be the mode of egress during the afternoon peak. It is assumed that there would be no "reverse commuting" such as traveling from San Francisco to Hercules during the morning commute. Of the 232 morning peak period trips, approximately 157 are automobile trips. During the afternoon peak period, of the 292 peak period daily boardings, approximately 196 are automobile trips.

Table 4.1-3
Rail Boardings by Mode of Access (2035)

Mode	% Boardings	Number of Boardings Peak Period	
		Morning[1]	Afternoon
Drive Alone	38.6%	90	113
Dropped Off/Picked Up	23.1%	54	67
Walk	16.5%	38	48
Bike	11.5%	27	34
Transit	2.45%	6	7
Carpool[2]	7.9%	18	23
Total	100%	232	292

Source: Fehr &Peers 2009.
[1] Number of Boardings for the morning peak period were derived from the Fehr & Peers December 2009 Memorandum.
[2] Assumes 2.5 person occupancy per vehicle.

Automobile Trip Distribution

The automobile trip distribution pattern for the intermodal transit center was determined based on existing travel patterns and on the nearby complementary land uses. As shown in **Table 4.1-4,** Hercules ITC Trip Distribution, trips coming from the north or south would access the intermodal transit center via San Pablo Avenue. Trips originating from the eastern part of Hercules would use Sycamore Avenue. The remaining trips would be internal to the project area. Because the proposed intermodal transit center would not generate substantial new employment

or draw people to the site, it is assumed that the intermodal transit center would provide transit services to existing commuters and not generate new trips. Rather, these trips would come from the regional roadway and transit network and be diverted to the intermodal transit center.

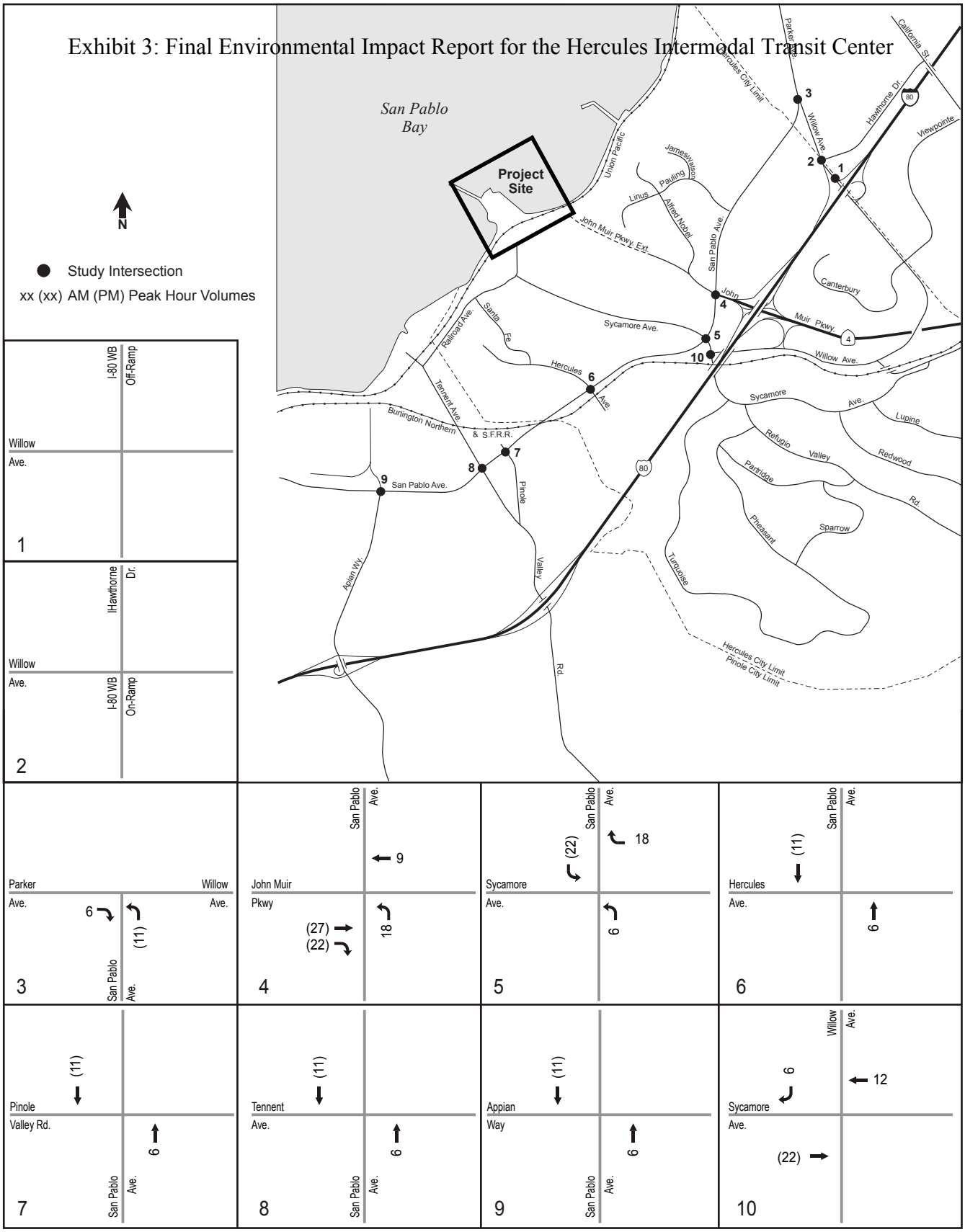
Table 4.1-4
Hercules ITC Trip Distribution

Origin/Destination	Percent Distribution to/from Hercules ITC (Parcel K) garage
San Pablo Avenue (northbound)	10%
Interstate 80 (northbound)	10%
State Route 84 (eastbound)	5%
Refugio Valley via Palm	5%
Refugio Valley via Willow Avenue	15%
Interstate 80 (southbound)	10%
San Pablo Avenue (southbound)	10%
Hercules Residential	35%
Source: DKS Associates. February 2010. Based on Fehr & Peers data emailed to DKS January 14, 2010.	

Automobile Trip Assignment

After the trip distribution was established, each auto trip was assigned to the roadway network based on the most logical route from its respective geographical zone. Based on the Hercules ITC project trip generation, trip distribution, and trip assignment, the proposed project is expected to generate 40 morning peak hour trips and 71 evening peak hour trips. The proportions of these trips that would travel through the study intersections were used for the intersection LOS analysis under project scenario. San Pablo Avenue is used for trips originating in Pinole or Rodeo, while Sycamore Avenue carries most of the Hercules trips. Access to the intermodal transit center would be provided via Sycamore Avenue and Railroad Avenue, and via the planned transit loop roadway connecting to John Muir Parkway. Afternoon egress, and "drop-off" egress trips were assigned to John Muir Parkway or Sycamore Avenue first, depending on the final destination. These trips were then assigned to San Pablo Avenue or SR-4. **Figure 4.1-2** Peak Hour Project Trips, illustrates the project trip assignment at the study intersections. **Figure 4.1-3** Project Conditions Peak Hour Volumes, shows the project scenario intersection volumes.

If either of the action alternatives is selected, regional automobile trips to the south, to the Hercules ITC, or to the north would be removed from the network in their present form to reflect a shift from auto travel to the ITC. This would result in fewer regional trips on I-80 but more trips on the local network, especially at the San Pablo Avenue/Sycamore Avenue intersection and the San Pablo Avenue/John Muir Parkway intersection.



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1 in = 3,200 ft (at letter layout)

0 200 400 800 Meters

0 800 1,600 3,200 Feet

Figure 4.1-2: Peak Hour Project Trips

City of Hercules
Hercules Intermodal Transit Facility
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources. No Warranty is made for its accuracy or completeness.
Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey.
Data is State Plane Feet, NAD83 Zone 3

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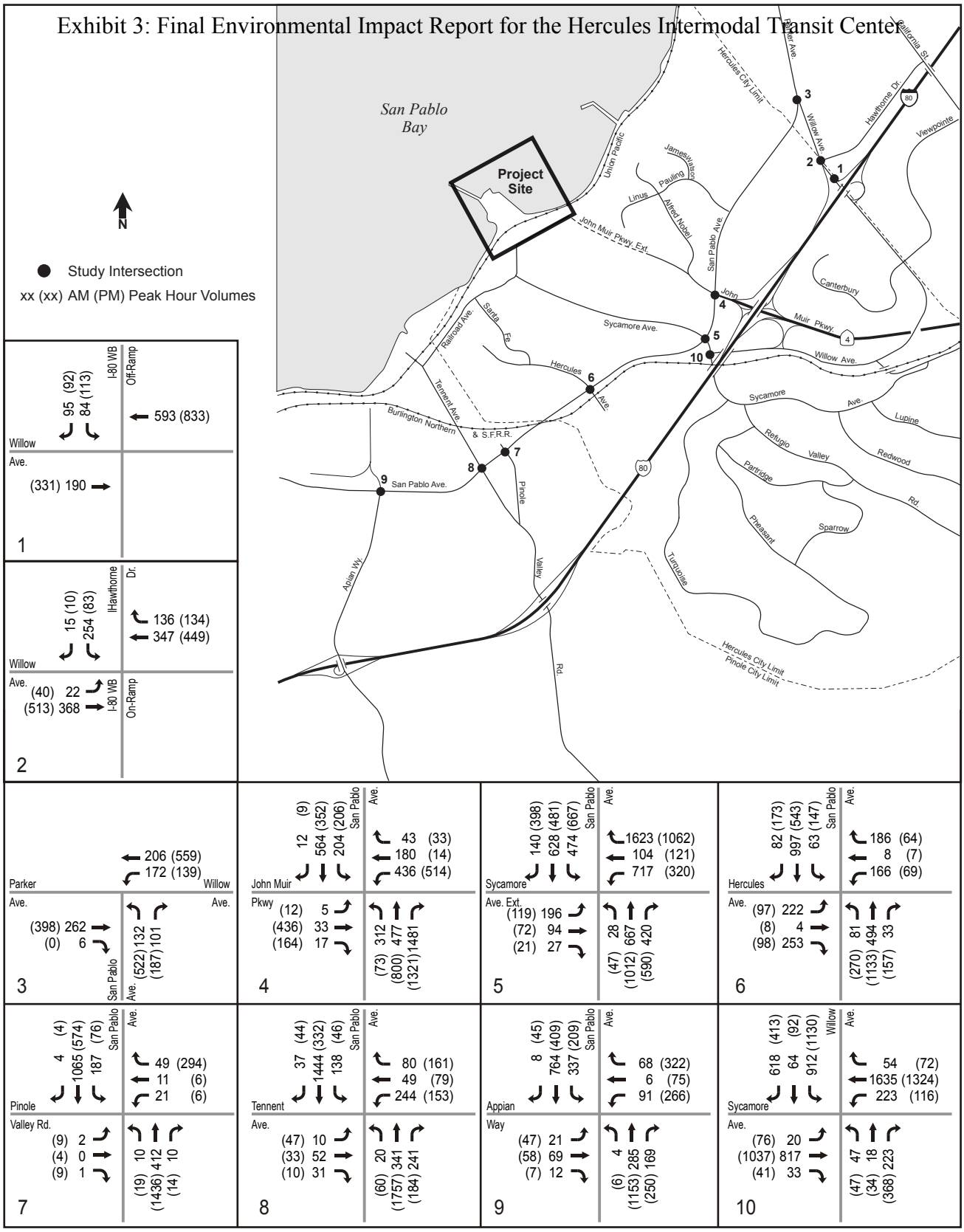

1 in = 3,200 ft (at letter layout)

N

0 200 400 800 Meters

0 800 1,600 3,200 Feet

Figure 4.1-3: Project Conditions Peak Hour Volumes

City of Hercules
Hercules Intermodal Transit Facility
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources. No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey.
Data is State Plane Feet, NAD83 Zone 3

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In summary, the Hercules ITC project is forecasted to generate 232 inbound park-and-ride automobile trips, including 54 "drop off" automobile trips during morning peak hours. During afternoon peak hours, the intermodal transit center is forecasted to generate 292 outbound park-and-ride automobile trips, including 67 "drop-off" automobile trips.

The automobile trips were distributed based on existing travel patterns and nearby complementary land uses. Automobile trips were assigned to the roadway network and local intersections based on the most logical routing from these zones.

Alternative 2

Beyond the intersection of Bayfront Boulevard and John Muir Parkway the roadway configuration, traffic effects, and transportation conditions would be the same for either alternative and traffic conditions described above for Alternative 1 would be the same for Alternative 2 except that the two looped driveways from John Muir Parkway would provide separate vehicle access for commuter bus/paratransit drop-off and turnaround and for passenger vehicle drop-off. The driveways would slope upward from the street to the pedestrian plaza.

Impacts to Intersection Level of Service

Impact TRANS-1: The proposed Hercules ITC project would not cause a substantial increase in traffic relative to the existing traffic load and capacity of the street system under the Future Baseline conditions.

No-Action Alternative

Under the No-Action Alternative, the proposed Hercules ITC project would not be built, and no vehicle trips would be generated. Under the No-Action alternative, the intersection of Sycamore Avenue/Willow Avenue is expected to continue to function at a deficient level of service, but no additional adverse effects to intersection level of service related to increased vehicle trips would occur. The potential beneficial impacts of the project, which could reduce traffic congestion at local intersections by reducing the number of passenger vehicles and increasing transit use, would also not occur.

The City is considering relocating the I-80/SR-4 ramp at Willow further to the east and, according to the recently released Redevelopment Plan, this would improve traffic conditions at this intersection. This improvement is not included in the analysis but would, if approved, improve sufficiently to avoid a deficient level of service.

Alternatives 1 and 2

The proposed Hercules ITC project would not cause a substantial increase in traffic relative to the existing traffic load and capacity of the street system under the Future Baseline conditions (less than significant).

The estimated vehicle trips generated by the Hercules ITC project as described in the previous section were added to the Future Baseline Scenario Morning and Afternoon peak hour

intersection volumes. The resulting Project Scenario intersection volumes are shown above on Figure 4.1-3.

Table 4.1-4 Project Scenario Level of Service Summary, summarizes the Project Scenario weekday peak hour intersection LOS analysis results. Detailed calculation work sheets are provided in Appendix E. According to the City of Hercules intersection LOS standards, the 10 study intersections would continue to operate at acceptable levels of service for the project scenario with the exception of the Sycamore Avenue/Willow Avenue intersection. This intersection would continue to operate at LOS E during morning peak hours and LOS F during afternoon peak hours. However, the proposed Hercules ITC project would increase intersection volumes by about 1 percent at this intersection. Because the Sycamore Avenue/Willow Avenue intersection would already operate at a less than acceptable level in the Future Baseline Scenario, the addition of Project Scenario traffic would not result in a significant impact.

Mitigation: No mitigation is required.

CEQA Determination: Impact is less than significant.

Table 4.1-4
Project Scenario Level of Service Summary

Intersection Number	Intersection	Morning Peak Hour		Afternoon Peak Hour	
		V/C Ratio[1]	LOS	V/C Ratio [1]	LOS
1	Willow Avenue/I-80 WB off-ramp	0.221	A	0.308	A
2	Willow Avenue/Hawthorne Drive	0.301	A	0.241	A
3	San Pablo Avenue/Willow Avenue	0.220	A	0.445	A
4	San Pablo Avenue/John Muir Parkway	0.524	A	0.720	C
5	San Pablo Avenue/Sycamore Avenue	0.933	**E**	0.833	D
6	San Pablo Avenue/Hercules Avenue	0.598	A	0.534	A
7	San Pablo Avenue/Pinole Valley Road	0.480	A	0.582	A
8	San Pablo Avenue/Tennent Avenue	0.651	B	0.709	C
9	San Pablo Avenue/Appian Way	0.362	A	0.683	B
10	Sycamore Avenue/Willow Avenue	0.979	**E**	1.098	**F**

Source: DKS Associates 2010.
[1]Volume to Capacity Ratio
***Bold** indicates an intersection operating at unacceptable LOS E or LOS F.*

Impacts to Transit Service

Impact TRANS-2: The proposed Hercules ITC project would result in increases in transit ridership.

No-Action Alternative

Under the No-Action Alternative, the proposed Hercules ITC would not be built and no new or increased transit options or service would be provided. No adverse impacts to the existing transit system would occur. However, the potential beneficial impacts of the project, which could rationalize and improve local and regional transit service, and provide new transit options for local commuters, would also not occur.

Alternatives 1 and 2

The proposed Hercules ITC project would result in slight increases in transit ridership.

As discussed in the Purpose and Need, the purpose of the proposed Hercules ITC project is to increase local and regional mobility and transportation options by providing new and expanded transit services with intermodal connections to facilitate use of public transit ridership. Together with the rail terminal, the proposed project includes a local and regional express bus transit terminal. The WestCAT would operate the local and express bus service.

Under Alternative 1, all bus service would access the intermodal transit center via John Muir Parkway at Bayfront Boulevard and a planned transit loop roadway. A passenger loading and unloading area for local and regional buses would be provided along the transit loop roadway.

Under Alternative 2, the transit terminal would be located adjacent to the parking structure and would include layover spaces to serve intermodal transit center passengers. Bus service would be provided at the terminal located off of the John Muir Parkway extension, adjacent to the intermodal transit center and parking structure. Access to the rail platform would be provided by a raised walkway.

According to the trip generation and mode of access analysis, approximately two-percent of peak hour rail ridership would take transit to access the intermodal transit center. This equates to approximately seven multi-modal passengers (rail passengers transferred from transit) during the peak hour in 2035. The average weekday transit boardings for WestCAT in 2035 are projected to be 11,600 (MTC 2008). Under either alternative, the incremental increase in passenger demand should be accommodated by the additional, re-routed transit service at the intermodal transit center.

Mitigation: No mitigation is required.

CEQA Determination: The impact of the project would be less than significant.

Parking Impacts

Impact TRANS-3: The proposed Hercules ITC project would not increase parking demand that may exceed the available parking supply.

No-Action Alternative

Under the No-Action Alternative, the proposed Hercules ITC would not be built and there would be no increase in demand for parking in the project vicinity. No adverse impacts to the existing parking supply would occur. However, the potential beneficial impacts of the project, improving intermodal transit connections, attracting automobile commuters to transit, and reducing overall private vehicle use and the attendant demand for parking, would also not occur.

Alternatives 1 and 2

Alternative 1 of the proposed Hercules ITC project would result in increased parking demand that may exceed the available parking supply in the short-term.

According to the mode-of-access analysis, there would be a park-and-ride demand of 189 vehicles during afternoon peak hours. A parking supply analysis was conducted for both project alternatives to determine if the provided parking capacity would be sufficient. A longer term horizon of year 2035 was used to reflect ridership projections at full build-out, and so that the analysis would conservatively reflect the full potential for future parking demand and supply, as a shorter horizon year may not capture the full potential parking demand.

Under Alternative 1, the proposed project would provide approximately 150 interim surface parking spaces. In the absence of additional surface parking spaces or the planned parking structure, this would result in a deficit of 39 parking spaces. Under Alternative 2, the proposed project would provide 385 parking spaces within a proposed parking structure. With a projected park-and-ride demand of 189 vehicles, there would be a sufficient supply of parking.

Mitigation Measure TRANS-3: The 150-space surface parking lot proposed under Alternative 1 shall be expanded or alternative parking capacity, such as shared or off-site parking, shall be identified to accommodate the expected demand of 189 park-and-ride vehicles during afternoon peak hours. Alternatively, measures to reduce parking demand, such as bus or shuttle service from the Hercules ITC or remote lots, shall be implemented.

CEQA Determination: For both Alternatives 1 and 2, potential impacts related to parking would be to less than significant with implementation of **Mitigation Measure TRANS-3**.

Safety Impacts

Impact TRANS-4: Construction of the proposed Hercules ITC project will introduce additional large (haul) trucks and other related traffic that could result in potentially adverse safety impacts to pedestrians, bicyclist and/or other motorists.

No-Action Alternative

Under the No-Action Alternative, the proposed Hercules ITC project would not be built, and therefore there would be no project-related increase in haul truck or other construction-related traffic. No adverse impacts related to pedestrian, bicycle and/or other motorist safety would occur.

Alternative 1

Construction activities that would generate off-site heavy construction traffic include removal of the surcharge material currently located on site, as well as removal of other excavated materials, and importation of construction material. It is estimated that approximately 6,500 truck trips (based on a 10-cubic-yard truck without a "pup" trailer). Because the architectural designs and plans have not yet been finalized, only a rough estimate of the quantity of material required to be brought onto the site is available. Based on the 30 percent design report, it is estimated that approximately 300 truck trips would be required to bring construction materials onto the site. Additionally, the method for constructing the new track has not yet been finalized, so it is currently not known whether the new track material (including track, ties, signals, and turnouts) would be brought in by train or truck. It can also be assumed that most of the 600 workers associated with the project would travel by motor vehicle to and from the site while working on the project. Construction traffic can be expected to occur throughout the entire 18 month construction period. Construction traffic would increase the number of heavy vehicles using the local roadways adjacent to the Hercules ITC site; however, the quantity of construction traffic associated with the project is not expected to result in a significant adverse effect to the safety impacts to pedestrians, bicyclists and/or other motorists in the area surrounding the Hercules ITC site.

Alternative 2

Construction traffic would be the same for Alternative 2 (East of Refugio Creek) as that described above for Alternative 1 (West of Refugio Creek).

Mitigation Measure TRANS-4: To reduce hazards to vehicles on local roadways, the City shall ensure that its primary construction contractor implements the following measures:

- Develop and implement a traffic safety plan in coordination with the City. The construction contractor shall develop a plan for traffic safety assurance for the local roadways in the project vicinity. The contractor shall submit the plan to the City Public Works Department for approval review before the initiation of construction-related activity that could adversely affect traffic on local roadways. The plan shall include the following elements:
    - Posting warnings about the potential presence of slow-moving vehicles;
    - Using traffic control personnel when appropriate;
    - Scheduling truck trips outside of peak morning and evening traffic periods to the extent feasible;

- Placing and maintaining barriers and installing traffic control devices necessary for safety, as specified in Caltrans's Manual of Traffic Controls for Construction and Maintenance Works Zones and in accordance with City requirements;
- Maintaining routes for passage of emergency response vehicles through roadways affected by construction activities.
- Training construction personnel in appropriate safety measures as described in the plan, and implementing the adopted plan.
- Assessing damage to roadways used during construction and repairing all potholes, fractures, or other damages.
- Maintaining emergency access during construction. Notifying and consulting with emergency service providers and undertaking measures necessary to maintain emergency access and facilitate the passage of emergency vehicles on city streets.

CEQA Determination: With implementation of **Mitigation Measure TRANS-4**, this impact will be less than significant.

Impact TRANS-5: The proposed Hercules ITC project would not result in increased hazards to pedestrians or bicyclists or conflicts with adopted policies, plans, or programs promoting walking or bicycling due to operation of the project.

No-Action Alternative

Under the No-Action Alternative, the proposed Hercules ITC project would not be built, and therefore there would be no project-related increase in pedestrian or bicycle activity in the project vicinity. No adverse impacts related to pedestrian and bicycle safety would occur. However, the potential beneficial impacts of the project, which would provide new pedestrian- and bicycle-accessible transit options and reduce the distance many pedestrian and bicycle commuters would need to travel to reach transit service, also would not occur. Under the No-Action Alternative, the Bay Trail link would remain unbuilt until another, unknown, development initiative constructs the trail segment.

Alternatives 1 and 2

The proposed Hercules ITC project would not result in increased hazards to pedestrians or bicyclists or conflicts with adopted policies, plans, or programs promoting walking or bicycling.

Approximately 28 percent of the peak hour ridership (65 morning riders and 82 afternoon passengers) would access the Hercules ITC by non-motorized means. For pedestrians, access along the adjacent roadway network would continue to be accommodated by the provided sidewalks that connect the surrounding neighborhood to the Hercules ITC or by planned sidewalks and pedestrian paths that would be required as part of the planned surrounding transit-oriented development. For bicyclists, a bike lane is provided on San Pablo Avenue from Willow Avenue to Hercules Avenue. West of San Pablo Avenue, bicyclists would share Sycamore

Avenue with motor vehicles to access the Hercules ITC. The Bay Trail and Creekside Trial would also provide bicyclists and pedestrians with separate access to the Hercules ITC.

The study intersections are currently signalized and equipped with pedestrian crossing signals and crosswalks. The expected increase in vehicular traffic volumes at these intersections would not significantly impact pedestrian or bicycle movements. However, the project site plans do not identify bicycle parking facilities. Therefore, the project's impact related to conflicts with adopted policies, plans, or programs promoting walking or bicycling would be potentially significant. To minimize impacts to pedestrians and bicyclists associated with the proposed project, the following mitigation measure shall be implemented.

Mitigation Measure TRANS-5: Final design of the Hercules ITC project shall provide bicycle parking spaces to further encourage bicycle access to the site. The trip generation and mode of access analysis indicates that 34 bicycle riders would board the train, and therefore, it would be appropriate to provide roughly 40 bicycle parking spaces at the Hercules ITC to meet the expected demand and provide some additional parking for high volume days. Additionally, the current draft design includes 12 bicycle storage lockers.

The final design should also provide for bicycle lanes along the future John Muir Parkway extension.

CEQA Determination: For both Alternatives 1 and 2, impacts related to the promotion of bicycling would be less than significant with implementation of **Mitigation Measure TRANS-5**.

Access and Circulation Impacts

Impact TRANS-6: The internal design of the Hercules ITC project would not result in impacts on vehicle site access and circulation.

No-Action Alternative

Under the No-Action Alternative, the proposed Hercules ITC project would not be built. No adverse impacts related to site access or circulation would occur.

Alternatives 1 and 2

The internal design of the Hercules ITC project would not result in impacts on vehicle site access and circulation.

Project access and circulation were analyzed for both alternatives of the proposed project. The site plans (Figures 2.2-1 and 2.2-18) indicate access from the John Muir Parkway extension and from Bayfront Boulevard. These roadways would allow for two-way vehicular circulation.

Under Alternative 1, transit vehicles would access the Hercules ITC from John Muir Parkway, following the transit loop roadway to the west to drop off and pick up passengers directly in front of the terminal. "Drop-off" vehicles would access the passenger drop off zone, located on the east side of transit loop roadway across the street from the transit drop-off, by turning right (westbound) or left (eastbound) from Bayfront Boulevard. Other vehicles traveling westbound on

John Muir Parkway would turn left at Bayfront Boulevard to reach the driveway for the structured parking, or turn left into the proposed surface parking lot. Vehicles traveling eastbound on Bayfront Boulevard would turn left into the parking structure or right to reach the surface parking lot. The project design includes crosswalks, sidewalks, curbs, and islands where feasible to separate pedestrians and bicyclists from vehicular traffic. Emergency vehicles would have access from Bayfront Boulevard to the north into the UPRR ROW and connect to the west end of the station platform.

Under Alternative 2, vehicles traveling westbound on John Muir Parkway would turn right into the project site to park at the proposed parking structure while vehicles traveling eastbound on Bayfront Boulevard would turn left. Two looped driveways from John Muir Parkway would provide separate vehicle access for commuter bus/paratransit drop-off and turn-around and one for passenger vehicle drop-off. This alternative includes a three-level parking structure located east of Refugio Creek.

The overall project internal design would provide acceptable site access and would not create significant conflicts with existing traffic patterns. No adverse internal circulation impacts related to the proposed project are anticipated.

Mitigation: No mitigation is required.

CEQA Determination: No significant or potentially significant impact would occur.

4.1.4. Cumulative Impacts and Mitigation

The traffic analysis also found that the Hercules ITC would have not result in any cumulative adverse effects to the intersections within the study area. Although several intersections in the study area would operate at less than acceptable levels in 2035 and project-related traffic would contribute to traffic volumes, the project would not result in a significant impact at these intersections. **Tables 4.1-5** and **4.1-6** provide a level of service comparison for all study intersections during the a.m. and p.m. peak-hour, respectively.

CEQA Determination: Cumulative effects associated with traffic and transportation systems from other identified projects are not considered significant.

Table 4.1-5
LOS Comparison Summary – A.M. Peak

Intersection Number	Intersection	Cumulative No Project		Cumulative with Project		Difference Project vs. No Project Delay	Potentially Significant Impact?
		Delay	LOS	Delay	LOS		
1	Willow Avenue/I-80 WB off-ramp	0.591	A	0.591	A	0.000	No Impact
2	Willow Avenue/Hawthorne Drive	0.781	C	0.781	C	0.000	No Impact
3	San Pablo Avenue/Willow Avenue	0.806	D	0.807	D	0.001	No Impact
4	San Pablo Avenue/John Muir Parkway	0.764	C	0.780	C	0.016	No Impact
5	San Pablo Avenue/Sycamore Avenue	0.859	D	0.865	D	0.006	No Impact
6	San Pablo Avenue/Hercules Avenue	0.758	C	0.758	C	0.000	No Impact
7	San Pablo Avenue/Pinole Valley Road	0.889	D	0.889	D	0.000	No Impact
8	San Pablo Avenue/Tennent Avenue	1.138	F	1.138	F	0.000	No Impact
9	San Pablo Avenue/Appian Way	0.624	B	0.626	B	0.002	No Impact
10	Sycamore Avenue/Willow Avenue	0.656	B	0.660	B	0.004	No Impact

Notes: Intersections operating below acceptable LOS are in bold.
Source: DKS Associates 2010

Table 4.1-6
LOS Comparison Summary – P.M. Peak

Intersection Number	Intersection	Cumulative No Project		Cumulative with Project		Difference Project vs. No Project Delay	Potentially Significant Impact?
		Delay	LOS	Delay	LOS		
1	Willow Avenue/I-80 WB off-ramp	**0.938**	**E**	**0.938**	**E**	0.000	No Impact
2	Willow Avenue/Hawthorne Drive	0.733	C	0.733	C	0.000	No Impact
3	San Pablo Avenue/Willow Avenue	0.712	C	0.712	C	0.000	No Impact
4	San Pablo Avenue/John Muir Parkway	**1.239**	**F**	**1.253**	**F**	0.030	No Impact
5	San Pablo Avenue/Sycamore Avenue	**1.103**	**F**	**1.110**	**F**	0.015	No Impact
6	San Pablo Avenue/Hercules Avenue	0.755	C	0.755	C	0.000	No Impact
7	San Pablo Avenue/Pinole Valley Road	**1.108**	**F**	**1.108**	F	0.000	No Impact
8	San Pablo Avenue/Tennent Avenue	**1.259**	**F**	**1.259**	F	0.000	No Impact
9	San Pablo Avenue/Appian Way	**1.366**	**F**	**1.366**	F	0.000	No Impact
10	Sycamore Avenue/Willow Avenue	0.762	C	0.762	C	0.000	No Impact

Notes: Intersections operating below acceptable LOS are in bold.
Source: DKS Associates 2010

4.2. LAND USE, PLANS AND POLICES

This section discusses the potential impacts of the Hercules ITC alternatives on lands uses within the project area. The analysis will focus on the project components that would be considered an impact to the current planned land uses and zoning designations in accordance with the various regulatory authorities governing the proposed site for each of the alternatives, including the no-action alternative.

4.2.1. Methodology

The analysis in this section focuses on the compatibility of land uses between existing and planned land uses proposed for the project site. The determination of the potential impacts was extracted from a review of the applicable federal, state, and local plans and policies. The land use and zoning designations in the project site include undeveloped public-open space and waterfront-commercial land intended primarily for mixed-use development.

4.2.2. Significance Criteria

The analysis for this section will address the criteria listed below for each of the proposed alternatives, with the purpose of determining any potential impacts under NEPA and CEQA guidance. The proposed project would be considered to have potential adverse impacts to the environment if the proposed project alternatives would exceed any of the following Standards of Significance regulations from Appendix G of the State CEQA Guidelines and definition of significance in the Council on Environmental Regulations (40 CRF Sec. 1508.27):

- Physically divide an established community causing a disruption in the community cohesion, either directly or indirectly.
- Conflict with applicable land use plan, policy, or regulation or an agency with jurisdiction over the project (including, but not limited to, the General Plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.
- Conflict with any applicable habitat conservation plan or natural community conservation plan.

4.2.3. Impacts and Mitigation

No-Action Alternative

Under the No-Action Alternative, the proposed Hercules ITC project would not be implemented. Consequently, the No-Action Alternative would not result in the construction of an intermodal transit center with a potential adverse impact or physical division of the community, or conflict with any of the applicable and existing habitat conservation or natural community conservations plans, policies, and regulations. There would be no direct or indirect land use impacts as a result of the No-Action Alternative. However, the No-Action Alternative would be inconsistent with City plans and policies, especially with the Waterfront Initiative, which proposes the development of the proposed project.

Action Alternatives

The potential impacts related to land use are temporary effects on land uses and include temporary impacts to pedestrian traffic flow during construction activities. The impacts would be essentially the same for the proposed Alternatives 1 and 2. The potential impacts resulting from these alternatives will be addressed jointly in the discussion below.

Construction Impacts and Mitigation

Impact LU-1: Potential of temporary affects or displaced land uses in or near the project sites resulting from construction activities.

Construction activities associated with the implementation of each of the proposed alternative actions would require landside construction activities. The landside construction activities would take place during Phase 1 of the proposed project's development and would include the train station, John Muir Parkway extension, Bayfront Bridge, Transit Loop roadway and bridge, and temporary surface parking areas. The Bay Trail would be temporarily affected during construction, and then re-routed through the Plaza of the completed Hercules ITC.

Alternatives 1 and 2. Construction activities associated with the John Muir Parkway and Bayfront extensions and the bridge construction could result in potential temporary affects to the existing land use. During construction activities, pedestrian access flow through the existing trail could be affected; however, these potential temporary impacts would not be considered adverse. Furthermore, because the project area has been proposed as an area intended for mixed-use TOD, development and construction activities would not conflict with the land use designations of the project area. No further adverse impacts are anticipated.

Mitigation: No mitigation is required.

CEQA Determination: The proposed project could potentially result in temporary affects to the existing land uses within the project area as a result of construction activities. Temporary impacts would be mainly associated with the John Muir Parkway Extension and the construction of the bridge; the potential affect would be on pedestrian flow through the existing trails. However, the impacts would be less than significant.

Operation Impacts and Mitigation

Community Disruption and Displacement

Impact LU-2: Potential disruption or displacement of existing land uses or communities.

Alternatives 1 and 2. No adverse impact is expected to result from the implementation of the proposed alternatives. The project area has been designated and intended to be converted into a mixed-use area with the intent of developing the proposed intermodal transit center. No existing structures are found in the proposed project area; consequently, there would be no project-specific impacts or adverse disruption to land uses or communities.

Mitigation: No mitigation is required.

CEQA Determination: The proposed alternative actions would not result in disruption or displacement of existing land uses or communities; therefore, the potential impacts resulting from the proposed alternative actions would be less than significant.

Land Use Compatibility with Plans, Policies, and Regulations

Impact LU-3: Potential conflict with exiting plans, policies, and regulations governing the areas at and near the proposed alternatives.

The plans identified below are described in Section 3.2.

BCDC-San Francisco Bay Plan (2008)

Alternatives 1 and 2. The proposed alternatives are consistent with the BCDC Bay Plan Recreation and Public Access policies which require development along the shore line to provide public access to the Bay shoreline and recreational facilities. The proposed alternatives will integrate these elements by integrating public paths and extensions to existing trails into the project design. During Phase 1 of Alternative 1, the Bay Trail Class I would be developed; also, a Waterfront Promenade, approximately 500-ft long of public space and extending approximately 26 ft wide along the proposed Transit Loop Drive would be integrated into the project design.

The BCDC Bay Plan states the need of a permit for any development in and within 100 feet of the Bay. The proposed project site for both Action Alternatives is within 100 feet of the San Francisco Bay and subject to the BCDC jurisdiction. Assuming permit approval, no adverse impacts are anticipated.

Mitigation: No mitigation is required.

CEQA Determination: The proposed project anticipates no potential adverse impacts conflicting with the Bay Plan policies and regulations. The proposed actions would be in compliance with the BCDC guidelines and policies; therefore no potentially significant impact would occur.

City of Hercules General Plan -Land Use Element and Open Space/Conservation Element

Alternatives 1 and 2. Development of the Hercules ITC is subject to the General Plan guidelines and policies. In accordance with Government Code Section 65566, the proposed project is consistent with the General Plan, and specifically with the policies of the Open Space Element of the General Plan. Phase 1 of the proposed project would involve the development of recreational and public open space facilities in compliance with the Land Use and Open Space/Conservation Element objectives and policies. Therefore, no adverse impacts are anticipated.

Mitigation: No mitigation is required.

CEQA Determination: The implementation of the proposed alternative actions would not conflict with the General Plan. No potentially significant impacts are anticipated to occur.

Waterfront District Master Plan (WDMP)

Alternative 1. The project at the Alternative 1 location would be consistent with the City's zoning regulations as set forth in the WDMP. The WDMP envisions and plans for the transit center to be located at the Alternative 1 site. The WDMP also plans for the roadway improvements that are part of the proposed project, including John Muir Parkway extension, Transit Loop and Bayfront Boulevard. The realignment and improvements to Refugio Creek would also be consistent with the WDMP.

Mitigation: No mitigation is recommended.

CEQA Determination: The proposed project at the Alternative 1 location would be consistent with the City's zoning regulations.

Alternative 2. The project at the Alternative 2 location would be inconsistent with City's zoning regulations as set forth in the WDMP. The WDMP designates the transit center at the Alternative 1 site. Also the exclusion of Transit Loop would be inconsistent with the WDMP. Alternative 2 does not include Transit Loop.

Mitigation: No mitigation is required.

CEQA Determination: The implementation of Alternative 2 would be inconsistent with the WDMP. The WDMP, as amended by the Waterfront Master Plan Initiative, can only be changed by the consent of the owner of the land or by a vote of the people in the City. The City is not the owner of the land under Alternative 2.

4.2.4. Cumulative Impacts and Mitigation

The proposed project area is designated primarily as mixed-use and public open space. Under the City's redevelopment plans, the project area has been designated predominantly as an area to be developed into a mixed-use area. Consequently, the development of the Hercules ITC would be fulfilling the City's redevelopment plan's anticipated vision and no cumulative impacts are anticipated as a result of the proposed project implementation.

CEQA Determination: Cumulative impacts associated with land use, plans and policies from other identified development projects are not considered significant.

4.3. SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

4.3.1. Methodology

Economic effects can be expected in the vicinity of the Hercules ITC when construction workers frequent local businesses, from construction traffic that delays business, or from transit riders who conduct business going to or from the transit center. Economic effects may extend to a larger area because construction materials and workers can be drawn from the regional, national, or even international market depending upon the scale and complexity of the project. For this project, any project related economic effects are expected to be experienced in both the project vicinity, as well as the greater San Francisco Bay Area because all of the construction materials and workers required to build and operate the facility are likely to be available within daily driving distance of the site.

Economic effects from project construction and operation are assessed to determine if they would have a reasonable likelihood of causing more than a minor effect within the area of potential effect, have been raised as an issue during the public scoping process, or are otherwise controversial. Social and economic effects typically addressed in NEPA environmental documents include changes to: population; employment; tax base; local businesses; housing communities and community cohesion; and community facilities.

4.3.2. Significance Criteria

Socioeconomics

Historical and projected data were analyzed to determine whether the project alternatives would result in potential impacts on employment, population, and housing. A socioeconomic impact would be considered adverse if the project would:

- Directly or indirectly induce substantial population growth;
- Displace or create severe hardship for a substantial number of people, housing, or businesses; or
- Disrupt or separate a neighborhood, including transportation improvements that could change traffic patterns.

Environmental Justice

For this analysis, it is reasonable to expect that any potential social effects would be limited to the new residential units located within one-half mile of the Hercules ITC and, to a lesser extent, the surrounding City and portions of Pinole. This constitutes the general “draw area” for Hercules ITC users and would make up the area of potential effect for the social analysis. The area of potential social effects, including the Environmental Justice analysis, consists of U.S. Census Tract 3591.01 of Contra Costa County that includes the project site, the rest of the City ., and portions of the City of Pinole. Including additional census tracts would make the analysis inclusive of nearly all of the expected riders but would also include a large number of residents

who are outside the ridership "draw area" for the project and distort the composition of the social community.

As described in detail below, the best available census data indicate that the minority population of the census block/tract/group is greater than 50 percent and the project would be subject to an Environmental Justice analysis. Potential effects to low-income population does not need to be addressed because the percentage of the population living below the poverty level does not exceed 50 percent of the total nor is it greater than the surrounding area.

Because racial or ethnic minority residents live in the vicinity of the project site, the potential effects of project construction and operation on these residents need to be addressed in this environmental document to ensure that they are not disproportionately affected in terms of:

- Adverse effects to human health;
- Destruction or disruption of man-made or natural resources;
- Diminution of aesthetic values;
- Disruption of community cohesion;
- Adverse employment effects;
- Displacement of persons;
- Adverse effects to businesses or farms,
- Increased traffic congestion; and,
- Isolation or separation of low-income or minority individuals within a given community or from the broader community.

4.3.3. Impacts and Mitigation

No-Action Alternative

Under the No Action-Alternative, the proposed Hercules ITC would not be implemented. Consequently, the No-Action would not result in the construction of an intermodal transit center with a potential adverse impact on socioeconomics or environmental justice. Therefore, there would be no construction or operation impacts to socioeconomics or environmental justice, and they would remain the same as the existing setting.

Action Alternatives

Because the two alternatives are very similar in size, location, and potential environmental effects, they are not differentiated in the socioeconomics and environmental justice discussions below.

Impact SOCIO-1: The project alternatives would not result in significant adverse socioeconomics impacts.

Alternatives 1 and 2. Construction of the proposed project is expected to cost approximately $50 million and employ roughly 600 workers during the 18 month construction period. Operation of the facility may employ a small number of workers. The proposed project includes development of a bus-to-train connection that is projected to serve 837 riders per day (Fehr & Peers 2009) and construction of a surface parking lot, and in the future, a transit area garage for up to 425 automobiles (Fehr & Peers 2009). The proposed project would improve access to public mass transit and would be an amenity to nearby residents and a benefit to workers in the vicinity of the Hercules ITC. Other than providing a transfer point for the proposed Hercules ITC, transit service to and from the nearby Hercules Transit Center is not expected to change as a result of the proposed project. The majority of Hercules ITC patrons are expected to come from the new residential units located within one-half mile of the transit center and the surrounding cities of Hercules, Pinole, and Rodeo-Crockett (Fehr & Peers 2009).

The San Francisco Bay Area is a large metropolis with over 7 million residents and a well-developed construction industry. Construction workers are likely to be available within the San Francisco Bay Area and would not need to move into the area for the project. Construction of the facility is, therefore, unlikely to generate a measurable increase in the population of the area. Operation of the facility would not directly generate more than a minimal number of jobs for maintenance activities or to work at the café, and these workers would likely come from the surrounding area as well. The project is unlikely to have more than a minor effect on population or employment in the area.

The Hercules ITC site currently does not generate any substantial tax revenues because it is undeveloped and no economic activity occurs on the site. Construction of the facility would generate minor tax revenues from the purchase of construction materials, income tax from workers, and spending in the local economy by construction workers. These tax revenues would be a minor benefit for the local jurisdiction and would end when the project is complete. Local businesses would experience a minor increase in activity during construction of the facility from sales of consumer goods such as lunches and other small items to construction workers and they may continue to experience improved sales to commuters using the facility. However, because the facility would serve fewer than 1,000 daily commuters, the volume of sales to commuters would be limited. Operation of the café would generate a small amount of tax revenues, but this is expected to be minor. Because the Hercules ITC would be a governmental activity, operation of the facility would not generate any tax revenues. Changes to tax revenues associated with the project would be minor.

Construction of the project would increase the demand for construction materials and workers, and local businesses would be able to compete for the construction contracts. Although the cost to construct the project is expected to be roughly $50 million, it would be a small project compared with other major public works projects in the San Francisco Bay Area. Local businesses would also experience a temporary benefit from spending by construction workers, but these effects are expected to be minor, temporary, and localized. Within the San Francisco Bay Area that constitutes the economic area of potential effect, these benefits would be minor.

Because the site is currently undeveloped, construction of the proposed project would not require the acquisition of any housing units and the project would not add to the number of housing units available in the area. As described above, the project is not expected to draw workers from outside the area, and the demand for housing would be unaffected.

The proposed project would provide a new access to public mass transit and this would benefit the newly constructed transit-oriented community located south of the Hercules ITC site, as well as the surrounding communities. Public transit could be expected to increase social interactions between transit riders and this would be a beneficial effect of the project. Because daily ridership is expected to be less than 1,000 people, this would have only a minor effect.

The proposed project would not include acquisition of any community facilities, nor would it change or deny access to any of these facilities. Because the project would not increase population in the area, it would not increase the use of any community facility.

The proposed project would provide a socioeconomic benefit by increasing transit options and improving transit services for nearby residents and businesses and this could reduce the time and cost of travel.

Mitigation: No mitigation is required.

CEQA Determination: Less than significant

Impact SOCIO-2: The project alternatives would not result in disproportionately adverse impacts to minorities, ethnic groups, or low-income households.

Alternatives 1 and 2. Potential project impacts to human health effects include potential adverse air quality and noise effects. The results of the air quality and noise evaluations conducted for the Hercules ITC project, shown in Sections 4.7 and 4.8 of this document, found no significant adverse effect (only modest effects) to either air quality or noise. Because of the absence of significant environmental effects, there would be no significant or disproportionate adverse effect to an environmental justice population living in the area.

The project would redevelop a former explosives/fertilizer production site that is currently vacant and unused by the public. Selecting either of the action alternatives would improve the man-made resources at the site and would neither destroy nor disrupt any man-made resources that might be used by an environmental justice population.

Selection of either Alternative 1 or 2 would not result in the destruction or disruption of any b resource, including subsistence resources, currently used by members of an environmental justice population. The natural resources of the site are described in detail in Section 3.9 Biological Resources.

The visual impacts of the project are described in Section 4.5 of this document. As discussed in this section, the aesthetic values of the site are expected to improve with construction of either of the action alternatives.

Because the site is currently unoccupied and there is no public access through the site, the project would not divide communities or reduce access through the site, and constructing either of the action alternatives would not disrupt community cohesion. Construction of the Bay Trail through the site would improve access and might increase community interactions and strengthen community cohesion.

Because the site is vacant, the proposed project would not reduce employment or require the displacement of any residents.

As discussed in detail in Section 4.1 Traffic and Transportation, both Alternatives 1 and 2 would increase localized traffic congestion as nearby residents travel to and from the Hercules ITC. Traffic congestion would be mitigated, to the maximum extent practicable, by roadway and highway improvements. Because the project increases access to public mass transit, traffic congestion in the broader community would decrease as additional commuters use the Hercules ITC and reduce trips by private vehicles. Additionally, the proposed project would not reduce public transit at the existing Hercules ITC. Localized traffic congestion would be an impact, but it would not fall disproportionately on the minority community in Hercules and the broader APE.

As stated above, the proposed project would not displace any residents, divide any community, or reduce access within a community. The proposed project would increase access from the south of the site to the north by way of the trail improvements and, at some point in the future, by connection of John Muir Parkway to Linus Pauling Drive. Minority individuals would also have improved access to public mass transit and could experience an increase in community and community interaction as a result of this improved access.

Mitigation: No mitigation is required.

CEQA Determination: Neither Alternative 1 nor 2 would have any significant adverse environmental effect on socioeconomics or environmental justice, either from construction or operation of the project. Beyond implementation of roadway improvements proscribed in the Section 4.1 Traffic and Transportation, no further mitigation measures are required. The impact would be less than significant.

4.3.4. Cumulative Impacts and Mitigation

As the area redevelops and more people live and work at the site of the former Hercules Powder Company, the public transit access provided at the Hercules Intermodal Center can be expected to become a more valuable social and economic asset and the beneficial socioeconomic effects can be expected to increase.

CEQA Determination: Cumulative impacts associated with socioeconomics and environmental justice from other identified development projects are not considered significant.

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4.4. CULTURAL RESOURCES

The proposed project site was once the site of an extensive factory, owned by the Hercules Power Company and the early period railroad, with many structures and features. As a result of subsequent demolition, no intact standing structures remain. The features noted on the surface during this investigation are disturbed remnants of complex facilities that survived demolition. None of these loci are considered eligible due to a lack of integrity.

A buried prehistoric period site P-07-002570, (CA-CCO-750) was identified during a fiber optic trench monitoring project and recorded by Cervantes and Tremaine (2000 *unpublished*) at a depth of 104 to 140 cm below the surface. The site is within the study area but is, as far as is known, outside the APE. However, the fact that there is a buried site close to the APE (within 100 feet) suggests the possibility that site could extend beneath the APE at depth. The area of the APE where the burial site is found occurs is within the Bayside Trail west of Hercules Point. If the trail is maintained in an as-is condition, or even resurfaced to a depth of no more than 10 centimeters, no potential impacts to site P-07-002570, if it exists buried beneath the trail, are anticipated.

4.4.1. Significance Criteria

During project preconstruction, construction, and operation phases, direct or indirect impacts to cultural resources may occur. Direct impacts are those that may result from the immediate disturbance of resources including vegetation or fill removal, off-road vehicle travel over the surface, various grading, trenching or other earth moving activities, or altering the setting of a resource. Indirect impacts are those that may result from increased erosion due to project clearance and preparation, staging, or from inadvertent damage or increased opportunities for vandalism due to improved surface visibility or access. Consideration of effects or impacts applies under both NHPA and CEQA. Under CEQA Guidelines Section 15126.4, impacts to archeological sites should be avoided. Preservation in place is the preferred alternative for cultural resources, when feasible.

When federal resources are involved, a project adheres to requirements of the NHPA and other federal mandates. Under the NHPA, a resource needs to be evaluated in terms of eligibility for the National Register of Historic Places (NRHP). If a site is determined to be an eligible or "historic property," impacts are assessed in terms of "effects." An effect means "alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register." A formal finding of effect including the SHPO consultation is needed for evaluation of cultural resources. If a property is determined "not eligible," then no determination of effect, or mitigation measures is necessary.

In accordance with CEQA (Section 15064.5 and Appendix F), a project would have a significant adverse impact to cultural resources if it would:

- Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5;

- Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to Section 15064.5;

- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature; or

- Disturb any human remains, including those interred outside of formal cemeteries.

As per CEQA guidelines, Section 15064.5(b)(2) a "substantial adverse change" in the significance of a resource is defined as physical demolition, destruction, relocation, or alteration of the resource or its immediate setting such that the significance of the resource would be materially impaired. The significance of a resource is materially impaired when a project demolishes or materially alters, in an adverse manner, those physical characteristics:

- Of a historic resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the CRHR;

- That account for its inclusion in a local register of historic resources pursuant to Public Resources Code Section 5020.1(k) or its identification in an historical resources survey meeting the requirements of Public Resources Code, Section 5024.1(g), unless the public agency reviewing the effect of the project establishes, by a preponderance of evidence, that the resource is not historically or culturally significant; or

- Of a historic resource that convey its historical significance and that justify its eligibility for inclusion in the CRHR as determined by a lead agency for purposes of CEQA.

4.4.2. Impacts and Mitigation

No-Action Alternative

Under the No-Action Alternative, the project site would remain undeveloped and there would be no adverse environmental effects. The site would, however, remain available for other development alternatives. While studies are on-going for Track Option B, it is expected that Track Option B will have a similar level of impact as the project alternatives based on the review of record search and field verification conducted to date.

Action Alternatives

Impact CULT-1: The potential to adversely affect unidentified archaeological resources during construction

Alternatives 1 and 2 and Track Option B. Record search and survey results indicate that there are no significant cultural resources on the surface of the APE, however, there are known cultural resources in the area. While the surface of the project area has been heavily altered and severely impacted, prehistoric and historic period archaeological sites could occur in buried contexts. Finds indicating prehistoric deposits may include shell, flaked, and ground stone tools, bone, and darkened soil. Historic period deposits are indicated by the presence of ceramics, glass, metal, milled lumber, and other refuse. The presence of known buried sites in and around

the proposed Project indicates the possibility that other buried resources could be discovered. If such finds are encountered, the Project would result in a significant impact.

Mitigation Measure CULT-1: Prior to construction, construction personnel shall be briefed regarding what to do in the event buried cultural materials are encountered. If cultural materials (artifacts, shell, bones, dark soil, etc.) are uncovered, work shall be stopped temporarily at the discovery location, and within a 100-foot-wide buffer zone around it. The City, or its agent, shall be immediately notified. The City will retain a qualified archaeologist who will examine, document, and evaluate the find. The archaeologist shall then consult with appropriate agencies to development mitigation measures to implement prior to resumption of further construction at the discovery point. The archaeologist shall oversee implementation of these mitigation measures once they have been determined.

CEQA Determination: This impact would be less than significant with implementation of **Mitigation Measure CULT-1.**

Impact CULT-2: The potential to adversely affect unidentified human remains during construction

Alternatives 1 and 2 and Track Option B. There is no evidence suggesting that human remains are present in the project area. There are no recorded cemeteries. However, there is always the possibility human remains could be encountered during any earth-moving endeavor, even when considered unlikely. If such finds are encountered, the project would result in a significant impact.

Mitigation Measure CULT-2: Prior to construction, construction personnel shall be briefed regarding procedures to follow in the event buried human remains are encountered. Once encountered, work should stop immediately at the discovery point, and within a 100-foot-wide buffer zone around it. The City, or its agent, shall be immediately notified. The Contra Costa County coroner shall be contacted immediately to examine and evaluate the find. The procedures presented in CEQA Guidelines, Section 15064.5(e)(1) will be followed. If the coroner determines that the remains are Native American, the City will contact the Native American Heritage Commission in accordance with Health and Safety Code Section 7050.5, and PRC 5097.98. The City shall insure that the discovery site and buffer zone are not damaged further until the City has consulted with the mostly likely descendants regarding their recommendations for treatment.

CEQA Determination: This impact would be less than significant with implementation of **Mitigation Measure CULT-2**.

Impact CULT-3: The potential to adversely affect unidentified paleontological resources.

Alternatives 1 and 2 and Track Option B. There are no known significant paleontological remains (vertebrate) located within the Project area, and the ground surface is largely disturbed and largely covered with fill. Regardless, construction activities at the proposed project could result in adverse impacts to undiscovered paleontological resources. Impact would be less than significant with mitigation measures incorporated.

The project area is largely made of fill and extremely altered landscapes. The Monterey sandstone and possible overlying Pleistocene age deposits that may contain fossils that might underlie project area soils and fill. It is possible to discover significant fossil deposits even in areas thought to have low potential. Construction excavation could expose and have an adverse impact on undiscovered paleontological resources. Following construction, operation of new facilities would not require actions that could expose paleontological resources and would not result in an impact to any such resources. This impact would be reduced to a less than significant level with implementation of the following mitigation measure.

Mitigation Measure CULT-3: Prior to construction, construction personnel shall be briefed regarding what to do in the event buried cultural or paleontological materials are encountered. If paleontological materials (bones, shells, leaf prints, etc.) are uncovered, work shall be stopped temporarily at the discovery location, and within a-100 foot wide buffer zone around it. The City, or its agent, shall be immediately notified. The City will retain a qualified paleontologist who will examine, document, and evaluate the find. The paleontologist shall then consult with appropriate agencies to develop procedures to implement prior to resumption of further construction at the discovery point. The paleontologist shall oversee implementation of these procedures once they have been determined.

CEQA Determination: This impact would be less than significant with implementation of **Mitigation Measure CULT-3**.

4.4.3. Cumulative Impacts and Mitigation

It is unlikely that the Project could have significant cumulative effects on cultural resources. Minimally, future project development within Hercules would be subject to CEQA-level review and would be required to mitigate impacts to cultural resources to a less than significant level. If any inadvertent finds are made during construction, an incremental effect to cultural resources may result. If the finds are evaluated and managed properly, no cumulatively considerable effect to cultural resources is anticipated.

CEQA Determination: Cumulative impacts associated with cultural resources from other identified development projects are not considered significant.

4.5. VISUAL AND AESTHETIC RESOURCES

The following section identifies and describes visual and aesthetics changes that would result if the two action alternatives were implemented. The existing visual landscape surrounding the Hercules ITC action alternatives sites, as described in Section 3.5, provides the baseline data for comparing the No-Action Alternative with the visual and aesthetic quality of the area after the project is implemented.

4.5.1. Methodology

Field visits were conducted to the sites of the Hercules ITC action alternatives. In addition to the field observations, the visual impact assessment is based on the review of project materials including topographic maps, project drawings, and technical data supplied by the Hercules ITC project design team, and aerial and ground-level photographs of the project area. During the field visits, photos were taken from different viewpoints and perspectives to illustrate the existing visual quality of the area surrounding each site. The photos were used as graphic examples of the existing visual and aesthetic setting. In addition, architectural design drawings were created to illustrate the how the proposed project would appear if the Hercules ITC was fully developed. These drawings were used to create conceptual renderings of the station, building, bridges, and other features of the fully-developed Hercules ITC as it would appear from various viewpoints, as shown on **Figures 4.5-1 and 4.5-2**. Alternative 2 would be a smaller version of the Hercules ITC, consisting of basically the station building, pedestrian bridge, platform structures, and other transit-related features but located on the eastern side of Refugio Creek. The design of the individual structures would be of similar for both alternatives.

Impacts have been determined according to the significance criteria listed below. Views across the project site out into the Bay and views on the land were used to indicate whether the scale of the surrounding landscape or the visual resources that distinguish these landscapes were substantially altered. If the proposed project substantially alters the visual context to result in adverse visual impacts, the impact was described and mitigation measures were recommended. In accordance with CEQA guidelines, the significance of the impact after mitigation was determined. As construction activities are temporary duration and of limited range, such activities would not permanently alter visual conditions, and thus the analysis focuses on long-term or operational effects.

4.5.2. Significance Criteria

As indicated in the Regulatory Framework described in Section 3.5, Aesthetics and Visual Resources, the principal regulations that govern design for new construction and limit the appearance, height, and bulk of a new project are local and regional. As such, CEQA guidelines tend to reinforce the issues addressed in permitting new construction. For the NEPA analysis involving transportation improvement projects, FTA considers the effect of the project alternatives on scenic vistas and scenic resources, as well as substantial light and glare. CEQA also considers these criteria in addition to those that provide a more local perspective of the scale or visual character of the surrounding landscape. Impacts are determined to be adverse if the project would:

- Create a substantial effect on a scenic vista;
- Substantially alter or obstruct scenic resources, including trees;
- Substantially degrade the visual character or quality of the site;
- Substantially contrast with the scale and context of the surrounding landscape; or
- Create a new source of light or glare which would affect views in the area.

The project would have no impact on scenic resources within a State scenic highway, as there are no scenic routes located within the vicinity of the project site, and no scenic routes on the project site that would be affected by the proposed project. Since there would be no project-specific impacts related to this issue, no further analysis is necessary.

4.5.3. Impacts and Mitigation

No-Action Alternative

The No-Action Alternative would leave site conditions as they presently are and does not include projects that would change the visual landscape, either temporarily or permanently, along the City waterfront area, although the planned development on adjacent parcels is anticipated to eventually occur. No visual or aesthetic impacts would result from the No-Action Alternative,. However, there would also be no beneficial effect from redeveloping the project site(s) or restoration of Refugio Creek.

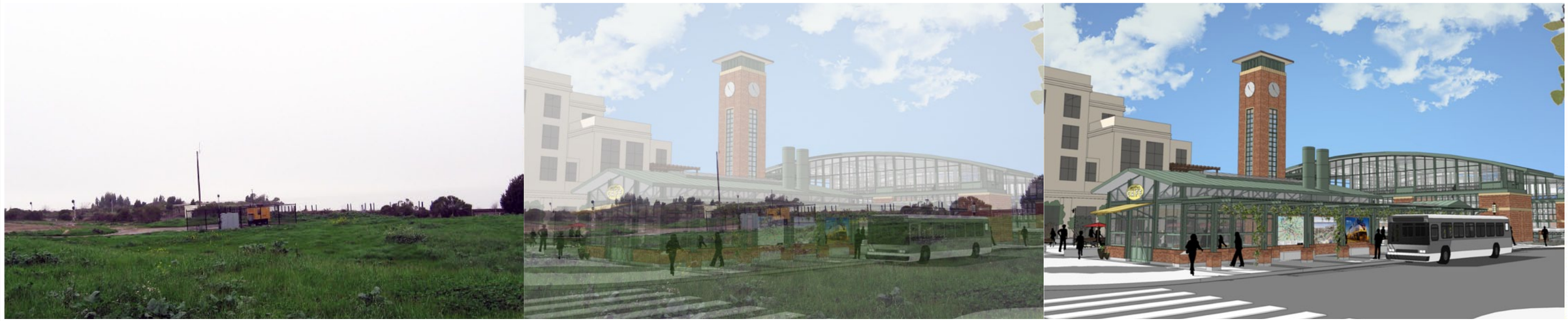
Action Alternatives

Scenic Vistas

Impact VAR-1: Implementation of the project could result in a substantial adverse effect on a scenic vista.

Alternative 1

The project site is very prominent in the City waterfront area, so it is viewed from the adjacent open space, residential, and commercial land uses to the south, east, and north, as well as by boaters on San Pablo Bay. Views of San Pablo Bay are available from the project site as well as from these surrounding uses. This alternative would develop a transit terminal building, a public plaza, and a pedestrian bridge near the west side of Refugio Creek on a parcel that is presently undeveloped. These structures would be visible within the currently expansive views from the developed areas and the Refugio Creek watershed toward San Pablo Bay.



View From Corner at Bayfront Blvd.

View From Transit Plaza

Figure 4.5-1: Conceptual renderings of Hercules ITC

HDR 2365 Iron Point Road, Suite 300
Folsom, CA 95630-8709

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HDR 2365 Iron Point Road, Suite 300
Folsom, CA 95630-8709

Figure 4.5-2: View of ITC from Transit loop and Promenade facing southwest

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Both Action Alternatives include the restoration of the Refugio Creek North Channel, which would greatly improve the aesthetic appearance of this location. The present creek channel would be restored to a more natural state, with a new meandering low-flow channel and enlarged marsh that would improve hydraulic and ecological function. The marsh would gradually increase the floodplain width to a maximum of approximately 200 feet upstream of Bayfront Bridge, with the construction of a new outlet to San Pablo Bay. Restoration work in the channel would include planting of native plant species.

In addition, a ten-foot-wide multipurpose trail flanked by landscaping and a split rail fence would also be constructed along the creek's eastern edge; this trail (known as Creekside Trail) would ultimately connect to the future multipurpose Bay Trail to be constructed adjacent to the UPRR tracks as part of the Hercules ITC. This trail would serve as a pathway for bicyclists and pedestrians, connecting users from John Muir Parkway near the North Channel along the east bank of Refugio Creek with the Hercules ITC facility across Bayfront Boulevard.

The proposed Hercules ITC would be visible or partially visible from certain areas in the City, such as the existing adjacent residential areas, the planned residential and commercial development to the west, south, and east in the proposed Hercules Bayfront Project in the Waterfront area, the planned extension of John Muir Parkway, and from Hercules Point to the north. Distant views of the project would also be visible from some residential areas at higher elevations east of I-80, and from residential areas along the shoreline in Hercules and Rodeo, north of the project site. The Hercules ITC site would be visible as well from part of the planned Hilltown residential development west of I-80. The project site; however, would be partially screened by existing residential structures and other development, and intervening topography. With the exception of the clock tower, the proposed Hercules ITC would be of sufficiently low elevation as to not obscure views of distant scenic landscape features such as the Bay or shoreline that are currently seen by receptors from these locations.

The Hercules ITC's visibility from receptors in nearby residential areas would vary depending on proximity and elevation; most of the residential area directly south of the project site is relatively flat and only slightly elevated above the project site level, and from most viewpoints, that existing residential development would serve to screen the Hercules ITC. The eventual planned Bayfront mixed use development project would partially or completely block views of the Hercules ITC from many nearby viewpoints. The residential development in the southwestern part of the Hercules Village is at higher elevations and Hercules ITC would be visible to receptors at this location against the backdrop of San Pablo Bay, the Rodeo shoreline, and the distant northern shoreline along the Bay. To better maintain views for adjacent receptors, the design scheme for the terminal waiting area and platforms would have northern and southern sides of these structures constructed of plate glass (Figure 4.5-1), which would serve to provide a nearly uninterrupted view from the plaza and Bayfront Boulevard of the Bay and the shorelands to the north.

To receptors at viewpoints to the north and northeast, including the residential areas along the shoreline in cities of Hercules and Rodeo, and in the business park to the northeast, the Hercules ITC would appear against the backdrop of the low promontory across the tracks to the south. The Hercules ITC elements would be visible during daylight hours, but not prominent in these views, as they would generally appear lower in profile than the background areas. During the

evening, night lighting would make the project more visible over the short - term, especially from viewpoints along John Muir Parkway to the east. Over the longer term, the Hercules ITC project would be seen against the backdrop of the Hercules Bayfront Project, and would appear less prominent from receptors to the north and east. Intervening topography would screen the Hercules ITC from receptors south of Sycamore or Railroad Avenues.

Waterside receptors would be able to see the Hercules ITC from San Pablo Bay north of Hercules Point. As seen from waterborne viewpoints, the Hercules ITC would appear against the backdrop of existing and planned residential and commercial development and the existing rail line. The Hercules ITC structure would be prominent only from receptors nearer the shore viewpoints. Generally, from most waterborne viewpoints, the elements of the Hercules ITC would appear to be lower in height than most of the buildings behind it, and would be seen in the context of existing urban development. Although the proposed 80-foot clock tower would appear as a prominent visual feature of the site, the tower has been designed to complement the appearance of the Hercules ITC and the Bayfront Project adjacent to it, and is not anticipated to represent an adverse visual change. As seen from these vantage points, the proposed Hercules ITC is compatible with the structures beyond, and this would not be considered a significant change. As such, no scenic views or vistas from waterborne receptors would be significantly impacted.

As part of the project's regulatory review process, the City has included BCDC Bay Plan policies on appearance, design, and scenic views, which provide guidelines for enhancing the visual quality of development around the Bay, while preserving views of the Bay and shoreline. The City has extensively consulted with local, State, and federal natural resources and permitting agencies regarding the planning and design process for the proposed Hercules ITC. Public meetings and design review workshops have been conducted as well to solicit comments from the general public.

Additionally, the City's Design Review Subcommittee and Planning Commission and the BCDC, would review all proposed development, City and County ordinances, and policies related to architectural design apply to the Hercules ITC project. With implementation of this review process and design controls, the proposed Hercules ITC project would not result in significant aesthetic and visual impacts to scenic vistas of the Bay and its associated shoreline.

Mitigation: No mitigation is required.

CEQA Determination: Implementation of Alternative 1 would not result in a substantial adverse effect on a scenic vista, and the impact is less than significant.

Alternative 2

Development of Alternative 2 would also be phased like Alternative 1 and the components would be similar. The main difference between the two action alternatives is that Alternative 2 would not construct the Transit Loop Drive and bridge, and the transit-related facilities would be located east of Refugio Creek on the planned new John Muir Parkway extension. Previous considerations for Alternative 2 included a proposal for a conference center and banquet facility. In response to feedback received at community and public workshops; however, this

consideration was removed. Two looped driveways from John Muir Parkway would provide separate vehicle access for commuter bus/para-transit drop-off and turnaround, and for passenger vehicle drop-off. A three-level parking structure would be located along John Muir Parkway, adjacent and east of the proposed transit center. As this alternative would have more structures than Alternative 1, it represents somewhat more visibility than the previous alternative. Otherwise, the visibility of these structures within the vicinity of the shoreline and Bay would be very similar to those described for Alternative 1. The proposed station, pedestrian bridge, and railroad platform structures would be of similar design as for Alternative 1 and would have similar appearance against the vista of the Bay. As the development of the Bayfront Project advances, the features of the Hercules ITC would blend more with its surroundings and would even be partially screened by some of the development's structures, and would not significantly intrude into a scenic vista. With the implementation of the required review process, design controls, and other measures described under the Alternative 1 discussion, the effects to scenic vistas by the Hercules ITC would be similar to those described for Alternative 1, also resulting in a less than significant impact.

Mitigation: No mitigation is required.

CEQA Determination: Implementation of Alternative 2 would not result in a substantial adverse effect on a scenic vista and the impact would be less than significant.

Track Option B

Implementation of Track Option B would have temporary construction impact to residents of the Victoria by the Bay and users of the Bay Trail in the Victoria by the Bay subdivision by temporarily limiting visibility of the shoreline and Bay and of distant vistas during construction. Construction of Track Option B would expose sensitive receptors at these locations to limited views of the Bay and environs for up to 3 months during construction activity. Due to the temporary nature of this activity, Track Option B would result in a less than significant impact to scenic vistas.

Mitigation: No mitigation is required.

CEQA Determination: Implementation of Track Option B would not result in a substantial adverse effect on a scenic vista and the impact would be less than significant.

Visual Character

Impact VAR-2: Implementation of the project would alter the existing visual character of the project site but would not substantially degrade the existing visual character or quality of the site and its surroundings. Construction activities could temporarily degrade the visual quality of the site and its surroundings.

Alternative 1

The proposed Alternative 1 station building would be constructed on Bayfront Boulevard, west of Refugio Creek on the south side of the project site. The station would include an additional upper level to provide access over the UPRR tracks to an approximately 25,100-square-foot

passenger waiting area and train platform building. Also proposed in Alternative 1 is a bridge (primarily for pedestrian use) that would connect the Railroad Plaza to Hercules Point. The bridge would provide pedestrian access over the railroad tracks to the planned Hercules Point park and recreation area. The bridge is an integral component of the overall project design and its appearance would be in character with the rest of the project. The proposed project would introduce built elements into a presently undeveloped, open landscape setting. Existing features include railroad tracks and the rubble and debris from the demolition of the explosives factory. Adjacent to the site on the west, there are extensively graded land parcels for the Bayfront Project. The nearest existing developments include residential and commercial uses / buildings to the south and west of the site. The Refugio Creek channel and open space characterize the lands to the east, with Hercules Point, San Pablo Bay, and the shorelines that define them to the north.

The proposed project site itself is a former industrial complex and is heavily disturbed from its past use and its demolition. The shoreline portion of the site is generally lined with rip-rap and stone ballast along the railroad grade. The site has been graded and most of the vegetation has been removed, leaving some scattered brush, but mostly non-native grasses and weeds. Project plans for the site include the removal of any remaining demolition debris, and landscaping for the Hercules ITC. Vegetation removal would be mitigated by planting new landscaping on the project site and by restoration and enhancement of the Refugio Creek channel and marshlands on Hercules Point.

To better blend in, the design for the Alternative 1 Hercules ITC terminal would be of generally similar scale to existing nearby development, and with design of the planned development of the waterfront area. With the exception of the clock tower, the Hercules ITC would be constructed at a somewhat lower elevation than much of the nearby developed areas and would not be visually prominent to most landside off-site receptors. As the adjacent Bayfront Project development progresses, the Hercules ITC would become less visually prominent from existing receptors as it would be partially screened by the new development and visually blend in. The Hercules ITC would be; however, visible to receptors at typical public vantage points of the planned mixed-use development of the Bayfront Project. Project structural plans would utilize exterior design and building materials similar to those already in use or planned for nearby development, such as masonry, stucco, wood, colors, painted finishes, and glass. Project design and construction would be in accordance with the architectural design guidelines developed in coordination with the public through multiple community and public workshops and in coordination with the BCDC Design Review Board in accordance wit the BCDC Bay Plan policies on appearance, design, and scenic views, as well as the design standards of the City's Waterfront Master Plan. The architectural style of the finished Hercules ITC would visually merge with those of the planned commercial and residential development of the Bayfront Project that would fill in around it. The project would contribute to a coherent appearance in the existing neighborhood through the use of similar materials and by coordination with planned development.

The design for the passenger waiting area and rail platform would include a steel, arched roof canopy that would cover the pedestrian bridge and portions of the rail platforms, but leave the railroad tracks exposed. The glass of photovoltaic cells on top of these structures would be glare-resistant. The terminal would also include a clock tower, approximately 80 feet tall. Except for the clock tower, most component features, would not be as visually prominent in most distant

views, as they would be constructed at lower elevations than nearby development and would be screened by both existing structures and those planned for the remainder of the waterfront area. As the clock tower would be a prominent sight for many people, the project sponsors designed visual character of the tower to consider the views from such receptors and have a generally pleasant appearance. As the development of the surrounding area progresses, the clock tower would eventually become partially screened by other structures of varying heights and would eventually blend in with its surroundings to appear less prominent in the viewshed, resulting in a less than significant impact.

Train traffic moving through the terminal is an established local visual condition that would be consistent with existing visual conditions at the site and would not represent a significant change to visual character.

Visual conditions during construction operations at the site would include various types of construction equipment, materials staging areas, construction-force parking areas, construction fencing, and construction-related debris. Although this would represent a temporary visual condition and would be mostly limited to the site itself, it would be an unsightly condition for nearer receptors. Although temporary, such conditions represent an impact on visual quality of the project site. However, with the application of **Mitigation Measure VAR-2,** temporary visual disruptions would be reduced to less than significant.

Mitigation Measure VAR-2: The City shall require the contractor to remove construction debris and dispose of it at a licensed facility on a daily basis. In the event daily disposal is not determined to be practical, it must be stored on site as far from residential receptors as feasible and be screened from view. The contractor would also be required to remove any debris, mud or other soils from the site that was deposited on public roadways by construction-related traffic. Construction equipment and crew parking areas are to be staged in an orderly manner and as far as possible from existing residences. Site conditions are to be left in a clean and orderly manner at the end of each working day.

CEQA Determination: Implementation of Alternative 1 would not substantially degrade the existing visual character or quality of the site and its surroundings. Construction activities could temporarily degrade the visual quality of the site and its surroundings; however, with the contractual construction site maintenance stipulations of **Mitigation Measure VAR-2** properly executed, temporary visual degradation would be less than significant.

Alternative 2

The main difference between the two action alternatives would be that Alternative 2 would not require construction of the Transit Loop Drive and bridge, while the transit-related facilities would be located east of Refugio Creek. The facilities that differ from Alternative 1 include the transit terminal, which would be located east of Refugio Creek on the planned John Muir Parkway extension near its intersection with Bayfront Boulevard.

The rail platform and pedestrian bridge would be similar to those described for Alternative 1 and their related impacts to visual quality would be similar to those described for that alternative as well, and would be less than significant. Potential temporary visual degradations during

construction activities would also be mitigated to less than significant s with the application of **Mitigation Measure VAR-2** described above.

Both Action Alternatives would enhance the appearance of the area by removing the unsightly rubble, weeds, and other debris that presently litter the project site.

Mitigation: Implement **Mitigation Measure VAR-2**.

CEQA Determination: As the project will be designed to the required City and BCDC standards, the implementation of Alternative 2 would not substantially degrade the existing visual character or quality of the site and its surroundings. Construction activities could temporarily degrade the visual quality of the site and its surroundings; however, with the contractual construction site maintenance stipulations of **Mitigation Measure VAR-2** properly executed, temporary visual degradation would be less than significant.

Track Option B

Implementation of Track Option B would temporarily degrade the visual quality of the site and its surroundings. Specifically, the residents of Victoria by the Bay and users of the Bay Trail in the Victoria by the Bay subdivision would experience limited visibility of the shoreline, Bay, and of distant vistas during construction for a period of up to 3 months. Due to the temporary nature of this activity, Track Option B would result in a less than significant impact to relative to the visual degradation of the site and its surroundings.

Mitigation: No mitigation is required.

CEQA Determination: Implementation of Track Option B would not result in a substantial adverse effect on degrading visual quality of the site and surroundings and the impact would be less than significant.

Light and Glare

Impact VAR-3: Implementation of the project would create new sources of substantial light and glare, and would result in unavoidable significant adversely- affected day or nighttime views in the project area.

Alternative 1

At present, the proposed project is an undeveloped parcel with no internal sources of light. What existing sources of light there are, currently come from mobile sources, such as passing trains along the Capitol Corridor line, or from vehicles along Bayfront Boulevard. Adjacent sources of light include street lights and exterior lighting from nearby developed areas.

Implementation of Alternative 1 of the proposed Hercules ITC would introduce new nighttime sources of light and glare that would include exterior and safety lighting from the station, the railroad platform, Creekside Park and Plaza, pedestrian walkways, and parking facilities. The large window panels of the station structure would emit interior light from the waiting area and would also become a source of night time glare. To minimize glare from the window areas, light

will be directed down or interior to the structures to minimize external glare and light spillage **(Figure 4.5-3).** The increased number of vehicles entering and leaving the site would also be sources of night time light and glare. New sources of potential daytime glare include pavement, windows, roofs, and exterior surfaces of project structures.

Most of the glare from moving vehicles would be temporary, would be mostly limited to those months of the year when nightfall occurs before the evening peak hour commute, and would combine within the visual character of roadways with other moving vehicles in the through-traffic. The mobile and limited peak- hour nature of vehicle glare from the Hercules ITC would be considered less than significant.

The Hercules ITC facilities would be located adjacent to open space and previously unlit areas. Existing and planned residential areas, which generate their own light and glare, including those to the southeast, south, and southwest of the project site, would be affected by these additional light sources. New light sources may represent a potentially significant impact to light-sensitive land uses, including nearby residential areas. To minimize potential impacts to light-sensitive receptors, the Hercules ITC lighting design scheme would generally consist of a low-voltage lighting control system consisting of relay/contactor panel(s), control switches, occupancy sensors, photocells, and other controlling devices. The general operation of lighting and controlled loads shall include the following:

- Interior Lighting: Manual switch control on/off with automatic time-scheduled shut off.
- Scheduled On/Off Loads: Time on/off by automatic time schedule with after hour override capability and shutoff.
- Exterior Lighting: Photocell or astronomic time on/off, time on/photocell, or astronomic off.

The system would include a rail-mounted automation module, photocontrol module, and/or other low voltage control devices. These devices are totally compatible with the manual operation of the dataline switches.

Exterior lighting control would consist of two photo electric cells, which will turn on three circuits at sunset, and a time switch that would turn off Part Night circuits at times determined by Hercules ITC management. All Night and exterior emergency circuits would be turned on and off by photo electric cells.

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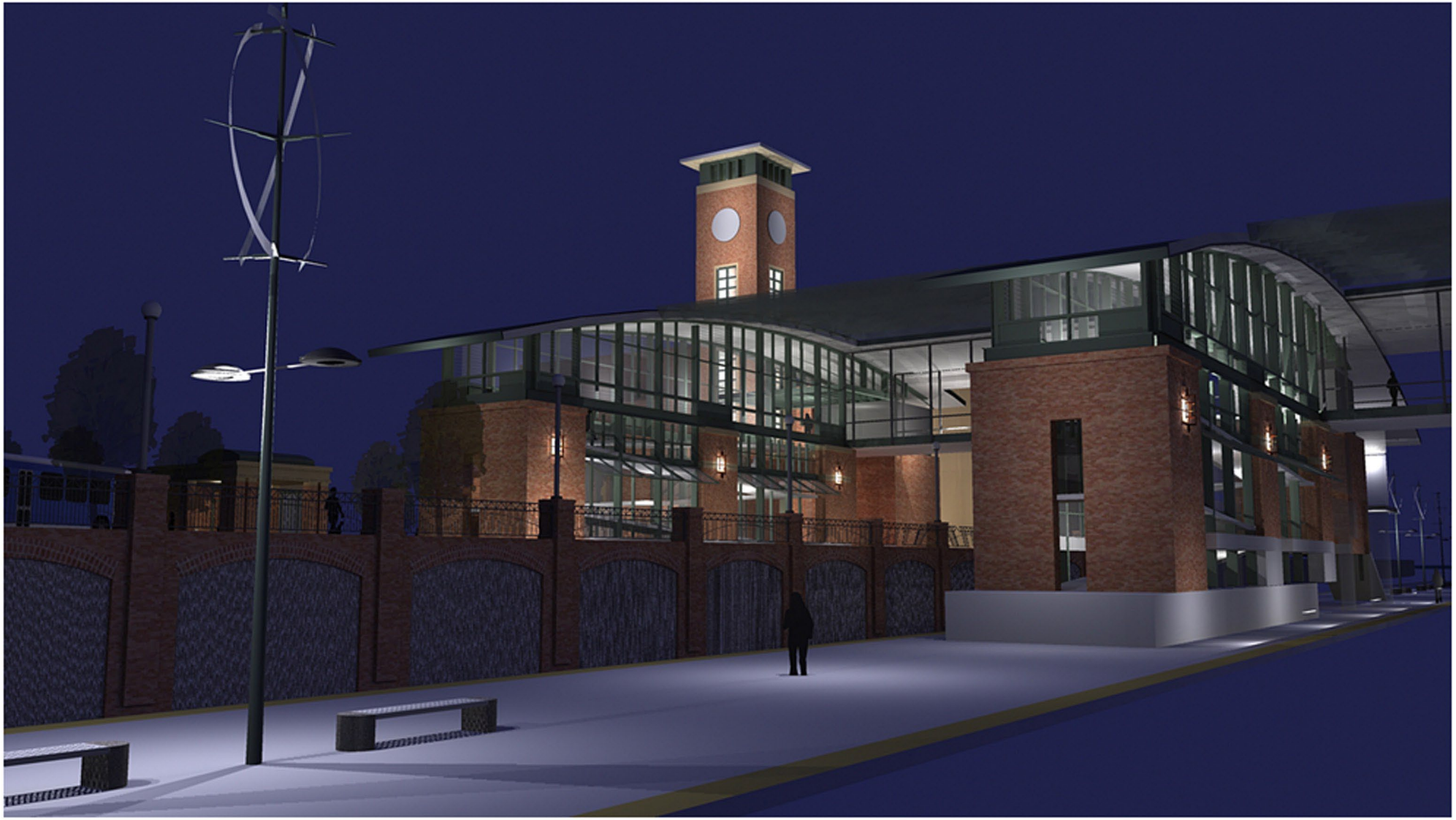

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Figure 4.5-3: Hercules ITC Conceptual Rendering of Potential Nighttime Glare

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Alternative 2

Light and glare impacts under Alternative 2 would be similar in nature to those described for Alternative 1, but would be of slightly greater magnitude because of the larger size of this alternative. The same lighting scheme, facility design, and materials specifications described under Alternative 1 would be applied to this alternative as well.

Mitigation Measure VAR-3: Prior to the approval of the final project design plans, the project applicant shall submit a Final Lighting Plan for review and approval by the City Planning Commission. The Final Lighting Plan shall be in compliance with the General Plan, the WDMP, and all other applicable City codes, as required by City Planning authorities. The Final Lighting Plan shall specify reasonable measures to minimize light spillover and glare from the completed facility, such as screened / hooding lighting, automatic dimmers, or strategically placed landscaping.

CEQA Determination: Although the Hercules ITC would be designed to minimize to the extent feasible, light or glare that would potentially significantly adversely affect day and nighttime views in the area. This impact would be significant and unavoidable.

Track Option B

Implementation of Track Option B would create no new source of substantial lights and glare. Due to the temporary nature of this activity, Track Option B would result in a less than significant impact to creating new sources of light and glare or nighttime views of the area.

Mitigation: No mitigation is required.

CEQA Determination: Implementation of Track Option B would not result in a substantial adverse effect relative to creating new sources of light and glare or nighttime views of the area and the impact would be less than significant.

Cumulative Impacts and Mitigation

It is anticipated that a ferry terminal would eventually be added to the Hercules ITC facility and would connect to the northern side of the station. The light from the vessels and ferry terminal facilities would be removed from existing residential land uses or approved development projects in the study area. The eventual build-out of the HB project to the east and west of the Hercules ITC complex and the existing residential and commercial development to the south and west would serve to add to the incremental effects of the light and glare emanating from the Hercules ITC and ferry terminal area, and would result in additional light and glare in combination with approved development projects that are scattered throughout the study area. Additionally, the proposed bridge to access the future Hercules Point Park would also alter views towards Hercules Point. Cumulative development in Hercules ITC site would obstruct and alter views looking west over the Bay. Cumulative visual effects are anticipated to be significant and unavoidable.

CEQA Determination: Cumulative impacts associated with visual and aesthetic resources from other identified development projects are considered significant and unavoidable.

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4.6. PARKLANDS AND RECREATIONAL FACILITIES

This section discusses the potential impacts of the Hercules ITC alternatives on study area parklands and recreational resources, including potential Section 4(f) properties (which are defined in U.S. DOT 49 USC, Section 303 and 223 USC, Section 138) and described below under NEPA Thresholds and Section 4 (f) Properties, and the CEQA Thresholds.

4.6.1. Methodology

Nine public parkland and recreational resources are currently located in the City of Hercules have been identified as potential Section 4(f) properties. These include: (1) Railroad Park; (2) Bayside Park; (3) Hanna Park; (4) Frog Pad Park; (5) Foxboro Park and tennis courts; (6) Woodfield Park and tennis courts; (7) Ohlone Park; (8) Refugio Valley Park; and (9) parts of the Bay Trail system. The closest recreational facilities to the proposed project site are the Bay Trail and Railroad Park, located at Railroad Avenue and Santa Fe Avenue. An evaluation of the potential direct ("use") and indirect ("constructive use") effects associated with the implementation of the terminal alternatives was conducted for these parkland and recreational facilities. A direct effect occurs when land is permanently incorporated into a transportation facility, or if there is a temporary occupancy of land that is adverse in terms of preservation. An indirect effect occurs when there are adverse impacts that would substantially impair the significance or enjoyment of a public park or recreation property. Other than part of the Bay Trail, none of these resources would be affected by the proposed project.

4.6.2. Significance Criteria

CEQA Thresholds

The impact of the proposed project on public parklands and recreational resources would be considered significant if it would exceed the following Standards of Significance, in accordance with Appendix G of the CEQA Guidelines and the definition of significance in the Council on Environmental Quality Regulations at 40 CFR Section 1508.27. A significant impact to park and recreational resources would occur if:

- The project would result in substantial adverse physical impacts associated with the provision of new or physically altered government facilities, the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts for parks;

- The project would increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated; or

- The project would include recreational facilities or require the construction or expansion of recreational facilities which may have an adverse physical effect on the environment

NEPA Thresholds and Section 4(f) Properties

The following criteria were applied to evaluate the proposed project alternatives. An alternative is considered to result in impacts to parklands and Section 4(f) properties when:

- Protected land is permanently acquired for transportation facilities;
- A temporary use is considered adverse; or
- Constructive use of a resource occurs.

A more detailed definition of "use" and "constructive use" is provided below.

Section 303, 49 USC Subtitle 1, known as Section 4(f) of the U.S. DOT Act, allows the use of land from a significant publicly owned public park, recreational area, wildlife or waterfowl refuge, or any significant historic site for use on a transportation project only when the Secretary of Transportation has determined that there is no feasible and prudent alternative. The project must also include possible planning to minimize harm to the property resulting from such use. The purpose of Section 303 is to preserve public parklands and recreation areas, refuges, and historic sites by limiting the circumstances under which such land can be used for transportation programs or projects. Protection also applies to non-publicly owned historic sites if officials having the jurisdiction determine they have federal, State, or local significance. Section 303 does not apply to archaeological resources if the City, in consultation with the SHPO, determines they do not require preservation in place, and their important information can be recovered or preserved through study.

Within the meaning of Section 303, "use" is generally considered to occur when the project requires a physical taking or other direct control of the land for the purpose of the project, and as a consequence, the use is changed and adversely impacted. For example, acquiring and developing a portion of a park to build a transportation improvement would be considered a "use."

However, "use" within the meaning of Section 303 includes not only actual physical takings, but also adverse impacts (constructive use) as well. For example, it has been said that a project that respects a park's territorial integrity may still, by means of noise, air pollution, or otherwise, "dissipate its aesthetic value, crush its wildlife, defoliate its vegetation, and take it in every practical sense." Therefore, when applied to transportation projects developed near Section 303 resources, a "constructive use" may occur when impacts due to proximity of the project substantially impair the activities, features, or attributes of the resource. Substantial impairment occurs when the protected activities, features, or attributes of the resource are substantially diminished.

In addition, Section 6(f) of the Department of the Interior Land and Water Conservation Fund Act (LWCFA) as amended (16 USC Sections 460l-4 et seq.) is addressed as appropriate. If Section 6(f) effects are determined, coordination and approval of the U.S. Department of the Interior (U.S. DOI), National Park Service (LWCFA liaison), and local agencies would be initiated. Replacement of Section 6(f) property for property used may be necessary.

In the event that a use of Section 303 and Section 6(f) of the LWCFA land would occur as result of implementing the Hercules ITC, the City must then determine that no feasible and prudent alternatives exist, and that all feasible mitigation has been incorporated into the project. The resulting Section 4(f) and Section 6(f) evaluation would be summarized in a new chapter incorporated into the Final EIR / EIS.

4.6.3. Impacts and Mitigation

No-Action Alternative

Under the No-Action Alternative, the Hercules ITC alternatives would not be implemented. The conversion of parklands, recreational facilities, or Section 4(f) properties would not occur. Therefore, Section 4(f) does not apply, and the No-Action Alternative would not result in direct or indirect effects on recreational resources, create any Section 4(f) impacts or generate any impacts under either CEQA or NEPA.

Action Alternatives

Impact PR-1: Alternatives 1 and 2 of the proposed project would not result in substantial adverse physical impacts associated with the provision of new or physically altered park or recreational facilities.

Alternatives 1 and 2. The proposed project would not introduce residential development into the project area and therefore would not directly generate an increase in population that could affect local public parkland and recreational facilities.

The proposed Hercules ITC is anticipated to generate little employment, with too few jobs to result in a significant long-term increase in employment, and is therefore unlikely to have indirect effects on public parks and recreational facilities related to an increase in residents associated with more employment. The proposed Hercules ITC would create only minimal employment and would not induce indirect effects on public parks and recreational facilities related to an increase in residents associated with increased employment. Most Hercules ITC activities that would create employment opportunities would be generally station maintenance and operations support activities, requiring few or no employees on site during a typical day. Any employees would most likely be recruited locally. Events at the banquet/conference center (Alternative 2 only) would be intermittent and for limited amounts of time, and are likely to employ mostly temporary personnel. Maintenance of trains and transit vehicles would not be conducted in Hercules, but instead be carried out at existing service facilities at other locations elsewhere in the Bay Area. Other Hercules ITC activities would consist of self-service passenger operations, such as ticketing and boarding. Impact would be less than significant.

The plan for Alternative 2; however, would also include a banquet/conference center, and would employ more people than Alternative 1, employees who would also likely be recruited locally. Therefore, indirect growth is not anticipated to induce the demand for additional public parks and recreational facilities in order to meet service ratios.

The proposed project would include a new Bay Trail segment that could be used for pedestrian and bicycle access to the Hercules ITC. The City would be responsible for construction and

maintenance of this segment. In addition, project and City plans include the addition of Creekside Park along Refugio Creek, and also would eventually provide access to the future Hercules Point Park. Most pedestrian and bicycle access to the Hercules ITC would be by public streets and sidewalks. Based on user projections, the increase in project-related Bay Trail use on adjacent, existing segments of the trail would likely number in the tens at most. Such a minor potential increase in use would not require the City to provide new or physically alter existing facilities not currently planned for, and would therefore not result in significant indirect environmental impacts.

Mitigation: None is required.

CEQA Determination: The proposed project would not result in adverse physical impacts associated with the provision of new or physically altered public parkland or recreational facilities.

Impact PR-2: The proposed project would not increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facilities would occur or be accelerated.

Alternatives 1 and 2. Similar to the findings of Impact PR-1 (above), the proposed Hercules ITC may indirectly add a minimal number of new residents to the area as facility employees, who in turn may use regional and local public parks and recreational facilities. The proposed Hercules ITC's minimal number of employees would not cause substantial physical deterioration to the use of local public parks and recreational facilities, and this impact would be less than significant.

Mitigation: No mitigation is required.

CEQA Determination: The proposed Hercules ITC project would not increase the use of existing neighborhood and regional public parks or other recreational facilities such that substantial physical deterioration of the facilities would occur or be accelerated. This is a less than significant impact.

4.6.4. Section 4 (F) Determination

Alternatives 1 and 2

Impact PR-3. The proposed project would not have the potential for direct use of Section 4(f) properties during project construction and operation.

Alternatives 1 and 2. Construction activities of both alternatives at the proposed Hercules ITC site may have the potential to temporarily impair the planned Bay Trail segment easement, as well as the existing Bay Trail segments adjacent to the project . Potential impairments that could occur to parts of the existing Bay Trail that are adjacent to the project could include temporary encroachment by construction equipment and materials (staging areas), impairment of access, air quality, noise, and visual intrusion. According to the Section 4(f) statute, a temporary occupancy of property does not constitute a use of a Section 4(f) resource, when the following conditions are satisfied: (1) the occupancy is of a temporary duration shorter than the period of construction;

(2) no change in ownership of the property occurs; (3) only minimal changes to the protected resource occur; (4) no permanent physical effects or interference with the purpose of the resource exist; (5) the resource can be fully restored at the completion of project construction; and (6) there is documented agreement of the appropriate officials having jurisdiction over the resource. These conditions would be met prior to and during construction of the Hercules ITC facilities. Temporary rerouting of Bay Trail users across the project site may be necessary to accommodate construction activities without impeding trail users. As such, the proposed project represents a de minimis impact, which is defined under 36 CFR Part 800, as one that will not adversely affect the features, attributes, or activities qualifying the property for protection under Section 4(f).

The alignment for the planned Bay Trail segment is currently undeveloped within the proposed sites of both Alternatives 1 and 2 and the proposed alignment is currently on private property (see the discussion in Section 3.6 regarding the Bay Trail – Bio – Rad Segment and the Bay Trail – Hercules Segment Easement Agreement). To properly integrate the design and construction of the Hercules ITC and the Bay Trail - Hercules Segment, the City is willing to undertake the design and construction of the Bay Trail - Bio-Rad Segment subject to the terms of the Easement Agreement. As outlined in the project description, the project design would incorporate a 20-foot wide easement through the site to facilitate unimpeded public access along the Trail. The City will construct and maintain the new Trail segment according to the standards used by the EBRPD, and would not result in a permanent displacement or acquisition of any portion of the existing Bay Trail. Upon completion, the Trail would be a paved Class 1 trail approximately 5,300 foot-long by 14 feet-wide.

The Hercules Point site is currently unoccupied and planned to become open space, and a public park on 10.96 acres. The Point; however, is presently under private ownership and access is restricted. Even though Hercules Point is included in adopted plans, it is not currently known as to when the property would actually become a public recreational facility. Furthermore, the components of the proposed project would not encroach onto Hercules Point itself, or hinder access to the property beyond existing conditions. As such, Hercules Point does not qualify for protection under Section 4 (f).

Because the operations of Alternatives 1 and 2 would not require the permanent acquisition of land designated as a Section 4(f) property, no potentially substantial adverse impacts are anticipated.

Mitigation: No mitigation is required.

CEQA Determination: This impact would be less than significant.

Impact PR-4. The proposed project would have the potential for temporary use of Section 4(f) properties during project construction.

Alternatives 1 and 2. The construction-related peak impacts of Alternatives 1 and 2 would be temporary and of limited scale, affecting a relatively small area adjacent to the planned and existing developed portions of the Bay Trail alignment. The application of **Mitigation Measures AIR-1, VAR-2, VAR-3, NOI- 2**, and **NOI-3**,, would serve to avoid or significantly reduce potential adverse effects during construction operations. Project construction would not

substantially impair the features and attributes of the Bay Trail, thereby resulting in less than substantial potential Section 4(f) impacts to the Bay Trail.

Mitigation: Implementation of **Mitigation Measures AIR-1, VAR-2, VAR-3, NOI-2**, and **NOI-3** will reduce potential impacts to less than significant. No additional mitigation is required.

CEQA Determination: This impact would be less than significant.

Impact PR-5. The proposed project would have the potential for constructive use of Section 4(f) properties during project construction.

Alternatives 1 and 2. The design for Alternatives 1 and 2 includes construction of a new segment of the Bay Trail ,other proposed improvements that would be located directly adjacent to the new Bay Trail alignment easement, and potential construction-related activities that would encroach on off-site segments of the existing Bay Trail. Therefore, some temporary and limited construction-related constructive use of parklands would occur.

It is anticipated that construction operations for the track realignments, the Hercules ITC building, the track platforms, the landside portion of the waterfront promenade, the pedestrian overpass, the Refugio Creek realignment, and the pedestrian plaza would encroach upon or enter the planned Bay Trail alignment. The construction of the John Muir Parkway extension, the Bayfront Bridge, and the restoration of the lower Refugio Creek channel would encroach upon or enter the planned Bay Trail alignment easement, or some parts of the existing Bay Trail off-site. As outlined in the project description, the alignment for the Bay Trail would be reconfigured through the project site, but would be kept as close to its original configuration as possible. Although the alignment is presently undeveloped, the design for both proposed Alternatives would also upgrade it to a Class I trail.

The Bay Trail typically experiences its greatest use during weekends and in the midday hours on weekdays. The affected segment of the Trail is located generally along the upland side of the San Pablo Bay shoreline in an undeveloped part of an urbanized area. Construction operations would generate temporary noise, visual, and access effects in the immediate vicinity of the Trail. Construction operations are anticipated to occur during the weekday-daylight hours, when the Trail is most heavily used. Additionally, construction activities would occur on either side of the Trail in some places that could require temporary taking of the easement to implement the project.

The construction-related peak impacts of Alternatives 1and 2 would be temporary and of a limited scale, affecting a relatively small area adjacent to the Bay Trail alignment. Project construction would not substantially impair the features and attributes of the Trail. The temporary impacts of these activities would be further minimized by application of **Mitigation Measures VAR-2, VAR-3, NOI-2**, and **NOI-3**, thereby resulting in less than substantial potential Section 4(f) impacts to the Bay Trail.

Mitigation: Implementation of **Mitigation Measures VAR-2, VAR-3, NOI-2**, and **NOI-3** will reduce potential impacts to less than significant. No additional mitigation is required.

CEQA Determination: This impact would be less than significant.

Impact PR-6. The proposed project Alternatives 1 and 2 would not have potential for impacts to historic sites or other cultural resources.

Alternatives 1 and 2. No historic sites were identified at these sites, as described in **Section 4.4 Cultural Resources**. Therefore, no impacts would occur to Section 4(f) properties under provisions of Section 106 of the NHPA of 1966. As also discussed in **Section 4.4**; however, construction activities associated with project implementation would have the potential to unearth undocumented resources, which could result in significant impacts. In the event this actually occurs, potential impacts to undocumented resources would be further minimized by application of the mitigation measures recommended in **Section 4.4** and would result in a less-than-significant effect.

Mitigation: With the implementation of **Mitigation Measures CULT-1** and **CULT-2**, no additional mitigation is required.

CEQA Determination: No significant or potentially significant impacts would occur with implementation of **Mitigation Measures CULT-1** and **CULT-2**.

4.6.5. Cumulative Impacts and Mitigation

Currently, the City provides nine park and recreational faculties. Moreover, a number of regional parks such as Lone Tree Park, and Pinole Point Regional Shoreline are all available for use by Hercules residents. The development of Creekside Park and Hercules Point Park are already anticipated under adopted City plans. Therefore, the need for more public parklands or recreational facilities as a result of improved access due to the project, when combined with regional growth, would not be expected to produce adverse cumulative impacts on parklands and recreational resources.

CEQA Determination: Cumulative impacts associated with parklands and recreational facilities from other identified development projects are considered less than significant.

4.6.6. Measures to Minimize Harm

Substantial adverse impacts could result from constructive use of areas adjacent to the Bay Trail. However, the potential temporary impacts would be mitigated through implementation of mitigation measures recommended in **Section 4.4 Cultural Resources, Section 4.5 Visual and Aesthetic Resources,** and **Section 4.8, Noise and Vibration**, of this EIR / EIS. With implementation of these measures, Section 4(f) impacts to the Bay Trail would be reduced to less than significant and no additional measures to minimize harm are required or recommended. In addition, the City will continue to consult with agencies and individuals who have jurisdiction over Section 4(f) lands on or adjacent to the project site.

4.6.7. Finding

The FTA will make a decision about whether there is direct, temporary, or constructive use of Section 4(f) resources within the project site based on the existing evaluation. Aside from the Section 4(f) use, consultation and coordination with the City will continue to ensure that all measures to minimize harm to Section 4(f) resources within the project site would be undertaken.

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4.7. AIR QUALITY

4.7.1. Methodology

In accordance with 40 CFR § 93, a conformity determination is required as part of the NEPA process for FTA and FHWA projects. Conformity involves demonstrating that the project is consistent with the purpose of the approved air quality State Implementation Plans (SIP), which is to eliminate or reduce the severity and number of violations of the NAAQS.

Project conformity is determined through the following criteria:

- Currently conforming transportation plan and Transportation Improvement Plan (TIP). The project area must be covered by a conforming transportation plan and TIP (40 CFR § 93.114).

- Projects from a transportation plan and TIP. The project must be included in the conforming plan (40 CFR § 93.115).

- Localized CO, PM_{10}, and $PM_{2.5}$ violations (hot-spots). The project must not cause or contribute to any new localized CO, PM_{10}, and/or $PM_{2.5}$ violations or increase the frequency or severity of any existing CO, PM_{10}, and/or $PM_{2.5}$ violations in CO, PM_{10}, and $PM_{2.5}$ nonattainment and maintenance areas. This criterion is satisfied for FHWA/FTA projects in CO, PM_{10}, and $PM_{2.5}$ nonattainment and maintenance areas if it is demonstrated that, during the timeframe of the transportation plan, no new local violations will be created and the severity or number of existing violations will not be increased as a result of the project (40 CFR § 93.116).

- Compliance with PM10 and PM2.5 control measures. The project must comply with any PM10 and PM2.5 control measures in the applicable implementation plan. This criterion is satisfied if the project-level conformity determination contains a written commitment from the project sponsor to include those control measures in the final plans, specifications, and estimates for the project (40 CFR § 93.117).

As discussed in Section 3.7, the project area is currently designated a maintenance area for CO and a nonattainment area for the 2006 standard for $PM_{2.5}$. However, the $PM_{2.5}$ designation was only recently published in the Federal Register and became effective in December 2009. The USEPA has granted a one-year grace period from the effective date of the new nonattainment designation before transportation conformity applies (USEPA 2009). Therefore, transportation conformity is not required for the $PM_{2.5}$ nonattainment area, and a hot-spot evaluation for $PM_{2.5}$ was not completed for this project. Furthermore, a SIP has not yet been prepared for the area and is not required to be submitted to USEPA until December 2012. Because there is not yet a SIP for the $PM_{2.5}$ nonattainment area, there are currently no approved control measures to be included in the project.

Although the project is not expected to create any new localized CO exceedances, a hot-spot analysis for CO was conducted for the proposed project and is described later in this section.

4.7.2. Significance Criteria

The significance criteria listed below are derived from Appendix G of the State CEQA Guidelines and the definition of significance in the Council on Environmental Quality Regulations at 40 CFR § 1508.27. For the purposes of this EIR/EIS, impacts to air quality would be significant if implementation of one of the proposed project alternatives would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);
- Expose sensitive receptors to substantial pollution concentrations; or
- Create objectionable odors affecting a substantial number of people.

The *BAAQMD CEQA Guidelines* (BAAQMD 1999, updated 2009) recommend analytical methodologies and provide evaluation criteria for determining the level of significance of project impacts under the above-listed general criteria. The BAAQMD's evaluation criteria for determining air quality impacts provide defined screening thresholds for pollutant emissions.

Construction Emissions

PM_{10} is the pollutant of greatest concern with respect to construction activities. Construction emissions of PM_{10} can vary greatly depending upon the level of activity, construction equipment, local soils, and weather conditions, among other factors. As a result, the *BAAQMD CEQA Guidelines* specify that "[t]he District's approach to CEQA analyses of construction impacts is to emphasize implementation of effective and comprehensive control measures rather than detailed quantification of emissions." Therefore, the determination of significance with respect to construction emissions should be based on a consideration of the control measures to be implemented. If all applicable control measures for PM_{10} indicated in the *BAAQMD CEQA Guidelines* would be implemented, then air pollutant emissions from construction activities would be considered less than significant. If a project would not implement all applicable control measures, construction emissions may be considered to result in a significant impact.

Operational Emissions

The *BAAQMD CEQA Guidelines* recommend the following thresholds of significance for operational emissions, which include both direct emissions and indirect emissions, or those that result from motor vehicles traveling to and from the project. A project is considered to have significant impacts if it produces any of the following:

- Mobile-source emissions of CO violating or significantly contributing to a violation of the CAAQS (9 ppm averaged over 8 hours, and 20 ppm averaged over 1 hour);

- Operational emissions of reactive organic gas (ROG), NO_x, or PM_{10} exceeding 80 pounds per day or 15 tons per year;

- Objectionable odors emitted near residential areas or other sensitive receptors;

- Emissions that would expose sensitive receptors (including residential areas) or the general public to substantial levels of TACs. Specifically, project emissions of TACs would be deemed significant if they result in a probability of contracting cancer for the Maximally Exposed Individual (MEI) exceeding 10 in one million and/or ground-level concentrations of non-carcinogenic TACs resulting in a hazard index greater than 1 for the MEI.

- A significant air quality impact from an individual project is also considered to be a significant cumulative air quality impact. For a project that does not individually have significant operational air quality impacts, the determination of significant cumulative impact should be based on an evaluation of the consistency of the project with the local and regional air quality plans.

4.7.3. Impacts and Mitigation

No-Action Alternative

The No-Action Alternative would not implement the proposed Hercules ITC. Existing air quality issues would continue to be addressed through the measures undertaken by the BAAQMD and identified in the SIP to reduce air pollutants to acceptable levels under federal and state guidelines.

Action Alternatives

Impact AIR-1: Construction of the proposed project would create emissions of fugitive dust from excavation and grading, and emissions of criteria pollutants from construction equipment exhaust.

Alternatives 1 and 2 and Track Option B: Construction of either action alternative of the proposed project (Alternative 1 or Alternative 2) will result in short-term impacts to air quality in the project area. These impacts include temporary increases in emissions of CO, carbon dioxide (CO_2), NO_x, PM_{10}, $PM_{2.5}$, ROG, oxides of sulfur (SO_x), and TACs. Once the proposed project has been completed, construction emissions would cease. The BAAQMD does not currently require full quantification of construction emissions for a project. The District considers implementation of all feasible control measures to be sufficient to reduce any air quality impacts from construction activities to less than significant.

In addition to construction activities on land, the proposed project would require the dredging of a new channel and outlet as part of the improvements of Refugio Creek through the tidal flats. Again, the BAAQMD does not currently require full quantification of construction emissions for

a project, but considers implementation of all feasible control measures to be sufficient to reduce any air quality impacts from construction activities to less than significant.

Mitigation Measure AIR-1a: During construction of the proposed project, the contractors shall implement the following control measures from Table 2 of the *BAAQMD CEQA Guidelines* to control fugitive dust emissions from excavation:

- Basic Control Measures:
  - Water all active construction areas at least twice daily.
  - Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard.
  - Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas at the construction site.
  - Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas at the construction site.
  - Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets.
- Enhanced Control Measures:
  - Stabilize open storage piles and disturbed areas by covering and/or applying water or chemical/organic dust palliative where appropriate. This shall apply to both inactive and active sites, during workdays, weekends, holidays, and windy conditions.
  - Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas (previously graded areas inactive for ten days or more).
  - Enclose, cover, water daily, or apply (non-toxic) soil binders to exposed stockpiles (dirt, sand, etc.).
  - Limit traffic speeds of hauling and non-earth moving equipment on unpaved roads to 15 mph and earth moving equipment to 10 mph.
  - Install wind fencing and phase grading operations, where appropriate, and operate water trucks to stabilize unpaved surfaces under windy conditions.
  - Install sandbags or erosion control measures to prevent silt runoff to public roadways.
  - Replant vegetation in disturbed areas as quickly as possible.

Mitigation Measure AIR-1b: During construction of the proposed project, in order to reduce emissions and TACs from construction equipment exhaust, the developer shall implement all feasible Best Available Control Technologies (BACTs), which may include the following:

- Use alternative fuel or ultra-low sulfur fuel for construction equipment, as feasible;
- Employ catalyst-equipped diesel construction equipment and other add-on emission control measures, as feasible;
- Minimize equipment idling time to a maximum of 5 minutes, or other appropriate limit;
- Limit the hours of operation of heavy equipment and/or the amount of equipment in use;
- Ensure that all construction equipment used on the project is maintained in good working order and properly tuned according to manufacturers' specifications; and
- Implement periodic spot checks by construction managers to ensure that emission control mitigations are maintained.

CEQA Determination: Implementation of the above mitigations will reduce the impacts of construction emissions to less than significant.

Impact AIR-2: Net operational emissions of ROG, NO_x, CO, SO_x, and PM_{10} could increase as a result of the implementation of the Hercules ITC.

Alternatives 1 and 2: Following construction of either action alternative, the Hercules ITC would generate operational emissions associated with the proposed rail station, bus trips, and motor vehicle trips, as well as the future ferry terminal. Although the ferry portion of the proposed project has been delayed to a future phase, it remains as a reasonably foreseeable cumulative impact. The proposed Hercules ITC would provide an intermodal transit center for commuters and residents in Hercules and adjacent communities to utilize bus and rail transportation. The proposed Hercules ITC would affect user commute trips differently between the various users' modes of travel. The following impact analysis discusses the effect the proposed Hercules ITC would have on mobile-source emissions in the project area.

Rail Emissions

The proposed Hercules ITC would add an additional rail station along the UPRR railway. Currently, commuters in the Hercules region drive to the Martinez Amtrak Station to board the northbound Capitol Corridor line, or drive to the Richmond Station to board the southbound Amtrak and BART lines. Implementation of the proposed project would allow commuters in the Hercules region to drive to the Hercules ITC to board either the northbound or southbound Capitol Corridor lines. The existing Capitol Corridor train already passes through the project site; however, the proposed project would allow the train to stop for passengers at the proposed Hercules ITC. The additional stop and boarding point would cause a slight increase in rail emissions due to the deceleration, idling, and acceleration of the train. Net changes in total operational emissions are summarized in **Table 4.7-1** below.

Bus Emissions

The proposed Hercules ITC would provide another transit stop for the existing WestCAT bus system. Currently, buses stop at the new Hercules Transit Center (HTC) on Willow Avenue, just

east of I-80. The proposed project would add an additional bus stop in the Hercules region at the proposed Hercules ITC. The project site is approximately 1.5 miles away from the new HTC; therefore, implementation of the proposed project would not add a substantial distance to the existing bus route. In addition, adding the proposed Hercules ITC to the existing bus route would allow some users to completely eliminate a motor vehicle trip to drive from their residence to the bus stop. It is not anticipated that implementation of the Hercules ITC would alter motor vehicle trip distances for commuters using the bus system. Some bus riders may begin to board the bus at the Hercules ITC; however, this change in trip distance would be small and would not result in a substantial change in emissions. Net changes in total operational emissions are summarized in Table 4.7-1.

Table 4.7-1
Total Net Hercules ITC Operational Emissions

Emissions Source	Emissions in Pounds per Day				
	ROG	NO_X	CO	SO_X	PM_{10}
Proposed Emissions*	1.29	2.40	25.00	0.02	0.09
Existing Emissions*	7.58	13.04	133.60	0.10	0.33
Net Change in Emissions	(6.29)	(10.64)	(108.60)	(0.08)	(0.24)
BAAQMD Threshold	80	80	—	—	80
Exceeds Threshold?	NO	NO	—	—	NO

** NOTE: Emissions are for all modes of travel, including rail, bus, and motor vehicle.*
Totals in table may not appear to add exactly due to rounding in the calculations.
Negative numbers are shown in parentheses.

Motor Vehicle Emissions

The proposed Hercules ITC would alter existing motor vehicle trips to transit centers (e.g., BART or Amtrak station) and provide commuters with alternative modes to reach San Francisco and other destinations in the Bay Area. The change in motor vehicle emissions associated with implementation of the proposed project was calculated using EMFAC2007 (CARB 2010c). Net changes in total operational emissions are summarized in Table 4.7-1.

Total Emissions

As shown in Table 4.7-1 Total Net Hercules ITC Operational Emissions above, total net operational emissions would decrease with implementation of the proposed Hercules ITC, primarily because of reduced carbon monoxide (CO) emissions from motor vehicle emissions.

Net operational emissions associated with the proposed project would not exceed any of the BAAQMD thresholds of significance. Therefore, operational emissions would have a less than significant impact on air quality in the region.

Mitigation: No mitigation is required.

CEQA Determination: The impact related to total net operational emissions would be less than significant.

Impact AIR-3: Implementation of the proposed project could expose sensitive receptors to CO concentrations in excess of the federal or state ambient air quality standards.

Alternatives 1 and 2: CO is produced in greatest quantities from gasoline-powered motor vehicle combustion and is usually concentrated at or near ground level because it does not readily disperse into the atmosphere. As a result, potential air quality impacts to sensitive receptors are assessed through an analysis of localized CO concentrations. Traffic-congested roadways and intersections have the potential to generate high localized levels of CO, which are called hot-spots. These hot-spots have the potential to exceed the state ambient air quality 1-hour CO standard of 20 ppm or the 8-hour CO standard of 9.0 ppm. Note that the federal levels are based on 1- and 8-hour standards of 35 and 9 ppm, respectively. An exceedance of the state or federal ambient air quality standards would constitute a significant air quality impact.

The project was evaluated to determine if it would cause a CO hot-spot utilizing a simplified CALINE4 screening model developed by the BAAQMD. The simplified model is intended as a screening analysis that identifies a potential CO hot-spot. If a hot-spot is identified, the complete CALINE4 model is then utilized to determine precisely the CO concentrations predicted at the intersections in question. This methodology assumes worst-case conditions (i.e., wind direction is parallel to the primary roadway and 90 degrees to the secondary road, wind speed of less than one meter per second, and extreme atmospheric stability) and provides a screening of maximum, worst-case, CO concentrations. This model was utilized to predict future CO concentrations at representative receptors 0 feet and 25 feet from the intersections in the study area based on projected traffic volumes for these intersections contained in the project traffic study. Maximum CO concentrations occurring during cumulative (i.e., year 2035) plus project conditions were calculated for peak hour traffic volumes. The results of these CO concentration calculations are presented in **Table 4.7-2,** Cumulative (2035) CO Concentrations.

As shown below, the contribution of traffic from cumulative (past, present, and reasonably foreseeable future) projects including the ferry terminal and planned development of the area around the Hercules ITC plus the proposed project traffic would not generate CO concentrations near the study intersections that would exceed the federal or state CO ambient air quality standards. Therefore, the project's impact would be considered less than significant and the project would not expose sensitive receptors to substantial pollutant concentrations. The day-to-day operations of the proposed project would generate CO concentrations that would not violate or contribute substantially to a violation of the CAAQS.

Mitigation: No mitigation is required.

CEQA Determination: The impact related to CO concentrations would be less than significant.

Table 4.7-2
Cumulative (2035) CO Concentrations

Intersection	0 Feet		25 Feet	
	1-Hour	8-Hour	1-Hour	8-Hour
Hawthorne Drive and Willow Avenue	3.9	3.9	3.7	3.7
Hercules Avenue and San Pablo Avenue	4.0	3.9	3.7	3.7
I-80 Westbound Off-Ramps and Willow Avenue	4.0	3.9	3.7	3.7
San Pablo Avenue and Appian Way	4.1	4.0	3.8	3.8
San Pablo Avenue and John Muir Parkway	4.6	4.3	4.1	4.0
San Pablo Avenue and Pinole Valley Road	4.0	3.9	3.8	3.7
San Pablo Avenue and Sycamore Avenue	4.7	4.4	4.2	4.0
San Pablo Avenue and Tennent Avenue	4.1	3.9	3.8	3.7
San Pablo Avenue and Willow Avenue	4.0	3.9	3.7	3.7
Sycamore Avenue and Bayberry Avenue	5.9	5.2	4.8	4.4
State CO Standards (ppm)	20	9.0	20	9.0

Source: Impact Sciences, Inc.2009
All CO concentrations at intersections are shown in parts per million (ppm).

Impact AIR-4: Implementation of the project could cause a substantial health risk to nearby receptors from exposure to toxic air contaminants (TACs) from diesel exhaust.

Alternatives 1 and 2: As described previously, CARB formally identified particulate matter emitted by diesel-fueled engines as a TAC. Diesel engines such as the proposed ferries, rail locomotives, and dredging equipment emit TACs in both gaseous and particulate forms. The particles emitted by diesel engines are coated with chemicals, many of which have been identified by the USEPA as Hazardous Air Pollutants, and by CARB as TACs. The proposed project would generate diesel particulate matter (DPM) emissions associated with operation of the rail, as well as periodic maintenance operations using engines. It should be noted that the Amtrak rail line currently passes through the project site. Adding the proposed rail station as part of the Hercules ITC would slightly increase the DPM emissions due to the deceleration, idling, and acceleration of the train as it arrives at and departs from the terminal. However, the addition of these emissions is not anticipated to be a substantial increase beyond the current operating emissions. The area of impact from DPM will depend on meteorological conditions. If light to moderate wind conditions prevail in the project area, DPM is likely to be dispersed widely and have its impact on a regional scale. During periods of very light wind speeds, low inversion heights, and atmospheric stability, diesel particulates may remain in the project area and have a relatively high local impact. However, health risk assessments typically evaluate the long-term or lifetime exposure to DPM; therefore, it is long-term average exposure that is of most concern. Due to the prevailing meteorological conditions in the project area, DPM is expected to be well dispersed. Therefore, due to the meteorological conditions at the project site, it is not anticipated that the project would cause a substantial health risk to nearby receptors due to DPM emissions.

Mitigation: No mitigation is required.

CEQA Determination: The impact related to exposure to diesel particulate matter would be less than significant.

Impact AIR-5: Implementation of the project could create objectionable odors affecting a substantial number of people.

Alternatives 1 and 2: The proposed project would include emissions associated with a new rail station, transit buses, and motor vehicles accessing parking spaces on-site. The proposed project's tendency to generate objectionable odors would depend on multiple factors. The occurrence of an objectionable odor depends on the nature, frequency, intensity of the source, wind speed, and direction, and also the sensitivity of the individual. Offensive odors typically do not cause any physical harm; however, they can be unpleasant and cause distress among the public and generate citizen complaints. The BAAQMD's Regulation 7 (Odorous Substances) would impose odor concentration standards in the case odor complaints about the proposed facility reach or exceed 10 complaints in a 90-day period.

Construction activities associated with development of the proposed project would include dredging operations that would generate odors associated with construction vehicles (i.e., diesel exhaust). In addition, if any surfaces of the proposed project require painting, odors could be generated during architectural coating operations. However, construction activities would only occur during daytime hours and would be confined to the project site. Therefore, it is not anticipated that construction related odors would affect a substantial number of people. Furthermore, dredging operations would not likely occur during the same period as architectural coating operations.

Following construction of the proposed Hercules ITC, operational emissions would include potential operational odors associated with diesel exhaust. Given the small number of diesel buses and passenger trains, as well as support vehicles (e.g., maintenance and garbage trucks) operating on the site, it is anticipated that the proposed project would not generate sufficient objectionable odors that would affect a substantial number of people.

Mitigation: No mitigation is required.

CEQA Determination: The impact related to objectionable odor would be less than significant.

4.7.4. Cumulative Impacts and Mitigation

Impact AIR-6: Implementation of the project could result in a cumulatively considerable net increase of criteria pollutants and TACs compared to the No-Action Alternative.

Alternatives 1 and 2: Implementation of the Hercules ITC would result in a reduction of vehicle trips across the Bay Area bridges and trip distances to mass transit stations. As discussed in Impact AIR-2, the proposed project would allow commuters from the East Bay region who drive to the San Francisco area to reduce their VMT by driving to the proposed Hercules ITC rather than driving directly to San Francisco. For rail users traveling north, the proposed project would allow commuters in the project's region who previously drove to the Martinez Amtrak station or the El Cerrito del Norte BART station to drive to the proposed Hercules ITC. For rail users traveling south, the proposed project would allow commuters in the project's region who

previously drove to the Richmond Amtrak station to drive to the proposed Hercules ITC. As shown in Table 4.7-1, the net increase in emissions associated with implementation of either action alternative of the proposed project would not exceed the BAAQMD thresholds of significance and, in the case of CO, emissions would be reduced.[1]

According to the *BAAQMD CEQA Guidelines*, any project that would individually have a significant air quality impact would also have a significant cumulative air quality impact. As discussed in Impact AIR-2, emissions associated with operation of the proposed project would not exceed any of the BAAQMD recommended operational thresholds of significance. Therefore, the project would not have an individually significant air quality impact.

For a project that does not individually have a significant air quality impact, the *BAAQMD CEQA Guidelines* recommend that a determination of cumulative impacts be based on an evaluation of the consistency of the project with the local general plan and of the general plan with the regional air quality plan. If a project is proposed in a city or county with a general plan that is consistent with the regional air quality plan and the project is consistent with that general plan, the project would not have a significant cumulative impact.

The applicable local plans are the General Plan as amended by the WDMP and the *Plan for Central Hercules* (City of Hercules 2000). The General Plan discusses an intermodal transit center in the Historic Town Center which includes the project site. The proposed Hercules ITC is consistent with several of the plan's stated objectives and policies in the Circulation Element, including:

- Objective: Promote public transit service within the City and area (p. III-20).
- Policy: The City shall actively participate in cooperative efforts to provide effective public transit to the City and adjacent communities, including promoting a commuter rail extension of BART in the City and a train station along San Pablo Bay within the Lower Refugio Valley serving the Capitol Corridor to intercept through travelers on I-80 (p. III-21, 22)

Furthermore, the *Plan for Central Hercules* specifically identifies a Capitol Corridor train station at the location of the proposed Hercules ITC (p. 6.2). Therefore, the project is consistent with the local general plans for Hercules.

The most recently adopted regional air quality plan, or CAP, for this area is the *2005 Ozone Strategy* (BAAQMD 2006). To analyze if the local general plan is consistent with the *2005 Ozone Strategy*, the *BAAQMD CEQA Guidelines* recommend evaluating 1) the local plan consistency with CAP population and VMT assumptions, 2) the local plan consistency with CAP TCMs, and 3) the local plan impacts associated with odors and toxics. If a local general plan fulfills the criteria above, the plan is consistent with the CAP.

[1] Implementation of the proposed project would cause a net increase of some pollutants and a net reduction in some pollutants. Nevertheless, any net increase in emission associated with the proposed project would not exceed the BAAQMD thresholds of significance.

Firstly, the *2005 Ozone Strategy* was developed by BAAQMD, in cooperation with the ABAG, a regional board composed of representatives from each of the city jurisdictions in the Bay Area, including the City. Population and VMT assumptions were developed by ABAG and, at the time, were consistent with the local general plans of each of the ABAG member jurisdictions. The local plans, including the *Hercules General Plan as amended by the Waterfront District Master Plan* and the *Plan for Central Hercules*, were consistent with the population and VMT assumptions used to develop the *2005 Ozone Strategy*.

Secondly, the General Plan and the *Plan for Central Hercules* contain numerous objectives and policies designed to achieve the same goals as the TCMs in the *2005 Ozone Strategy*. A majority of the TCMs contained in the *2005 Ozone Strategy* are related to mass transit, carpooling, and facilities associated with commercial uses (e.g., bicycle facilities, vanpool services, and other incentives). Similarly, as stated above, the local plans contain objectives and policies to encourage the expanded use of public transit, such as the proposed Hercules ITC, and are therefore consistent with the CAP. Specifically, the following list includes the applicable TCMs that relate directly to public transit and describes how the proposed Hercules ITC would be consistent with those TCMs:

- TCM 1 – Support Voluntary Employer-Based Trip Reduction: The proposed Hercules ITC would offer commuters in the project's vicinity various commute alternatives. Therefore, commuters that would utilize the proposed Hercules ITC would reduce vehicles trips or VMT in the air basin.

- TCM 3 – Improve Area-wide Transit Service: The proposed Hercules ITC would provide commuters in the region with access to various transit services. By creating a central location where commuters have access to multiple transit services, the proposed project provides a more accessible and feasible mass transit alternative.

- TCM 4 – Improve Regional Rail Service: The proposed Hercules ITC would include an additional rail station, which would reduce the distance driven by commuters (in the project's vicinity) to reach a rail station.

- TCM 5 – Improve Access to Rail and Ferries: The proposed Hercules ITC would allow commuters in the project's vicinity to access both rail and, ultimately, ferry transportation.

- TCM 7 – Improve Ferry Service: As part of a later phase, the proposed Hercules ITC would allow commuters from Alameda, Contra Costa, and potentially Solano Counties to access ferry services. The intermodal design of the proposed project would allow commuters to potentially use rail or bus services to reach the ferry rather than using an individual motor vehicle.

- TCM 12 – Improve Arterial Traffic Management: The proposed Hercules ITC would offer multiple alternate modes of transportation. Commuters who utilize the proposed project would be removing or minimizing vehicle trips or VMT from the roads, thereby improving traffic management.

Lastly, the General Plan and the *Plan for Central Hercules* do not specifically address odors or TACs, but such concerns are adequately addressed through the land use element and land use map. Industrial facilities and major highway corridors, which would be expected to generate the highest potential for odors and emissions of TACs, are specifically separated from residential areas and other sensitive land uses in the local plans. Although the plans encourage higher density and mixed land uses, the intended uses do not extend to industrial categories. Furthermore, the General Plan contains an extensive Hazardous Waste Management Plan Element that explicitly addresses the need to control hazardous waste and hazardous emissions from industrial facilities within the City. It can be concluded, therefore, that the plans implicitly address the issue of odors and TACs, and therefore, satisfy the third evaluation element of the plans.

As discussed above, the proposed Hercules ITC is consistent with the General Plan and the *Plan for Central Hercules*, and those plans meet the criteria used to determine consistency with the *2005 Ozone Strategy*. Furthermore, all appropriate control measures would be implemented during construction to minimize the generation of fugitive dust, and all appropriate BACTs would be implemented to minimize construction emissions of criteria pollutants and TACs. The recommended mitigation measures would help reduce construction and operational emissions to a less than significant level. Therefore, the proposed project would not cause an individually significant impact. Accordingly, the proposed project would not have a significant cumulative impact.

CEQA Determination: Cumulative impacts associated with criteria pollutants and TACS from other identified development projects are not considered significant.

Impact AIR-7: Implementation of the project would generate GHGs and could contribute to cumulative impacts of global climate change.

Alternatives 1 and 2: Guidelines for GHGs and climate change within the CEQA process, including thresholds for significance, are currently being developed. Following Assembly Bill 32 (the Global Warming Solutions Act of 2006), Senate Bill 97 was passed in 2007, which required the Governor's Office of Planning and Research (OPR) to develop draft amendments to the CEQA guidelines "for the mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions." The OPR prepared a Technical Advisory on CEQA and Climate Change in June 2008 as a precursor to the draft CEQA guidelines.

As required by SB 97, OPR developed and, on April 13, 2009, submitted to the Natural Resources Agency its proposed amendments to the CEQA guidelines for GHG emissions. The Natural Resources Agency conducted a formal rule-making process throughout the remainder of 2009, adopted a slightly revised version of the amendments, and then submitted them to the Office of Administrative Law (OAL) on December 31, 2009. The CEQA Guidelines Amendments became effective on March 15, 2010.

In preparation for the new guidelines, many air districts, including the BAAQMD, have been revising their CEQA guidance documents to include specific guidance for implementing the new state guidelines on GHG emissions. Specifically, the BAAQMD issued a draft of its CEQA Air Quality Guidelines on December 7, 2009, which includes specific guidance for assessing and

mitigating GHGs for projects, and even sets thresholds of significance for project-level GHG emissions. The new CEQA guidelines were finalized in June 2010. The proposed project was evaluated prior to the guidelines being adopted and was evaluated for GHGs using the Draft BAAQMD guidance (BAAQMD 2010).

The Draft BAAQMD guidance outlines a five-step process to evaluate a project for GHG emissions and make a significance determination. Step 1 involves comparing the project attributes with screening criteria to decide whether more detailed evaluations are necessary or whether the project would likely result in a less than significant impact to global climate change. For projects needing additional evaluation, Step 2 details an emissions quantification procedure to calculate unmitigated GHG emissions for the project operation. In Step 3, the unmitigated emissions total is compared to thresholds of significance to determine the need for mitigation. If mitigation is needed, it is detailed in Step 4, along with the associated reduction in GHG emissions to determine the mitigated GHG emissions from the project operation. Finally, in Step 5, the mitigated emissions are compared with thresholds of significance.

The GHG evaluation for the Hercules ITC began with the Step 1 screening procedure, which compares project-specific land use categories to assumed thresholds that would not be expected to result in significant GHG contributions. However, the list of land use categories did not include a transit center or any related description, so it could not be assumed through the screening procedure that the project would result in a less than significant impact to global climate change. As a result, a detailed emissions quantification was required, following the procedure in Step 2.

GHG emissions quantification involves both direct emissions and indirect emissions. Direct emissions are those that originate from the specific project site, while indirect emissions are associated with the energy production, water conveyance, and wastewater treatment of the project's incremental consumption of energy and water. Direct emissions are calculated using the URBEMIS2007 model, which estimates CO_2 emissions from construction, area, and mobile sources accessing the project. The attributes of the proposed Hercules ITC were modeled in URBEMIS2007, which estimated that the operation of the project would generate 985.3 tons per year (896.6 metric tons per year [MT/yr]) of combined area source and operational emissions of CO_2. However, the indirect emissions must also be calculated and added to this figure.

The Draft BAAQMD guidance recommends that indirect emissions calculations use data from CARB's Local Government Operations Protocol (LGOP), which contains utility-specific emissions factors for CO_2 and region-specific emissions factors for methane (CH_4) and nitrous oxide (N_2O). Specific data on average water usage and wastewater treatment was also obtained from the East Bay Municipal Utility District. Using the BAAQMD recommended procedures, the indirect GHG emissions for the proposed Hercules ITC were estimated to be 37.04 MT/yr of CO_2 equivalents (CO_2e) for electricity consumption, 0.28 MT/yr of CO_2e for electricity used in water conveyance, and 0.52 MT/yr of CO_2e for electricity used in wastewater treatment, for a total of indirect GHG emissions of 37.84 MT/yr of CO_2e. The calculations include adjustments for CH_4 and N_2O. The combined direct and indirect GHG emissions for the proposed Hercules ITC project were estimated at 934.4 MT/yr of CO_2e.

With the total estimated operational-related GHG emissions for the project, the evaluation moved to Step 3 of the Draft BAAQMD guidance, which was to compare the unmitigated emissions to the thresholds of significance. The threshold of significance for GHG emissions for land use development projects (e.g. residential, commercial, industrial, institutional, and public land uses and facilities) is 1,100 MT/yr of CO_2e. The estimated operational GHG emissions from the proposed Hercules ITC project are 934.4 MT/yr of CO_2e, which is below the BAAQMD threshold of significance. Therefore, the estimated GHG emissions from the proposed project would result in a less than significant impact, and Steps 4 and 5 of the GHG evaluation do not need to be completed.

CEQA Determination: Cumulative impacts associated with to GHG emissions and global climate change from other identified development projects are not considered significant.

4.8. NOISE AND VIBRATION

4.8.1. Significance Criteria

According to Appendix G of the CEQA Statutes and Guidelines, the proposed project would have a significant impact with respect to noise if it causes or results in:

- Exposure of persons to or generation of noise levels in excess of standards established in the local General Plan or noise ordinance, or applicable standards of other agencies;
- Exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels;
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;
- Exposure of people residing or working in the project area to excessive noise levels due to the project being located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport; or
- Exposure of people residing or working in the project area to excessive noise levels due to the project being located within the vicinity of a private airstrip.

An interior CNEL of 45 dBA is mandated by the State of California Noise Insulation Standards (CCR, Title 24, Part 6, Section T25 28) for multiple-family dwellings and hotel and motel rooms. In 1988, the State Building Standards Commission expanded that standard to include all habitable rooms in residential use, including single-family dwelling units. Since normal noise attenuation within residential structures with closed windows is about 20 dB, an exterior noise exposure of 65 dBA CNEL[2] allows the interior standard to be met without any specialized structural attenuation (dual-paned windows, etc.) features. The noise standards used in this analysis are, therefore, 65 dBA CNEL exterior use and 45 dBA CNEL interior.

4.8.2. Issues Not Discussed Further

There are no public or private airports or airstrips in the project vicinity and the project site is not located within an airport land use plan. Furthermore, there are no public or private airports or airfields within at least 10 miles of the project site. Therefore, the proposed project would not expose people to excessive airport or aircraft related noise levels and these issues are not discussed further in this EIR/EIS.

[2] The 24-hour average noise level with noise occurring during evening and nighttime hours weighted prior to averaging.

4.8.3. Impacts and Mitigation Measures

No-Action Alternative

Under the No-Action Alternative, the Hercules ITC project would not be constructed, and therefore it would not increase ambient noise levels in the project vicinity above acceptable levels. No noise impacts would occur.

Action Alternatives

Impact NOI-1: Implementation of the proposed project would add new vehicle trips to the roadway network in the project vicinity, which could increase ambient noise levels at nearby noise-sensitive receptors above acceptable levels.

Alternatives 1 and 2: The implementation of either action alternative (Alternative 1 or Alternative 2) would increase vehicle traffic and traffic noise in the project area. Traffic data contained in the Hercules ITC Traffic Impact Analysis prepared by DKS Associates (2010) was used to calculate potential project-related traffic noise levels along roadways in the project vicinity. These data included turning movement counts at 10 intersections for existing conditions and projections for baseline and project conditions. Link volumes were calculated based on the turning movement data. The surrounding roadway network, along with the associated link traffic volumes, was modeled in the FHWA approved Traffic Noise Model software, version 2.5 (TNM 2.5) (FHWA 2004), to evaluate traffic-related noise impacts to surrounding residential land uses. Both the a.m. and p.m. peak hour periods were modeled for both action alternatives, for a total of four scenarios. Although the results were similar amongst all scenarios, the p.m. peak hour for Alternative 1 was slightly higher than the other scenarios, so the results discussed here are for that scenario. The TNM 2.5 modeling indicated that the project would not result in traffic noise levels exceeding acceptable levels at sensitive receivers near the site (e.g., residences). Project-related traffic noise levels at the residences closest to John Muir Parkway, west of San Pablo Avenue, are calculated to be in the range of 53 to 55 dBA Leq, while the residences closest to the future intersection of John Muir Parkway and Bayfront Boulevard are calculated to be in the range of 42 to 52 dBA Leq. These future noise levels are approximately 0 to 3 dBA higher than the future noise levels without the project, which are expected to range from 42 to 52 dBA Leq, and are in the range of existing ambient noise levels measured in the area of 50 to 51 dBA Leq. The traffic-related noise levels are projected to remain below the applicable noise criteria (65 dBA Leq) and the slight increase at some of the residences would be considered less than significant because it would be less than a 5-dBA increase. **Table 4.8-1** summarizes existing noise levels and future traffic-related noise levels with and without the project.

Mitigation: No mitigation is required.

CEQA Determination: This impact would be less than significant.

Table 4.8-1
Traffic-related Noise Levels

Receiver Location	Existing (2009) measured noise levels (dBA)	Future (2035) modeled noise levels without project (dBA)	Future (2035) modeled noise levels with project (dBA)	Project contribution (dBA)
R1 – Corner of S. Front St. and N. Front St.	50	52	55	3
R2 – Corner of N. Front St. and Cabrillo Ln.	50	52	53	1
R3 – Corner of N. Front St. and Drake Ln.	50	52	54	2
R4 – Corner of Sanderling Dr. and Sanderling Dr.	51	52	52	0
R5 – Corner of Sanderling Dr. and Avocet Dr.	51	51	50	0
R6 – Promenade St., south of Bayfront Blvd.	50	50	51	1
R7 – Earnest St., south of Bayfront Blvd.	50	45	45	0
R8 – Railroad Ave., south of Bayfront Blvd.	50	42	42	0

Impact NOI-2: Operation of the proposed Hercules ITC would cause increased noise levels in the project area from trains and buses.

Alternatives 1 and 2 and Track Option B: The operation of either action alternative of the proposed Hercules ITC would result in increases in noise levels from trains and buses.

Trains

Both action alternatives would place the train station platform at the same location, so the train noise issues would be the same for both alternatives. Trains are required to sound their signal horn as a safety measure, when approaching curves or other points where view may be obscured, and when approaching an at-grade crossing or another train. Observations made in the vicinity of the proposed station site confirmed that railroad trains do not normally sound their horns in this area. This was supported by the measured data. Maximum noise levels were typically 75-85 dBA Lmax measured at a distance of 160 feet from the center of the tracks. The measured day/night average noise level was 68 dBA Ldn. During the same time period near the Martinez Amtrak Station, typical maximum noise levels ranged from 90 to105 dBA Lmax and the measured noise level over a 24-hour period was 76 dBA Ldn. An at-grade railroad crossing near the Martinez station necessitated the sounding of horns for all trains passing through the area. Near the Hercules ITC, there would only be a locked gate at the crossing for emergency vehicle access. Because the proposed station would not have a nearby at-grade crossing noise levels are expected to be substantially lower than those measured at the Martinez station.

Specific train noise impacts were calculated for the proposed Hercules ITC using the methodology contained in the FTA Transit Noise and Vibration Impact Assessment (2006). The methodology uses spreadsheet-based calculations using project-specific details. The nearest existing residences to the proposed Hercules ITC are approximately 300 to 500 feet from the station platform. The calculations result in projected future noise levels from train activity (not including or other noise sources) of 53 to 58 dBA Ldn at these nearest residences. These projected noise levels compare with the long-term ambient noise measurements (LT-2) conducted in the area of 61 dBA Ldn (refer to Section 3.8.3.3), which also includes noise from other sources in the surrounding area. According to FTA noise criteria (refer to Figure 3.8-1), based on existing noise levels, there would be no noise impact to existing nearby residences from future train activity at the Hercules ITC.

Buses

Buses would access the proposed Hercules ITC from John Muir Parkway. Under Alternative 1, buses would pick-up and drop-off passengers directly in front of the intermodal transit center approximately 175 feet north of existing residences south of Bayfront Boulevard. Under Alternative 2, the bus loading zone would be located about 400 feet northeast of these residences. According to the project's traffic study, there are a total of 14 local, express, regional, and transbay bus routes currently operated out of the Hercules Transit Center, about 1.5 miles from the proposed Hercules ITC. Some of the existing transit routes would be re-routed to serve the intermodal transit center, although not all existing routes would directly serve the proposed Hercules ITC. This analysis assumed an average headway of 20 minutes during the peak hour for existing bus routes. Using worst-case assumptions that all existing routes would access the Hercules ITC, up to 42 buses could access the transit center during the peak hour. These buses were also included in the traffic-noise modeling under Impact NOI-1. Average noise levels resulting from buses are calculated to be 49 dBA Leq at 175 feet and 44 dBA Leq at 400 feet. Based on these calculations, the operation of buses at the proposed Hercules ITC would not substantially increase the hourly average noise levels or daily average noise levels resulting from train operations at the Hercules ITC.

Combined Sources

Future noise levels from train activity alone would be approximately 10 to 12 dBA higher than noise levels from bus activity alone at similar distances. Therefore, the combined noise levels from all Hercules ITC activity would be the same as those from train activity alone. Future project-related noise levels from train and bus activity combined is calculated to range from 53 to 58 dBA Ldn at the residences nearest to the station platform. This compares to the long-term ambient noise measurement (LT-2) conducted in the area of 61 dBA Ldn.

FTA impact thresholds are shown in Figure 3.8-1. Considering the existing noise exposure at nearby residential receivers was measured at 61 dBA Ldn, and the highest project-related noise level would be 58 dBA Ldn, there would be an increase in the cumulative noise level in the area (from existing noise sources and from the future Hercules ITC) of approximately 1.8 dBA. As shown in the noise impact thresholds in Figure 3.8-1, The noise increase would fall within the no impact

Mitigation: No mitigation is required.

CEQA Determination: The impact related to operational noise from the Hercules ITC would be less than significant.

Impact NOI-3: Noise-generating construction activities are anticipated to exceed noise level standards and be at least 5 dBA above the ambient noise environment at adjacent noise-sensitive land uses.

Alternatives 1 and 2 and Track Option B: The proposed Hercules ITC would be constructed on either the west or east side of Refugio Creek (Alternatives 1 and 2, respectively) on the south side of the existing railroad tracks. Primary project components include a transit terminal and bus turnaround located on Bayfront Boulevard adjacent to Refugio Creek, track realignment and construction of a rail platform at the train station, and the railroad bridge replacement at Refugio Creek that would include installation of new riprap and embankment protection. Interim surface parking lots would be constructed north of the planned intersection of John Muir Parkway and Bayfront Boulevard and a parking structure would be constructed off John Muir Parkway north of the transit center. Finally, both alternatives would include the extension of the John Muir Parkway, including the proposed Bayfront Bridge, and the restoration of the lower Refugio Creek channel. In order to provide for the future ferry component, the "tie-in" for the bay- or waterside ramp will be constructed as part of the Hercules ITC project. The ramp "tie-in" will include concrete or steel piles on the western side of the Hercules ITC terminal.

Sources of construction noise that are unique to railroad construction include a rail saw, spike driver, tie cutter, tie handler, and tie inserter. Typical noise levels resulting from this equipment range from about 77 to 90 dBA, measured at a distance of 50 feet (FHWA 1995). During impact pile driving hourly average noise levels could reach 94 dBA Leq at 50 feet. Maximum noise levels generated during demolition or foundation construction would typically range from 85 to 105 dBA Lmax assuming the operation of jackhammers, hoe rams, or impact pile drivers. Typical ranges of noise levels at 50 feet from construction sites are listed in **Table 4.8-2**. Construction-generated noise levels from large projects, like the proposed Hercules ITC, drop off at a rate of about 4 to 6 dBA per doubling of distance between the source and receptor. Shielding provided by barriers or structures can provide an additional 5 to 10 dBA noise reduction at distant receivers.

Construction of the rail platform, track relocation, signals, and overpass could begin in 2010 and the train station and bus terminal could be completed in 2012. No schedule has been established for construction of the permanent parking structure; timing of these facilities would depend on funding and economic conditions. Construction activities are anticipated to include grading, excavation, paving, installation of underground utilities, building construction, and pile driving. Noise impacts resulting from construction depend on the noise generated by various pieces of construction equipment, the timing and duration of noise-generating activities, and the distance between construction noise sources and noise sensitive areas. Construction noise impacts primarily result when construction activities occur during noise-sensitive times of the day (e.g., early morning, evening, or nighttime hours), the construction occurs in areas immediately adjoining noise sensitive land uses, or when construction lasts over extended periods of time.

Table 4.8-2
Typical Ranges of Noise Levels at 50 Feet from Construction Sites (dBA Leq)

	Domestic Housing		Office Building, Hotel, Hospital, School, Public Works		Industrial, Parking Garage, Religious, Amusement & Recreation, Store, Service Station		Public Works Roads & Highways, Sewers, and Trenches	
	I	II	I	II	I	II	I	II
Ground Clearing	83	83	84	84	84	83	84	84
Excavation	88	75	89	79	89	71	88	78
Foundations	81	81	78	78	77	77	88	88
Erection	81	65	87	75	84	72	79	78
Finishing	88	72	89	75	89	74	84	84

Notes:
I - All pertinent equipment present at site.
II - Minimum required equipment present at site.
Source: USEPA 1973

The nearest existing sensitive uses are residences located approximately 300 to 500 feet south of areas on the site where major construction activities would occur. As indicated in **Table 4.8-3**, noise from the loudest phases of construction would range from 55 to 73 dBA Leq at existing residences when construction activities occur at the site. Pile driving noise levels would typically range from 72 to 78 dBA Leq at existing sensitive uses if pile driving occurs near the periphery of the site nearest residences. The UPRR tracks will be temporarily relocated on the landside of the railroad alignment in order to accommodate construction. This will temporarily place trains in closer proximity to residential uses and increase potential noise and vibration effects until final construction of the Hercules ITC Station.

Table 4.8-3
Range of Construction Noise Levels at Nearby Land Uses (dBA Leq)

Direction of Nearest Receivers	Distance from Major Areas Proposed for Construction	Land Use Type	Typical Construction Noise Level Range	Pile Driving Construction Noise Levels
South	300	Residential	61 to 73	78
South	500	Residential	55 to 67	72

Mitigation Measure NOI-1: The proposed project shall implement the following best-available construction noise control measures.

- Ensure that construction activities (including the loading and unloading of materials and truck movements) are limited to the hours of 7:00 a.m. to 7:00 p.m. on weekdays and between the hours of 9:00 a.m. and 5:00 p.m. on weekends or holidays.

- Restrict pile driving to the hours of 8:00 a.m. to 5:00 p.m. to ensure that driving occurs when residents are more likely to be away from home or able to leave if necessary to avoid noise effects.
- Equip all internal combustion engine-driven equipment with mufflers, which are in good condition and appropriate for the equipment.
- Prohibit unnecessary idling of internal combustion engines.
- Utilize "quiet" models of air compressors and other stationary noise sources where technology exists.
- Locate stationary noise-generating equipment as far as feasible from sensitive receptors when sensitive receptors adjoin or are near a construction project area.
- Pre-drill foundation pile holes to minimize the number of impacts required to seat the pile.
- Where feasible, construct solid plywood fences between the construction noise sources and adjacent noise-sensitive land uses to reduce offsite propagation of construction noise.
- Route construction-related traffic along major roadways and as far as feasible from sensitive receptors.
- Residences or noise-sensitive land uses adjacent to construction sites shall be notified of the construction schedule in writing.
- Designate a "construction liaison" that would be responsible for responding to any local complaints about construction noise. The liaison would determine the cause of the noise complaints (e.g., starting too early, bad muffler, etc.) and institute reasonable measures to correct the problem.
- Conspicuously post a telephone number for the liaison at the construction site.

CEQA Determination: Even with the implementation of mitigation, the impact related to construction noise would be significant and unavoidable.

Impact NOI-4: Project construction and operation could generate groundborne vibration levels exceeding acceptable limits.

Alternatives 1 and 2 and Track Option B: Construction activities such as pile driving generate groundborne vibration. Like noise, groundborne vibrations naturally attenuate with distance. The nearest sensitive receptors are located approximately 300 feet from where pile driving would occur. At a distance of 300 feet, groundborne vibration levels from pile driving would be in the range of 0.26 mm/s to 0.46 mm/s. For comparison, the threshold for risk of architectural damage to buildings occurs above 2.5 mm/s of vibration, the same threshold at which people begin to be annoyed by vibration levels. As a result, groundborne vibration resulting from construction activities would be less than significant.

The operation of the station would result in train speeds equal to or lower than existing train speeds through the area. Groundborne vibration resulting from railroad train operations is a function of speed and decreases with decreasing speed. The presence of the station, therefore, would result in lower levels of groundborne vibration than currently exist in the area. Vibration impacts associated with the operation of this project would be less than significant.

Mitigation: No mitigation is required.

CEQA Determination: This impact would be less than significant.

Track Option B

Implementation of Track Option B would generate short term noise impacts to residents at Victoria by the Bay at the northeastern section of the UPRR corridor where the third track would be installed. Mitigation measures to reduce the potential noise and vibration impacts discussed above would be implemented as part of the construction for Track Option B. However, implementation of Track Option B would have a number of beneficial effects reducing the potential adverse effects of the project related to noise and vibration. Implementation of Track Option B would eliminate the need to construct the shoofly tracks, thereby avoiding the need to route traffic closer to residents temporarily during construction of the Hercules ITC. Additionally, Option B would require few piles reducing noise and vibrations impacts. Most significantly, implementation of Track Option B is anticipated to shorten the duration of construction from approximately 30 months to 24 months. Construction related noise and vibration would still result in temporary significant impacts. Decreasing the period of construction Option B would reduce the duration of construction related noise; however, this impact would still be significant and unavoidable.

4.8.4. Cumulative Impacts and Mitigation

Construction of the Hercules ITC and the other reasonably foreseeable projects in the vicinity, including the ferry terminal and the mixed use developments, are not expected to occur at the same time and construction as the Hercules ITC. Therefore, noise and vibration impacts would be spread over an extended period.

Operation of the Hercules ITC, the ferry terminal, and the commercial activities associated with the mixed use developments would occur during normal working hours and the only evening/night time or weekend noise would be from residential activities. As the area redevelops and more people live and work in the vicinity of the Hercules ITC, the area can be expected to experience more constant noise and fewer periods of quiet. This is a foreseeable result of redeveloping the area into an urban environment and consistent with the approved plans of the City.

CEQA Determination: Cumulative effects associated with noise and vibration from other identified development projects are not considered significant.

4.9. BIOLOGICAL RESOURCES

This section describes potential impacts of the Hercules ITC on the biological environment. This section outlines construction impacts, operational impacts, and cumulative impacts on each potentially affected biological resource. Special-status species are discussed first, followed by sensitive natural communities, marine mammals, fishery resources, and lastly waters of the U.S. This section provides an evaluation of each proposed Action Alternative and the No-Action Alternative. Where differences in impacts occur between the Alternatives 1 and 2, they are discussed separately. Otherwise, impacts for Alternatives 1 and 2 are discussed together. Mitigation measures are also proposed to avoid or minimize each potential impact.

The information presented in this section is summarized from the "Biological Resources Information for the Hercules Intermodal Transit Center Project" (HDR 2010a; Appendix G), which provides a background for the information presented in this section.

4.9.1. Methodology

Special-status Species Evaluation

A list of regionally-occurring special-status species with the potential to occur in the ESL and/or be impacted by the proposed project was prepared by reviewing the following sources: the list of reported occurrences of special-status in the California Natural Diversity Database (CNDDB) for the "Mare Island, California" USGS quadrangle and the surrounding eight quads (CNDDB 2009); the list of federal listed special-status species with the potential to occur in, or be affected by projects in the "Mare Island, California" USGS quad and the surrounding eight quads (USFWS 2009); and the list of rare and endangered plants known to occur on the "Mare Island, California" USGS quad and the surrounding eight quads obtained from California Native Plant Society Online Database (CNPS 2009). HDR then conducted a biological reconnaissance survey to characterize the habitat types present in the ESL. The results of the habitat assessment were compared to the habitat requirements of the regionally occurring special-status species and used to determine which of these species had the potential to occur in the ESL. The list of regionally-occurring special-status species compiled from the USFWS, CNDDB, and CNPS lists, their specific habitat requirements, and a discussion of presence/absence of suitable habitat for these species in the ESL is presented in Appendix G to this EIR/EIS.

Special-status species and sensitive natural communities that were determined to have potential habitat in the project area are listed in Table 3.9-1, the Project Study Area Sensitive Species/Natural Communities Table, which is located in Section 3.9.4 of this EIR/EIS.

Regionally Occurring Marine Mammals and Regionally Important Fisheries

A list of marine mammals and regionally important fisheries potentially occurring in San Pablo Bay was obtained from the following sources: CDFG's monitoring programs (Fall Midwater Trawl and Summer Townet Survey) as queried from the Bay Delta and Tributaries Project database (WWR 2007a), the San Pablo Bay Watershed Restoration Framework Program (California Coastal Conservancy and USACE 2000), the Report on the Subtidal Habitats and

Associated Biological Taxa in San Francisco Bay (NMFS 2007), and the Hercules Multimodal Transit Facility Fish and Fisheries Assessment (WWR 2007a).

Waters of the U.S. Including Wetlands

A delineation of potential jurisdictional waters of the U.S. for the project site was prepared by Vollmar Consulting in 2008 (Vollmar 2008) and a Jurisdictional Determination was issued by the USACE in December 2008 (USACE 2008). Project design modifications occurred in 2009 subsequent to the Jurisdictional Determination being issued. Project design modifications necessitated enlargement of the study area boundary and additional jurisdictional delineation effort. HDR prepared a delineation report in fall 2009 for potential waters of the U.S. in the remaining portions of the study area not included in the previously verified delineation (HDR 2010b). The 2009 delineation has not yet been verified by the USACE.

The 2008 and 2009 jurisdictional delineation reports are both included in Appendix G to this EIR/EIS.

WWR completed a wetland delineation of the Chelsea Wetlands area in March 2008 (WWR 2009) This wetland delineation was field verified by the USACE in March 2009.

4.9.2. Significance Criteria

The project would have a significant adverse impact on biological resources if it would:

- Have a substantial adverse effect, either directly through “take” or indirectly through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the USFWS, CDFG, or CNPS;
- Have a substantial adverse effect on a species Critical Habitat designated by NMFS or USFWS, or on EFH designated by the Magnuson-Stevens Act;
- Result in the introduction or spread of an invasive species;
- Have a substantial adverse effect on any sensitive natural community identified in local or regional plans, policies, regulations, or by the USFWS or CDFG;
- Have a substantial adverse effect on federally protected wetlands as defined by Sections 10 and 404 of the CWA, including special aquatic sites (e.g., eelgrass beds, mudflats), through direct removal, filling, hydrologic disruption, or other means;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with any local policies or ordinances protecting biological resources;
- Have a substantial adverse effect on habitat for commercially or recreationally important fisheries;

- Have a substantial adverse effect on waterfowl breeding or wintering habitat by reducing acreage or quality, or have a substantial adverse effect on the acreage or quality of migrant or wintering shorebird habitat; or
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

4.9.3. Impacts and Mitigation

No-Action Alternative

This alternative would not alter existing biological conditions. There would be no construction or operational impacts to biological resources, therefore biological conditions would remain the same as the existing setting.

Action Alternatives

Potential Impacts to Federally Listed Threatened or Endangered Wildlife Species

Impact BIO-1: Construction of the proposed project could potentially result in "take" through harm or harassment of individual California red-legged frogs (CRLF).

Several seasonal and perennial wetlands occur within and near the project site. All aquatic habitats within one mile of the project site are unsuitable for CRLF breeding. Potential dispersal corridors identified within one mile of the project site contain barriers, including heavy traffic areas (e.g., I-80, SR-4, city streets), moderate to high-density urban, commercial, and industrial developments, and numerous culverts stretching for long distances. Because habitats on the project site are not suitable for breeding, and potential corridors for dispersal to the site have barriers, CRLF is not expected to occur in the project site or areas adjacent to the project boundaries for Track Option B. In the remote possibility that an individual dispersed through barriers to the project site, construction activities within and adjacent to Refugio Creek, the North Channel (e.g., creek realignment and restoration, extension of John Muir Parkway), and habitat adjacent to the project boundaries for Track Option B would have the potential to harm or harass the individual. Take of CRLF would be a potentially significant impact. Implementation of the following standard avoidance and minimization measures prior to and during construction would reduce the potential impacts to less than significant.

Alternatives 1 and 2 and Track Option B. Construction activities within and adjacent to Refugio Creek, the North Channel (e.g., creek realignment and restoration, extension of John Muir Parkway), and habitat adjacent to the project boundaries for Track Option B have the potential to harm or harass CRLF if individuals entered the project site during construction. Take of CRLF would be a potentially significant impact.

Mitigation Measure BIO-1: Preconstruction surveys for CRLF would be conducted in the project site approximately two weeks prior to the initiation of construction activities to ensure that CRLF is not actively using the project site as a dispersal corridor. Preconstruction surveys would be conducted by a qualified biologist familiar with all life stages of the frog and would cover all aquatic habitats on the project site suitable for CRLF dispersal. Prior to conducting the

preconstruction surveys, USFWS would be notified of the intent to conduct CRLF preconstruction surveys and the names and qualifications of surveyors. Surveys will not commence until approval is received by USFWS.

If any life stage of CRLF (e.g., egg mass, tadpole, juvenile, or adult) is detected within the project site during surveys, USFWS will be notified regarding the presence of the CRLF. A plan will be developed in consultation with USFWS to relocate the CRLF to the nearest suitable location.

If no CRLF are found in the project site during preconstruction surveys or if CRLF are found and relocated in consultation with USFWS, temporary exclusionary fencing may be installed in Refugio Creek in consultation with USFWS to prevent CRLF from dispersing into the project site from upstream.

Construction personnel would participate in a USFWS-approved worker environmental awareness program. A qualified biologist would inform all construction personnel about the life history of CRLF and its potential presence in the project area and explain the state and federal laws pertaining to protecting this species and its habitat. Construction personnel would be informed of the presence of a biological monitor and receive instruction regarding reporting requirements if a CRLF is found during construction.

A biological monitor would be present during all construction activities within Refugio Creek. The biological monitor will have the authority to stop construction activities if a CRLF is found within the construction area. If a CRLF is found in the project site during construction, work will immediately cease in the vicinity of the CRLF and USFWS will be notified. At the approval of USFWS, the monitor will relocate the CRLF to a suitable location outside of the construction area. If relocation of the CRLF is not permitted, construction activities in the vicinity of the frog will cease until it has passively dispersed away from the construction area.

CEQA Determination: Implementation of the proposed mitigation measure would reduce potential impacts to CRLF to less than significant.

Impact BIO-2: Construction of the proposed project could potentially result in "take" through harm or harassment of vernal pool fairy shrimp (VPFS).

Numerous unvegetated ponded depressions occurring within the UPRR ROW and elsewhere within ruderal habitats in the ESL provide potential habitat for fairy shrimp species. However, VPFS are not expected to occur in the project site because it is outside of their known range and because the habitat on-site is marginal. In order to determine presence/absence of federally-listed vernal pool branchiopods, USFWS protocol presence/absence surveys were conducted during the wet season in the southern half of the ESL in winter of 2003/2004 and in the northern half of the ESL in winter 2006/2007. An unlisted species of fairy shrimp (versatile fairy shrimp; *Branchinecta lindahli*) was found in many of the unvegetated season pools during those surveys (Vollmar 2007). HDR commenced wet season surveys of the entire ESL in winter 2009/2010 and has also found versatile fairy shrimp in several seasonally ponded features. No other fairy shrimp have been found in the ESL during any surveys.

Alternatives 1 and 2 and Track Option B. VPFS are not expected to occur in the project site and no impacts to VPFS are anticipated. However, if VPFS are found during wet season surveys in 2009/2010, they could be harmed by construction activities. Take of VPFS would be a potentially significant impact.

Mitigation Measure BIO-2: Fairy shrimp surveys will be completed in winter 2009/2010 within suitable habitats for VPFS. If VPFS are detected during surveys, the USFWS will be notified and appropriate avoidance and/or mitigation measures will be implemented prior to commencement of construction within or adjacent to VPFS occupied habitat. If no VPFS are found, no further mitigation would be necessary.

CEQA Determination: Implementation of the proposed mitigation measure would reduce potential impacts to VPFS to less than significant.

Impact BIO-3: Construction of the proposed project could potentially result in "take" through harm or harassment of California clapper rail.

California clapper rail is not expected to occur in or adjacent to the project site, including areas adjacent to the project boundaries associated with Track Option B, because these areas are isolated from other marshes with established California clapper rail populations. The project site is not likely to be colonized except after years of exceptionally high recruitment when other higher quality marshes are at carrying capacity. A protocol-level survey conducted in 2007 did not detect any California clapper rails at or adjacent to the project site (WWA 2007). However, there is a low potential that the project site may be colonized in any given year.

Alternatives 1 and 2 and Track Option B. If the project site and areas adjacent to the project boundaries associated with Track Option B were colonized by California clapper rail prior to the commencement of construction, construction activities could result in harassment of nesting birds and potentially cause abandonment of the young or forced fledging. This would be considered a potentially significant impact.

Mitigation Measure BIO-3: If construction begins during the breeding season (January 15 to April 15), a USFWS approved biologist will conduct a preconstruction survey of California cordgrass tidal marsh habitat for California clapper rail prior to any construction activities occurring within 500 feet of those habitats. The survey will include searching all accessible California cordgrass tidal marsh habitats in and within 500 feet of the project site for California clapper rail. The surveys shall be conducted within two weeks prior to the commencement of construction activities. If California clapper rail is not found, no further avoidance and minimization measures are necessary. If California clapper rail is found, the biologist will note whether or not a nest was observed and record the behavior of the bird(s) (e.g., exhibiting courtship/nesting behavior, foraging, etc.). If California clapper rail is observed nesting or is determined by the biologist to be potentially intending to utilize the habitat for nesting, construction activities will be delayed within 500 feet of the California cordgrass tidal marsh where the bird(s) is found, and USFWS will be notified of the finding. Work will not commence within 500 feet of California cordgrass tidal marsh occupied by California clapper rail until USFWS is consulted regarding appropriate avoidance measures and permission is granted by USFWS to commence work.

Preconstruction survey(s) will be re-conducted as specified above if a lapse in construction activities of two weeks or more occurs at any time during the breeding season such that no more than two weeks will have elapsed between the last survey and the commencement of construction activities.

CEQA Determination: Implementation of the proposed mitigation measure would reduce potential impacts to California clapper rail to less than significant.

Impact BIO-4: Construction of the proposed project could potentially result in "take" through harm or harassment of salt marsh harvest mouse.

Salt marsh harvest mouse is not expected to occur in or adjacent to the project site because the tidal marsh habitat in and adjacent to the project site is expected to be unsuitable to support a viable salt marsh harvest mouse population. However, presence/absence surveys for salt marsh harvest mouse have not been conducted and there is a low potential that salt marsh harvest mouse could occur in the pickleweed tidal marsh habitat in and adjacent to the ESL.

Alternatives 1 and 2 and Track Option B. Activities associated with construction of the station building and railroad realignment for Alternative 1 would potentially impact salt marsh harvest mouse if it occurred within the impacted pickleweed tidal marsh. This would be considered a potentially significant impact.

Mitigation Measure BIO-4: A USFWS approved biologist will conduct a preconstruction survey of the northern coastal salt marsh habitat in the project site prior to any construction activities occurring within 500 feet of those habitats. If salt marsh harvest mice are found in or adjacent to the project site during preconstruction surveys, USFWS will be notified of the finding and consultation will be initiated. Construction activities within 500 feet of the northern coastal salt marsh will be delayed until consultation has been completed with USFWS.

If no salt marsh harvest mice are found during preconstruction surveys, salt marsh harvest mouse exclusion fencing will be installed around the perimeter of the northern coastal salt marsh to prevent salt marsh harvest mice from entering the project site and being harmed by construction activities. Location and design specifications for the proposed exclusion fencing will be submitted to USFWS for review and approval. A USFWS approved biologist will monitor installation of the fencing in order to ensure that the fencing is installed appropriately to ensure total exclusion of the salt marsh harvest mouse as well as to ensure that no individuals are harmed during installation.

A USFWS approved biological monitor will be present during construction activities within and immediately adjacent to the northern coastal salt marsh habitat. The biological monitor will have the authority to stop construction activities if a salt marsh harvest mouse is found within the construction area. If a salt marsh harvest mouse is found in the project site during construction, work will immediately cease in the vicinity and USFWS will be notified.

Construction personnel would participate in a USFWS-approved worker environmental awareness program. A qualified biologist would inform all construction personnel about the life history of salt marsh harvest mouse and its potential presence in the project area and explain the state and federal laws pertaining to protecting this species and its habitat. Construction

personnel would be informed of the presence of a biological monitor and receive instruction regarding reporting requirements if a salt marsh harvest mouse is found during construction.

CEQA Determination: Implementation of the proposed mitigation measure would reduce potential impacts to salt marsh harvest mouse to less than significant.

Potential Impacts to State-Listed Threatened or Endangered Wildlife Species

Impact BIO-5: Construction of the proposed project could potentially result in "take" through harm or harassment of California black rail.

California black rail is not expected to occur in or adjacent to the project site because the northern coastal marsh within and adjacent to the project site is of a relatively small acreage and isolated; however, other habitat elements are present. A 2007 protocol-level survey did not detect any black rails (WWA 2007) within the ESL; however, there is some chance that pickleweed tidal marsh or pickleweed brackish marsh in or adjacent to the project site may be occupied by California black rail in some years. Although the species was observed in areas immediately south of the southern-end of the project boundary for Track Option B and could nest in the nearby tidal marsh, potential nesting habitat is separated from this area by a row of trees, the Bay Trail, an unused road, and an actively used railroad right-of-way. Given these factors it is unlikely that the species would occur in this area.

Based on aerial photography, no habitat for this species is present in the northern-end of the project boundary for Track Option B and is assumed that the species does not occupy this portion of the project. Studies are underway to ground-truth aerial photography and support environmental permits prior to construction.

Alternatives 1 and 2 and Track Option B. Construction activities could potentially impact California black rail if it occupied northern coastal marsh habitat or tidal marsh in and adjacent to the project site and areas immediately adjacent to the project boundaries for Track Option B prior to construction. This would be considered a potentially significant impact.

Mitigation Measure BIO-5: If construction begins during the breeding season (February 1 to August 31), a CDFG approved biologist will conduct a preconstruction survey of pickleweed tidal marsh habitat for California black rail prior to any construction activities occurring within 500 feet of those habitats. The survey will be conducted according to CDFG guidelines and will include searching all accessible pickleweed tidal marsh habitats in and within 500 feet of the project site for California black rail. The surveys shall be conducted within two weeks prior to the commencement of construction activities.

If California black rail is not found, no further avoidance and minimization measures would be necessary. If California black rail is found, the biologist will note whether or not a nest was observed and record the behavior of the bird(s) (e.g., exhibiting courtship/nesting behavior, foraging, etc.). If California black rail is observed nesting or is determined by the biologist to be potentially intending to utilize the habitat for nesting, construction activities will be delayed within 500 feet of the pickleweed tidal marsh where the bird(s) is found and CDFG will be notified of the finding. Work will not commence within 500 feet of pickleweed tidal marsh

occupied by California black rail until CDFG is consulted regarding appropriate avoidance measures and permission is granted by CDFG to commence work.

Preconstruction survey(s) will be re-conducted as specified above if a lapse in construction activities of two weeks or more occurs at any time during the breeding season such that no more than two weeks will have elapsed between the last survey and the commencement of construction activities.

CEQA Determination: Implementation of the proposed mitigation measure would reduce potential impacts to California black rail to less than significant.

Potential Impacts to Other Sensitive Wildlife Species

Impact BIO-6: Construction of the proposed project could potentially result in disturbance of sensitive bat species, including pallid bat and hoary bat.

While unlikely, sensitive bat species have the potential to forage within the project site or use the large culverts under the railroad tracks or the trees within the willow riparian habitat for roosting.

Alternatives 1 and 2 and Track Option B. Construction activities associated with realignment of Refugio Creek outfall into San Pablo Bay or construction activities within willow riparian habitats could potentially disturb roosting bats. This would be considered a potentially significant impact.

Mitigation Measure BIO-6: Preconstruction bat surveys shall be conducted to inspect inside culverts under the railroad tracks and trees within the willow riparian habitat. If no roosting bats are found, no further mitigation would be necessary. If bats are detected within a roost at the time of construction, excluding any bats from roosts will be accomplished by a bat specialist prior to the onset of any construction activities. Exclusionary devices, such as plastic sheeting, plastic or wire mesh, can be used to allow for bats to exit but not re-enter any occupied roosts. Expanding foam and plywood sheets can be used to prevent bats from entering unoccupied roosts.

CEQA Determination: Implementation of the proposed mitigation measure would reduce potential impacts to sensitive bats to less than significant.

Impact BIO-7: Construction of the proposed project could potentially impact San Pablo vole and/or salt marsh wandering shrew

Marginal habitat for San Pablo vole and salt marsh wandering shrew occurs within the tidal marsh habitat within the project site.

Alternatives 1 and 2 and Track Option B. If these species were to occur within the project site, they could be impacted by construction activities in and within 500 feet of tidal marsh habitat. This would be considered a potentially significant impact.

Mitigation Measure BIO-7: Preconstruction surveys for San Pablo vole and salt marsh wandering shrew will be conducted simultaneously with salt marsh harvest mouse surveys. If

these species are detected, CDFG will be contacted regarding appropriate measures to relocate them out of the work area or protect occupied habitat in conjunction with salt marsh harvest mouse avoidance measures. Exclusionary fencing installed for salt marsh harvest mouse would also prevent these species from entering the project site. The salt marsh harvest mouse biological monitor will also report the presence of any San Pablo voles or salt marsh wandering shrews observed during construction activities to CDFG, and appropriate avoidance measures will be implemented prior to commencement of construction activities adjacent to occupied habitat.

CEQA Determination: Implementation of the proposed mitigation measure would reduce potential impacts to San Pablo vole and salt marsh wandering shrew to less than significant.

Impact BIO-8: Construction of the proposed project could potentially result in disturbance to other sensitive bird species (Cooper's hawk, tricolored blackbird, northern harrier, white-tailed kite, saltmarsh common yellowthroat, San Pablo song sparrow, Alameda song sparrow, osprey, burrowing owl) and migratory birds during the nesting season.

San Pablo song sparrow nests have been documented in and adjacent to the project site along Hercules Point. Great egrets, great blue heron, white-tailed kite, osprey, and Alameda song-sparrow have been observed either foraging and/or displaying nesting behavior in areas south of the southern-end of the project boundary for Track Option B. Several other migratory bird species were observed in the project site and could potentially begin nesting in the project site prior to construction.

Alternatives 1 and 2 and Track Option B. If sensitive bird species began nesting in or adjacent to the project site prior to commencement of construction, work related activities could result in harm or harassment of nesting birds, such as abandonment of the nest by the adult birds or forced fledging. This would be considered a potentially significant impact.

Mitigation Measure BIO-8: If feasible, ground disturbing activities (e.g., clearing and grubbing) in and within 500 feet of suitable nesting habitat for these species should commence outside of the breeding season (September 1 to January 14). If birds began nesting in and within 500 feet of the project site after construction commenced, it could be assumed that they were not disturbed by construction activities.

If ground disturbing activities (e.g., clearing and grubbing) begin during the breeding season (January 15 to August 31), a qualified biologist will conduct a nesting bird survey in and within 500 feet of the project site for Cooper's hawk, tricolored blackbird, northern harrier, white-tailed kite, saltmarsh common yellowthroat, San Pablo song sparrow, Alameda song sparrow, osprey, burrowing owl, and other migratory birds and nesting birds. The pre-construction surveys shall be conducted within two weeks prior to the commencement of construction activities. If no nesting birds are found, then no further avoidance and minimization measures are necessary. If nesting birds are found, the locations of the nests and/or nesting territories will be mapped and appropriate avoidance measures will be determined in consultation with CDFG to protect the nesting birds during construction.

Preconstruction survey(s) will be re-conducted as specified above if a lapse in construction activities of two weeks or more occurs at any time during the breeding season such that no more than two weeks will have elapsed between the last survey and the commencement of construction activities.

CEQA Determination: Implementation of the proposed mitigation measure would reduce potential impacts to nesting birds to less than significant.

Potential Impacts to Sensitive Natural Communities

Impact BIO-9: Construction of the proposed project would result in impacts to Northern Coastal Salt Marsh habitat, Coastal Brackish Marsh habitat and brackish stream habitat.

Construction of the proposed project is expected to impact Northern Coastal Salt Marsh and Coastal Brackish Marsh habitats, which are considered sensitive natural communities and are also waters of the U.S. regulated by the USACE and USEPA under Section 10/404 of the CWA. Realignment of the lower portion of Refugio Creek to its new outfall location into San Pablo Bay is expected to impact disturbed Coastal Brackish Marsh habitat and brackish stream habitat occurring within the banks of the creek, as well as Northern Coastal Salt Marsh bayward of the railroad tracks. Upstream, restoration of Refugio Creek within the project site will impact Coastal Brackish Marsh. A restoration plan is currently being prepared for Refugio Creek. Restoration efforts are expected to result in no net loss of brackish marsh habitat and brackish stream habitat within Refugio Creek. Additionally, restoration and mitigation work at the Chelsea Wetlands would temporarily impact Northern Coastal Salt Marsh habitat, Coastal Brackish Marsh habitat and brackish stream habitat. However, restoration efforts will more than offset temporary impacts to habitats. Construction of the John Muir Parkway Bridge will impact a small portion of Coastal Brackish Marsh Habitat. Construction of the train station building and realignment of railroad tracks will impact small portions of Northern Coastal Salt Marsh habitat.

Alternative 1 and Track Option B. Construction of station building is expected to impact approximately 0.10 acres of Northern Coastal Salt Marsh habitat.

Construction of the Bay Trail, John Muir Parkway, Bayfront Boulevard, Bayfront Bridge, Transit Loop, and Transit Loop Bridge will permanently impact 0.08 acres of Coastal Brackish Marsh habitat (i.e., pickleweed brackish marsh).

Construction of the Bay Trail, John Muir Parkway, Bayfront Boulevard, and Bayfront Bridge, will permanently impact 0.06 acres of brackish stream habitat.

Restoration of Refugio Creek will temporarily impact 0.52 acres of Northern Coastal Salt Marsh habitat. Restoration of the North Channel and Refugio Creek will temporarily impact 0.68 acres of Coastal Brackish Marsh habitat. Approximately 0.47 acres of brackish stream habitat will temporarily be impacted with the restoration of Refugio Creek.

Alternative 2 and Track Option B. Construction of the station building is expected to impact approximately 0.01 acres of Northern Coastal Salt Marsh habitat.

Construction of the Bay Trail, John Muir Parkway, Bayfront Boulevard, and Bayfront Bridge will permanently impact 0.07 acres of Coastal Brackish Marsh habitat.

Construction of the Bay Trail, John Muir Parkway, Bayfront Boulevard, and Bayfront Bridge, will permanently impact 0.05 acres of brackish stream habitat.

Restoration of Refugio Creek will temporarily impact 0.52 acres of Northern Coastal Salt Marsh habitat. Restoration of the North Channel and Refugio Creek will temporarily impact 0.68 acres of Coastal Brackish Marsh habitat. Approximately 0.47 acres of brackish stream habitat will temporarily be impacted with the restoration of Refugio Creek.

Mitigation Measure BIO-9: Temporary orange fencing will be erected around the perimeter of Northern Coastal Salt Marsh and Coastal Brackish Marsh habitats that will not be impacted by construction activities; delineating them as environmentally sensitive areas. Environmentally sensitive area fencing will be used that does not prohibit the potential movement of sensitive wildlife species, including, but not limited to the salt marsh harvest mouse, the San Pablo vole, the salt marsh wandering shrew, the California clapper rail, and the California black rail into or out of these marsh habitats. Signs will be placed on the fencing clearly stating that it is a sensitive habitat and that it is to be avoided during construction.

All construction personnel will receive training notifying them of the environmentally sensitive areas on the project site and the potential for these areas to support special-status species.

Construction personnel and equipment will not be allowed to enter the environmentally sensitive areas on the project site. Storage of materials and equipment will not be allowed within 100 feet of environmentally sensitive areas.

Prior to commencement of construction activities that have the potential to impact the Northern Coastal Salt Marsh and Coastal Brackish Marsh, a permit will be obtained from the USACE and the BCDC for fill and/or disturbance of this habitat. All permit conditions will be followed. Suitable compensatory mitigation for impacts to Northern Coastal Salt Marsh and Coastal Brackish Marsh will be determined in conjunction with the USACE and BCDC and implemented to ensure no net loss of Northern Coastal Salt Marsh occurs.

CEQA Determination: Implementation of the proposed mitigation measure would reduce potential impacts to Northern Coastal Salt Marsh, Coastal Brackish Marsh, and brackish stream habitats to less than significant.

Impact BIO-10: Construction of the proposed project could potentially result in loss of eelgrass and/or widgeongrass beds.

Alternatives 1 and 2. Eelgrass surveys within the ESL and vicinity were completed in 2007 (WWR 2007b) and in 2010 (HDR 2010c), and no eelgrass or widgeongrass beds were found. However, eelgrass and widgeongrass beds expand and contract seasonally and populations could establish in the project site prior to construction and be impacted by dredging activities. Impacts to these special aquatic sites would be a potentially significant impact.

Mitigation Measure BIO-10: A valid preconstruction eelgrass survey will be completed during the period of active growth of eelgrass (typically March through October). The preconstruction survey will be completed prior to the beginning of construction and shall be valid until the next period of active growth. If any eelgrass is identified in the project area, post-construction eelgrass surveys will be conducted to determine if any eelgrass was adversely impacted. The survey will be prepared in consultation with CDFG and/or NMFS. If any eelgrass has been impacted, the impacted eelgrass will be mitigated for in consultation with CDFG and/or NMFS (e.g., at a ratio of 1.2:1).

CEQA Determination: Implementation of the proposed mitigation measure would reduce potential impacts to eelgrass and/or widgeongrass beds to less than significant.

Impact BIO-11: Construction of the proposed project could potentially result in loss of intertidal mudflats.

Dredging for the construction of the new outlet and channel for Refugio Creek would impact intertidal mudflats. Impacts to this special aquatic site would be a potentially significant impact.

Alternative 1. Restoration of Refugio Creek will result in a temporary loss of 5.05 acres of intertidal mudflat.

Alternative 2. Restoration of Refugio Creek will result in a temporary loss of 5.05 acres of intertidal mudflat.

Mitigation Measure BIO-11: A permit will be obtained from the USACE and the BCDC prior to impacting the intertidal mudflats. All permit conditions will be followed. Suitable compensatory mitigation will be determined in conjunction with the USACE and BCDC and implemented in order to replace and/or enhance the functions and values lost due to impacting special aquatic sites during implementation of the proposed project.

CEQA Determination: Implementation of the proposed mitigation measure would reduce potential impacts to intertidal mudflats to less than significant.

Invasive Species

Impact BIO-12: Construction of the proposed project could potentially result in the spread of invasive species.

Alternatives 1 and 2 and Track Option B. The upland habitats on the project site are currently dominated by non-native invasive species. These species are abundant in disturbed habitats in the region. No mitigation is necessary for nonnative upland species. However, there is a potential that non-native cordgrass or other non-native species could be introduced to the project site as a result of construction disturbance to salt marsh and intertidal mudflats. If non-native cordgrass was introduced to the project site, it could spread and potentially competitively displace or hybridize with the existing native cordgrass. Additionally, any aquatic habitats disturbed by construction could become rapidly colonized by non-native species. This would be a potentially significant impact.

Mitigation Measure BIO-12: In order to prevent the introduction of non-native cordgrass and/or other non-native aquatic plant species to the project site, the following measures will be implemented:

- All construction equipment to be utilized in or adjacent to the intertidal mudflats and salt marsh habitats shall be thoroughly cleaned to remove dirt and weed seeds prior to being transported or driven to or from the project site.
- If any borrow soil or other stockpiled material (e.g., rock slope protection) to be placed in or adjacent to the intertidal mudflats and salt marsh habitats is transported to the project site from an offsite location, it shall be inspected for the presence of noxious weeds or invasive plants.
- If noxious weeds or invasive plants are present in imported materials, the contractor shall remove approximately five inches of the surface of the material from the borrow site before transporting to the project site.
- Before removal, this material will be chemically or mechanically treated to kill the existing noxious weeds and invasive plants, and will not be used for the project without approval.

CEQA Determination: Implementation of the proposed mitigation measure would reduce potential impacts associated with the spread of non-native species to less than significant.

Fisheries and Aquatic Resources

Potential construction-related impacts assessed include those associated with: (1) the use of access roads and staging areas; (2) construction of facilities, roads, and bridges associated with the Hercules ITC; (3) realignment and restoration of Refugio Creek; and (4) construction of Hercules Point Pedestrian Bridge.

The potential for construction-related impacts to affect fish and aquatic resources is dependent on the potential for project activities to directly affect individuals and/or remove, damage, or alter onsite habitat conditions within and adjacent to the construction footprint. Evaluations of potential impacts were based on several considerations, including construction timing, physical habitat disturbance, potential for physical injury, hazardous spills, sedimentation and turbidity, entrainment, vibration and pressure waves, predation risk, and the life stage periodicity and habitat utilization of evaluated species in the project area.

Impact BIO-13: Dredging activities could impact marine mammals

Alternatives 1 and 2. Several species of marine mammals may frequent the sub-tidal and intertidal regions of the project area, foraging on migratory fish species and utilizing sandy shores or mudflats. In-water construction and dredging activities may disrupt foraging by marine mammals by decreasing visibility. However, because marine mammals often feed in deep, low-light environments, the potential impacts of localized turbidity plumes during dredging are not expected to be significant. Dredging activities may disrupt foraging by removing benthic prey species such as fishes which are fed on by seals or amphipods which are fed on by gray whales. However, this impact is not expected to be significant due to the localized nature of the dredging

impacts and the relatively large feeding ranges of marine mammals in the Bay. In addition, there are no known marine mammal haul-out sites within or adjacent to the Project Area.

Mitigation Measure BIO-13: Implementation of **Mitigation Measure WR-1** and the following measures will be followed during dredging in San Pablo Bay to reduce turbidity.

In-water construction and dredging activities will occur during the window of June through November, to minimize effects on listed species and their habitat.

Sampling and testing for contaminants will be conducted in potential dredging locations in San Pablo Bay prior to the onset of dredging activities (per USEPA and USACE requirements). If sediments to be dredged are contaminated such that their resuspension may adversely affect listed species or their habitat, NMFS and CDFG will be consulted.

Bankward slopes of the dredged area will be slanted to acceptable side slopes (e.g., 3:1) to prevent sloughing.

CEQA Determination: Implementation of the proposed mitigation measure would reduce potential impacts to marine mammals to less than significant.

Impact BIO-14: Construction and dredging activities could result in the modification or disturbance of special aquatic sites including eelgrass beds, mudflats, and tidal marshes that provide fish habitat.

Alternatives 1 and 2. Construction activities could modify and disturb aquatic habitats including tidal marshes and mudflats. However, the tidal marsh habitat present in the project area consists of highly fragmented, poorly developed patches. The limited quantity and quality of the existing nearshore wetlands are not anticipated to provide a significant resource for fish in the project area and have little potential to provide habitat for special-status fish species. . Aquatic surveys conducted during spring 2007 indicate the presence of intertidal and shallow subtidal mudflats, which may provide shallow-water habitat for juvenile fishes. Aquatic surveys conducted in 2007 indicate no presence of eelgrass beds in the immediate project area (WWR 2007a).

Mudflats

Construction of the pilings for the north building of the Hercules ITC and the railroad bridge may directly remove small amounts of mudflat habitat along San Pablo Bay. However, these areas are small relative to the amount of soft bottom habitat locally and throughout the Bay. While small amounts of soft bottom habitat would be removed by each pier, hard substrate habitat would be added in the form of piles. The surface area for attachment of organisms would exceed the loss of soft bottom habitat, providing hard substrate habitat benefits. Any new riprap placed on the Bay-side of the train tracks would incorporate native vegetation in its design. It is not anticipated that any additional riprap would be placed outside of the UPRR ROW.

The proposed north building of the Hercules ITC may extend over the intertidal mudflats of San Pablo Bay, which may result in shading of potential juvenile fish foraging and rearing habitat in San Pablo Bay. However, the area of shallow water habitat shaded during high tide is expected to be negligible compared to the amount of shallow water habitat present in the vicinity and in San Pablo Bay.

Tidal Marsh – Refugio Creek

Grading the new proposed Refugio Creek channel will involve removing the two 90 degree bends and the three 72 inch culverts that currently convey flow underneath the access road, upstream of the existing railroad bridge. These culverts currently restrict flood events and cause overtopping of water onto the access road and the railroad. The new invert of the proposed channel will be lowered to allow for greater tidal influence in Refugio Creek. The new Refugio Creek channel from the Transit Loop Bridge upstream for approximately 400 feet will be planted with riparian and tidal marsh species, such that the new channel will provide for an equal or greater amount of tidal marsh habitat than the existing channel. This restored channel section includes a meandering low flow channel with a bottom width of 20 feet, a depth of 3.5 feet, and 1:1 sloped sides. The floodplain is approximately 105 feet wide with a 2 to 3 percent slope towards the low flow channel.

Tidal Marsh – San Pablo Bay The proposed restoration of Refugio Creek includes the restoration of the creek channel and relocation of the creek mouth into San Pablo Bay. Currently, the channel, upon exiting into San Pablo Bay, is redirected by a shelf of mud and debris and makes another 90 degree turn to the northeast before discharging past tidal marsh and mudflat. Relocation of the channel mouth will effectively remove the 90 degree turns creating a more natural channel. The new mouth for Refugio Creek will drain out to a patch of existing tidal marsh habitat in San Pablo Bay. As a result, a segment of tidal marsh habitat in San Pablo Bay will be lost due to the excavation of the new mouth. Additionally, as the new channel establishes an equilibrium, additional tidal marsh may eventually be degraded or lost over time from due to the flows of Refugio Creek . A Mitigation and Monitoring Plan (MMRP) will be prepared for this project in coordination with the USACE, CDFG, and responsible agencies as appropriate. Changes and/or loss of tidal marsh habitat will be monitored and mitigated for under the adaptive management program identified in the MMRP. There is currently a void of tidal marsh habitat in the immediate vicinity of the existing Refugio Creek channel in San Pablo Bay. This area may be suitable for restoration by establishing appropriate grade levels and planting native tidal marsh species. New plantings and any loss in tidal marsh due to the new Refugio Creek outflows will be monitored over time to ensure no net loss in tidal marsh habitat. Mitigation and restoration of tidal marsh habitats will be coordinated with the responsible resource agencies.

Mitigation Measure BIO-14: As described above, the proposed Refugio Creek channel will incorporate restored tidal marsh and riparian habitat, including suitable bank slopes for vegetation growth. The new channel is anticipated to provide more juvenile fish habitat over time, relative to existing conditions.

Any tidal marsh habitat that is degraded or lost due to relocating the mouth of Refugio Creek will be mitigated for by planting tidal marsh vegetation in San Pablo Bay, in the vicinity of

where Refugio Creek currently flows out into San Pablo Bay. Tidal marsh habitat will be monitored over time to ensure no net loss in tidal marsh habitat. Wetland restoration will be coordinated with the responsible agencies as part of the wetland permitting required under Section 404 of the CWA.

Although eelgrass surveys within the ESL and vicinity were completed in 2007, and no eelgrass was found (WWR 2007b), valid preconstruction eelgrass surveys will be completed (see **Mitigation Measure BIO-10**).

CEQA Determination: Implementation of the proposed mitigation measure would reduce potential impacts to aquatic fish habitats to less than significant.

Impact BIO-15: Construction and dredging activities may temporarily increase sedimentation and turbidity in Refugio Creek and San Pablo Bay.

Alternatives 1 and 2 and Track Option B. Activities associated with access, staging, storage, and disposal, in addition to activities associated with construction of the facilities associated with the Hercules ITC (e.g., railroad bridge, Bayfront Bridge, Transit Loop Bridge, Station building) and Refugio Creek grading activities have the potential to contribute sediment and increase turbidity in waters within Refugio Creek and San Pablo Bay above those levels generally found under existing conditions. In addition, dredging activities in San Pablo Bay have the potential to increase turbidity in San Pablo Bay.

Although many fish species potentially present are highly migratory and capable of moving freely throughout the project area, a sudden localized increase in turbidity may potentially affect some fishes by temporarily disrupting normal behaviors that are essential to growth and survival such as feeding, sheltering, and migrating (NMFS 2003b). Behavioral avoidance of turbid waters may be one of the most important effects of suspended sediments on salmonids (Birtwell et al. 1984; DeVore et al. 1980; Scannell 1988). Additional turbidity-related effects associated with behavioral alteration include disruption of feeding behaviors, which increases the likelihood that individual fish would face increased competition for food and space, and experience reduced growth rates or possibly weight loss (NMFS 2003b).

Grading activities in Refugio Creek and construction of the railroad bridge, Transit Loop Bridge, and Bayfront Bridge will be conducted subsequent to installing a cofferdam at the mouth of Refugio Creek and dewatering Refugio Creek. Therefore, the potential for construction activities to increase sedimentation or turbidity within Refugio Creek and San Pablo Bay will be minimized.

During any dredging activities in San Pablo Bay, dissolved oxygen concentrations in the water column could potentially be reduced if the suspended dredged material contains high concentrations of oxygen-demanding substances (e.g., hydrogen sulfide) (USACE 2004). The reduction of dissolved oxygen during dredging is reportedly minimal (1 to 2 parts per million (ppm)) and transitory in surface waters, but can be more severe in bottom waters (reduction of up to 6 ppm for 4 to 8 minutes) (USACE 2004). Most estuarine organisms are capable of tolerating low dissolved oxygen conditions for such short time periods, and reduced dissolved oxygen concentrations generally would be expected to be localized and short term, with minimal

potential impacts (U.S. Navy 1990 as cited in USACE 2004). In addition, the motile nature of fish enables them to typically avoid areas of high turbidity and thus potential impacts are generally expected to be minimal.

In-water construction and dredging activities in San Pablo Bay will be conducted during the work window of June through November to minimize potentially significant impacts to anadromous salmonids and longfin smelt. Impacts to other fish species also will be minimized by limiting the timing of dredging in San Pablo Bay to June through November.

The implementation of impact avoidance measures including preparation and implementation of a SWPPP and associated BMPs, and utilization of a silt curtain during dredging activities, is expected to minimize sedimentation and turbidity resulting from construction and dredging activities to below levels that would significantly impact special-status fish species and their habitat in San Pablo Bay. In addition, grading activities associated with the proposed Refugio Creek channel and construction of the proposed railroad bridge, Bayfront Bridge, and Transit Loop Bridge will be conducted "in the dry" prior to diverting Refugio Creek flow through the new proposed channel, and therefore, no notable increases in sedimentation or turbidity would be expected to occur downstream or in San Pablo Bay during these activities.

Mitigation: Implementation of **Mitigation Measures BIO-13, WR-1,** and **WR-2** will reduce potential impacts to fish and other aquatic species to less than significant. No additional measures will be required.

CEQA Determination: Implementation of the proposed mitigation measure would reduce potential impacts as a result of sedimentation or turbidity to less than significant.

Impact BIO-16: Construction activities may potentially result in a chemical spill in Refugio Creek or San Pablo Bay.

Alternatives 1 and 2 and Track Option B. Hazardous materials and chemicals in the form of gasoline, engine oil, lubricants, or other fluids used during construction activities could potentially enter Refugio Creek or San Pablo Bay as a result of seepage or accidental spills. Accidental discharge of hazardous materials and chemicals could potentially affect fish and aquatic resources that may be present in the immediate vicinity and downcurrent of the construction area by increasing physiological stress or direct mortality, and altering primary and secondary production.

Mitigation Measure BIO-16: Implementation of a Spill Prevention and Response Plan designed to minimize the potential for chemical spills and seepage, would reduce the potential impact to a less than significant level. Additionally, all maintenance materials (i.e., oils, grease, lubricants, antifreeze, and similar materials) will be stored at off-site areas. If these materials are required during construction activities, then they will be placed in a designated area at a minimum of 100 feet away from Refugio Creek and San Pablo Bay. Regular maintenance of construction vehicles and equipment will also be performed to ensure they are in working order throughout the construction period. On-site vehicle maintenance will only be allowed within maintained staging areas that are away from sensitive resource areas.

CEQA Determination: Implementation of the proposed mitigation measure would reduce potential for a chemical spill to less than significant.

Impact BIO-17: Dredging activities could result in the entrainment of special-status fish and aquatic species.

Alternatives 1 and 2. Dredging within San Pablo Bay mudflats in areas with depths less than 20 feet may pose an entrainment risk to smaller juvenile fish species, such as salmon and steelhead (USACE 2004). However, juvenile salmonids rearing in the Bay are likely to be sufficiently mobile such that they can generally avoid entrainment from dredging activities (USACE 2004).

Mitigation Measure BIO-17: Dredging activities in San Pablo Bay will be conducted during the work window of June through November to minimize potentially significant impacts to anadromous salmonids and longfin smelt. This work window also will minimize potential impacts to other fish and aquatic species by minimizing the timing of dredging to June through November.

CEQA Determination: Implementation of the proposed mitigation measure would reduce potential for entrainment of fish to less than significant.

Impact BIO-18: Vibration and pressure waves resulting from pile driving could impact special-status fish and aquatic species and marine mammals.

Alternatives 1 and 2 and Track Option B. During pile driving activities for constructing the north building of the Hercules ITC, the potential exists for vibration and pressure waves to be generated in San Pablo Bay, potentially affecting fish and marine mammal species in the project area. However, because pile driving will occur “in the dry” within a cofferdam (or “in the dry” during low tide), the noise levels are not expected to reach a level that would startle or disrupt fishes or marine mammals to the point of causing non-volitional movement out of their preferred habitat. Because all pile driving activities will occur out of water, the noise levels under water will be much lower than those created in the air.

Mitigation Measure BIO-18: Pile driving will be conducted “in the dry,” minimizing any potential impacts to fishes and marine mammals to less than significant levels. Avoidance and minimization measures to be employed to reduce underwater noise levels to less than significant levels will be developed in consultation with NMFS, but may include some or all of the following:

- Use of a cofferdam;
- Use of a vibratory pile driver when feasible;
- Use of a percussion hammer;
- Use of a cushioning block between the hammer head and pile;
- Driving piles during slack tides while currents are comparatively slower;

- If marine mammals are observed within 1,000 feet of the project, allowing them to completely exit the project area before pile driving resumes;
- Restricting pile driving to the June to November 30 work window to protect anadromous salmonids and longfin smelt; and
- Use of a qualified biologist to monitor pile installation to ensure that the sound minimizing techniques are effective in maintaining sound waves below established thresholds.

CEQA Determination: Implementation of the proposed mitigation measure would reduce potential impacts from pile driving to less than significant.

Impact BIO-19: Dredging activities could result in resuspension of contaminants.

Alternatives 1 and 2. Metal and organic chemical contamination is widespread in San Francisco Bay sediments due to river run-off and municipal/ industrial discharges. Contaminants of particular concern in the Bay include silver, copper, selenium, mercury, cadmium, PCBs, DDT and its metabolites, pesticides, **polycyclic aromatic hydrocarbons**, and tributyltin (USACE 2004). Dredging of contaminated sediments does present the potential for release of contaminants to the water column, and for the uptake of contaminants by organisms contacting resuspended material (USACE 2004). However, most contaminants are tightly bound in the sediments and are not easily released during short-term resuspension (USACE 2004). Dredging activities under the proposed project may resuspend contaminants in San Pablo Bay if contamination is present.

Mitigation Measure BIO-19: Sampling and testing for contaminants will be conducted in potential construction/dredging locations in San Pablo Bay prior to the onset of dredging activities.

Dredging activities in San Pablo Bay will be conducted during the work window of June through November to minimize potentially significant impacts to anadromous salmonids and longfin smelt. This work window also will minimize potential impacts to other fish and aquatic species by minimizing the time period of dredging to June through November.

CEQA Determination: Implementation of the proposed mitigation measure would reduce potential for re-suspension of contaminants to less than significant.

Impact BIO-20: Construction and dredging activities could result in increased predation risk of special-status fish and aquatic species.

Alternatives 1 and 2. Construction activities associated with the proposed project have the potential to increase the risk of predation due to: (1) cofferdam closure and dewatering; (2) noise associated with pile driving activities; (3) increased turbidity above those levels normally found in San Pablo Bay; (4) the potential for water quality contamination due to a hazardous spill or resuspension of contaminants during dredging; and (5) habitat modification or disturbance from construction and dredging activities. Potential impacts associated with these activities that are not directly associated with predation risk are described in other portions of this section.

Dewatering associated with cofferdam closure reportedly may confine fish and expose them to an increased risk of predation (NMFS 2000). Typically, fish salvage operations are utilized when construction activities cause dewatering and confinement. However, fish salvage operations also can disorient and/or injure fish, further increasing the risk of predation following removal and subsequent release from the dewatered and/or confined project area (NMFS 2003b). Disorientation caused by noise associated with pile driving can temporarily disrupt normal fish behaviors, thereby increasing the risk of predation (NMFS 2000; NMFS 2003b). Additionally, construction and dredging activities may increase turbidity, which in turn, could alter normal fish behavior and increase the risk of predation (DeVore et al., 1980; Birtwell et al., 1984; Scannell 1988; NMFS 2003a). However, it also has been reported that increased turbidity could decrease piscine and avian predation on fish.

Cofferdam closure and activities associated with cofferdam closure also could potentially lead to increased predation risk on sensitive fish species. Cushman (1985) reported that cofferdam dewatering could cause harm, injury, and mortality to entrained and stranded individuals by confining them to areas of increased water temperature, decreased dissolved oxygen concentration, and predation. Additionally, fish salvage operations could disorient or injure individuals (NMFS 2003b) such that they face an increased predation risk after release. However, the amount of increased predation resulting from disorientation or injury associated with fish salvage operations is unknown.

The amount of increased predation risk associated with increased turbidity, pile driving, cofferdam dewatering activities and habitat modification is unknown. However, sensitive fish and aquatic resources would only be exposed to increased predation risk for a limited duration during their downstream migration and is not expected to result in long-term population declines.

Mitigation Measure BIO-20: In-water construction activities in San Pablo Bay and dredging activities in San Pablo Bay will be conducted during the work window of June through November to minimize potentially significant impacts to anadromous salmonids and longfin smelt.

CEQA Determination: The implementation of BMPs to minimize sedimentation and turbidity, hazardous spills, and vibration and pressure waves, is expected to indirectly reduce any potentially significant impacts associated with increased predation risk to less than significant.

Impact BIO-21: Dredging activities could impact benthic invertebrates.

Alternatives 1 and 2. Dredging involves the removal of substrate and benthic organisms at the dredging site, resulting in immediate localized effects on bottom life. Aside from the initial physically disruptive effects, the composition and abundance of the benthic community may become altered. Dredging opens the area for recolonization on a new substrate that may resemble the original substrate or be completely different in physical characteristics (USACE 2004). The site may be recolonized by the same organisms that inhabited the area prior to dredging, or opportunistic species that have suitable environmental requirements may occupy the site (Reilly et al. 1992, as cited in USACE 2004). Recolonization of the dredging site can begin quickly, although reestablishment of a more stable benthic community may take several months or years after the dredging has occurred (Oliver et al. 1977, Conner and Simon 1979, as cited in USACE

2004). Communities inhabiting highly variable and easily disrupted environments, such as those found in shallow water, recovered more quickly from dredging operations than communities in less variable environments such as in deep or offshore waters (USACE 2004). Oliver et al. (1977, as cited in USACE 2004) noted two phases of succession after a disturbance. In the first phase, opportunistic species such as some polychaetes would move into a disturbed area; the second phase involved recruitment of organisms associated with undisturbed areas near the disturbed site. Recovery at the disturbed dredging site depends on the type of environment and the speed and success of adult migration or larval recruitment from adjacent undisturbed areas (Hirsch et al. 1978, as cited in USACE 2004). The effects of habitat loss or alteration at the dredge site may extend beyond the boundaries of the dredging operations. However, dredging-induced habitat alterations are minor compared to the large-scale disturbance of benthic habitat in San Francisco Bay from naturally occurring physical forces, such as seasonal and storm-generated waves, and seasonal fluctuations in riverine sediment transport (Reilly et al. 1992, as cited in USACE 2004). The result of these forces is a state of non-equilibrium in benthic species composition, typical of shallow estuaries (USACE 2004).

Prior studies indicate that benthic organisms naturally re-establish in dredged locations relatively quickly on the order of several months and are capable of attaining pre-disturbance levels of biomass and abundance within one to several years. Invertebrates would likely recolonize the dredged areas quickly after dredging activities, as the proposed dredging footprint is small relative to the surrounding sub-tidal environment. Therefore, impacts to benthic organisms are not anticipated to significantly impact benthic invertebrate populations or higher trophic levels within San Pablo Bay.

Loss of benthic invertebrates also may potentially impact the food web and prey availability for foraging fish species and marine mammals, but the potential decrease in prey availability would likely be minimal compared to the prey availability in the vicinity of the project site in San Pablo Bay.

Mitigation: No mitigation is required.

CEQA Determination: Potential impacts to benthic macroinvertebrates would be less than significant.

Impact BIO-22: Dredging activities could result in the spread of non-native invertebrate species.

Alternatives 1 and 2. Surveys indicate minimal presence of nonnative benthic invertebrates in the project area (WWR 2007a). Temporary impacts associated with dredging activities are not likely in result in the spread of nonnative invertebrate benthic species.

Mitigation: No mitigation is required.

CEQA Determination: Potential impacts would be less than significant.

Impact BIO-23: Dredging activities could impact phytoplankton production.

Alternatives 1 and 2. Phytoplankton production accounts for about 50 percent of the total amount of organic matter in the San Francisco Estuary (SFEP 1992b, as cited in USACE 2004). Phytoplankton production is influenced by currents, light availability, and the composition of aquatic organisms (USACE 2004). The organic matter produced in or transported to the Bay is ingested directly by planktonic invertebrates (zooplankton) that digest and metabolize it to carbon dioxide, water, and dissolved nutrients (USACE 2004). There are estimated to be over 200 species of zooplankton in the Estuary, most of which have not been well-studied (USACE 2004). Important species include the opossum shrimp (*Neomysis mercedis*) that ranges from Suisun Bay down into San Pablo Bay during periods of high riverine flow, and the copepod *Eurytemora* that also resides in the northern reaches (USACE 2004). Zooplankton are consumed by larval and juvenile stages of most fish species, by adult fishes such as anchovy, smelt, and shad, and by macro-invertebrates such as bay shrimp (USACE 2004). Because dredging activities may temporarily increase turbidity levels in the vicinity of the dredge site, a temporary reduction in light availability could reduce phytoplankton productivity in the vicinity of the project site. However, due to the small footprint of the dredge site compared to the area of aquatic habitat in San Pablo Bay, the potential reduction in phytoplankton is expected to be highly localized and the sediment plumes are anticipated to settle relatively rapidly out of the upper water column where phytoplankton production is greatest. With implementation of avoidance and minimization measures to minimize turbidity during dredging activities, this impact is anticipated to be less than significant.

Mitigation Measure BIO-23: Temporary impacts to phytoplankton production due to increases in turbidity would be avoided/minimized through the use of construction BMPs to reduce the potential for increases in turbidity (e.g., use of silt curtains or methods to protect from disturbance).

CEQA Determination: Implementation of the proposed mitigation measure would reduce potential impacts to phytoplankton production to less than significant.

Impact BIO-24: Dredging activities could impact Pacific herring spawning.

Alternatives 1 and 2. The vegetation features often associated with herring spawning such as eelgrass and algae (e.g., *Gracilaria* spp.) are not present in the project area; there are numerous pilings from an old, abandoned pier present in the vicinity that may be suitable for egg attachment, however, because the site is located north of traditional spawning locations in the central San Francisco Bay and no spawning activities are documented in the project vicinity, the potential impacts associated with dredging are expected to be less than significant.

Mitigation Measure BIO-24: Dredging activities will only occur during the window of June through November, minimizing potential impacts on herring spawning activities.

CEQA Determination: Implementation of the proposed mitigation measure would reduce potential impacts to herring to less than significant.

Potential Impacts to Wetlands and Other Waters of the U.S.

Impact BIO-25: Construction of the proposed project would result in impacts to wetlands and other waters of the U.S.

Alternatives 1 and 2 and Track Option B. Construction of the proposed project is expected to impact Northern Coastal Salt Marsh (comprising California cordgrass tidal marsh and pickleweed tidal marsh), pickleweed brackish marsh, intertidal mudflat, cattail marsh, seasonal wetland, and freshwater intermittent drainage (**Table 4.9-1**). Northern Coastal Salt Marsh, Coastal Brackish Marsh, eelgrass bed, and intertidal mudflat are sensitive natural communities and are discussed under Impacts BIO-9, -10, and -11.

Restoration of Refugio Creek is expected to cause impacts to cattail marsh, seasonal wetland, and willow riparian woodland. Construction of the promenade is expected to impact seasonal wetlands. Realignment including the construction of Track Option B of railroad tracks is expected to cause impacts to seasonal wetlands.

Construction of the proposed project will require discharges of fill material into waters of the U.S. to construct the station structure and related facilities as well as to realign Refugio Creek, construct the new meandering channel and establish the new mouth of the creek in San Pablo Bay. Materials discharged into waters of the U.S. would be comprised of clean fill, rock and/or concrete and fill may be supported by piles at the structures such as the station building and the bridges. Refugio Creek would be realigned by first dewatering the area using cofferdams (as described in Section 2) and then excavating the new floodplain and a meandering low flow channel. Impacts resulting from each of the project elements are provided in **Table 4.9-2**.

Mitigation Measure BIO-25: Construction activities within wetlands and other waters of the U.S. will be limited to the extent feasible.

Prior to commencement of construction activities that have the potential to impact the wetlands or other waters of the U.S., a permit will be obtained from the USACE and BCDC for fill and/or disturbance of this habitat. All permit conditions will be followed. Suitable compensatory mitigation for impacts to wetlands and other waters of the U.S. will be determined in conjunction with the USACE and implemented to ensure no net loss of wetlands occurs.

Table 4.9-1
Impacts to Jurisdictional Wetlands and Other Waters

Feature	Alternative 1 Impacts (Acres)	Alternative 2 Impacts (Acres)
Wetland Features		
Pickleweed Tidal Marsh	0.194	0.188
Cordgrass Tidal Marsh	0.582	0.669
Pickleweed Brackish Marsh	0.762	0.749
Cattail Marsh	0.411	0.407
Seasonal Wetland	0.430	0.389
Wetland Feature Subtotal	2.379	2.402

Other Waters		
Intertidal Mudflat	5.048	5.222
Brackish Stream	0.533	0.521
Freshwater Intermittent Drainage	0.054	0.054
Other Waters Subtotal	5.635	5.797
Total Acreage of Impacts to Jurisdictional Wetlands and Other Waters	**8.014**	**8.199**
* *Acreage calculations were rounded to the nearest thousandth of an acre.*		

The City proposes to provide compensatory mitigation for impacts to sensitive aquatic communities as a result of the proposed project by creating/restoring wetlands adjacent to Refugio Creek and the North Channel (**Figure 4.9-1 and 4.9-2**) and if necessary to accommodate adequate compensatory mitigation acreage by dedicating a portion of the tidally influenced salt marsh habitat planned for creation/restoration at the Chelsea Wetland Restoration site, which is approximately 0.7 mile south of the site near the mouth of Pinole Creek (**Figure 4.9-3**). All unavoidable impacts to waters of the U.S. will be compensated for through the construction of suitable wetland habitats. It is anticipated that all wetland impacts will be mitigated for through implementation of the project. If additional wetland mitigation is required, the City will coordinate with the responsible agencies to provide additional mitigation at the Chelsea Wetlands or through another mechanism. Impacts resulting from the project and the proposed mitigation is provided in Table 4.9-2.

Track Option B.

Implementation of Track Option B has not been approved by UPRR and other governing bodies; however, if approved, would provide several operation benefits (discussed in Section 2). Construction of Track Option B would likely result in the fill of waters of the U.S., including wetlands, through the placement of ballast and supporting fill for the UPRR corridor. Additionally, construction of Track Option B, would require the expansion of the UPRR crossing of the unnamed drainage located at the northeastern end of the project near the Victoria by the Bay community. The new crossing structure would be designed to avoid and minimize placement of any fill such as footings and abutments into waters of the U.S. Implementation of Track Option B would potentially result in the unavoidable loss of approximate 0.1 acre of brackish marsh, 0.23 acre of seasonal wetland. Impacts associated with Track Option would be avoided to the greatest extent practicable. Unavoidable impacts would be mitigated for through the construction of similar habitats within the project area adjacent to Refugio Creek and the North Channel.

CEQA Determination: Implementation of the proposed mitigation measure would reduce potential impacts to waters of the U.S. to less than significant.

Table 4.9-2
Hercules ITC Project Impacts and Mitigation Summary

Permanent Impacts	Alt 1 Total Impacts (acres)	Alt 2 Total Impacts (acres)	Alt 1 Approx. Volume (cubic yards)	Alt 2 Approx. Volume (cubic yards)	Mitigation Ratio	Alt 1 Mitigation Acreage	Alt 2 Mitigation Acreage	Location of Proposed Potential Mitigation			
								Refugio[1]	North Channel	Bay	Total
Bay Trail	0.051	0.087	<10	<10	3	0.153	0.261	0.261			0.153
Emergency Vehicle Access	0.151	0.403	1,500	3,000	3	0.453	1.209	1.209			0.453
John Muir Parkway, Bayfront Blvd, and Bridge	0.07	0.07	280	280	3	0.21	0.21		0.21		0.21
Promenade	0.026	NA	<10	<10	3	0.078	NA	0.078			0.078
Parking/Facilities	0.0	0.001	<10	<10	3	NA	0.003	0.003			
Railroad	0.249	0.243	<10	<10	3	0.747	0.729	0.747			0.747
Station Building	0.126	0.115	250	250	3	0.378	0.345	0.378		0.105	0.483
Station Platform	0.052	0.052	<10	<10	3	0.156	0.156	0.156			0.156
Transit Loop Drive and Bridge	0.0612	NA	1010	NA	3	0.1836	NA	0.183			0.183
Total	**0.786**	**0.971**	**3090**	**3580**	**NA**	**2.3586**	**2.913**	**3.015**	**0.21**	**0.105**	**3.330**
Temporary Impacts											
North Channel Restoration	**0.219**	**0.219**	--	--	1	0.219	0.219		0.219		**0.219**
Refugio Creek Restoration	**7.009**	**7.009**	2,400	2,400	1	7.009	7.009	1.961		5.048	**7.009**
Total	**7.228**	**7.228**	**2,400**	**2,400**	**NA**	**7.228**	**7.228**	**1.961**	**0.219**	**5.048**	**7.228**

<10: Construction of these project elements will result in minor discharges to small discrete features such as cattail marsh or seasonal wetlands. Estimates of discharges are estimated to be less than 10 cubic yards as they are minor and difficult to quantify.

--Restoration of North Channel will involve expansion of the ponded area and is not anticipated to have fill discharged to complete the restoration/enhancement work.

[1] Values for proposed mitigation include the higher estimate of either Alternative 1 or Alternative 2. Final mitigation will be determined in coordination with regulatory agencies as part of the permitting process.

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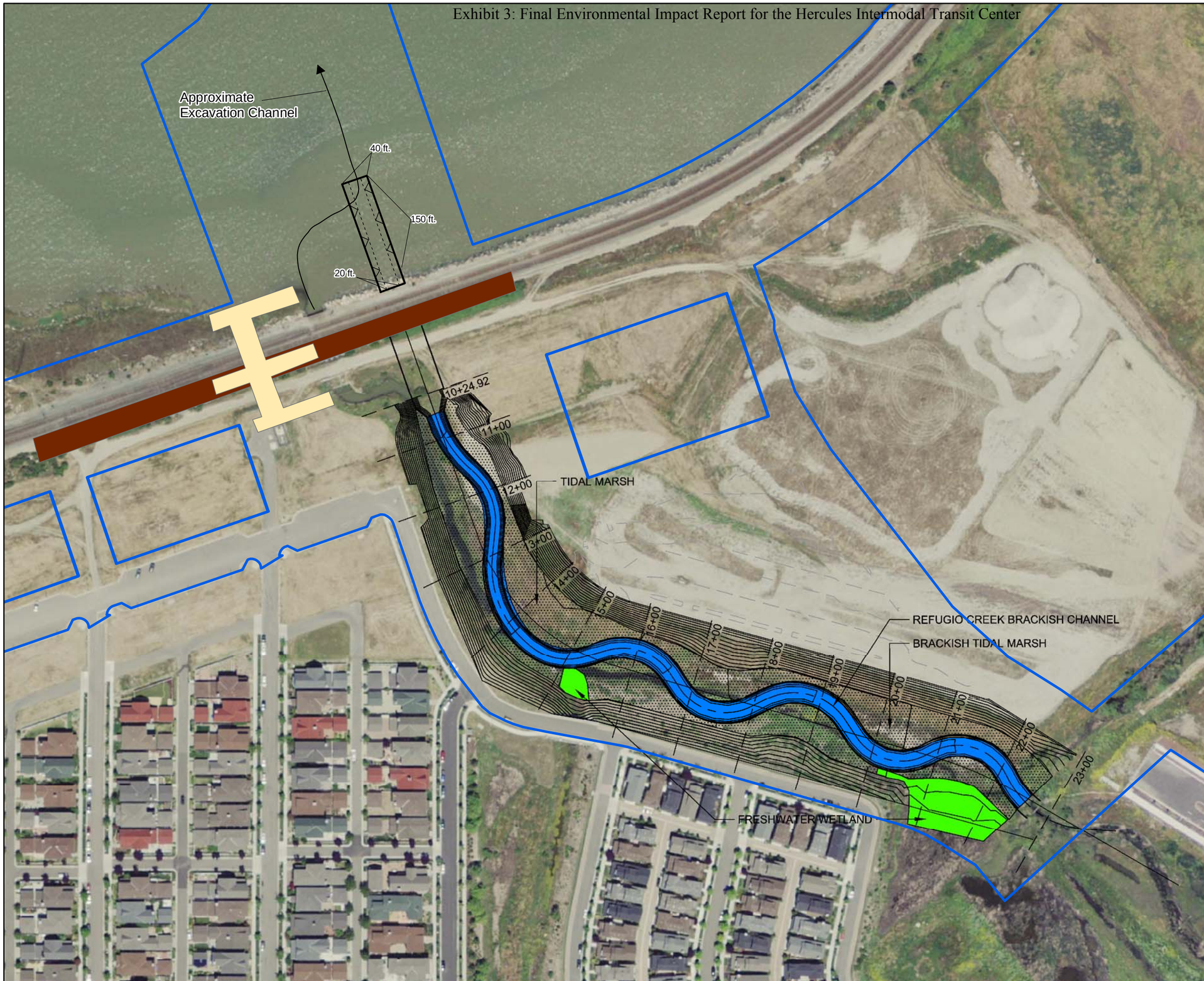

Legend

- Project Boundary
- Station Building
- Station Platform

Refugio Creek Restoration:
Wetland graphic prepared by RDG, 03-2010.

N

1 in = 150 ft (at tabloid layout)

0 12.5 25 50 Meters

0 50 100 200 Feet

Figure 4.9-1: Refugio Wetland Mitigation

City of Hercules
Hercules Intermodal Transit Facility
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources.
No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey.
Data is State Plane Feet, NAD83 Zone 3

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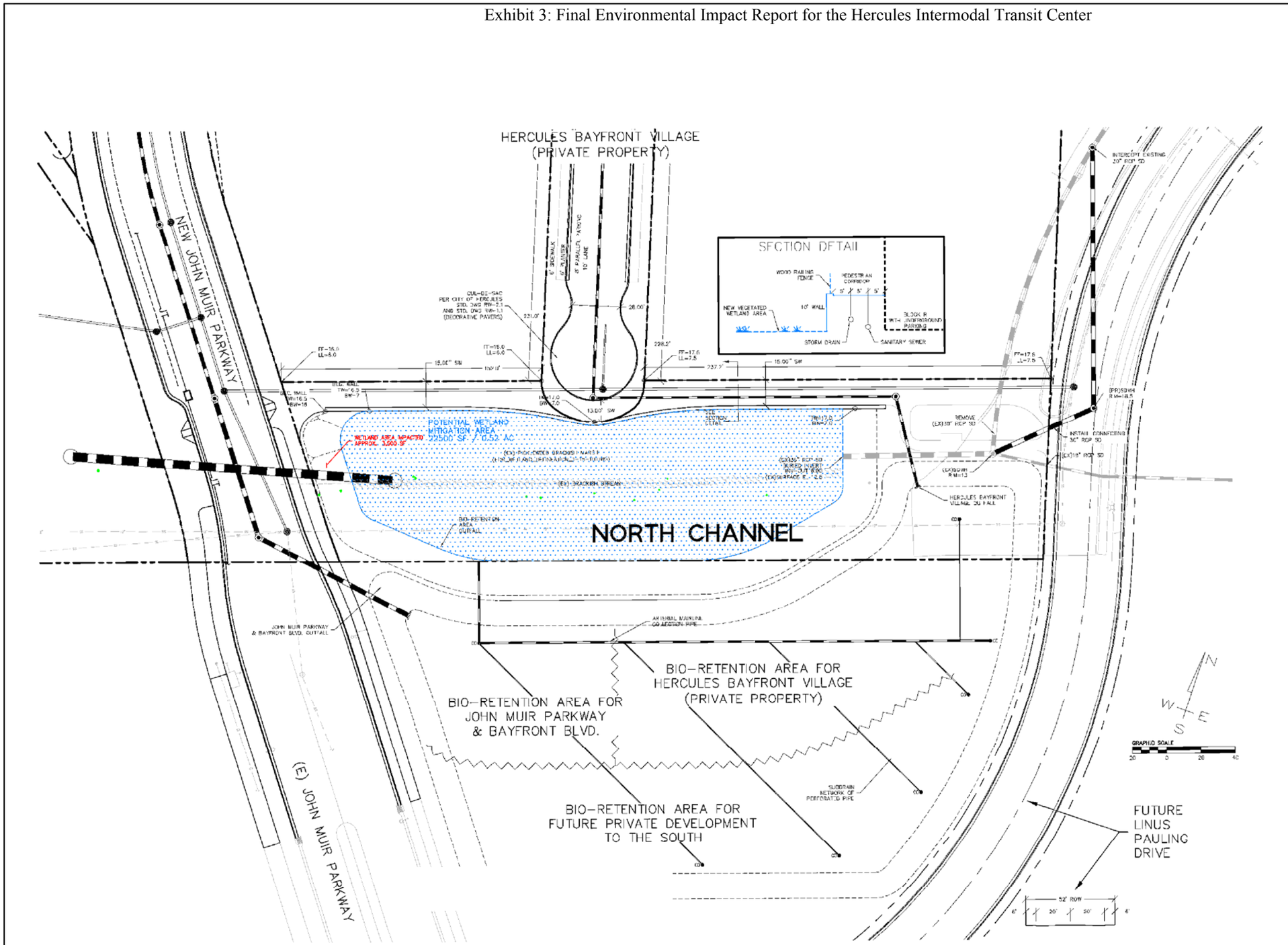

1 in = 60 ft (at tabloid layout)

0 7.5 15 30 Meters

0 30 60 120 Feet

Figure 4.9-2:
North Channel Wetland Mitigation

City of Hercules
Hercules Intermodal Transit Facility
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources.
No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey.
Data is State Plane Feet, NAD83 Zone 3

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Figure 4.9-3: Chelsea Wetlands Restoration Plan

City of Hercules
Hercules Intermodal Transit Facility
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources.
No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey.
Data is State Plane Feet, NAD83 Zone 3

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4.9.4. Cumulative Impacts and Mitigation

Much of the Hercules ITC site is generally degraded resulting from the historic development and remediation of the site. Existing natural communities are relatively small and fragmented. However, loss of these sensitive communities would be considered a significant impact. Other projects in the immediate vicinity would also have the potential to contribute to cumulative impacts to sensitive communities and biological resources.

The HB Project proposes to develop a mixed commercial and residential community at the Hercules Waterfront and adjacent to Refugio Creek. While much of the proposed project area is disturbed ruderal habitat resulting from the remediation activities, development of the site would remove potential foraging habitat for wildlife, may result in impacts to wetlands and other aquatic habitats, increase anthropocentric activity to the waterfront that may disturb wildlife, and potentially contribute secondary or indirect adverse effects to water quality in Refugio Creek and San Pablo Bay. The Hercules ITC and the HB Development, while related and part of the WDMP, are independent projects that are being evaluated under separate environmental review documents. Neither project is dependent upon the other for implementation. An EIR is being prepared for the HB Project (SCH #2009112058) and will be circulated for public review as required under CEQA. Consequently, both projects are being evaluated for the potential impacts respective to project elements in whole so that if either project does not occur, the other project may proceed. Currently, there is no federal involvement for the project and consequently no NEPA document is being prepared. However, a permit may be required from the USACE under Section 404 of the CWA. If a permit is required from the USACE, compliance with NEPA will be required.

Additionally, the City of Hercules Redevelopment Agency (City RDA) and The Red Barn Company (Red Barn) are proposing to construct the “Hercules New Town Center” (HNTC) near the intersection of SR-4 and I-80 in the City. The HNTC would be a new “downtown” area for the City, focused on pedestrian and transit friendly mixed uses, including a mix of residential, commercial, office, and public and quasi-public uses commensurate with the areas central, crossroads location. Development would follow allowable uses and development intensities outlined in the City’s General Plan.

A preliminary determination of waters of the U.S. that covers the project area was completed by WRA in 2008. Based on the results of that preliminary determination, construction of the proposed project would result in the permanent fill of approximately 2.65 acres of jurisdictional wetlands, and 0.026 acre of wetlands that may be considered “isolated” and not jurisdictional under Section 404 of the CWA (WRA 2008). The preliminary determination has not been verified by the USACE. The proposed project would also result in potential effects on CRLF, a federally-threatened species. (pers. comm. Joshua Phillips)

Additionally, WETA’s proposed ferry project discussed in Section 1 (Ferry Project) would also result in potential adverse effects including loss of mudflat and tidal marsh habitat to construct the associated facilities including that ferry channel, turning basin, the ferry pier, and the emergency vehicle access. The dredging and construction activities have the potential to impact fisheries, special aquatic sites, and may temporarily affect water quality and result in noise and vibration effects that would affect marine wildlife.

While no schedule has been formally established for the construction or the start of ferry service, a proposed route to the Hercules/Rodeo area has been approved as a new ferry location as part of the 2003 Program EIR (SCH #2001112048; WTA 2003). Planning and siting for the Hercules ITC to include a bus, train and ferry location has been planned extensively between the City of Hercules and WETA to identify the most appropriate location that would result in the least environmentally damaging practicable alternative. As discussed in Section 2, several locations were evaluated and not brought further for consideration because they did not meet basic requirements of the project especially concerning engineering and safety considerations. The two locations considered allow for the placement of the Hercules ITC at the only section of track that is tangent (i.e., straight) sufficiently to construct the necessary 800 foot platform. Alternative configurations and design alternatives brought forward during preliminary design have allowed the further avoidance and minimization of impacts.

The proposed Ferry Project, when constructed, will result in additional and contribute cumulative to impacts on biological resources. The ferry will require dredging a new channel through the bay to establish the ferry line, the turning basin, and to construct the ferry pier. Based on the preliminary estimates, the ferry terminal would require dredging a channel approximately 7,500 feet long and 100 feet wide in the Bay to deep water to accommodate the ferry vessels' draft. The design side slopes for the dredged channel would be at a 5:1 slope; however, the initial channel construction would be to an approximately 3:1 slope, and the channel sides would be allowed to slough down. The area surrounding the proposed channel is very shallow. A turning basin would be created at the location where the channel meets the floating dock. The channel would be dredged to a depth of 11 feet below MLLW and the turning basin to a depth of 12 feet below MLLW. The total volume of dredged material to be removed for both the channel and the turning basin would be approximately 222,000 cy. Standard dredging environmental control measures, such as the use of silt curtains, would be used during construction to minimize turbidity and reduce potential impacts to sensitive marine habitat.

In addition to the ferry access channel, dredging of a temporary channel for construction access along the length of the proposed pier would produce about 20,000 cy of material, assuming a channel length of about 650 feet and a width of 80 feet, with a depth of 6 feet. The material produced by construction dredging would be stockpiled in an appropriate location or off hauled. Dredge spoil location would be coordinated with permitting agencies prior to initiation of construction. on site next to the pier alignment and tested for the presence of contaminants. Alternatively, pile driving may be carried out from a temporary trestle adjacent to the pier alignment in place of or in addition to access from barges. This pile-driving method would require numerous additional temporary piles, but would reduce or avoid the need for an access channel through the shallow near-shore waters and mud flats (pers. comm. Elizabeth Purl).

Periodic maintenance dredging would also be required. The amount of maintenance dredging needed would depend on current and tidal conditions and boat wake wash effects, and would be determined later, once the project is in operation. The amount of dredged material removed during each maintenance operation would be considerably smaller than that removed during project construction.

Implementation of the Ferry Project will require the compliance with CEQA and NEPA. WETA, the lead agency under CEQA will be preparing an environmental document in coordination with the FTA, the federal lead agency under NEPA. Construction of the Ferry Project will also

require permitting with state and federal agencies including the USACE, San Francisco RWQCB, CDFG, USFWS, NMFS, BCDC and local permitting with the City and Contra Costa County. Additionally, it will be necessary to prepare a Consolidated Dredging-Dredged Material Reuse/Disposal Application to be submitted to the USACE Dredged Material Management Office.

Construction of the Ferry Project would contribute additional impacts to the tidal mudflats and adjacent wetlands. Dredging of the project would also contribute to potential turbidity and impacts to water quality that would affect biological resources. The Hercules ITC project proposes to accommodate elements of the proposed Ferry Project including the construction of the Ferry Plaza (terminal landing facility at the Hercules ITC and to prepare the emergency vehicle access to service the Ferry Plaza). In determining the least environmentally damaging practicable alternative, the Hercules ITC identified design configurations that include accommodating the Hercules Ferry Project so as to identify the least environmentally damaging practicable alternative. Please refer to Section 6 for a discussion of the evaluation of alternatives and the minimization of cumulative impacts to biological resources.

While both the Hercules ITC and the proposed Ferry Project would contribute to similar adverse effects including loss of aquatic habitat, increased potential turbidity and potential impacts to protected flora and fauna, both projects will be required to undergo environmental review and permitting and will be required to mitigate potential impacts. Additionally, as the projects are likely to be phased over time with the construction of the Hercules ITC and the restoration of Refugio Creek occurring before the dredging of the ferry channel, some of the potential cumulative effects such as increased turbidity resulting from the dredging will be diminished.

Surveys conducted in the project area in 2007 and 2010 did not identify any presence of eelgrass beds so the two projects are not anticipated to result in any loss of eelgrass beds (WWR 2007a, HDR 2010c). Additionally, the Hercules ITC includes the restoration of Refugio Creek, a highly degraded natural waterway. This restoration effort will expand the flood plain along Refugio Creek, create new tidal marsh and riparian habitats and improve the ecological value of the area and water quality resulting in a net gain of habitat and natural communities.

All three projects will be required to comply with necessary permitting requirements for impacts to wetlands and sensitive communities and will have to comply with all applicable laws, ordinances and standards. All projects will be required to complete necessary mitigation as part of the environmental review and permitting process including demonstrating that adverse effects including the potential loss of special aquatic sites have been avoided and minimized. In the case of unavoidable impacts, loss of wetlands will be compensated for through the construction of restoration and compensatory mitigation ensuring no net loss of wetlands. With the implementation of mitigation measures and adherence to permitting requirements from regulatory agencies and local standards, the Hercules ITC, the Hercules HB, and the Ferry Project are not likely to result in a significant cumulative impact to biological resources.

Implementation of **Mitigation Measures BIO-1** through **BIO-25** would reduce the potential for the Hercules ITC to contribute to a cumulatively considerable or significant impact.

CEQA Determination: With the implementation of **Mitigation Measures BIO-1** through **BIO-25**, cumulative effects associated with biological resources from other identified development projects are not considered significant.

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4.10. WATER RESOURCES

This section describes the potential impacts that the Hercules ITC could have on water resources, including water quality and flood hazards. This section is organized by construction impacts, operational impacts, and cumulative impacts. The section provides an evaluation of impacts for each alternative and, where applicable, mitigation measures that can be adopted to avoid or minimize these effects.

4.10.1. Significance Criteria

Impacts to hydrology and water quality could have an adverse effect on the environment if they would:

- Result in a substantial adverse impact on water quality;
- Cause a degradation in water quality due to release of contaminated sediments during dredging activities;
- Cause a degradation in water quality from onsite construction of Hercules ITC facilities, roadways, and associated structures;
- Result in a flood hazard to human safety and property due to construction in a floodplain;
- Result in altering the existing drainage pattern of the site or area, including the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on or off site;
- Result in altering the existing drainage pattern of the site or area, including the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site;
- Result in degradation in water quality due to increases in stormwater runoff from paved or regraded areas;
- Result in a substantial depletion of groundwater supplies or interfere substantially with groundwater recharge such that there would a net deficit in aquifer volume or lowering of the local groundwater table level; or
- Cause inundation by seiche, tsunami, or mudflow.

4.10.2. Issues Not Discussed Further

No housing units are proposed for the proposed project; therefore, the project would not place housing within a 100-year flood hazard area as mapped on a FIRM or other flood hazard delineation map, and this issue is not discussed further.

The proposed project is not within an identified groundwater basin, nor in an area that is identified as a significant source of groundwater recharge. Therefore, the proposed project would have no impact on groundwater supplies or groundwater recharge.

The proposed project is located outside of the San Francisco Bay tsunami evacuation area, and therefore, would not be subject to inundation by a tsunami. The project is not located in an area that would be subject to inundation by failure of a levee or dam. Additionally, it is not located near a large body of water that would be capable of creating a seiche, nor is it located near unstable hilly terrain that could cause a mudflow.

4.10.3. Impacts and Mitigation

No-Action Alternative

This alternative would not involve construction or operation of the Hercules ITC or the realignment of Refugio Creek. Therefore, there would be no construction or operation impacts to water resources, and water resources would remain the same as the existing setting.

Action Alternatives

Construction Impacts and Mitigation

Impact WR-1: Dredging of Refugio Creek and San Pablo Bay could impact water quality through mobilization of contaminated sediment.

Contaminated sediments are known to occur near historical sites along the San Pablo Bay shoreline. Disturbance of contaminated sediment could impact water quality.

Alternatives 1 and 2 and Track Option B. Both alternatives would involve realigning and restoring Refugio Creek from San Pablo Bay upstream approximately 1,000 feet to the existing restored creek segment. The realignment would require a new mouth into San Pablo Bay. Within the Refugio Creek corridor area, approximately 16,381 cy of material would be cut and approximately 2,524 cy would be filled to implement the Refugio Creek Restoration component of the project. The creek channel would be continued into San Pablo Bay for approximately 150 feet to provide an initial unobstructed tidal connection. Approximately 400 cy of Bay sediment would be dredged. Excavation would be done during low tide; silt curtains would be installed for work in open water.

Sediment “toxic hot spots,” where sediment dredging could result in the degradation of water quality, have been indentified in San Francisco Bay by the Bay Protection and Toxic Cleanup Program (BPTCP). No known toxic hot spots are located in San Pablo Bay near Hercules; however, unknown contaminated sediment could be present (WTA 2003). Before dredging, proposed bottom sediments would have to be sampled and tested for contamination in accordance with the Dredged Material Management Office (DMMO) guidelines. If impacted sediments are to be dredged, precautions to prevent release of contamination would be taken.

Mitigation Measure WR-1a: Both alternatives will require dredging in San Pablo Bay and Refugio Creek. Prior to dredging, a Sampling and Analysis Plan (SAP) detailing sediment

sampling and analysis will be submitted to the San Francisco Bay DMMO, which includes representatives from the USACE, RWQCB, BCDC, USEPA, and other resource agencies. If the results of the SAP indicate that water quality will not be impacted by dredging, a consolidated Dredging – Dredge Material Reuse/Disposal permit would be issued by the USACE. The permit will cover both Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act and is functionally equivalent to a RWQCB Report of Waste Discharge. If contaminated sediment is encountered, further sediment characterization and a sediment removal plan (including upland disposal or beneficial reuse) will be required to protect water quality.

Mitigation Measure WR-1b: Dredging would result in some suspension of sediments. If impacted sediments are to be dredged in Refugio Creek and/or San Pablo Bay, impacts to water quality could be minimized through the use of the following Best Management Practices (BMPs):

- Use of silt curtains, which prevent suspended sediment from migrating out of the immediate project area;
- Dredging only on low or incoming tide;
- Hydraulic or closed clamshell dredging to reduce the generation of suspended sediments;
- Shunting, which involves pumping of the free water in a sediment holding barge to the bottom of the water body, which reduces turbidity; and
- Employment of an independent, certified, on-board dredging inspector to ensure compliance with permit conditions.

Monitoring will be conducted during dredging to allow for the following:

- Measurement of the efficiency of contaminated sediment removal;
- Determination dredged volumes;
- Measurement of sediment resuspension at the dredge site; and
- Checking performance of barriers and other controls.

These are commonly used BMPS that have been accepted by the RWQCB as significantly reducing the impacts to water quality from sediment resuspension. A CWA Section 401 Water Quality Certification is required from the RWQCB for dredging permits.

Dredging may release heavy metals, pesticides, etc. from the sediments into the Bay and Refugio Creek, Therefore, without sediment characterization data; it is unknown whether the above measures will reduce the water quality impacts to less than significant.

CEQA Determination: This impact is considered significant and unavoidable.

Impact WR-2: Construction of Hercules ITC facilities, roadways, and associated structures could degrade water quality.

Construction activities such as site grading could increase the potential for erosion and uncontrolled runoff of stormwater contaminated with sediments of other pollutants that could affect surface water quality and sedimentation. In addition, inadvertent spills of petroleum products and chemical substances during construction could affect water quality.

Alternatives 1 and 2 and Track Option B. Both alternatives would include the same Hercules ITC facilities and roadways identified in Section 2.0, Alternatives Considered.

Mitigation Measure WR-2: Impacts to surface water from erosion are expected to be minimal during construction. Erosion will be controlled in accordance with an approved Erosion Control Plan. In addition, all construction activities will be performed in accordance with the California National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction Activities, 2009-0009-DWQ (effective July 1, 2010), requiring the implementation of BMPs to control sediment and other pollutants mobilized from construction activities.

BMPs may include, but would not be limited to:

- Excavation and grading activities in areas with steep slopes or directly adjacent to open water shall be scheduled for the dry season only (April 15 to October 15), to the extent possible. This will reduce the chance of severe erosion from intense rainfall and surface runoff.

If excavation occurs during the rainy season, storm runoff from the construction area shall be regulated through a storm water management/erosion control plan that shall include temporary onsite silt traps and/or basins with multiple discharge points to natural drainages and energy dissipaters. Stockpiles of loose material shall be covered and runoff diverted away from exposed soil material. If work stops due to rain, a positive grading away from slopes shall be provided to carry the surface runoff to areas where flow would be controlled, such as the temporary silt basins. Sediment basins/traps shall be located and operated to minimize the amount of off-site sediment transport. Any trapped sediment shall be removed from the basin or trap and placed at a suitable location onsite, away from concentrated flows, or removed to an approved disposal site.

Temporary erosion control measures shall be provided until perennial revegetation or landscaping is established and can minimize discharge of sediment into nearby waterways. For construction within 500 feet of a water body, appropriate erosion control measures shall be placed upstream adjacent to the water body.

Erosion protection shall be provided on all cut-and-fill slopes. Revegetation shall be facilitated by mulching, hydroseeding, or other methods and shall be initiated as soon as possible after completion of grading and prior to the onset of the rainy season (by October 15).

BMPs selected and implemented for the project shall be in place and operational prior to the onset of major earthwork on the site. The construction phase facilities shall be maintained regularly and cleared of accumulated sediment as necessary. Effective mechanical and structural BMPs that would be implemented at the project site include the following:

- Mechanical storm water filtration measures, including oil and sediment separators or absorbent filter systems such as the Stormceptor® system, can be installed within the storm drainage system to provide filtration of storm water prior to discharge.
- Vegetative strips, high infiltration substrates, and grassy swales can be used where feasible throughout the development to reduce runoff and provide initial storm water treatment.
- Roof drains shall discharge to natural surfaces or swales where possible to avoid excessive concentration and channelization of storm water.
- Permanent energy dissipaters can be included for drainage outlets.
- The water quality detention basins can be designed to provide effective water quality control measures including the following:
    - Maximize detention time for settling of fine particles;
    - Establish maintenance schedules for periodic removal of sedimentation, excessive vegetation, and debris that may clog basin inlets and outlets;
    - Maximize the detention basin elevation to allow the highest amount of infiltration and settling prior to discharge.

Hazardous materials such as fuels and solvents used on the construction sites shall be stored in covered containers and protected from rainfall, runoff, vandalism, and accidental release to the environment. All stored fuels and solvents will be contained in an area of impervious surface with containment capacity equal to the volume of materials stored. A stockpile of spill cleanup materials shall be readily available at all construction sites. Employees shall be trained in spill prevention and cleanup, and individuals shall be designated as responsible for prevention and cleanup activities.

Equipment shall be properly maintained in designated areas with runoff and erosion control measures to minimize accidental release of pollutants.

These measures will be developed and described in the SWPPP that is prepared before construction begins. With proper implementation of BMPs, no significant impacts to surface or groundwater quality are anticipated during construction.

CEQA Determination: With implementation of the proposed mitigation measure, the potential impact would be less than significant.

Impact WR-3: Implementation of the project could alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on or off-site.

The project would involve realigning and restoring Refugio Creek from San Pablo Bay upstream approximately 1,000 feet to the existing restored segment.

Alternatives 1 and 2 and Track Option B. Both alternatives would include realigning and restoring Refugio Creek. The changes in drainage pattern and the potential for erosion and sedimentation would be similar for both alternatives.

Both alternatives would alter drainage patterns by replacing the railroad bridge that carries the UPRR tracks across Refugio Creek and the culverts through which the creek flows beneath the tracks as part of the track reconstruction portion of the proposed project. A new channel and outlet for the creek similar in cross section and length to the existing creek outlet channel would be dredged through the tidal flats. The work associated with the railroad bridge replacement would include removal of the existing railroad bridge and installation of new rip-rap embankment protection at this location and a 2-span railroad bridge. Additionally, work carried out concurrently with the proposed project would include related streambed alteration and replacement of the three existing culvert pipes. New abutments and rip-rap slope protection would also be installed where the new culverts pass through the UPRR embankment. These features would provide long-term stabilization of the creek outfall and banks in the vicinity of the tracks. These features together with the planned restoration of the creek channel to a more natural profile would reduce potential impacts related to streambed and bank alteration.

The additional hardscape surfaces (pavement, parking lots, and structures) proposed for the project site as well as the Refugio Creek streambed alignment with new culverts and proposed dredging would modify existing drainage patterns on the project site, which could result in the erosion of disturbed soil and stormwater discharges.

Mitigation Measure WR-3: Implementation of **Mitigation Measure WR-2** will reduce potential impacts to less than significant. No additional measures will be required.

CEQA Determination: With implementation of the proposed mitigation measure, the potential impact would be less than significant.

Impact WR-4. Implementation of the project could alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.

The project would involve realigning and restoring Refugio Creek and as a result flows through the creek would increase from 1,100 to 2,400 cfs in a 100-year flood event.

Alternatives 1 and 2 and Track Option B. Both alternatives would replace the railroad bridge that carries the UPRR tracks across Refugio Creek and the culverts through which the creek flows beneath the tracks. The work associated with the railroad bridge replacement would include removal of the existing railroad bridge and installation of new rip-rap embankment protection at this location. The new 2-span railroad bridge would be located about 100 feet east of the current bridge location. The UPRR tracks would be widened to accommodate the platform width and a third track. The new railroad bridge and culverts constructed to accommodate the increased flow rate would therefore be about 100 feet wider than the existing railroad bridge.

Bridge replacement under the UPRR embankment is required to upgrade the flow capacity of the bridge. The existing railroad bridge and culverts currently act as barriers to flood flows, creating

the potential for local flooding during major storms. Flood control analysis (Balance Hydrologics 2006) found that, as a result of development within the creek's watershed, the flows through Refugio Creek would increase from 1,100 to 2,400 cfs in a 100-year flood event.

An upstream portion of the creek was reconstructed as a habitat restoration project as part of earlier development projects; reconstruction of the remaining section of the creek would be performed at the same time as the track realignment. Work carried out concurrently with the proposed project would include related streambed restoration and replacement of the three existing culvert pipes. The proposed culvert location would result in a streambed alignment that would essentially straighten the creek and remove the two existing 90-degree bends in the creek alignment. New abutments and rip-rap would also be installed where the new culverts pass through the UPRR embankment. A new channel and mouth for the creek similar in cross section and length to the existing creek channel would be dredged through the tidal flats.

With the development of project improvements, the flood flow capacity of the lower reach of Refugio Creek would be increased, and flood risks would be reduced. The project would thus have beneficial impacts related to flooding.

The project would be constructed on an undeveloped but heavily disturbed site. The upland areas have been graded and filled with engineered fill to a depth of several feet, and the shoreline along much of the project site is lined with rip-rap and stone ballast for the rail line. These activities have caused much of the project site to be elevated above the 100-year floodplain (**Figure 4.10-1**). Vegetation currently at the project site consists primarily of non-native grasses and weeds. The vegetation removal would be mitigated by planting new landscaping on the project site and by the restoration and enhancement of the Refugio Creek channel. The increase in impervious surfaces and associated runoff that could contribute to flood risks would be offset by these project elements.

The project would include a temporary surface parking lot that would eventually be replaced by mixed-use buildings with structured parking as part of the buildout of the waterfront area. The proposed rail platform would be elevated several feet above the existing tracks and would be roofed. The project's impervious surfaces would lead to less water infiltration on the project site and would create additional water runoff.

Mitigation Measure WR-4: Implementation of **Mitigation Measure WR-2** will reduce potential impacts to less than significant. No additional measures will be required.

CEQA Determination: With implementation of the proposed mitigation measure, the impact would be less than significant.

Operation Impacts and Mitigation

Impact WR-5: Operations in a floodplain could constitute hazards to human safety and property.

Areas along the Bay shoreline and drainages leading to the Bay are potential floodplains. Building within a floodplain involves risks to life and property.

Alternatives 1 and 2 and Track Option B. Both alternatives would include similar Hercules ITC facilities and roadways identified in Section 2.0, Alternatives Considered. Portions of the project site are within the 100-year floodplain boundary. These include the railroad tracks and the location of the proposed parking structure. Presently, as discussed under Impact WR-3 above, the existing railroad bridge and culverts act as barriers to flood water flow, creating the potential for local flooding during major storms. Railroad bridge replacement under the UPRR embankment will improve the current potential flooding condition. Because the project would place structures within the existing floodplain, the impact is considered potentially significant.

Mitigation Measure WR-5: New facilities should be designed to minimize flooding (through the use of retaining wall, levees, and/or construction on fill). Flood hazard warnings should be posted and flood evacuation plans should be developed. Construction and design should also account for the maximum flood level so that facilities are built above the mark.

CEQA Determination: With implementation of the proposed mitigation measure, the potential impact would be less than significant.

Impact WR-6: Stormwater runoff from the Hercules ITC site and parking could degrade water quality.

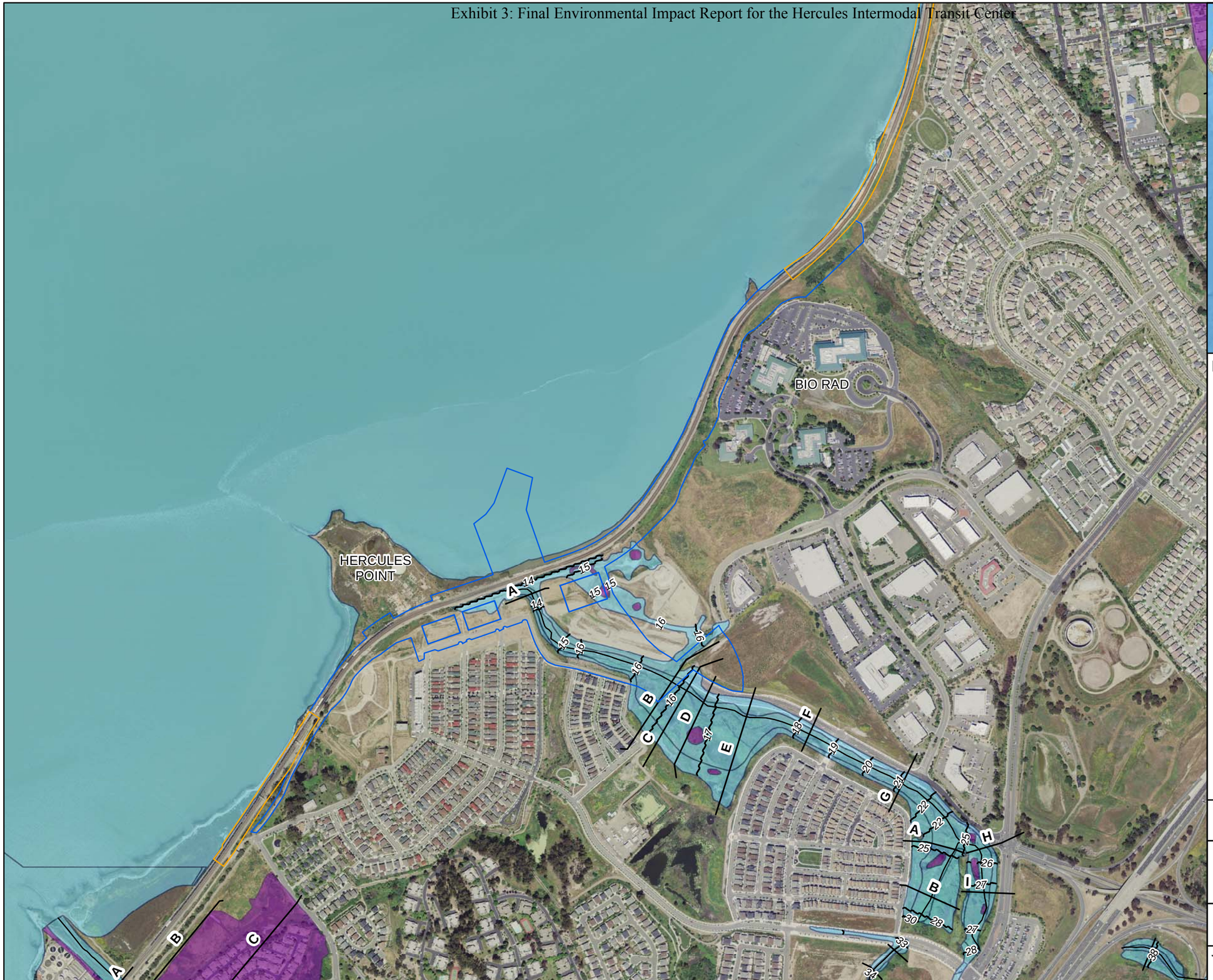
Development of the Hercules ITC would involve paving and construction of buildings. Asphalt, rooftops, concrete surfaces, and other structures would prevent the natural drainage and infiltration of stormwater through the soil. Surface water runoff generated from undeveloped, unpaved areas has greater volume and rate when the site is paved and the capability of surface water infiltration is reduced or eliminated. Increases in impervious surfaces and the resulting increases of surface water runoff volumes and rates can produce considerable changes to downstream hydrology in areas where portions of the drainage system are converted from pervious to impervious surfaces.

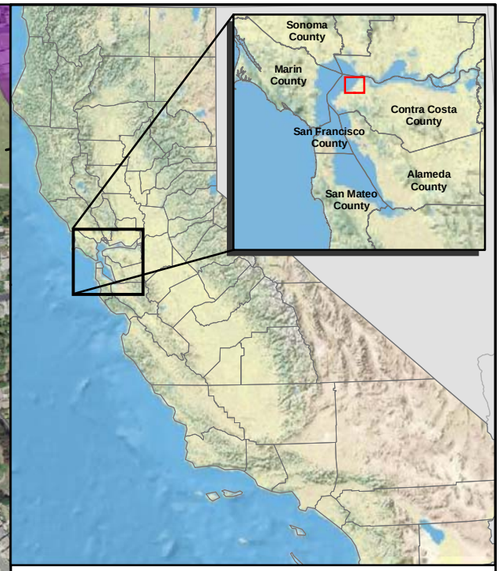
The Hercules ITC would have its facilities designed in accordance with the provisions of the Contra Costa County Clean Water Program, which provides measures for a project to manage increased runoff from increased impervious surfaces. Measures to be implemented may include detention basins, vegetated swales, buffer strips, and/or infiltration basins.

Alternatives 1 and 2. Both alternatives would include the same Hercules ITC facilities and roadways identified in Section 2.0, Alternatives Considered, and therefore, have similar effects.

Mitigation Measure WR-6: Operation of the Hercules ITC will be in conformance with the California NPDES General Permit for Storm Water Discharges Associated with Industrial Activities. In accordance with this permit, a SWPPP would be developed, and BMPS would be implemented to control pollutants in stormwater discharges. Permanent stormwater control measures may include detention basins, vegetated swales, buffer strips, and/or infiltration basins. To eliminate surface runoff from the new parking areas, either gravel or permeable pavement would be used so that rainwater could permeate into underlying soil. With proper implementation of these and other BMPs in the SWPPP, no adverse impacts to water quality are anticipated during the long-term operation of the Hercules ITC.

CEQA Determination: With implementation of the proposed mitigation measure, the potential impact would be less than significant.





Legend

- Track Option B Boundary
- Project Boundary
- Lettered Cross Section
- Base Flood Elevation
- Refugio Creek
- 100 Year (1% Annual Chance) Flood Zone
- 500 Year (0.2% Annual Chance) Flood Zone

N

1 in = 700 ft (at tabloid layout)

0 100 200 400 Meters

0 350 700 1,400 Feet

Figure 4.10-1: FEMA Flood Zones

City of Hercules
Hercules Intermodal Transit Facility
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources.
No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey.
Data is State Plane Feet, NAD83 Zone 3

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Impact WR-7: Operation of the Hercules ITC under either Alternative 1 or Alternative 2 could result in periodic inundation due to tsunami and/or rising sea level and other climate change effects.

Tsunami-generated waves have the potential to inundate low-lying coastal areas and cause extensive erosion and/or deposition of sediment. Poorly constructed facilities can also be damaged by both the incoming waves and outgoing return flow. By the time a tsunami enters the Bay, its impacts will be dramatically reduced compared to those on the open coast. The tsunami hazard has not yet been mapped in the East Bay. However, if one assumes that there is a 42-foot tsunami at the entrance to the Bay, as stated in the multi-jurisdictional Local Hazard Mitigation Plan (LHMP) (ABAG 2007), the wave height on the opposite bank in the Oakland-Berkeley area will be roughly half (21 feet) and roughly 10% or 4 feet at each end (Alviso in San Jose and the north side of San Pablo Bay). In this situation, the wave height in Hercules could be somewhere between 6 and 18 feet, a significant hazard in the areas of the City adjacent to the Bay including the vicinity of the Hercules ITC. The California OES has funded the mapping of tsunami inundation evacuation planning maps for within San Francisco Bay; however, this mapping is not yet complete. The LHMP will be modified to examine the hazard of tsunamis when the maps are available.

Tsunami-generated waves are associated with seismicity and have a very low probability to occur in general, much less in the San Pablo Bay area. The General Plan and previous environmental studies have concluded that the City of Hercules is highly unlikely to be affected by these hazards because of its distance from the Pacific Ocean.

However, the risk to coastal flooding and erosion has increased dramatically due to climate change. According to the 2009 California Climate Adaptation Strategy (2009 Strategy), projections for sea level rise related to climate change in California have increased (California Natural Resources Agency 2009). The 2009 Strategy uses a projection of a 20 to55-inch increase in sea level by the end of this century. Heberger et al. (2009) have projected 1.4 meters along the Pacific Coast and have looked specifically at the coastal flood risk in San Francisco Bay. Flooding and erosion will also occur due to extreme weather events and storm surges. Based on this information, it is likely that the UPRR will be gradually inundated due to increased sea levels over time (**Figure 4.10-2**). However, other infrastructure and facilities developed under either Alternative 1 or 2 will be located above projected flood elevations and more likely to be affected by occasional storm surge, wave action, and associated erosion.

While the UPRR tracks and waterside facilities are at risk due to location and the projected changes in inundation associated with climate change, the UPRR will be subject to such changes well beyond the boundaries of the project. At some point in the future, the railroad will likely need to be elevated. The Hercules ITC will either continue to operate as a transit center or be used in some other capacity.

Mitigation. No mitigation is required.

CEQA Determination: While the UPRR tracks will ultimately be subject to inundation due to sea level rise and extreme weather events, the UPRR tracks may be elevated and use of the

Hercules ITC can be adapted to meet changing conditions. This is not considered a significant impact.

4.10.4. Cumulative Impacts and Mitigation

If the Hercules Bayfront project is constructed at the same time as the proposed project, there could be cumulative impacts resulting from erosion and uncontrolled runoff of stormwater from both projects. Stormwater may be contaminated with sediments of other pollutants that could affect surface water quality and sedimentation. In addition, inadvertent spills of petroleum products and chemical substances during construction could affect water quality.

CEQA Determination: With the implementation of **Mitigation Measure WR-2**, cumulative effects associated with water resources from other identified development projects are not considered significant.

Project Design Elevations:
Top of Rail Elevation 11.6-ft. above MSL
Platform Elevation 12.4-ft. above MSL
Civic Plaza Elevation 18.0-ft. above MSL

Possible Flood Elevations:
Mean High Tide (MHT) & Mean High Water (MHW) = 3-ft. above Mean Sea Level (MSL)
100-yr Flood Elevation = 7-ft. above MSL
Flood Elevation + 16 in. Sea Level Rise = 8-ft. above MSL
Flood Elevation + 55 in. Sea Level Rise = 11-ft. above MSL

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Figure 4.10-2: Approximate sea level rise with flood elevations

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4.11. GEOLOGY AND SOILS

This section describes the potential impacts that the Hercules ITC could have on geology and soils.

4.11.1. Significance Criteria

The impact of the proposed project on the geology and soils environment would be considered significant if it would exceed any of the following standards of significance:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
    - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area, or based on other substantial evidence of a known fault;
    - Strong seismic ground shaking;
    - Seismic-related ground failure, including liquefaction; or
    - Landslides.
- Result in substantial soil erosion or the loss of topsoil;
- Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on-site or off-side landslides, lateral spreading, subsidence, liquefaction, or collapse.
- Be located on expansive soil, as defined by the California Building Code, creating substantial risks to life or property.

4.11.2. Issues Not Discussed Further

The State of California delineates zones around active faults under the Alquist-Priolo Earthquake Fault Zoning Act. Any development within the zone requires detailed geological investigation to accurately delineate active fault strands such that they can be avoided. Fault rupture beneath engineered structures can, if the fault displacement is large enough, lead to damage and in extreme conditions catastrophic collapse. Even minor fault displacements can cause significant structural damage.

The proposed project is not crossed by any known or previously recognized active faults or earthquake fault zones (Alquist-Priolo Special Study Zones). There would therefore be no known risk related to ground surface rupture by faulting; for this reason, this issue is not discussed further in this section.

4.11.3. Impacts and Mitigation

No-Action Alternative

The No-Action Alternative would not involve construction of the proposed project, and therefore would not have any impacts related to geologic resources.

Action Alternatives

Impact GEO-1: Seismic activity could damage facilities and/or injure people.

Alternatives 1 and 2 and Track Option B. The Bay Area, including Hercules, is one of the most seismically active regions in the United States. Earthquakes and ground shaking in the Bay Area are inevitable but unpredictable and will occur at some point prior to, during, or after the completion of the proposed Hercules ITC project. An earthquake of moderate to high magnitude generated within the San Francisco Bay region, similar to that which has occurred in the past, could cause considerable ground shaking within the project area. Future development within this area would involve construction of facilities in a seismically active zone, and the ground shaking associated with earthquakes would pose potential threats to structures and to persons present at the time of seismic events. Potential impacts during construction include construction slope stability, excavation stability, and subsidence due to dewatering.

Although some structural damage typically is unavoidable, building codes and local construction requirements have been established to protect against building collapse and to minimize injury during seismic events. Structures built to code should be able to: (1) resist minor earthquakes without damage, (2) resist moderate earthquakes without structural damage but with some nonstructural damage, and (3) resist major earthquakes without collapse but with some structural as well as nonstructural damage. Conformance to the current building code recommendations does not constitute any kind of guarantee that significant structural damage would not occur in the event of a maximum magnitude earthquake. However, it is reasonable to expect that a well-designed and well-constructed structure will not collapse in a major earthquake (WTA 2003).

Compliance with applicable regulations, such as building code requirements, and conformance with the General Plan Safety Element policies listed above, would be required as part of any development project. Using standard construction techniques, chosen in accordance with the results of site-specific geotechnical investigations and in compliance with codes and requirements, structures can be designed and built to withstand the geologic hazards listed above.

Mitigation Measure GEO-1: A site-specific geotechnical investigation shall be required for this project. The project will conform to provisions of current building codes and to the recommendations of the geotechnical investigations performed for the proposed project. Facilities shall be designed and constructed at a minimum to “Essential Structure” standards as well as the seismic design requirements for ground shaking specified in the Uniform Building Code for Seismic Zone 4. Additionally, to satisfy the provisions of the 2007 CBC, these facilities shall be designed to withstand ground motions equating to approximately a 500-year return period (10 percent probability of exceedance in 50 years). For design purposes, site-specific ground motions shall be calculated for the chosen project site.

CEQA Determination: With the implementation of **Mitigation Measure GEO-1**, the potential impact would be less than significant.

Impact GEO-2: The proposed project could result in substantial soil erosion of topsoil.

Alternatives 1 and 2 and Track Option B. The erosion potential is low on the proposed Hercules ITC site because it lies on the valley floor and does not include any steep natural slopes. The channel of Refugio Creek would be altered during project construction by straightening the existing curved channel and creating a new outfall to San Pablo Bay. Construction activities onsite would create new creek banks and expose unvegetated soils, which could erode during storm events. However, stormwater erosion is regulated by the NPDES, which requires the implementation of BMPs for future development on both the alternative sites and any work in the creek channel. A SWPPP would be developed and implemented in accordance with the State's NPDES General Permit for Stormwater Discharges Associated with Construction Activity. The SWPPP would identify the BMPs to be implemented on the construction site. With the required compliance with the NPDES, as well as implementation of **Mitigation Measure WR-2**, the proposed project would not cause significant impacts related to erosion. Potential impacts related to erosion are discussed in greater detail in **Section 4.10, Water Resources, Impact WR-2**.

Impact GEO-3: Liquefaction, landslides, or lateral spreading could damage facilities and/or injure people and structures.

Alternatives 1 and 2 and Track Option B. Onshore areas of the project site typically consist of fill underlain by a natural sand-bar deposit, consisting of interbedded stiff silts and moderately dense sands approximately 10 to 15 feet in thickness. The sand bar is underlain by 'Young Bay Mud' marine estuarine deposits, which are approximately 30 to 35 feet thick. Beneath the Young Bay Mud is a layer of stiffer older marine sediments known as 'Older Bay Mud' approximately 40 to 60 feet thick. The younger and older Bay Mud deposits do not present a significant liquefaction risk. The onshore portions of the site underlain by the sand spit are potentially susceptible to liquefaction.

Liquefaction of soils occurs when loose, cohesionless soils become saturated, temporarily losing shear strength during strong ground shaking. Significant factors that affect soil liquefaction potential are grain-size and distribution, relative density, degree of saturation, the initial stresses acting on the soils, and the characteristics of the earthquake, such as the intensity and duration of the ground shaking. The project site has been mapped within a State of California Liquefaction Hazard Zone. In addition, the site has been mapped by the as an area that may have a high susceptibility to liquefaction (ENGEO 2009). This impact is less than significant with implementation of mitigation.

Mitigation Measure GEO-3: Design-level analyses of the liquefaction hazard shall be required for the project. Specifically, a program of site-specific exploratory borings and accompanying laboratory testing will be required to delineate any potentially liquefiable materials underneath proposed facilities. These geotechnical investigations will also be required for consideration prior to foundation design. Potentially liquefiable deposits will either have to be removed or engineered (dewatered or densified) to reduce their liquefaction potential. This has been

performed with success within areas of liquefaction risk in the Bay Area. For example, densified fill materials in areas of Foster City and Redwood Shores survived the 1989 M_w 6.9 Loma Prieta earthquake without liquefying (Benuska 1990 *as cited in* URS 2003). The commercial and residential developments situated on these areas of engineered fill suffered no major structural damage during the earthquake.

CEQA Determination: With the implementation of **Mitigation Measure GEO-3**, the potential impact would be less than significant.

Impact GEO-4: Subsidence could damage facilities.

Alternatives 1 and 2 and Track Option B. Subsidence is ongoing around the margins of the Bay. Settlement commonly occurs in areas of manmade fill underlain by young Bay Mud through consolidation of the Bay Mud, and consequent subsidence of the overlying materials. Areas of the potential sites that are underlain by bedrock and dense fill have a low susceptibility to subsidence. Areas that are underlain by Bay Mud, estuarine sediments, organic rubbish, or thick organic deposits may be moderately to highly susceptible to subsidence. The young Bay Mud within the project site ranges up to a maximum of about 40 feet thick. Settlement is discussed under liquefaction, above.

Mitigation Measure GEO-4: A number of approaches are available to mitigate total and differential settlement associated with compressible Bay Mud. One or more of these shall be implemented in the design and construction of the proposed Hercules ITC structures, in compliance with the recommendations of the design-level geotechnical report:

- Careful grading design that incorporates anticipated total and differential settlements. This generally requires use of minimal fill thickness wherever practical, careful estimation of future settlements, and proper settlement monitoring during construction.

- Surcharging to eliminate or reduce total and differential settlement. Surcharging can be staged to allow reusing import fills in various areas, depending on the project phasing.

- Use of deep foundations that derive support below the Bay Mud. This generally involves driven concrete piles commonly used for heavy structures.

The project alternative selected should depend on the approach selected, the ability to phase developments and allow settlement to occur prior to construction, and the potential future settlement as identified in the design-level geotechnical report that could adversely impact structures and related site improvements.

CEQA Determination: With the implementation of **Mitigation Measure GEO-4**, the potential impact would be less than significant.

Impact GEO-5: The proposed project alternatives could potentially impact mineral resources.

Alternatives 1 and 2. As described in Section 3.11, no significant mineral deposits have been identified by the California Department of Conservation, Division of Mines and Geology, for the Hercules Area (City of Hercules 2009c). In addition, “MRZ-3 zones” have been mapped at

several locations in the vicinity of the project, including the hilly area north of John Muir Parkway to the west of I-80 in the general vicinity of the Hill Town site, but there is no information to suggest that these areas have extractable minerals of commercial value (California Public Utility Commission; City of Hercules 1998 *as cited in* City of Hercules 2009c). Furthermore, the Bay Area has other available sources for these materials. Therefore, the proposed project would have no significant impact on mineral resources.

Mitigation: No mitigation is required.

CEQA Determination: Less than significant.

4.11.4. Cumulative Impacts and Mitigation

If the Hercules Bayfront project is constructed at the same time as the proposed project, there could be cumulative impacts resulting from topsoil erosion, resulting from stormwater runoff. Potential cumulative impacts related to erosion are discussed in greater detail in **Section 4.10, Water Resources.**

CEQA Determination: With the implementation of **Mitigation Measure WR-2**, cumulative effects associated with geology and soils from other identified development projects are not considered significant.

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4.12. HAZARDOUS MATERIALS

This section provides an overview of the presence of hazardous materials within the project area, the potential for impacts during construction activities for the proposed project, and the regulatory setting applicable to environmental protection and health and safety. Issues related to public health and safety includes the transport, use, and storage of hazardous materials and disposal of hazardous wastes.

A material is considered hazardous if it appears on a list of hazardous materials prepared by a federal, state, or local agency, or if it has characteristics defined as hazardous by such an agency. Factors that influence the health effects of exposure to hazardous material include the dose to which the person is exposed, the frequency of exposure, the exposure pathway, and individual susceptibility.

The CCR defines a hazardous material as a substance that, because of physical or chemical properties, quantity, concentration, or other characteristics, may either: (1) cause an increase in mortality or an increase in serious, irreversible, or incapacitating, illness; or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported or disposed of, or otherwise managed. Hazardous wastes are defined in a similar manner. Hazardous wastes are hazardous materials that no longer have practical use, such as substances that have been discarded, discharged, spilled, contaminated, or are being stored prior to proper disposal.

This section presents the potential impacts and mitigation measures that have been identified for the proposed project and the potential hazardous materials associated with construction and operation of the project alternatives.

4.12.1. Methodology

The methodology for analyzing impacts related to hazards and hazardous materials include identifying general types of hazardous materials and techniques that are likely to be used during construction and operation of the proposed project. The analysis in this section focuses on the use, generation, disposal, transport, risk of upset, or management of hazardous or potentially hazardous materials on the project site. Level of significance criteria assume that the construction and operation of the proposed project would comply with all applicable federal, state, and local laws and regulations, including the General Plan policies and objectives described in **Section 3.12**, **Hazardous Materials**.

4.12.2. Significance Criteria

The following environmental significance criteria are based on criteria developed in accordance with the requirements of CEQA, NEPA, and all applicable state and federal laws. Based on these criteria, a project would generally be considered to have a significant environmental impact if it would:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;

- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;
- Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment;
- For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, result in a safety hazard for people residing or working in the project area;
- For a project within the vicinity of a private airstrip, result in a safety hazard for people residing or working in the project area;
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or
- Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

The project site is not located within one-quarter mile of an existing or proposed school, within an airport land use plan area, or within two miles of a public airport or private airstrip. The proposed project would not interfere with an adopted emergency response or evacuation plan. The project site is in a developed area and is not located within or adjacent to wildlands where there could be a risk of wildland fires. Therefore, there would be no safety hazards associated with these issues.

4.12.3. Impact and Mitigation

No-Action Alternative

Under the No-Action Alternative, existing bus services without the construction of a train station and a new bus terminal at the same location would continue. Land-based transit services and roadways would remain in their present state with no new improvements other than those that have been programmed and funded. Therefore, no impacts related to hazardous materials or wastes would result.

Action Alternatives

As described in Section 3.12 Hazardous Materials, implementation of the proposed project would necessitate that the existing gas pipelines be relocated outside of the UPRR ROW. Directional drilling under the creek would be used to relocate the pipelines.

The impacts would be essentially the same for the proposed Action Alternatives 1 and 2. Thus, the potential impacts resulting from these alternatives will be addressed jointly in the discussion below.

The proposed project would include a bus terminal, commuter train access, a new Amtrak station and Capitol Corridor stop, parking for transit passengers, and the roadway/trail/sidewalk infrastructure necessary to support the multimodal transit facility. The transit center would include the construction of a station building with a center platform and a pedestrian bridge spanning the UPRR ROW. Primary access to the transit station from Interstate 80 would be provided through the extension of John Muir Parkway from its current terminus northeast of Tsushima Bridge. The extension of John Muir Parkway would require a new bridge over Refugio Creek. Additionally, construction of the Hercules ITC would require improvements to the UPRR rail line, including a new railroad bridge across Refugio Creek; realignment and straightening of UPRR tracks; and safety improvements, such as grade separation of the track from the Hercules Bayfront development area. Other improvements would include a pedestrian bridge across the UPRR tracks to access the future Hercules Point open space, temporary surface parking to service the Hercules ITC, a creekside park, the completion of the Bay Trail, and the realignment and restoration of Refugio Creek. As described in Section 3.12, Hazardous Materials, implementation of the proposed project would necessitate that the existing gas pipelines be relocated outside of the UPRR ROW. Directional drilling under the creek would be used to relocate the pipelines.

Grading and demolition occurred on the project site between 2002 and 2007. In general, grading included removal and reworking of existing fills and buried subsurface debris, abandonment of pile elements, environmental remediation under the observation of DTSC, and installation of wick drains and placement of surcharge fills imported from various sites.

Implementation of the proposed project includes preparation of a Spill Prevention and Response Plan, described in further detail below, and a SWPPP, which would minimize hazards to construction employees and the environment.

Construction and Operation Impacts and Mitigation

Impact HAZ-1: The proposed project could create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or through the accidental upset or release of hazardous materials.

Alternatives 1 and 2 and Track Option B. The primary hazardous materials concerns related to construction of the proposed project are grading and excavation in potentially contaminated site soils and creek or bay sediments. As described above, site soils have generally been remediated to residential-use standards, with the exception of the Hercules Point area, which is subject to a deed restriction allowing only industrial or commercial uses. A small portion of the project site lies within the deed-restricted (limited to industrial or commercial uses) Hercules Point (OU-3) parcel, and the proposed project uses would be consistent with the deed restriction. During grading and excavation activities for the proposed project, site workers could be exposed to soil contaminants and/or potentially contaminated creek and bay sediments. This is considered a

potentially significant impact. Implementation of **Mitigation Measures HAZ-1a** and **1b** would reduce this impact to less than significant.

During construction of the proposed project, it is anticipated that limited quantities of miscellaneous hazardous substances, such as gasoline, diesel fuel, hydraulic fluid, solvents, oils, etc., would be brought onto the project site. In addition, the proposed project operations may include limited use of fuels and other hazardous materials such as those typically associated with equipment use and servicing. As with any liquid or solid, during handling and transfer from one container to another, the potential for an accidental release exists. Depending on the relative hazard of the material, if a spill of significant quantity were to occur, the accidental release could pose both a hazard to workers and residents, as well as the environment. This is considered a potentially significant impact. Implementation of **Mitigation Measures HAZ-1c** and **1d** would reduce this impact to less than significant.

Additional hazardous materials concerns related to construction of the proposed project include relocation of the existing gas pipelines. The project construction plans propose to relocate these pipelines with minimal disruption to services. Although there is no record of releases associated with the existing gas pipelines within the project area, relocation activities could create a hazard to both workers and residents, as well as the environment, through the accidental upset or release of hazardous materials. This is considered a potentially significant impact. As described in Section 4.13 Utilities, the City and the project designers shall consult with utility providers who have infrastructure in the immediate vicinity of the proposed project sites, and this consultation shall be completed prior to finalizing the project plans and before any ground disturbances occur. In order to avoid construction conflicts, project plans for pipeline relocation shall be designed to the satisfaction of the City and the utility providers and/or pipeline owner(s). These early and ongoing coordination efforts, along with implementation of **Mitigation Measures HAZ-1a, HAZ-1b, HAZ-1c,** and **HAZ-1d**, would reduce this impact to less than significant.

Once the project is developed, it could potentially include the use, storage, release, or disposal of small amounts of hazardous household-type products such as cleaning agents, solvent, paint, oils, pesticides, etc. Such uses of hazardous materials rarely pose a significant threat to the public or the environment. The proposed project would be required to comply with applicable federal, state, and local regulations regarding hazardous waste and materials. Compliance with the applicable regulations would minimize or avoid significant environmental hazards to the public or the environment.

Mitigation Measure HAZ-1a: The construction contractor shall develop a project-specific Health and Safety Plan that includes a project-specific contingency plan for hazardous materials and waste operations. This plan shall be submitted to and approved by the City before construction activities are allowed to proceed. The Health and Safety Plan, applicable to all grading and excavation activities, shall establish policies and procedures to protect workers and the public from potential hazards posed by hazardous wastes. The Health and Safety Plan shall be prepared according to federal and state OSHA regulations.

Mitigation Measure HAZ-1b: If affected or potentially affected soil and/or sediments are encountered during construction activities (grading and excavation), these materials would be excavated, stockpiled, and characterized to evaluate appropriate reuse or disposal alternatives.

Confirmation of materials, sample characterization of stockpile materials using analytical data, and soil reuse/disposal plans would be submitted to the City for review and acceptance.

Mitigation Measure HAZ-1c: The construction contractor shall develop a Spill Prevention and Response Plan and provide copies to all contractors working on the proposed project. At least one copy shall be made available at the project site with the construction manager at all times. The purpose of the Spill Prevention and Response Plan is to provide construction managers, environmental compliance monitors, and regulatory agencies with a detailed description of hazardous materials management, spill prevention, and spill response/cleanup measures associated with the construction of the proposed project.

Mitigation Measure HAZ-1d: Construction contractors and employees shall immediately control the source of any leak and contain any spill using appropriate spill containment and countermeasures. If required by any regulatory agency, contaminated media shall be collected and disposed of at an offsite facility approved to accept such media. In addition, all precautions required by the RWQCB for the project's NPDES General Permit for Stormwater Discharges Associated with Construction Activity would be taken to ensure that no hazardous materials enter the nearby waterways.

CEQA Determination: With implementation of the proposed mitigation measures, the potential impact would be less than significant.

Impact HAZ-2: The proposed project would be located on a site that is included on a list of hazardous materials sites and could, as a result, create a significant hazard to the public or the environment.

Alternatives 1 and 2 and Track Option B. As discussed above, portions of the project site are included on federal and state lists of hazardous materials sites. However, these areas have been certified by the DTSC as having been remediated satisfactorily, generally to residential levels, with the exception of the Hercules Point area, which is subject to a deed restriction allowing only industrial or commercial uses. The risks associated with residual contamination are discussed under Impact HAZ-1 above.

Mitigation: Implementation of **Mitigation Measures HAZ-1a** through **HAZ-1d** will reduce potential impacts to less than significant. No additional measures will be required.

CEQA Determination: With implementation of the proposed mitigation measures, the potential impact would be less than significant.

4.12.4. Cumulative Impacts and Mitigation

If the Hercules Bayfront project is constructed at the same time as the proposed project, there could be cumulative impacts resulting the routine transport, use, or disposal of hazardous materials or through the accidental upset or release of hazardous materials from both projects. Stormwater contaminated with hazardous materials could affect surface and groundwater quality. Accidental releases of hazardous materials into the air could affect public health.

CEQA Determination: With the implementation of **Mitigation Measures HAZ-1a** through **HAZ-1d**, cumulative effects associated with hazardous materials from other identified development projects are not considered significant.

4.13. UTILITIES

This section discusses the potential impacts of the Hercules ITC alternatives on project area public utilities.

4.13.1. Methodology

The analysis in this section focuses on whether the implementation of the proposed project would impact existing public utilities (domestic water, sanitary sewer, storm drainage, electricity, natural gas, and telecommunications) within the vicinity of the proposed project site locations.

Public services were analyzed to determine if implementation of the Hercules ITC alternatives would require additional public utilities or result in the deterioration of existing service levels. The impact analysis combines the discussion of potential short-term construction impacts with long-term requirements of the Hercules ITC alternatives for each public utility evaluated.

4.13.2. Significance Criteria

In accordance with the requirements of CEQA and NEPA and all applicable state and federal environmental laws, the proposed project would have a potentially adverse effect on the environment. The significance criteria listed below are derived from Appendix G of the CEQA Guidelines and the definition of significance in the CEQ Regulations at 40 CFR Section 1508.27. For the purposes of this EIR / EIS, impacts to utilities and energy would be significant if implementation of one of the proposed project alternatives would:

- Exceed wastewater treatment requirements of the applicable RWQCB;
- Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significance environmental effects;
- Have insufficient water supplies to serve the project from existing entitlements and resources, with new or expanded entitlements needed;
- Result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project’s projected demand in addition to the provider’s existing commitments;
- Be served by a landfill with insufficient permitted capacity to accommodate the project’s solid waste disposal needs;
- Fail to comply with federal, State, and local statutes and regulations related to solid waste; or

- Require new or expanded electrical or natural gas facilities, the construction of which could cause significant environmental effects.

4.13.3. Issues Not Discussed Further

Full utility services are available to the proposed project. The City of Hercules obtains electric power and natural gas from PG&E and Hercules Municipal Utility. Telecommunications service in the City of Hercules is provided by AT&T. Development of the proposed Hercules ITC would have relatively small electric power, natural gas, and telecommunication demands compared to the capacity of these utilities and could be supplied from the existing power generation, natural gas supply, and telecommunications infrastructure. The Hercules ITC proposes to include glare-resistant photovoltaic cells on the Station Building roof and small–scale Mariah Power wind power turbines for installation at the Station Platform (See Section 2.2.1, Alternative 1). Both of these features would generate some of the electric power needed by the proposed project. The Hercules ITC project thus is not anticipated to require new or expanded electrical, natural gas, or telecommunication utility services for either of the two action alternatives. Extensions of these utilities will be made in accordance with their respective providers' rules and regulations on file with the CPUC at the time the applicant applies for utility services. Any relocation of existing utility facilities would be done at the City's expense. Impacts are anticipated to be less than significant and this topic is not discussed further.

4.13.4. Impacts and Mitigation

No-Action Alternative

Under the No-Action Alternative, the proposed project components detailed in the Project Description would not be implemented. For this reason, the No-Action Alternative would not result in the need for expanded utility infrastructure or service levels, result in a determination from a utility service provider about capacity for the proposed project, or create the need for an increase of public services. Utility infrastructure and service upgrades and expansion are anticipated to occur within the project study area regardless of whether the proposed project is implemented. Therefore, the Hercules ITC alternatives studied in detail would not result in potentially adverse direct or indirect utility impacts.

Action Alternatives

Underground Utilities

Impact UT-1: Construction activities have the potential to adversely impact existing underground utilities.

Alternatives 1 and 2. Underground utilities currently crossing the proposed Hercules ITC site include four optical fiber communication lines, and although not public utilities, two privately-held petroleum transport pipelines that would be disturbed by construction operations. These lines run parallel to the UPRR track along its northern side for the entire distance of the affected project area. The project construction plans include the relocation of these utility lines with minimal disruption of their services, and impacts would therefore be less than significant.

To avoid potential disturbances of any underground utilities that may be presently not known, the City and the project designers shall consult with public utility providers who have infrastructure in the immediate vicinity of the proposed Hercules ITC sites to determine the exact location and depth of utility lines. This consultation shall be completed prior to finalizing the project plans and before any ground disturbances occur.

Mitigation: No mitigation is required.

CEQA Determination: The project design plans include sufficient provisions for the identification and successful relocation of any underground utilities. As such, the construction of either Alternative 1 or 2 would result in less than significant impacts to underground utility systems.

Wastewater Services

Impact UT-2: The proposed project would not exceed wastewater treatment requirements from the applicable Regional Water Quality Control Board, nor would it require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities.

Alternative 1. Wastewater from the proposed project would be primarily the result of the use of public restrooms, cleaning facilities, and maintenance activities. The wastewater produced at the Hercules ITC would consist of typical domestic wastewater constituents and would not be extensive or unusual. The Hercules ITC would connect with existing wastewater lines, which would provide sufficient capacity in the overall system to serve the Hercules ITC and other development in the waterfront area. The washing of trains and transit vehicles would occur offsite at their respective maintenance facilities, and the wastewater would be collected and disposed of offsite and thus not affect the Hercules ITC output. It is not anticipated that Alternative 1 would require wastewater treatment beyond the capacity that is available from the Pinole/Hercules Wastewater Treatment Plant. As the current treatment capacity projections are based upon the proposed Alternative 1 site area being developed with residential and commercial uses, the Hercules ITC would generate considerably less wastewater than planned for by the JPA. The proposed project would not require wastewater treatment beyond the capacity or requirements of the Pinole/Hercules Wastewater Treatment Plant, nor would it require the construction of a new water or wastewater treatment facility. Impact would be less than significant.

Mitigation: No mitigation is required.

CEQA Determination: Alternative 1 of the proposed project would not require wastewater treatment beyond the capacity or requirements of available wastewater treatment facilities and would not require the construction of new wastewater treatment facilities.

Alternative 2. This alternative would include a banquet / conference center that would generate a slightly greater amount of wastewater than Alternative 1. Wastewater would also be generated by the use of the restrooms, cleaning, and other building maintenance activities. The wastewater produced would consist of typical domestic wastewater constituents and would be collected by the same lines that currently serve the HB development to the south of the proposed project site.

Also similar to Alternative 1, this alternative would generate less wastewater than if the project site were developed with the current General Plan residential and commercial land use designations. As discussed above, the proposed project would not require wastewater treatment beyond the capacity or requirements of existing wastewater treatment facilities and would not require the construction of a new water or wastewater treatment facility. The impact associated with Alternative 2 would be less than significant.

Mitigation: No mitigation is required.

CEQA Determination: Alternative 2 of the proposed project would not require wastewater treatment beyond the capacity or requirements of available wastewater treatment facilities and would not require the construction of new wastewater treatment facilities.

Stormwater Services

Impact UT-3: The proposed project would not require or result in the construction of new stormwater drainage facilities or the substantial expansion of existing facilities, the construction of which could cause significance environmental effects.

Alternative 1. Under Alternative 1, the proposed project would introduce pavement and structures that would create new impervious surfaces that would generate stormwater runoff. These areas would include the bus turnaround, the passenger drop-off area, the transit terminal entrance plaza, parking garage complex, and the rail platform. As such, the project design incorporates new drainage connections to the existing storm drain system. Stormwater runoff would then be collected in existing or improved drainages, then released to either percolate into the ground or drain into the Bay through existing drainage systems. Improvements to existing drainage facilities would be implemented through use of filtered drains or other measures, to ensure that the discharge of stormwater drainage into the Bay would not lead to degradation of water quality. Alternative 1 would therefore result in a less than significant impact.

Mitigation: No mitigation is required.

CEQA Determination: Alternative 1 of the proposed project would not require or result in the construction of new storm water drainage facilities or the substantial expansion of existing facilities, resulting in a less-than-significant impact.

Alternative 2. Alternative 2 would also introduce pavement and structures that would create new impervious surfaces that would generate stormwater runoff. These areas would include the bus turnaround, the passenger drop-off area, the transit terminal entrance plaza, the banquet/conference facility and parking garage, and the rail platform. As such, the project design incorporates new drainage connections to the existing storm drain system. Stormwater runoff would then be collected in existing or improved drainages, then released to either percolate into the ground, or drain into the Bay through existing drainage systems. Improvements to existing drainage facilities would be implemented through use of filtered drains or other measures, to ensure that the discharge of stormwater drainage into the Bay would not lead to degradation of water quality. Alternative 2 would therefore result in a less than significant impact.

Mitigation: No mitigation is required.

CEQA Determination: Alternative 1 of the proposed project would not require or result in the construction of new storm water drainage facilities or the substantial expansion of existing facilities, resulting in a less than significant impact.

Water Supply

Impact UT-4: The proposed project would have sufficient water supplies to serve the project from existing entitlements and resources.

Alternative 1. With implementation of the project, anticipated water supply necessary for the maintenance and operation of the Hercules ITC would be minimal. The maintenance of all trains and transit vehicles would take place at their respective off-site maintenance facilities. The proposed Hercules ITC would have a low water demand, as the facility would not include high water demand development, commercial, industrial, or residential uses. The Hercules ITC would require the use of water for the operation of restrooms, facility cleaning, and landscaping activities. The station building would be served by connecting to an existing water line under Bayfront Boulevard, which has sufficient capacity to serve the water demands of the Hercules ITC. No expansion of existing water distribution facilities would be required. As water demand for the Hercules ITC would be minimal, it is not anticipated to exceed the water entitlements for the project site. The impact would be less than significant.

Mitigation: No mitigation is required.

CEQA Determination: Alternative 1 of the proposed project would have sufficient water supplies to serve the project from existing entitlements and resources, and impacts from this alternative would therefore be less than significant.

Alternative 2. Water demand by Alternative 2 of the proposed project would be slightly more than under Alternative 1, as it includes the proposed banquet/conference center. Water would be used in the kitchen for food preparation and clean up. Some water would be required for the occasional events to be held at the proposed banquet/conference center. Water would also be regularly used for the restrooms, facility cleaning, and landscaping activities. Similar to Alternative 1, the Hercules ITC's demand for water is expected to be minor compared to existing entitlements, and impact would be less than significant.

Mitigation: No mitigation is required.

CEQA Determination: Alternative 2 of the proposed project would have sufficient water supplies to serve the project from existing entitlements and resources, and impact of this alternative would therefore be less than significant.

Solid Waste Services

Impact UT-5: The proposed project would comply with all federal, state, and local statutes and regulations related to solid waste. The proposed project would be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs.

Alternative 1. Alternative 1 of the proposed Hercules ITC would generate some solid waste, generally in the form of refuse discarded by transit patrons and wastes produced by maintenance activities. The project is not anticipated to generate large quantities of solid waste, due to the nature of its purpose. Solid waste generated from the proposed Hercules ITC would be picked up and transported to a licensed landfill, consistent with City policies, and all federal, State, and local statutes, and regulations related to solid waste would be complied with. Transit patrons are not anticipated to remain at the Hercules ITC for any longer than they need to and consequently would not generate large quantities of solid waste on site. All solid waste generated by the Hercules ITC would be picked up and transported to a licensed landfill, consistent with City policies, and the project sponsors would comply with all federal, State, and local statutes and other regulations related to the disposal of solid waste. The solid waste generated by the proposed project is not anticipated to exceed any permitted landfill capacities, and impact would be less than significant.

Mitigation: No mitigation is required.

CEQA Determination: Alternative 1 of the proposed project would comply with all federal, State, and local statutes and regulations related to solid waste. The proposed project would be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs. Impacts would be less than significant.

Alternative 2. Alternative 2 would generate slightly greater quantities of solid waste than Alternative 1, as it include the conference/banquet facilities. The operation of the conference/banquet facilities would contribute in generating slightly more solid waste to the quantities generated under this alternative. Operation of these facilities; however, would be occasional and for limited periods of time, resulting in relatively minor amounts of additional refuse. The total output of this alternative that would also be well within the permitted capacities of the landfills serving the project area. All solid waste generated by the Hercules ITC would be picked up and transported to a licensed landfill, consistent with City policies, and the project sponsor would comply with all federal, State, and local statutes and other regulations related to the disposal of solid waste, resulting in a less than significant impact for Alternative 2.

Mitigation: No mitigation is required.

CEQA Determination: Alternative 2 of the proposed project would comply with all federal, State, and local statutes and regulations related to solid waste. The proposed project would be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs. Impacts would be less than significant.

4.13.5. Cumulative Impacts and Mitigation

The Hercules ITC would not result in any cumulative adverse impacts to utilities in the project area.

CEQA Determination: Cumulative effects associated with utilities from other identified development projects are not considered significant.

4.14. PUBLIC SERVICES

This section discusses the potential impacts of the Hercules ITC alternatives on project area public services.

4.14.1. Methodology

The analysis in this section focuses on whether the implementation of the proposed project would impact existing public services (fire protection, police protection, public schools, and public libraries) within the vicinity of the proposed project site location.

Public services were analyzed to determine if implementation of the Hercules ITC alternatives would require additional public services or result in the disruption or deterioration of existing service levels. Public service staffing and resources were also evaluated against the size, complexity, and the future public service needs of the project. In this regard, the impact analysis combines the discussion of potential short-term construction impacts with long-term requirements of the Hercules ITC alternatives for each public service evaluated.

4.14.2. Significance Criteria

In accordance with the requirements of CEQA and NEPA and all applicable State and federal environmental laws, the proposed project would have a potentially adverse effect on the environment if it would result in the following:

- Degradation or relocation of existing public services facilities; or
- Substantial adverse physical or environmental impacts that affect service ratios, response times, or other performance objectives for any of the public services: fire protection, police protection, public schools, or public libraries.

4.14.3. Impacts and Mitigation

No-Action Alternative

Under the No-Action Alternative, the proposed Hercules ITC projects detailed in the Project Description would not be implemented. For this reason, the No-Action Alternative would not result in the need for expanded public services or service levels, nor result in a determination from a public service provider about insufficient capacity for the proposed project, or create the need for an increase of public services. New public service facilities, service upgrades, and expansions are anticipated to occur within the project study area regardless of whether the proposed project is implemented.

Action Alternatives

The potential impacts related to provision of public services are related primarily to site operations and general location, and would be essentially the same for both Action Alternatives 1 and 2. Therefore, the impacts anticipated to result from these alternatives are not addressed separately in this discussion.

Emergency Response

Impact PUB SVC-1: Construction traffic and other activities have the potential to adversely disrupt police and fire department emergency response times in the project area.

Alternatives 1 and 2. Underground utilities currently crossing the proposed Hercules ITC site include four optical fiber communication lines, and although not public utilities, two privately-held petroleum transport pipelines that would be disturbed by construction operations. These lines run parallel to the UPRR track along its northern side for the entire distance of the affected project area. The project construction plans include the relocation of these utility lines with minimal disruption of their services, and impact would therefore be less than significant.

To avoid potential disturbances of any underground utilities that may be presently not known, the City and the project designers shall consult with public utility providers who have infrastructure in the immediate vicinity of the proposed Hercules ITC site to determine the exact location and depth of utility lines. This consultation shall be completed prior to finalizing the project plans and before any ground disturbances occur.

Mitigation Measure PUB SVC-1: Prior to the start of construction activities, the City shall consult with the emergency service providers who have jurisdiction in the immediate vicinity of the Hercules ITC site to develop a Construction Emergency Response Access Plan that would identify appropriate routes and access points that would be available to police and fire services to use during the construction phase.

CEQA Determination: Implementation of the Construction Emergency Response Access Plan would serve to prevent potentially significant construction phase-related impacts to police and fire emergency response times to a less than significant level.

Fire Protection

Impact PUB SVC-2: The proposed Hercules ITC project is not anticipated to generate any substantial adverse impacts associated with the introduction of new or altered fire protection facilities in order to maintain acceptable service ratios, response times, or other performance objectives.

Alternatives 1 and 2. Operation of the Hercules ITC project is anticipated to result in only a slightly increased demand for fire and emergency services because of the large numbers of people that are projected to utilize the Hercules ITC. According to the Rodeo-Hercules Fire Protection District, project operations would not negatively affect response times and would not significantly diminish the level of services for fire responders in the project area.

The RHFPD does not anticipate that operation of the proposed project would expose persons to fire hazards, lack of emergency access, or other fire safety issues for which the RHFPD is unable to provide protection on the portion of the site south of the UPRR tracks. The completed project would include a gated emergency at-grade crossing of the UPRR tracks in order to provide emergency vehicle access to Hercules Point and the areas north of the tracks. The RHFPD does not anticipate any need for additional personnel or facilities with the operation of the proposed project, and impacts would be less than significant.

Mitigation: No mitigation is required.

CEQA Determination: Alternatives 1 and 2 would result in less than significant impacts to fire response service levels or RHFPD resources. The proposed project would not expose persons to fire hazards, lack of emergency access, or other fire safety issues for which the RHFPD is unable to provide protection.

Law Enforcement

Impact PUB SVC-3: No new police facilities would be required as a result of implementing the project. The Police Department would be able to maintain acceptable service ratios, response times, or other performance objectives, As such, construction or alteration of existing facilities would not be necessary, and impacts of the proposed project with respect to new or physically altered police protection facilities and services would be avoided.

Alternatives 1 and 2. Implementation of the proposed Hercules ITC project and the addition of employees and transit users associated with the proposed project would result in some increase in the potential need for police protection services. Alternative 2 proposes a retail building would be sited in the plaza near the Station Building and the retail building would provide space for a security office or police substation. The City Police Department (Department) estimates that the service calls for the Hercules ITC would be consistent with moderate to large groups of transit passengers arriving and departing throughout the day, along with a stable area resident population, and a large quantity of commuter vehicles parked in the area for multiple hours during working days. These calls would typically consist of minor offenses, such as traffic complaints, parking issues, loitering, and alcohol consumption, as well as more serious crimes such as vehicle burglaries and theft. The Department does not anticipate an increase in the incidents of crimes against persons or substantial reduction in response times as a result of project implementation (City of Hercules; Emergency Operations Division Letter from Bill Goswick to Nelson Oliva and Fred Deltorcho. Safety Concerns and Recommendations for the Transit/Ferry Terminals. June 14, 2008.).

It is anticipated that emergency response training for the Department personal would need to be expanded in order to more effectively patrol the new passenger train station, the transit/bus terminal, the parking facilities, and the surrounding area. Drills would be conducted, which would involve not only Department personnel, but other City employees, as well as the City Emergency Operations Center. As part of these operations, emergency evacuation routes would be determined, planned, and tested in simulated emergency drills to ensure their feasibility.

The Department is continually recruiting for additional police officers, and increased staffing. The Department has already planned for meeting the projected personnel needs of not only the proposed project, but other future developments in Hercules as well. It is anticipated that the established recruiting program would be able to provide for any increased demand for police services that may be needed for the Hercules ITC. No new police facilities would be required to serve the Hercules ITC. Therefore, impacts of the proposed project with respect to new or physically altered police protection facilities and services would be less than significant.

Mitigation: No mitigation is required.

CEQA Determination: Alternatives 1 and 2 would not generate a significant increased demand for police services and would not require new or altered police facilities in order to serve the Hercules ITC. Impacts of the proposed project are therefore anticipated to be less than significant.

Public Schools

Impact PUB SVC-4: The proposed project would not result in substantial adverse physical impacts associated with the provision of new or physically altered public school facilities in order to maintain acceptable service ratios or other performance objectives, the construction of which could cause significant environmental impacts.

Alternatives 1 and 2. No growth in population and development would occur that is not already anticipated and provided for by City planning authorities. The proposed project would not induce residential development that would potentially generate new student enrollment in the WCCUSD or other public school districts in the region. The proposed Hercules ITC project would not generate substantial growth in employment, as relatively few personnel would be required to perform daily operations and maintenance activities at the Hercules ITC. As such, it is not anticipated that project-related employment would attract the number of families with school-aged children to the area that would strain public school resources. It is likely that most of the limited employment generated by the Hercules ITC would be filled either by Hercules residents, or persons that would commute to work and not relocate to the area. Any new students associated with Hercules ITC employees would be accommodated in existing public school facilities and would not require the construction of new facilities, or the physical alteration of existing schools. The proposed project would therefore have less than significant impacts on public schools.

Mitigation: No mitigation is required.

CEQA Determination: Alternatives 1 and 2 would not generate a substantial population increase that would require new or physically altered public school facilities in order to serve the Hercules ITC employees. Impacts of the proposed project are therefore anticipated to be less than significant.

Public Libraries

Impact PUB SVC-5: The proposed project would not result in substantial adverse physical impacts associated with the provision of new or physically altered public library facilities in order to maintain acceptable service ratios or other performance objectives, the construction of which could cause significant environmental impacts, nor increase the use of existing public library facilities such that substantial physical deterioration of the facilities would occur or be accelerated.

Alternatives 1 and 2. As discussed under Impact PUB SVC-4 above, the proposed project may indirectly add a minimal number of residents to the area. These new residents may use public library facilities throughout the area. The proposed project's minimal number of employees would not be of sufficient size to result in substantial adverse physical impacts associated with the provision of new or physically altered public library facilities in order to maintain acceptable

service ratios or other performance objectives, the construction of which could cause significant environmental impacts. Likewise, the very limited population growth anticipated to occur as a result of the project would result in an insignificant increase in library usage at the public libraries operated by the City and the Contra Costa County Library system and are not expected to result in substantial physical deterioration to the use of library facilities. Therefore, the project's impacts with respect to this criterion are considered less than significant.

Mitigation: No mitigation is required.

CEQA Determination: Alternatives 1 and 2 would not generate a substantial population increase that would require new or physically altered public library facilities in order to serve the Hercules ITC employees, or cause substantial or significant physical deterioration to occur or be accelerated from the use of library facilities. Impacts of the proposed project are therefore anticipated to be less than significant.

Impact PUB SVC-6: Cumulative impacts could occur on fire protection, enforcement services, public schools, and library facilities.

Alternatives 1 and 2. City-wide growth in combination with the approved development in the waterfront area could result in increased demand for public services in Hercules. The construction and operation of the Hercules ITC would generate a slightly increased demand for fire protection and law enforcement services. The majority of Hercules ITC users are expected to be residents of Hercules and the immediate surrounding area, and the use of the Hercules ITC by commuters during both the a.m. and p.m. daily commute period would not directly cause a significant increase in the City's overall population. The project thus would not lead to a change in response times and/or requirement for construction of new police or fire facilities, libraries, or schools.

Cumulative development in the project area could have a potentially adverse physical impact associated with the provision of new or physically altered public services and facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for fire protection or law enforcement services. With the proposed addition of residential and commercial development in the area, an increased demand for these services would result. This could result in potentially adverse impacts related to new building construction or expansion of service. However, the development of the Hercules ITC project would not represent a considerable contribution to the cumulative impact on fire or police protection services. No significant cumulative impacts to the public services or facilities that serve the area are expected.

Mitigation: No mitigation is required.

CEQA Determination: Cumulative impacts on public services and facilities would be within the capabilities of the existing providers. The cumulative impacts of the proposed project are therefore anticipated to be less than significant.

4.14.4. Cumulative Impacts and Mitigation

If the HB project is constructed at the same time as the proposed project, there could be cumulative impacts resulting from disruption of police and fire department emergency response times from both projects.

CEQA Determination: With implementation of **Mitigation Measure PUB SVC-1**, cumulative effects associated with public services from other identified development projects are not considered significant.

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5. CEQA Considerations

5.1. IRREVERSIBLE AND IRRETRIEVABLE RESOURCES EFFECTS

CEQA Guidelines Section 15126.2(c) requires that environmental documents describe any significant irreversible environmental changes that would be caused by a proposed project. Section 15126.2(c) states:

> *"Use of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified."*

Resources would be used during construction and operation of the proposed project. Fossil fuel energy would be used during construction to produce and transport construction materials, to transport construction equipment to and from the work site, and to construct the Hercules ITC and ancillary facilities. Other natural resources would be used to produce glass, steel, concrete, and asphalt used to construct the Hercules ITC and ancillary facilities. Operational use of resources would primarily be fossil fuel energy associated with train and bus operations, night lighting of the Hercules ITC, parking, and adjacent areas. However, as discussed in Section 4.13 Utilities, energy consumption related to the construction and operation of the proposed project would not be substantial, wasteful, inefficient, or unnecessary. The proposed Hercules ITC would employ renewable energy resources including solar and wind. Automobile trips would be reduced during the operation of the Hercules ITC, which would reduce fossil fuel use. Other natural resources used to construct the proposed project would generally not be retrievable, although some materials may be reused or recycled. While the quantity of the resources that would be used would not be insignificant, they are generally not in short supply.

Removal or nonuse of the Hercules ITC is unlikely with the level of capital commitment at approximately $50 million (current dollars). It is possible that the Hercules ITC could have other uses in the future; however, these are also likely to involve resource use. It is assumed that the land developed for Hercules ITC use would represent an irreversible and irretrievable commitment of land resources.

Irreversible environmental damage may also result from environmental accidents caused by a project. Environmental accidents that may occur during construction and operation of the proposed project include accidental spill or release of hazardous materials (e.g., fuels and oils), and the release of any contaminated material found in dredged sediments or soils excavated from construction facilities. These potential impacts are described in Sections 4.10, Water Resources, and 4.12, Hazardous Materials, and mitigation measures are identified such as preparing and implementing a hazardous waste management plan, a contaminated materials sampling and analysis plan, and a contaminated materials removal plan, if necessary. Implementation of these

mitigation measures would reduce these potential impacts to Less than significant Therefore, irreversible environmental damage is not anticipated.

The proposed Hercules ITC would not consume a substantial quantity of resources such as fossil fuel energy, and these resources would not be used in a wasteful, inefficient, or unnecessary manner. The proposed Hercules ITC would employ renewable energy resources including solar and wind. It is assumed that the land developed for the Hercules ITC would represent an irreversible and irretrievable commitment of land resources given capital construction costs.

Implementation of mitigation measures identified in the Draft EIS/EIR would reduce potential impacts associated with environmental accidents, and irreversible environmental damage is not anticipated. The resource commitments described above are justified because they would result in improvements to the local and regional transit system and reduce automobile trips and associated fossil fuel energy use. These benefits are expected to outweigh the costs of the permanent commitment of resources described above.

5.2. CUMULATIVE EFFECTS

CEQA Guidelines Section 15130 requires that environmental documents include a discussion of cumulative impacts. Cumulative impacts are two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts (Section 15355). The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment, which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time. CEQA Guidelines Section 15130(b) indicates that either a list-based or a projections-based approach may be used to evaluate cumulative impacts. The list-base approach considers a list of past, present, and probable future projects producing related or cumulative impacts. The projections-based approach considers regional or area-wide conditions contributing to cumulative impacts.

NEPA and FTA guidelines require that regional growth projections from the Metropolitan Planning Organization be used as input for evaluating the cumulative impacts for transportation projects for future year conditions. In the San Francisco Bay Area, the MTC maintains a regional travel demand forecast model that uses the regional population and employment growth forecasts by ABAG.

Caltrans uses a projection-based approach tailored to the specific conditions of the project study area. The 2035 cumulative analysis follows the Caltrans methodology, but also incorporates a list of projects potentially producing related or cumulative impacts. The list of development projects below have been identified based on recent environmental studies and actions conducted by the City of Hercules and correspondence with the planning department:

1. Waterfront District Master Plan
2. Hercules Redevelopment Plan
3. Future Hercules Ferry Terminal

4. Proposed Hercules Bayfront Project
5. Sycamore Crossing
6. Hilltown

This cumulative analysis method satisfies NEPA and CEQA requirements to evaluate the proposed project's contribution to the effect on the environment caused by the accumulation of past, present, and reasonably foreseeable projects. The evaluation of potential cumulative impacts associated with the project is discussed in each of the technical analysis discussion in Chapter 4, Environmental Consequences.

As discussed in Section 4.5, Aesthetic and Visual Resources, development of the Hercules ITC and adjacent developments will contribute cumulatively to a potentially significant change in the visual character of the area and existing views. While mitigation will be incorporated to reduce the potential adverse effects of the project, the project may also result in a significant increase in light and glare in the area where little existed before.

5.3. GROWTH INDUCING EFFECTS

NEPA and CEQA require environmental documents to include an evaluation of growth inducing impacts.

NEPA Regulation Sections 1502.16 and 1508.8 require an environmental document to include an evaluation of indirect project impacts.

5.3.1. Economic or Population Growth

The San Francisco Bay Area has a large available workforce from which the majority of the construction and operational workers can be hired. Workers would not need to relocate to accommodate project construction or operation. Project operation is estimated to generate a small number of full time jobs to provide security and maintenance to the facility and service at the cafe, not including administrative positions. The resulting economic growth from these positions would be considered insignificant in the larger San Francisco Bay Area economy, or even within the local area of the proposed project (see Section 4.3, Socioeconomics and Environmental Justice).

People may also move to an area due to a perceived increase in the quality of life afforded by an increase in transit service. This is not likely to significantly affect population growth in the study area because the surrounding community is relatively developed and accessible by transit.

All of the alternative Hercules ITC locations would serve developed urban uses. The action and alternatives are located within the boundaries of the City of Hercules's Updated 2009 Redevelopment Plan (City of Hercules 2009). As such, the City of Hercules has included the Hercules ITC in planning for the growth of the redevelopment plan area and evaluated its potential impacts on growth. For this reason, population increase would not likely be significant relative to the number of people projected to move to the study area by 2035 (see Section 3.3, Socioeconomics and Environmental Justice). The proposed project may reduce potential impacts related with this growth by improving transit service and reducing automobile trips.

5.3.2. Remove Obstacles to Growth

A project may also be growth inducing if it removes an impediment to growth through the construction of infrastructure or the provision of additional public services, such as utilities, roadways, or police or fire protection.

The action and alternative locations are located within the Updated 2009 Redevelopment Plan area and part of the Waterfront Development Master Plan. This Redevelopment Plan details infrastructure needs for the entire plan area, which includes those necessary for the proposed project's operational activities. The proposed project and its infrastructure needs have been anticipated in the Redevelopment Plan.

5.3.3. Require Construction of New Facilities

The proposed project alone is not anticipated to increase population significantly to require the construction of new community service facilities (see Section 4.3, Socioeconomics and Environmental Justice, Section 4.13, Utilities, and Section 4.14, Public Services).

5.3.4. Encourage and Facilitate Other Activities

The proposed project is not anticipated to significantly contribute to economic or population growth, or require construction of infrastructure or the provision of additional public services that would be considered growth inducing.

5.4. CEQA SIGNIFICANCE CRITERIA

CEQA Guidelines Section 15126 indicates that an EIR must discuss significant environmental effects of a project. Significant effects on the environment are defined as "…substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance" (CEQA Guidelines Section 15382). CEQA does not include thresholds for determining whether effects on the environment are significant. CEQA Guidelines Section 15064 states that:

> *"The determination of whether a project may have a significant effect on the environment calls for careful judgment on the part of the public agency involved, based to the extent possible on scientific and factual data. An ironclad definition of significant effects is not always possible because the significance of an activity may vary with the setting. For example, an activity which may not be significant in an urban area may be significant in a rural area."*

CEQA Guidelines Appendix F and G include guidance to assist in the preparation of environmental documents. Criteria derived from these appendices are summarized in **Table 5.4-1.**

Table 5.4-1
Summary of CEQA Significance Thresholds.

Impact Category	CEQA Significance Threshold	Source(s)
Traffic and Transportation	A significant impact would occur if the project could cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections), as follows: • Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways, or exceed thresholds established by the City of Hercules as follows: • For arterial streets and signalized intersections, the impact would be considered significant if the project would cause the street segment or intersection to operated below LOS D during peak hours, or • For signalized intersections on San Pablo Avenue, the impact would be considered significant if the project would cause the intersection to operated below LOS E during peak hours • Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks; • Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses; • Result in inadequate emergency access; or • Result in inadequate parking capacity.	State CEQA Guidelines, Appendix G and City of Hercules
Land Use	The proposed project would be considered to have potential adverse impacts to the environment if the proposed project alternatives would do and exceed any of the following: • Physically dive an established community causing a disruption in the community cohesion, either directly or indirectly. • Conflict with applicable land use plan, policy, or regulation or an agency with jurisdiction over the project (including, but not limited to, the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect. • Conflict with any applicable habitat conservation plan or natural community conservation plan.	State CEQA Guidelines, Appendix G
Cultural Resources	A significant impact would occur if the project would cause a significant substantial adverse change in the significance of a historical resource or an archaeological resource, as defined in State CEQA Guidelines Section 15064.5. A significant impact would also occur if the project would directly or indirectly destroy a unique paleontological resource, site, unique geologic feature, or disturb any human remains.	State CEQA Guidelines, Appendix G
Visual and Aesthetic Resources	A significant impact would occur if the project would have a substantial adverse effect on a scenic vista, cause substantial damage or degradation to scenic resources and the existing visual character and/or quality of the site, or create substantial light or glare that would adversely affect views in the project area.	State CEQA Guidelines, Appendix G

Impact Category	CEQA Significance Threshold	Source(s)
Parklands and Recreation	A significant impact would occur if the project would conflict with established recreational, educational, or religious uses; conflict with adopted plans and goals of the community; or create an additional demand for public service facilities, the expansion of which would result in significant environmental impact.	State CEQA Guidelines, Appendix G
Air Quality	A significant impact would occur if the project would violate an air quality standard or conflict and/or obstruct with the implementation of the BAAQMD Clean Air Plan, expose sensitive receptors to substantial pollutant concentrates, and create objectionable odors that could affect a substantial amount of people, or contribute significantly to an existing or projected air quality violations. Also, construction and operational emissions generated from the proposed project would result in significant air quality impacts if: • Construction (short-term temporary emissions): - Control measures recommended by the BAAQMD are not incorporated into the project design or applied to project construction. • Operation (long-term continual emissions): - Mobile source emissions (location to the proposed project) of CO violate or contribute substantially to a violation of the NAAQS or CAAQS; - Project emissions of ROG, NO_x, or PM_{10} exceed BAAQMD mass emissions thresholds of 15 tons per year or 80 pounds per day; - The proposed project exposes members of the public to objectionable odors; - The proposed project has the potential to expose sensitive receptors (including residential areas) or the general public to substantial incremental increases in TAC emissions that exceed 10 chances per million of excess cancer risk for the MEI and/or a hazard index of 1 for non-cancer risk for MEI; and - The propose project would be considered to have a significant cumulative air quality impact if it would individually have a significant air quality impact. For any project that does not individually have significant operational air quality impacts, the determination of significant cumulative impacts should be based on an evaluation of the consistency of the project with the local and regional air quality plans.	State CEQA Guidelines, Appendix G; BAAQMD
Noise and Vibration	A significant impact would occur if the project would: • Result in an overall noise level at the noise sensitive land uses of 65 dB CNEL or more; • Result in an overall increase in noise level at the noise sensitive land uses of 3 dB or more; • Cause stationary noise sources exceed the prescribed criteria listed within the Noise Ordinance for either level or duration; or • Conflict with any other locally applicable policies protecting noise sensitive land uses.	State CEQA Guidelines, Appendix G
Biological Resources	A significant impact would occur if the project would have a substantial adverse effect on any candidate species, sensitive species, special-status species, riparian habitat, or other	State CEQA Guidelines, Appendix G

Impact Category	CEQA Significance Threshold	Source(s)
	sensitive natural community as identified in local or regional plans, policies, regulations, or by the CDFG or the USFWS. A significant impact would also occur if the project would have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA, or interfere substantially with the movement of native resident migratory fish, wildlife species, or established native resident migratory wildlife corridors, or impede the use of native wildlife nursery sites. A significant impact would also occur if the project would conflict with local policies or ordinances that protect biological resources, or conflict with provisions of any adopted conservation plans.	
Water Resources	A significant impact would occur if the project would violate any water quality standards or waste discharge requirements, substantially deplete groundwater supplies, interfere substantially with groundwater recharge, substantially alter the existing drainage pattern of the area, substantially increase the rate and/or amount of surface runoff, degrade water quality, or place structures within a 100-year flood hazard area.	State CEQA Guidelines, Appendix G
Geology and Soils	A significant impact would occur if the project would expose people or structures to large geological hazards, like the rupture of a known earthquake fault, strong seismic ground failure, or landslides. A significant impact would also occur if the project resulted in substantial soil erosion or loss of topsoil, if the project is located on an unstable or expansive soils or geologic units that would result in substantial risk, or if the project has soils that cannot adequately support the use of septic tanks or alternative waste water disposal systems where sewers are not available.	State CEQA Guidelines, Appendix G
Hazardous Materials	A significant impact would occur if the project would create a significant hazard to the public or environment through the routine transport, use, or disposal of hazardous material or a significant hazard to the public or environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. Also, if the project would emit hazardous emissions or handle hazardous substances within ¼ mile of an existing or proposed school, a significant impact would occur. A significant impact would occur if the project would conflict with local policies or ordinances that protect biological resources, or conflict with provisions of any adopted conservation plan.	State CEQA Guidelines, Appendix G
Utilities	A significant impact would occur if the project would exceed the Bay Area RWQCB's wastewater treatment requirements or if the project would require or result in construction of new water facilities, wastewater treatment facilities, or storm water drainage facilities, or expansion of existing storm, water, or wastewater facilities that could cause significant environment effects. A significant impact would also occur if there were not sufficient water supplies available to serve the project from existing entitlements and resources or new or expanded entitlements were needed. A significant impact would also occur if the project's wastewater treatment provider does not have adequate capacity to serve the project's demands in addition to existing	State CEQA Guidelines, Appendix G

Impact Category	CEQA Significance Threshold	Source(s)
	commitments, if the project is not served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs, or if the project does not comply with all local, state, and federal solid waste regulations.	
Public Services	A significant impact would occur if the project would significantly impact acceptable service ratios, response times, or other performance objectives for fire, police, school, parks, or other public facilities, or the project would increase the use of public facilities that would induce or accelerate substantial physical deterioration.	State CEQA Guidelines, Appendix G
Climate Change	A significant impact would occur if the extent the project may increase greenhouse gas emissions (in the form of exhaust) as compared to the existing environmental setting and/or the project conflicts with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.	State CEQA Guidelines, Appendix G

5.4.1. Summary of Impacts and Mitigation Measures

Table 5.4-2 presents a summary of significant and potentially significant impacts for each project alternative, the corresponding mitigation measures for each impact, and the significance level after mitigation. A detailed discussion of these impacts and mitigation measures is included in Chapter 4, Environmental Consequences.

5.4.2. Unavoidable Significant Environmental Effects

CEQA Guidelines Section 15126.2(b) requires an EIR to include a discussion of any significant impacts, including those which can be mitigated but not reduced to a level of insignificance. CEQA also requires a discussion of impacts that cannot be alleviated without imposing an alternative design, their implications and the reasons why the project is being proposed, notwithstanding their effect. All of the significant impacts identified in Chapter 4 can be mitigated to a less than significant level, except those identified below in Table 5.4-2.

Table 5.4-2
Summary of Significant and Potentially Significant Impacts
(Impacts and Mitigation Measures are Summarized. Refer to relevant sections for complete text)

Draft EIR/EIS Section	Environmental Area/Impacts	Alternatives	Impacts	Mitigation	Level of Significance After Mitigation
4.1	Traffic and Transportation Systems	1 and 2	TRANS-4: Construction of the project will introduce additional large (haul) trucks and other related traffic that could result in potentially adverse safety impacts to pedestrians.	MM TRANS-4: Contractor will develop and implement traffic safety plan in coordination with the City.	Less than significant
4.3	Cultural Resources	1 and 2 and Track Option B	CULT-1: The project may adversely affect unidentified archeological resources during construction	MM CULT-1: Prior to construction, project crews will be briefed on the identification of cultural materials. If cultural materials are encountered, construction within 100 feet will stop, the City will be notified and a qualified archeologist will examine and document the materials. The archeologist will coordinate with responsible agencies as appropriate to develop mitigation measures prior to resuming construction in the area of the discovery. The archeologist will oversee implementation of the procedures once they have been determined.	Less than significant
4.3	Cultural Resources	1 and 2 and Track Option B	CULT-2: Construction of the project may adversely affect unidentified human remains.	MM CULT-2: Prior to construction, project crews will be briefed on the potential to identify human remains. If remains are encountered, construction within 100 feet will stop. The City will be notified. The Contra Costa County Coroner will be contacted to evaluate the find. If the Coroner determines that the remains are Native American, the City will coordinate with the Native American Heritage Commission.	Less than significant
4.3	Cultural Resources	1 and 2 and Track Option B	CULT-3: Construction of the project may adversely affect unidentified paleontological resources	MM CULT-3: Prior to construction, project crews will be briefed on the potential to identify paleontological resources. If	Less than significant

Draft EIR/EIS Section	Environmental Area/Impacts	Alternatives	Impacts	Mitigation	Level of Significance After Mitigation
				materials are encountered, construction within 100 feet will stop and the City will be notified. A qualified paleontologist will examine, document and evaluate the find. The paleontologist will coordinate with the responsible agencies regarding the development of appropriate mitigation measures. The paleontologist will oversee implementation of the procedures once they have been determined.	
4.5	Visual and Aesthetic Resources	1 and 2	VAR-3: Implementation of the project would create new sources of substantial light and glare and would result in significant adversely affected day and nighttime views in the area.	MM VAR-3: Prior to the approval of the final project design plans, the project applicant shall submit a Final Lighting Plan for review and approval by the City Planning Commission. The Final Lighting Plan shall be in compliance with the General Plan, the WDMP, and all other applicable City codes, as required by City Planning authorities. The Final Lighting Plan shall specify reasonable measures to minimize light spillover and glare from the completed facility, such as screened / hooding lighting, automatic dimmers, or strategically placed landscaping.	Significant and unavoidable.
4.5	Visual and Aesthetic Resources	1 and 2	VAR Cumulative Impacts: It is anticipated that a ferry terminal would eventually be added to the Hercules ITC facility and would connect to the northern side of the station. The eventual build-out of the Hercules Bayfront project to the east and west of the Hercules ITC complex and the existing residential and commercial development to the south and west would serve to add to the incremental effects of the light and glare emanating from the Hercules ITC and ferry terminal area, and would result in	MM VAR-3: Prior to the approval of the final project design plans, the project applicant shall submit a Final Lighting Plan for review and approval by the City Planning Commission. The Final Lighting Plan shall be in compliance with the General Plan, the WDMP, and all other applicable City codes, as required by City Planning authorities. The Final Lighting Plan shall specify reasonable measures to minimize light spillover and glare from the completed facility, such as screened / hooding lighting, automatic dimmers, or strategically placed landscaping.	Significant and Unavoidable.

Draft EIR/EIS Section	Environmental Area/Impacts	Alternatives	Impacts	Mitigation	Level of Significance After Mitigation
			additional light and glare in combination with approved development projects that are scattered throughout the study area. Cumulative development in Hercules ITC site would obstruct and alter views looking west over the Bay. Cumulative visual effects are anticipated to be significant and unavoidable.		
4.7	Air Quality	1 and 2 and Track Option B	AIR-1: Construction of the proposed project would create emissions of fugitive dust from excavation and grading, and emissions of criteria pollutants from construction equipment exhaust.	MM AIR-1: During construction, construction contractors will be required to implement fugitive dust control measures and reduce emissions.	Less than significant
4.8	Noise and Vibration	1 and 2 and Track Option B	NOI-3: Noise-generating construction activities are anticipated to exceed noise level standards and be at least 5 dBA above the ambient noise environment at adjacent noise-sensitive land uses.	MM NOI-3: The proposed project shall implement best-available construction noise control measures.	Significant and unavoidable
4.9	Biological Resources	1 and 2 and Track Option B	BIO-1: Construction of the proposed project could potentially result in “take” through harm or harassment of individual California red-legged frogs (CRLF)	MM BIO-1: Preconstruction surveys for CRLF would be conducted in the project site approximately two weeks prior to the initiation of construction activities to ensure that CRLF is not actively using the project site as a dispersal corridor. Surveys will not commence until approval is received by USFWS. Construction personnel would participate in a USFWS-approved worker environmental awareness program. A biological monitor would be present during all construction activities within Refugio Creek.	Less than significant

Draft EIR/EIS Section	Environmental Area/Impacts	Alternatives	Impacts	Mitigation	Level of Significance After Mitigation
4.9	Biological Resources	1 and 2 and Track Option B	BIO -2: Construction of the proposed project could potentially result in "take" through harm or harassment of vernal pool fairy shrimp (VPFS).	MM BIO-2: Fairy shrimp surveys will be completed in winter 2009/2010 within suitable habitats for VPFS. If VPFS are detected during surveys, the USFWS will be notified and appropriate avoidance and/or mitigation measures will be implemented prior to commencement of construction within or adjacent to VPFS occupied habitat.	Less than significant
4.9	Biological Resources	1 and 2 and Track Option B	BIO -3: Construction of the proposed project could potentially result in "take" through harm or harassment of California clapper rail.	MM BIO-3: If construction begins during the breeding season (January 15 to April 15), a USFWS approved biologist will conduct a preconstruction survey of California cordgrass tidal marsh habitat for California clapper rail prior to any construction activities occurring within 500 feet of those habitats.	Less than significant
4.9	Biological Resources	1 and 2 and Track Option B	BIO -4: Construction of the proposed project could potentially result in "take" through harm or harassment of salt marsh harvest mouse.	MM BIO-4: A USFWS approved biologist will conduct a preconstruction survey of the northern coastal salt marsh habitat in the project site prior to any construction activities occurring within 500 feet of those habitats. A USFWS approved biological monitor will be present during construction activities within and immediately adjacent to the northern coastal salt marsh habitat. Construction personnel would participate in a USFWS-approved worker environmental awareness program.	Less than significant
4.9	Biological Resources	1 and 2 and Track Option B	BIO -5: Construction of the proposed project could potentially result in "take" through harm or harassment of California black rail.	MM BIO-5: If construction begins during the breeding season (February 1 to August 31), a CDFG approved biologist will conduct a preconstruction survey of pickleweed tidal marsh habitat for California black rail prior to any construction activities occurring within 500 feet of those habitats.	Less than significant

Draft EIR/EIS Section	Environmental Area/Impacts	Alternatives	Impacts	Mitigation	Level of Significance After Mitigation
4.9	Biological Resources	1 and 2 and Track Option B	BIO -6: Construction of the proposed project could potentially result in disturbance of sensitive bat species, including pallid bat and hoary bat.	MM BIO-6: Preconstruction bat surveys shall be conducted to inspect inside culverts under the railroad tracks and trees within the willow riparian habitat.	Less than significant
4.9	Biological Resources	1 and 2 and Track Option B	BIO -7: Construction of the proposed project could potentially impact San Pablo vole and/or salt marsh wandering shrew	MM BIO-1: Preconstruction surveys for San Pablo vole and salt marsh wandering shrew will be conducted simultaneously with salt marsh harvest mouse surveys. If these species are detected, CDFG will be contacted regarding appropriate measures to relocate them out of the work area or protect occupied habitat in conjunction with salt marsh harvest mouse avoidance measures. Exclusionary fencing installed for salt marsh harvest mouse would also prevent these species from entering the project site.	Less than significant
4.9	Biological Resources	1 and 2 and Track Option B	BIO -8: Construction of the proposed project could potentially result in disturbance to other sensitive bird species (Cooper's hawk, tricolored blackbird, northern harrier, white-tailed kite, saltmarsh common yellowthroat, San Pablo song sparrow, burrowing owl) and migratory birds during the nesting season.	MM BIO-8: If feasible, ground disturbing activities (e.g., clearing and grubbing) in and within 500 feet of suitable nesting habitat for these species should commence outside of the breeding season (September 1 to January 14). If birds began nesting in and within 500 feet of the project site after construction commenced, it could be assumed that they were not disturbed by construction activities.	Less than significant
4.9	Biological Resources	1 and 2 and Track Option B	BIO-9: Construction of the proposed project would result in impacts to northern coastal salt marsh habitat, coastal brackish marsh habitat and brackish stream habitat.	MM BIO-9: Prior to commencement of construction activities that have the potential to impact the Northern Coastal Salt Marsh and Coastal Brackish Marsh, a permit will be obtained from the USACE and the BCDC for fill and/or disturbance of this habitat. All permit conditions will be followed. Suitable compensatory mitigation for impacts to Northern Coastal Salt Marsh and Coastal Brackish Marsh will be determined in conjunction with the USACE and BCDC and	Less than significant

Draft EIR/EIS Section	Environmental Area/Impacts	Alternatives	Impacts	Mitigation	Level of Significance After Mitigation
				implemented to ensure no net loss of Northern Coastal Salt Marsh occurs.	
4.9	Biological Resources	1 and 2	BIO-10: Construction of the proposed project could potentially result in loss of eelgrass and/or widgeongrass beds.	MM BIO-10: A valid preconstruction eelgrass survey will be completed during the period of active growth of eelgrass (typically March through October). The preconstruction survey will be completed prior to the beginning of construction and shall be valid until the next period of active growth. If any eelgrass is identified in the project area, post-construction eelgrass surveys will be conducted to determine if any eelgrass was adversely impacted. The survey will be prepared in consultation with CDFG and/or NMFS.	Less than significant
4.9	Biological Resources	1 and 2	BIO-11: Construction of the proposed project could potentially result in loss of intertidal mudflats.	MM BIO-11: A permit will be obtained from the USACE and the BCDC prior to impacting the intertidal mudflats. All permit conditions will be followed. Suitable compensatory mitigation will be determined in conjunction with the USACE and BCDC and implemented in order to replace and/or enhance the functions and values lost due to impacting special aquatic sites during implementation of the proposed project.	Less than significant
4.9	Biological Resources	1 and 2 and Track Option B	BIO-12: Construction of the proposed project could potentially result in the spread of invasive species.	MM BIO-12: The contractor will ensure that construction equipment is clean of potential noxious or invasive species prior to utilization of equipment on the site.	Less than significant
4.9	Biological Resources	1 and 2	BIO-13: Dredging activities could impact marine mammals	MM BIO-13: Implementation of **Mitigation Measure WR-1** and the following measures will be followed during dredging in San Pablo Bay to reduce turbidity. • In-water construction and dredging activities will occur during the window of June through November, to minimize effects on listed species and their habitat.	Less than significant

Draft EIR/EIS Section	Environmental Area/Impacts	Alternatives	Impacts	Mitigation	Level of Significance After Mitigation
				• Sampling and testing for contaminants will be conducted in potential dredging locations in San Pablo Bay prior to the onset of dredging activities (per USEPA and USACE requirements). If sediments to be dredged are contaminated such that their resuspension may adversely affect listed species or their habitat, NMFS and CDFG will be consulted. • Bankward slopes of the dredged area will be slanted to acceptable side slopes (e.g., 3:1) to prevent sloughing.	
4.9	Biological Resources	1 and 2	BIO-14: Construction and dredging activities could result in the modification or disturbance of special aquatic sites including eelgrass beds, mudflats, and tidal marshes that provide fish habitat.	MM BIO-14: Any tidal marsh habitat that is degraded or lost due to the movement of relocating the mouth of Refugio Creek will be mitigated for by planting tidal marsh vegetation (i.e., cordgrass) in San Pablo Bay, in the vicinity of where Refugio Creek currently flows out into San Pablo Bay. Tidal marsh habitat will be monitored over time to ensure no net loss in tidal marsh habitat. Wetland restoration will be coordinated with the responsible agencies as part of the wetland permitting required under Section 404 of the CWA. Although eelgrass surveys within the ESL and vicinity were completed in 2007, and no eelgrass was found (WWR 2007b), valid preconstruction eelgrass surveys will be completed (see Mitigation Measure #BIO-10).	Less than significant
4.9	Biological Resources	1 and 2 and Track Option B	BIO-15: Construction and dredging activities may temporarily increase sedimentation and turbidity in Refugio Creek and San Pablo Bay.	BIO-15: Implementation of **Mitigation Measures BIO-13, WR-1,** and **WR-2** will reduce potential impacts to fish and other aquatic species to less than significant. No additional measures will be required.	Less than significant

Draft EIR/EIS Section	Environmental Area/Impacts	Alternatives	Impacts	Mitigation	Level of Significance After Mitigation
4.9	Biological Resources	1 and 2 and Track Option B	BIO-16: Construction activities may potentially result in a chemical spill in Refugio Creek or San Pablo Bay.	MM BIO-16: Implementation of a Spill Prevention and Response Plan designed to minimize the potential for chemical spills and seepage, would reduce the potential impact to a less than significant level.	Less than significant
4.9	Biological Resources	1 and 2	BIO-17: Dredging activities could result in the entrainment of special-status fish and aquatic species.	MM BIO-17: Dredging activities in San Pablo Bay will be conducted during the work window of June through November to minimize potentially significant impacts to anadromous salmonids and longfin smelt. This work window also will minimize potential impacts to other fish and aquatic species by minimizing the timing of dredging to June through November.	Less than significant
4.9	Biological Resources	1 and 2 and Track Option B	BIO-18: Vibration and pressure waves resulting from pile driving could impact special-status fish and aquatic species and marine mammals.	MM BIO-18: Pile driving will be conducted "in the dry," (within a cofferdam or during low tide) minimizing any potential impacts to fishes and marine mammals to less than significant levels.	Less than significant
4.9	Biological Resources	1 and 2	BIO-19: Dredging activities could result in resuspension of contaminants.	MM BIO-19: Sampling and testing for contaminants will be conducted in potential construction/dredging locations in San Pablo Bay prior to the onset of dredging activities. Dredging activities in San Pablo Bay will be conducted during the work window of June through November to minimize potentially significant impacts to anadromous salmonids and longfin smelt. This work window also will minimize potential impacts to other fish and aquatic species by minimizing the time period of dredging to June through November.	Less than significant
4.9	Biological Resources	1 and 2	BIO-20: Construction and dredging activities could result in increased predation risk of special-status fish and aquatic species.	MM BIO-20: In-water construction activities in San Pablo Bay and dredging activities in San Pablo Bay will be conducted during the work window of June through November to	Less than significant

Draft EIR/EIS Section	Environmental Area/Impacts	Alternatives	Impacts	Mitigation	Level of Significance After Mitigation
				minimize potentially significant impacts to anadromous salmonids and longfin smelt.	
4.9	Biological Resources	1 and 2	BIO-23: Dredging activities could impact phytoplankton production	MM BIO-23: Temporary impacts to phytoplankton production due to increases in turbidity would be avoided/minimized through the use of construction BMPs to reduce the potential for increases in turbidity (e.g., use of silt curtains or methods to protect from disturbance).	Less than significant
4.9	Biological Resources	1 and 2	BIO-24: Dredging activities could impact Pacific herring spawning.	MM BIO-24: Dredging activities will only occur during the window of June through November, minimizing potential impacts on herring spawning activities.	Less than significant
4.9	Biological Resources	1 and 2 and Track Option B	BIO-25: Construction of the proposed project would result in impacts to wetlands and other waters of the U.S.	MM BIO-25: Prior to commencement of construction activities that have the potential to impact the wetlands or other waters of the U.S., a permit will be obtained from the USACE and BCDC for fill and/or disturbance of this habitat. All permit conditions will be followed. Suitable compensatory mitigation for impacts to wetlands and other waters of the U.S. will be determined in conjunction with the USACE and implemented to ensure no net loss of wetlands occurs.	Less than significant
4.10	Water Resources	1 and 2	WR-1: Dredging of Refugio Creek and San Pablo Bay could potentially adversely impact water quality through mobilization of contaminated sediment.	MM WR-1a: If contaminated sediment is encountered, further sediment characterization and a sediment removal plan (including upland disposal or beneficial reuse) will be required to protect water quality. MM WR-1b: If impacted sediments are to be dredged in Refugio Creek and/or San Pablo Bay, impacts to water quality could be minimized through the use of the following BMPs:	Significant and unavoidable

Draft EIR/EIS Section	Environmental Area/Impacts	Alternatives	Impacts	Mitigation	Level of Significance After Mitigation
				• Use of silt curtains, which prevent suspended sediment from migrating out of the immediate project area; • Dredging only on low or incoming tide; • Hydraulic or closed clamshell dredging to reduce the generation of suspended sediments; • Shunting, which involves pumping of the free water in a sediment holding barge to the bottom of the water body, which reduces turbidity; • Employment of an independent, certified, on-board dredging inspector to ensure compliance with permit conditions; and • Monitoring will be conducted during dredging to allow for: measurement of the efficiency of contaminated sediment removal; determination dredged volumes; measurement of sediment resuspension at the dredge site; and checking performance of barriers and other controls.	
4.10	Water Resources	1 and 2 and Track Option B	WR-2: Construction of project could potentially adversely impact water quality by degradation.	MM WR-2: Erosion will be controlled in accordance with an approved Erosion Control Plan. In addition, all construction activities will be performed in accordance with the California NPDES General Permit for Storm Water Discharges Associated with Construction Activities, 2009-009-DWQ, requiring the implementation of BMPs to control sediment and other pollutants mobilized from construction activities	Less than significant
4.10	Water Resources	1 and 2 and Track Option B	WR-3: The project *could* potentially adversely impact the existing drainage pattern of the site or area, which would result in substantial erosion or siltation on or off-site.	MM WR-3: Implementation of MM WR-2	Less than significant

Draft EIR/EIS Section	Environmental Area/Impacts	Alternatives	Impacts	Mitigation	Level of Significance After Mitigation
4.10	Water Resources	1 and 2 and Track Option B	WR-4: The project could potentially adversely impact the existing drainage pattern of the site or area, which could result in flooding on or offsite.	MM WR-4: Implementation of MM WR-2	Less than significant
4.10	Water Resources	1 and 2 and Track Option B	WR-5: Operations in a floodplain could constitute hazards and may adversely impact human safety and property	MM WR-5: New facilities will be designed to minimize flooding through the use of retaining wall, levees, and/or construction on fill. Flood hazard warnings will be posted and flood evacuation plans will be developed. Construction and design will account for the maximum flood level so that facilities are built above the mark.	Less than significant
4.10	Water Resources	1 and 2	WR-6: Stormwater runoff from the Hercules ITC site and parking may adversely impact water quality	MM WR-6: Operation of the Hercules ITC will be in conformance with the California NPDES General Permit for Storm Water Discharges Associated with Industrial Activities.	Less than significant
4.11	Geology and Soils	1 and 2 and Track Option B	GEO-1: Seismic activity could damage facilities and/or injure people.	MM GEO-1: A site-specific geotechnical investigation shall be required for this project. The project will conform to provisions of current building codes and to the recommendations of the geotechnical investigations performed for the proposed project.	Less than significant
4.11	Geology and Soils	1 and 2 and Track Option B	GEO-2: The proposed project could result in substantial soil erosion of topsoil	MM WR-2: Prior to construction, the City will develop and erosion control plan and stormwater pollution prevention plan. Best management practices will be incorporated into the project to avoid and minimize potential erosion. The project will be constructed in conformance with the NPDES Construction Stormwater Permit.	Less than significant
4.11	Geology and Soils	1 and 2 and Track Option B	GEO-3: Liquefaction, landslides, or lateral spreading could damage facilities and/or injure people and structures.	MM GEO-3: Design-level analyses of the liquefaction hazard shall be required for the project. Specifically, a program of site-specific exploratory borings and accompanying laboratory testing will be	Less than significant

Draft EIR/EIS Section	Environmental Area/Impacts	Alternatives	Impacts	Mitigation	Level of Significance After Mitigation
				required to delineate any potentially liquefiable materials underneath proposed facilities. These geotechnical investigations will also be required for consideration prior to foundation design.	
4.11	Geology and Soils	1 and 2 and Track Option B	GEO-4: Subsidence could damage facilities.	MM GEO-4: Project design will incorporate mitigation measures to avoid or minimize the potential for subsidence including driving piles to support structures, surcharging, and grading design considerations.	Less than significant
4.12	Hazards and Hazardous Materials	1 and 2 and Track Option B	HAZ-1: The proposed project could create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or through the accidental upset or release of hazardous materials.	MM HAZ-1a: The construction contractor shall develop a project-specific Health and Safety Plan that includes a project-specific contingency plan for hazardous materials and waste operations. MM HAZ-1b: If affected or potentially affected soil and/or sediments are encountered during construction activities (grading and excavation), these materials would be excavated, stockpiled, and characterized to evaluate appropriate reuse or disposal alternatives. MM HAZ-1c: The construction contractor shall develop a Spill Prevention and Response Plan and provide copies to all contractors working on the proposed project. MM HAZ-1d: Construction contractors and employees shall immediately control the source of any leak and contain any spill using appropriate spill containment and countermeasures. In addition, all precautions required by the RWQCB for the project's NPDES General Permit for Stormwater Discharges Associated with Construction Activity would be taken to ensure that no hazardous materials enter the nearby waterways.	Less than significant

Draft EIR/EIS Section	Environmental Area/Impacts	Alternatives	Impacts	Mitigation	Level of Significance After Mitigation
4.14	Public Services	1 and	PUB SVC-1: Construction traffic and other activities have the potential to adversely disrupt police and fire department emergency response times in the project area.	MM PUB SVC-1: Prior to the start of construction activities, the City shall consult with the emergency service providers who have jurisdiction in the immediate vicinity of the Hercules ITC site to develop a Construction Emergency Response Access Plan that would identify appropriate routes and access points that would be available to police and fire services to use during the construction phase.	Less than significant

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6. Evaluation of Alternatives

6.1. SUMMARY OF ALTERNATIVES ANALYZED

The Draft EIR/EIS studied three alternatives: the No-Action Alternative and two Action Alternatives. Under the No-Action Alternative, no train or bus infrastructure and services would be constructed in the Project area, road extension and bridges would not be built, and no improvements would be made to Refugio Creek. Existing services would remain unchanged except for transportation improvements identified and programmed in the regional transportation plans (see Section 3.1 Traffic and Transportation Systems). Both Action Alternatives would construct a transit center station along the UPRR track alignment at the Hercules Waterfront that would include a terminal station, center platform and grade separation, extensions of John Muir Parkway and Bayfront Boulevard, ferry plaza and connection facility for future ferry connection, emergency vehicle access, bus and vehicle transit loop and drop off areas, extensions of the Bay trail and Creekside trail, pedestrian bridge crossing of the railroad tracks to Hercules Point, lighted parking areas, pedestrian walkways, and plazas. The Action Alternatives considered are:

- Alternative 1: West of Refugio Creek
- Alternative 2: East of Refugio Creek

More detailed information for these alternatives is presented in Section 2.

6.2. SUPPORTING THE PROJECT PURPOSE AND NEED

The No-Action Alternative would partially respond to the deficiencies in the regional transportation network and goals established in the project Purpose and Need (Chapter 1.0) by implementing infrastructure improvements that have been identified and funded by regional transportation plans. The Action Alternatives would more fully support the Purpose and Need by adding alternative modes of travel for trans-bay commuters and midday travelers destined for San Francisco, South Bay, or Sacramento areas for work or entertainment. Train service and potential future ferry service would provide additional access and capacity to the congested trans-bay transportation network, including the Bay Bridge and the BART trans-bay tube, and provide emergency access between San Francisco and the East Bay in the event of a natural or man-made disaster. Additionally, the Action Alternatives would complete a needed section of the San Francisco Bay Trail and provide connection to the Bay Trail connector, a local Hercules trail providing bicycle commuters expanded commuting options.

6.3. ENVIRONMENTALLY SUPERIOR ALTERNATIVE

Section 15126.6(e)(2) of the CEQA Guidelines states that if the environmentally superior alternative is the No-Action Alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives. With the exception of traffic impacts associated with increasing congestion, the No-Action Alternative would not produce construction- or operation-related impacts resulting from the new transit center. However, the transportation and

environmental benefits of the Action Alternatives would not occur under this alternative, nor would the project Purpose and Need nor the Objectives of the project be addressed.

In contrast, both Action Alternatives provide beneficial impacts to the environment by establishing additional modes of commuting between San Francisco, the South Bay, the East Bay, and the Sacramento areas, thereby removing cars from congested roadways. The Action Alternatives would provide regional bus and rail connections and promote bicycle and pedestrian modes of travel by expanding local and regional trail connection. Additionally, the Action Alternatives would facilitate connection to future ferry service that would provide an additional mode of travel as well as offer an additional emergency means of crossing the San Francisco Bay if a natural or man-made catastrophe disabled the Bay Bridge or the BART tube.

As discussed in Chapter 2, Alternatives Considered, several alternatives were eliminated due to the design and safety constraints for the location of the station platform. Amtrak and the CCJPA restrict construction of stations to locations that are tangent (straight) and meet minimum length requirements. Within the City, only the two Action Alternatives provide adequate track length at a location on the existing train tracks that is tangent. Alternative 1 would situate the Hercules ITC station at approximately the center of the platform west of Refugio Creek. Alternative 2 would situate the Hercules ITC at the easternmost edge of the platform east of Refugio Creek.

This discussion compares the environmental impacts of the proposed alternatives and identifies the environmentally superior alternative. Both Action Alternatives result in potentially significant impacts to the environment, most of which can be mitigated. However, both Action Alternatives would construct the temporary shoofly track that would place railroad traffic closer to existing residential areas. This temporary significant impact would not be avoidable. However, once complete, the separation of grade will create an effective barrier and improve noise and vibration of the railroad traffic to adjacent residential areas.

Both projects would require the construction of John Muir Parkway, Bayfront Boulevard and bridge, and the UPRR Bridge replacement that would result in discharges of fill to waters of the U.S. and the loss of wetlands. Both Action Alternatives would also complete the restoration and realignment of Refugio Creek and the North Channel to address local flood risk and to improve hydraulic conveyance and ecological function. Both Action Alternatives would also provide a transit terminal structure to provide connection to a future ferry.

Alternative 1 differs from Alternative 2 in that construction of the station west of Refugio Creek would require an additional bridge and wetland impacts for the Transit Loop to provide bus and vehicle drop-off and parking bays that are removed from traffic and pedestrians. Parking would be provided by a temporary surface level parking lot across Refugio Creek until additional parking is made available by the Bayfront Development. However, Alternative 1 would provide less overall parking to support the Hercules ITC than would be provided for under Alternative 2. Alternative 2 incorporates a 3-story parking structure adjacent to the Hercules ITC that would not be available under Alternative 1.

6.4. CUMULATIVE IMPACTS

According to CEQA Section 15355, "cumulative impacts" refer to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects.

WETA has made public knowledge of its intent to develop ferry service from downtown San Francisco to the City. Ferry service is therefore reasonably foreseeable as a project and must be considered for cumulative impacts. Consequently, the environmental impacts of both Action Alternatives with the addition of ferry service are considered.

Both Action Alternatives would include the development of a bay side terminal structure that would support future ferry service. Under both Action Alternatives, an EVA would be constructed at the same location and connect to the platform at the westernmost edge. If the ferry service from San Francisco is provided to Hercules, the EVA would connect to the ferry platform/terminal so that emergency vehicles could drive directly to the ferry terminal.

Under Alternative 2, this EVA would result in an additional bridge across Refugio Creek located on the San Pablo Bay side of the railroad tracks. The EVA could not be constructed at a location east of Refugio Creek adjacent to the ITC station due to grade difference and geometric constraints. Additionally, in case of a catastrophic emergency (e.g., train or ferry on fire), a safe egress from the station building to a stable sanctuary such as Hercules Point should be provided. The construction of additional length of EVA on the bay side of the railroad tracks would be completed nearly entirely in aquatic habitats and result in greater impacts to special aquatic sites such as wetlands and mudflats (refer to CWA Section 404(b)(1) discussion below).

6.5. CLEAN WATER ACT: SECTION 404(B)(1) CONSIDERATIONS

According to the CWA: Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material (Guidelines), where the activity associated with a discharge which is proposed for a special aquatic site does not require access or proximity to or siting within the special aquatic site in question to fulfill its basic purpose (i.e., is not "water dependent"), practicable alternatives that do not involve special aquatic sites are presumed to be available, unless clearly stated otherwise.

While the construction of the train and bus station is not a water-dependent project, providing connection to future ferry service would be a water dependent requirement for the project. Additionally, the improvements proposed to Refugio Creek to provide hydraulic conveyance and improved ecological function are also "water dependent."

According to the Guidelines, mitigation is required to offset unavoidable impacts. In determining mitigation, Section 230.10(a) allows the issuance of a permit for only the least environmentally damaging practicable alternative. The thrust of this section on alternatives is avoidance of impacts. Subsequent to the avoidance of impacts, is the minimization of

unavoidable impacts. Finally, such impacts that cannot be avoided and have been identified to have the minimal impact require compensatory mitigation.

Both Action Alternatives would result in unavoidable impacts to waters of the U.S. Unavoidable impacts to waters of the U.S. would be mitigated for through the implementation of the Guidelines. Unavoidable impacts would be compensated for through the restoration and construction of comparable and suitable habitats at locations in the vicinity of the project along Refugio Creek, the North Channel and potentially at the Chelsea Wetlands.

A comparison of impacts to waters of the U.S. associated with both Action Alternatives is provided in **Table 6.5-1**.

Table 6.5-1
Comparison of Impacts to Waters of the U.S., Including Wetlands for Alternatives 1 and 2

Project Component	**Alternative 1** (Acres)	**Alternative 2** (Acres)
North Channel Restoration[1]	0.219	0.219
Refugio Creek Restoration[1]	7.009	7.009
Station Building	0.126	0.115
Parking and Facilities	0.00	0.001
Station Platform	0.052	0.052
Transit Loop Drive, Bridge, and Promenade	0.087	N/A
John Muir Parkway, Bayfront Blvd, and Bridge	0.070	0.070
Bay Trail	0.051	0.087
Railroad	0.249	0.243
Emergency Vehicle Access	0.151	0.403
Total	**8.014**	**8.199**

[1]Impacts associated with the restoration of Refugio Creek and North Channel would be temporary. Areas will be restored and revegetated after construction.

As discussed in previous sections and above, both Action Alternatives would result in similar impacts to the environment concerning traffic, hazards, aesthetics, etc. However, the Action Alternatives differ with respect to impacts to biological resources and aquatic habitats, especially when considering cumulative effects. Consequently, the least environmentally damaging practicable alternative and the environmentally superior alternative is Alternative 1.

6.6. OTHER CONSIDERATIONS

Both Action Alternatives would result in similar transit and commute times to the Hercules ITC and would it not have any significant difference on future ferry service travel times. As discussed above, emergency response on the water side of the railroad tracks would be best served by connecting a safe path from the ferry platform/terminal to Hercules Point. Differences in the required project elements would also result in cost implications for construction. Estimated costs to construct the Action Alternatives are presented in **Table 6.6-1**. Clarification the phases for the project are provided in Section 2.2.1.

Table 6.6-1
Comparison of Construction Costs for Alternatives 1 and 2

Phase	Alternative 1 West of Refugio Creek	Alternative 2 East of Refugio Creek
1	$68.1 M	$73.1 M
2	$3.7 M	$3.7 M
3	$5.0 M	$6.0 M
Total	**$76.8 M**	**$82.8 M**

6.7. PREFERRED ALTERNATIVE

The FTA is required to comply with the Safe Accountable Flexible Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) which provides the procedures by which the FTA is required to implement NEPA. Upon review of the Draft EIR/EIS, the City and FTA may select a preferred alternative and may decide whether to develop the preferred alternative, after it has been officially identified, to a higher level of detail than the other alternatives. The lead agencies must determine that the development of the preferred alternative to a higher level of detail than the other alternatives under review will not prevent the lead agencies from making an impartial decision on the appropriate course of action and is necessary to facilitate the development of mitigation measures or concurrent compliance with other environmental laws. The lead agencies must agree that a particular alternative is the preferred alternative and that the relevant conditions are met, before developing that alternative in greater detail. If the lead agencies do not agree, then they must work out their differences because work on developing an alternative in greater detail cannot proceed until the lead agencies agree. SAFETEA-LU permits the preferred alternative to be developed to a higher level of detail than the other alternatives for only the following reasons: (1) to facilitate the development of mitigation measures; or (2) to facilitate concurrent compliance with other applicable environmental laws. Applied appropriately, this provision is an effective tool for achieving the concurrent reviews called for in SAFETEA-LU (U.S. DOT 2010).

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7. Coordination and Consultation

This section describes the initial and ongoing coordination and consultation efforts by the City to engage the local community and public agencies, including those with permitting authority for the project regarding the environmental review of the proposed Hercules ITC project.

The project environmental review process was initiated by the issuance publication of the Notice of Preparation (NOP), submitted to the State Clearinghouse and the publication of the Notice of Intent (NOI) in the Federal Register on November 20, 2009 (Appendix B). The NOP and NOI announced that City in coordination with the FTA is preparing a Draft EIR/EIS for the construction of a proposed intermodal transit center project. The announcement described the project background and alternatives considered. It explained the scoping process, including the location of the public scoping meetings and methods to submit comments on the issues to be addressed in the Draft EIR/EIS.

The City and FTA sent joint letters of invitation (Appendix B) to public agencies to participate in the project environmental review process. The recipients are listed in **Table 7-1**. The City held an interagency meeting on November 18, 2009 at the USACE's offices in San Francisco with state and federal agencies (**Table 7-2**).

On November 18, 2009, the City met with the USACE to provide an update on the progress of the project and obtain feedback on the Draft EIR/EIS scope. Meeting attendees included: City Staff and their consultant team, and several members of the USACE, USEPA, San Francisco RWQCB, FTA and USFWS. The interagency meeting provided an informal introduction to project scoping and included a PowerPoint presentation followed by discussions focused on issues particularly relevant to the Draft EIR/EIS and possible alternatives. Attendees were informed that in order to submit formal scoping comments, they could make a comment at the scoping meetings or submit written comments by December 30, 2009. The meeting agenda, summary and sign-in sheet can be found in Appendix C.

Table 7-1
Recipients of Participating Agency Letter

Name	Agency
Jacqueline Wyland	Environmental Protection Agency, Region 9
	California Department of Conservation
	California Regional Water Quality Control Board
Gunther Moskat	California Department of Toxic Substance Control
	California Department of Conservation, Division of Mines and Geology
	Bay Area Rapid Transit, Real Estate Dept.
Craig Goldblatt	MTC
	Contra Costa County Health Department, Environmental Division
Barney Opton	U.S. Army Corps of Engineers

Name	Agency
Robert Nagel	AMTRAK
	California Department of Transportation, District 4.
	California Department of Transportation, Division of Rail
Carl Wilcox	California Department of Fish & Game
	California State Native American Heritage Commission
	California State Lands Commission
Paul Maxwell	Contra Costa Trans. Authority
	Bay Area Air Quality Management District
	Contra Costa Joint Powers Authority
Janet McBride	Association of Bay Area Governments
Don Hankins	U.S. Fish & Wildlife Service
	California Governor's Office of Planning & Research
	California Office of Historic Preservation
	Contra Costa County Flood Control and Water Conservation Dist.
Jim Townsend	East Bay Regional Park District
	Contra Costa County Community Development Department
Charlie Anderson	Western Contra Costa Transit Authority
	Federal Aviation Administration
	National Oceanic and Atmospheric Administration, Fisheries Service
	U.S. Coast Guard
	U.S. Department of Homeland Security – Transit Security Agency
	California Public Utilities Commission
	West Contra Costa Unified School District
	Contra Costa Water District

Table 7-2
Public Scoping Meetings and Agency Comments

Meeting Date	Meeting Location/ Correspondence Type	Meeting Type/ Discussion Topic
November 18, 2009	U.S. Army Corps of Engineers San Francisco, CA	Pre-application Meeting with FTA, USACE, RWQCB, EPA, and USFWS
November 19, 2009	San Francisco Bay Conservation Development Commission Office, San Francisco, CA	Pre-Application Meeting
December 8, 2009	City of Hercules Public Library	Public Scoping Meeting
March 18, 2010	Conference Call with BCDC	Permitting and coordination with the BCDC

Meeting Date	Meeting Location/ Correspondence Type	Meeting Type/ Discussion Topic
June 24, 2010	Letter from USACE	Comments on Admin Draft of EIR/EIS
April 27, 2010	Project Site: Hercules, CA	Site visit with the USFWS
July 23, 2010	Letter from USFWS	Technical Assistance

A formal scoping meeting was conducted by the City to gather input and comments prior to the development of the joint Draft EIR/EIS. The Public Scoping Meeting was held on December 8, 2009 at 5:30 p.m. at the Hercules Library, located at 109 Civic Drive, Hercules, CA 94547. Approximately 10 people attended the scoping meeting.

The meeting format included an informal open house, brief presentation, and comment period. This format offered attendees the opportunity to view a variety of project displays and illustrations of the project area and environmental process, talk on-on-one with project team members, learn more about the overall project, and provide formal comments. The presentation, conducted through PowerPoint, included project background, purpose and need, project development process, and environmental process. Five verbal comments and one written comment were provided during the meeting. Recurring comments and issues that provided during this meeting included concerns regarding noise, access (vehicular and pedestrian), and traffic/circulation. A summary of key issues identified at the scoping meeting is presented in **Table 7-3**.

Written comments were accepted at the meeting and via mail, fax, and e-mail until December 30, 2009. All comments were to be submitted to Lisa Hammon, Assistant City Manager. The formal comment period was extended from November 23, 2009 to December 30, 2009.

The PowerPoint presentation and project displays and illustrations are provided in Appendix B Public Scoping Meeting Presentation. The agenda, meeting summary, completed comment card, and sign-in sheet are provided in Appendix C Public Scoping Meeting Materials.

Table 7-3
Summary of Scoping Comments Key Issues

Purpose and Need
• Concerned that the description of project purpose, as presented in the NOI, too narrowly defines the purpose and therefore restricts the range of alternatives that may fulfill the transportation needs of the project.
• Focus on the underlying problems that will be addressed by the transportation project for the purpose and need.
• Should not be written in a way that includes the solution itself, or other elements that may or may not relate to the transportation issues.
• Concerned that broadening the scope of this transit project to include non-transportation-related goals may limit the range of potential alternatives that could achieve the transportation goals of the project.

• Clarify if the stream restoration elements are connected to the transportation goals o the project in the DEIS. If not, separate environmental analysis and implementation of activities related to creek restoration from project elements related to transportation needs.
• Revise the following statement in the purpose and need, "implement the City of Hercules Waterfront Master Plan Initiative and its directive to construct and intermodal transit center on Block I," to include "…, consistent with state and federal regulations."
• Consistency with local land use plans and regulations should not be used to preclude alternatives from consideration.
Cumulative Impacts
• Consider other projects in Hercules: downtown on Bayfront Boulevard is becoming more residential and office, and less other uses. The New Town Center (NTC) project nearby may be taking away the economic viability of making the Bayfront Boulevard downtown truly mixed-use. Encourage the two projects (NTC & Anderson Pacific's downtown) to be studied to prevent NTC from cannibalizing on the retail, restaurants, etc. on Bayfront Boulevard.
• Clarify how much of the EIR/EIS takes into account the other ongoing projects in terms of cumulative effects.
• Consider cumulative rail safety-related impacts created by other projects.
• Explore the extent to which proposed alternatives will integrate with existing transportation facilities.
• Discuss how the project will impact existing vehicle lanes, bicycle lanes, and pedestrian paths due to project construction or operation.
• Address measure to minimize or mitigate impacts to vehicle lanes, bicycle lanes, and pedestrian paths.
• Identify the opportunities available to better connect all modes of transportation in all potential alternatives.
• Discuss FTA and the City of Hercules's coordination with the Capitol Corridor JPA, the Water Emergency Transportation Authority, and other local transit providers.
• Identify which elements of the project are being proposed to accommodate potential future ferry service.
Alternatives
• Clarify how project alternatives will be considered and discussed and if alternative project sites will be considered.
• Ensure that any build alternative which would affect track alignment and platform characteristics meets the same operational standards as planned in the preferred alternative CCJPA/UPRR/Amtrak has already been involved with. If the operational standards could not be met in any alternative, there is a strong likelihood that the alternative could not be feasible from the aspect of rail operations or that there would need to be additional in-depth review and probably modification by/with CCJPA/UPRR/Amtrak to ensure the alternative could be made feasible.
• Ensure that alternatives that meet CCJPA standards are also acceptable to UPRR. Any alignment which would deviate from UPRR's design criteria would also not satisfy CCJPA's criteria.
Green Design and Operations
• Commit to facilities that are certified as "green buildings" per the Leadership in Energy and Environmental Design (LEED) green building rating system
• Encourage implementation of "green infrastructure" in onsite storm water management features.
• Construct new infrastructure with industrial materials recycling, or the reusing or recycling of byproduct materials generated from industrial processes.
• Identify how industrial materials recycling can be incorporated into project design.

• Implement an Environmental Management System for the proposed facility.
Transit Plaza & Building G Comments
• Prefer a Farmers market for the use of the square and allowance of the farmers' trucks next to vendor stalls up on the plaza.
• Concerned about cars doing "donuts" in the plaza, recommend a design to dissuade this activity such as removable barriers.
• Building G's relationship with the plaza is unengaged. The plaza is not embracing this building and is turning its back to it. Anderson Pacific needs to be pressed and commit to the design of the plaza side of building G, so the plaza can reflect its design. The two go hand-in-hand. The plaza space next to G is a great opportunity for restaurant tables and seating from G to fill the square.
• Plaza is uninspired and bland. Would like to see the guiding landscape renderings that show the intent of the plaza design. These renderings should be freehand, loose, and very conceptual. Would like to know the point and purpose for this plaza.
• Clarify what is historic about the current design.
• Include a historical consultant to actively research the history of the site and incorporate that into the design. Specifically, the design of the café, plaza, and building G needs to be created in a fashion tied to the history of the area.
• Concerned about the plaza becoming a haven for skateboarders.
• Clarify where the police substation is located.
Pedestrian/Bicycle Circulation
• Ensure that John Muir Parkway remains a pedestrian friendly roadway.
• Recommend, as a regular Capitol Corridor rider, a crosswalk from the planned parking garage to the station.
• Suggest that the entire road area from the east end of the Transit Loop bridge to the bus drop off area, or a hugely significant part of that area, be considered to be striped as pedestrian crossing.
• Support (County) the key project objective to develop a trail linkage between the project and Rodeo. The preferred trail linkage should provide direct and convenient access to the project by bicycling or walking. Ensure such a linkage would not conflict with the project objective to improve safety along the railroad corridor by excluding pedestrian access.
• Projects may increase pedestrian traffic at crossings, and elsewhere along rail corridor right-of-ways.
• Orient the transit center to maximize opportunities for pedestrian and bicyclist traveling to the station.
• Align transit center with Bayfront development streets to facilitate walking and biking as a means of promoting mass transit use and reducing regional vehicle miles traveled and traffic impacts on the state highways.
Access
• Recommend two access points to Hercules Point, one where the former railroad bridge was, and the second from the ferry pier; the park will be substantially enhanced by easy assess.
Parking
• Clarify if there will be a charge for commuters to use the new surface parking and if the City will manage this parking to ensure it will be available for transit passengers rather than others who are not taking the train or ferry.
Traffic
• Concerned with traffic impacts to Promenade Street and other arterials.

• Concerned that new developments and improvements to existing facilities may increase vehicular traffic volumes, not only on streets and at intersections, but also at the at-grade highway-rail crossings.
• Address the new grade separated crossing in the traffic impact study.
• Ensure compliance with General Order 26-D clearance requirements.
• The proposed project has the potential to increase vehicular and pedestrian traffic in the vicinity.
• Clarify whether there will be a conflict between transit vehicles and private vehicles.
• Concerned abut traffic impacts from the proposed alternative routes: alternative routes to John Muir Parkway going to Sycamore to Railroad Avenue to Bayfront Boulevard is to indirect. The most direct route is Sycamore to Promenade Street straight up to the station. Taraya at Sycamore is a difficult intersection and Taraya also has the "dog leg" curve at Sanderling. If John Muir Parkway is backed up, cars will travel first on Promenade Street, not Taraya or Railroad Avenue. Traffic calming measures will need to be implemented to slow cars along the length of Promenade. Traffic calming (such as larger sidewalk bulb-outs) need to be implemented to dissuade cars from leaving (number 1) the bus loop and from then entering (number 2) at Bayfront and Promenade.
• Traffic mitigation fees should be specifically identified in the environmental document.
• Include an analysis of the impacts of the proposed project on State highway facilities in the vicinity of the project site.
• Traffic Impact Study should be prepared to provide the following:
o Information on the plan's traffic impacts in terms of trip generation, distribution, and assignment. Address assumptions and methodologies used in compiling this information. Show the percentage of project trips assigned to State facilities.
o Current Average Daily Traffic and AM and PM peak hour volumes on all significantly affected streets, highway segments and intersections.
o Schematic illustration and level of service analysis for 1)existing, 2) existing plus project, 3) cumulative, and 4) cumulative plus project for the roadways and intersections in the project area.
o Calculation of cumulative traffic volumes should consider all traffic-generating developments, both existing and future, that would affect the State highway facilities being evaluated.
o Identified mitigation measures where plan implementation is expected to have a significant impact.
• Traffic Impact Study should use the procedures contained in the 2000 update of the Highway Capacity Manual should be as a guide for the analysis, as well as the Caltrans "*Guide for the preparation of Traffic Impact Studies."*
Safety
• Consider impacts such as collisions between trains and vehicles, and between trains and pedestrians.
• Consider measures to reduce adverse impacts to rail safety in the DEIR, recommendations include the following:
o Installation of grade separations at crossings.
o Improvements to warning devices at existing highway-rail crossings.
o Installation of additional warning signage.
o Improvements to traffic signaling at intersections adjacent to crossings, e.g., traffic preemption.
o Installation of median separation to prevent vehicles from driving around railroad crossing gates.
o Prohibition of parking with 100 feet of crossings to improve the visibility of warning devices and approaching trains.
o Installation of pedestrian-specific warning devices and channelization and sidewalks.

o Construction of pull out lanes for buses and vehicles transporting hazardous materials.
o Installation of vandal-resistant fencing or walls to limit the access of pedestrians onto the railroad right-of-way.
o Elimination of driveways near crossings.
o Increased enforcement of traffic laws at crossings.
o Rail safety awareness programs to educate the public about the hazards of highway-rail grade crossings.
Noise
• Concerned about the noise level, given the large number of homes, and businesses near the Transit Center.
• Minimize track noise when straightening the track by using the best materials possible as this project will be the best opportunity to make this improvement.
• Implement procedures (e.g., mandatory slowing) to further minimize noise.
• Concerned about the added noise and smog pollution caused by the Transit Center's location and its impact upon the Promenade development.
• Concerned about a funnel for noise created by constant traffic flow of the "loop" this is aligned to the Promenade and providing a view down Promenade Street. Compounding this will be the reverberant energy sent from the hardscape of the Intermodal Transit Center's main building structure up the funnel now known as Promenade Street.
• Concerned about noise from the "kiss and drop" area, with honking to the arriving/departing passengers.
• Concerned about noise and smells this project will bring to my house at night when windows are open to enjoy the cool nights.
Air Quality
• Concerned about the air pollution that will be generated by the idling busses and cars as well as their comings and goings and the polluted air being blown into the Promenade neighborhood.
• Include, in the DEIS, a thorough analysis of potential air quality impacts for each of the alternatives and identify opportunities to reduce emissions.
• Address potential air quality impacts during the construction period in the DEIS.
• Include the following recommended mitigation measures in the DEIS to reduce construction emissions:
o Fugitive Dust Source Controls:
▪ Stabilize open storage piles and disturbed areas by covering and/or applying water or chemical/organic dust palliative where appropriate.
▪ Install wind fencing and phase grading operations where appropriate, and operate water trucks for stabilization of surfaces under windy conditions.
▪ Prevent spillage and limit speeds to 15 miles per hour when hauling material and operating non-earthmoving equipment. Limit speed of earthmoving equipment to 10 miles per hour.
o Mobile and Stationary Source Controls:
▪ Reduce use, trips, and unnecessary idling from heavy equipment.
▪ Maintain and tune engines per manufacturer's specifications to perform at EPA certification, where applicable, levels and to perform at verified standards applicable to retrofit technologies. Employ periodic, unscheduled inspections to limit unnecessary idling and to ensure that construction equipment is properly maintained, tuned, and modified consistent with established specifications.

▪ Prohibit any tampering with engines and require continuing adherence to manufacturer's recommendations.
▪ Lease new, clean equipment meeting the most stringent of applicable Federal or State Standards and commit to using the best available emissions control technologies on all equipment.
o Administrative Controls:
▪ Identify all commitments to reduce construction emissions and update the air quality analysis to reflect additional air quality improvements that would result from adopting specific air quality measures.
▪ Identify where implementation of mitigation measures is rejected based on economic infeasibility.
▪ Prepare an inventory of all equipment prior to construction and identify the suitability of add-on emission controls for each piece of equipment before groundbreaking. Meet EPA diesel fuel requirements for off-road and on-highway, and use alternative energy sources such as natural gas and electric.
▪ Develop a construction, traffic and parking management plan that minimizes traffic interference and maintains traffic flow.
▪ Identify sensitive receptors in the project area and minimize impacts to them.
Water/Water Quality
• Incorporate water conservation measures through EBMUD and request that the City include in its conditions of approval a requirement that the project sponsor comply with Assembly Bill 325, Model Water Efficient Landscape Ordinance.
• Section 31 of EBMUD's Water Service Regulations requires that water service shall not be furnished for new or expanded service unless all the applicable water-efficiency measures described in the regulation are installed at the project sponsor's expense.
• The project area is within unformed Drainage Areas 69 and 112, mapped by the Contra Costa Flood Control & Water Conservation District (FC District). These drainage areas define the watersheds for Pinole Creek and Refugio Creek; they have not been studied and do not have drainage fees in place.
• The FC District has inadequate maintenance funding for Pinole Creek and Refugio Creek watershed facilities. The City of Hercules (City) should ensure that a perpetual funding source is in place for maintenance of the new drainage facilities installed by this development, as well as the prorated share of the watershed facilities that are utilized by this development.
• Request that the joint EIR provide a map of the watersheds where the project is located, including watershed boundaries, show all existing watercourses, tributaries, and man-made drainage facilities within the project site that could be impacted by this project, mitigation measures, and also identify FC District's right of way.
• Recommend that the least amount of impact to natural watercourses results from the project development. Currently, Pinole Creek does not have capacity to accommodate a 100-year event. Discuss mitigation measures for replacement of the railroad bridge and construction of Bayfront Boulevard over Refugio Creek and any impacts to downstream watercourses.
• Develop a Drainage Master Plan for this specific area. This plan should be approved by the City and the FD District prior to allowing further development in the area. The Drainage Master Plan should include detailed hydrologic modeling of the watershed that considers land use, existing facilities, soil, and topographic data. The Drainage Master Plan should also result in a plan with descriptions of proposed flood control facilities (which typically include basins, channels, and storm drains), compliance with discharge and water quality requirements, cost estimates, and schedules.
• Incorporate creek enhancements since realignment and restoration of segments of Refugio Creek are part of the project improvements. Improvements may include improving the riparian corridor, incorporating public access, and creek-oriented site layout. This approach is an opportunity to enhance the habitat value of the creeks while providing an amenity to retail customers and the residential neighborhood.

• Recommend that the joint EIR quantify the amount of runoff that would be generated by the project and discuss how the runoff entering and originating from the site would be distributed between the natural watercourses and to any man-made drainage facilities.
• Discuss the adverse impacts of the runoff from the project site to the existing drainage facilities and drainage problems in the downstream areas, including those areas outside of the project site.
• Recommend that the joint EIR address the design and construction of storm drain facilities to adequately collect and convey stormwater entering or originating within the project area to the nearest adequate man-made drainage facility or natural watercourse, without diversion of the watershed, per Title 9 of the County Ordinance Code. Mitigation measures for any improvement or relocation of drainage facilities, specifically the outfall to Refugio Creek, should be addressed in the joint EIR.
• Recommend that the adequacy and stability of the drainage facilities within the project area be studied to determine if local drainage design criteria are met, as well as FEMA National Floodplain Insurance requirements. If those are not met, then the joint EIR should discuss the potential impacts and propose mitigation measures to address those impacts. The discussion should also include an analysis of the capacity and erosion potential of the existing watercourses.
• Make efforts to avoid and minimize the project's impacts on water resources. Impacts include construction activities, replacement of a bridge crossing on Refugio Creek, realignment and restoration of a portion of Refugio Creek, relocation of an outfall to the creek, and potential loss of special aquatic sites such as tidal wetlands, mudflats, and riparian areas.
• Demonstrate in the DEIS that potential impacts to waters of the United States have been avoided and minimized to the maximum extent practicable prior to obtaining a CWA Section 404 permit.
• Include in the DEIS a waters assessment of an appropriate scope and detail to identify sensitive areas or aquatic systems with functions highly susceptible to change, including the following recommendations:
o Estimate the acreage of waters of the United States within the project area using CWA jurisdictional determinations, which should be submitted to the Army Corps of Engineers for verification.
o Identify all protected resources with special designations and all special aquatic sites and waters within state, local, and federal protected lands. Take additional steps to avoid and minimize impacts to these areas.
o Provide specific descriptions of proposed activities in CWA regulated waters including grading plans and cross sections.
o Include the classification of waters and the geographic extent of waters and adjacent riparian areas.
o Characterize the functional condition of waters and adjacent riparian areas.
o \Describe the extent and nature of stream channel alteration, riverine corridor continuity, and buffered tributaries.
o Include wildlife species affected that could reasonably be expected to use waters or associated riparian habitat and sensitive plant taxa that are associated with waters or associated riparian habitat.
o Analyze the potential flood flow alteration.
o Characterize the hydrologic linkage to any impaired water body.
o Analyze the potential water quality impact and potential effects to designated uses.
o Identify specific techniques proposed for minimizing surface water contamination due to increased runoff from additional impervious surfaces.
• Explore onsite alternatives to avoid or minimize impacts to specific waters.
• Include, in the DEIS, a complete systematic analysis for drainage crossings which identifies and prioritizes the potential for improvements to the aquatic system and for wildlife use at each crossing, including the following recommendations:

o Demonstrate that all potential impacts to waters of the United States have been avoided and minimized. The DEIS analyses should clearly demonstrate how cost, logistical, or technological constraints preclude avoidance and minimization of impacts, if these resources cannot be avoided.
o Quantify temporary and permanent impacts to waters of the United States for each alternative studied. Report these numbers in table form for each impacted water and wetland feature in the DEIS.
o Identify design measures and modifications to avoid and minimize impacts to water resources. Quantify the benefits achieved for each alternative studied.
o Include a compensation proposal for unavoidable impacts to CWA regulated waters that compiles with new regulations for compensatory mitigation promulgated in April 2007.
• Appreciate the goals of "continue to improve and protect Refugio Creek as a major environmental amenity" and "improve Refugio Creek to allow adequate flows into the Bay without resulting in flooding."
Utilities
• Gas and electric service is available to the project. Extensions of these facilities will be made in accordance with PG&E's gas and electric rules and regulations on file with the CPUC at the time the applicant applies for gas and electric service. Any relocation of existing facilities would be done at the developer's expense.
Climate Change
• Include discussion of the potential impacts of climate change on the proposed project and identify adaptive management strategies to protect the project area form those impacts.
• Would like to be able to review the analysis and baseline test protocols that will be used to provide assurance that the people of Promenade development, will not be adversely affected. Provide times and places where the data and analysis can be reviewed.
Mitigation
• For all proposed mitigation measures fully discuss the project's fair share contribution, financing, scheduling, and implementation responsibilities as well as lead agency monitoring.
• Any mitigation measures within Pinole Creek will require a separate Flood Control Permit.
• Discuss mitigation measures required by U.S. Army Corps of Engineers, the State Department of Fish, and Game and the State Regional Water Quality Control Board that may be necessary.
Permits
• Complete any required roadway improvements prior to issuance of project occupancy permits.
• Ensure resolution of the Department's California Environmental Quality Act (CEQA) concerns prior to submittal of the encroachment permit application.
• Apply for an encroachment permit for any work or traffic control that is necessary within the State Right-of-Way.
• Recommend that the joint EIR contact the appropriate environmental regulatory agencies, such as the U.S. Army Corps of Engineers, the State Department of Fish and Game and the State Regional Water Quality Control Board, to explore the permits, special conditions, and mitigation that may be necessary for this project.
Hazardous Materials
• Provide APN or latitude and longitude information on the project to help identify any hazardous substances release sites at or near the project.
Coordination with Agencies
• Involve the Capitol Corridor in the joint EIR/EIS process and in the review of interim documents as well as the administrative drafts shared with partner agencies.

• Include the San Francisco Bay Conservation Development Commission in your agency coordination plan as a participating agency.
• Coordinate preparation of the Traffic Impact Study with Caltrans (two copies).
• Provide opportunity for Caltrans to review the scope of work and environmental document (two copies).
• Provide opportunity for the United States Environmental Protection Agency to review the environmental document (two copies).
• Provide additional time to review the notices of preparation for the proposed Intermodal Transit Center and the Bayfront project for the City of Pinole.
• Obtain CPUC approval to modify an existing highway-rail crossing or to construct a new crossing.
• Coordinate with the East Bay Municipal Utility District (EBMUD), owner and operator of the water distribution pipelines within the proposed project area, on any proposed construction activity in public streets. Relocation of the water mains may be required, at the project sponsor's expense.
• The FC District holds fee title as well as having easement and maintenance responsibility for a portion of Pinole Creek downstream of the project area, and therefore should be involved in the review of any proposals that will potentially impact those creeks. The FC District should also be included in the review of all drainage facilities that have a region-wide benefit, that impact region-wide facilities, or that impact FD District-owned facilities (Pinole Creek). The FC District is available to provide technical assistance during the development of the DEIR, including hydrology and hydraulic information and our HYDRO6 method, under our Fee-for-Service program.
• Recommend that the project's CEQA document state if this project will include land transaction involving the FC District in the appropriate sections.
Environmental Justice and Community Involvement
• Identify how the proposed alternatives may affect the mobility of low-income or minority populations in the surrounding areas and provide appropriate mitigation measures for any anticipated adverse impacts.
• Include a description of the area of potential impact used for the analysis and provide the source of the demographic information.
• Identify whether the proposed alternatives may disproportionately and adversely affect low-income or minority populations in the surrounding area and provide appropriate mitigation measures for any adverse impacts.
• Include opportunities for incorporating public input to promote context sensitive design.
• Expand upon the process for participation in the scoping phase of the project; explain the notification process for the meetings, when or where they will be held.
• Notify the public of the EIR during the review and comment period.
• Request adequate notification to future public meetings/hearings.
Funding
• Recommend the identification and securing of funding to complete the project.
• To receive approval and allocation of funds from the California Transportation Commission (CTC), the lead agency must notify CTC at completion of the environmental process.
• Prior to CTC approval for future funding consideration, lead agency must provide written assurance of consistency of the project programmed by the Commission and the final EIR/EIS document.
Miscellaneous
• Clarify if the Bay Trail is going to be improved as part of this project at the same time as the construction of the Transit Center.

• Conduct baseline testing across 20 points at locations within a 200 yard radius of the proposed site. Envision multiple tests in both the A and B scales taken over a period of two weeks.
• Move the transit loop so that it does not align with any street. Prevent parking and idling of busses for more than three minutes in front of the terminal. Prohibit use of horns in the area except as safety devices. Move the transit loop back to one of its past locations 200 feet down the track.
• Support the goals of providing improved connectivity and access to transit service to the community since it has the potential to increase transit mode share and reduce air quality impacts from automobile emissions, as well as provide improved service for existing transit riders.

The following **Table 7-4** provides a list of permits and approvals and agencies with jurisdiction or approval authority.

Table 7-4
Agency Approval of Permits Required

Agency	Permit/Review/Approval
Federal	
United States Army Corps of Engineers	Clean Water Act, Section 404 Permit for filling or dredging waters of the United States
United States Fish and Wildlife Service	Federal Endangered Species Act, Section 7 Consultation for Threatened and Endangered Species
National Marine Fisheries Service	Federal Endangered Species Act, Section 7 Consultation for Threatened and Endangered Species
United States Environmental Protection Agency	Interagency consultation for conformity and air quality planning in the project area
State	
California Department of Fish and Game	Section 1600 Agreement for Streambed Alteration State Endangered Species Act, Consultation for Threatened and Endangered Species
State Historic Preservation Office	Consultation for concurrence on a finding of “no historic properties affected.”
California State Lands Commission	Letter of Non-Objection
San Francisco Bay Conservation and Development Commission	Design Review, Major Permit Application
San Francisco Bay Regional Water Quality Control Board	Clean Water Act, Section 401 Water Quality Certification Clean Water Act, Section 402, National Pollutant Discharge Elimination System (NPDES) Construction Stormwater Permit
California Public Utilities Commission	Consultation for authority to construct pursuant to the Public Utility Code, Sections 1201-1205 an at-grade crossing of a railroad track or an overpass or underpass of a railroad track.

Agency	Permit/Review/Approval
California Department of Toxic Substances Control	Coordination regarding excavation of areas under deed restriction
Local	
City of Hercules	Design Review, Utility, Use, and Encroachment Permits
City of Rodeo	Coordination and Design Review, Utility, Use, and Encroachment Permits
City of Pinole	Coordination and Design Review, Utility, Use, and Encroachment Permits
Contra Costa County	Coordination on project planning, consistency with local plans, and efforts to ensure there are minimal impacts to residents and business owners
East Bay Municipal Utility District	Coordination on water service
Contra Costa County Flood Control	Flood Control Permit
Bay Area Air Quality Management District	Conformity Determination, Consultation for an Authority to Construct and Permit to Operate.
Capitol Corridor Joint Powers Authority	Coordination for consistency with Train Station Policy
Union Pacific Railroad Company	Consultation prior to receiving authority to construct by the California Public Utilities Commission for a construction and maintenance agreement. Transfer of title.
East Bay Regional Parks	Coordination on project planning, Memorandum of Agreement

The following **Table 7-5** provides the distribution list for entities receiving a copy of the Draft EIR/EIS.

Table 7-5
Distribution List

Responsible Agency	Agency
Federal	
U.S. Postal Service	PostMaster 499 Parker Avenue Rodeo, CA 94572
U.S. Army Corps of Engineers	Ian Liffmann 1455 Market St., #1760 San Francisco, CA 94103
U.S. Environmental Protection Agency (EPA)	Jacqueline Wyland 75 Hawthorne Street (E-3) San Francisco, CA 94105

Responsible Agency	Agency
U.S. Department of Interior (DOI)	Office of Environmental Policy and Compliance U.S. Department of the Interior Main Interior Building MS 2340 Washington, DC 20240 *Note: Department of Interior handles internal distribution to component agencies, including U.S. Fish and Wildlife Service Regional Offices*
AMTRAK	Robert Nagel, Dir. of Engineering 1303 Third St. Oakland, CA 94607
State	
Department of Conservation	801 K Street, 24th Floor Sacramento, CA 95814
Department of Transportation – District CEQA Coordinator	Caltrans District 4 P. O. Box 23660 Oakland, CA 94623-0660
Governors Office/Plan & Research	P.O. Box 3044 Sacramento, CA 95812-3044
San Francisco Bay Regional Water Quality Control Board	Kathryn Hart 1515 Clay Street Oakland, CA 94612
California State Clearinghouse	State Clearinghouse 1400 Tenth Street Sacramento, CA 95814
Department of Fish and Game	Diane Harais P.O. Box 47 Yountville, CA 94599
Department of Fish and Game	1416 Ninth Street Sacramento, CA 95814
Department of Toxic Substance Control	Gunther Moskat, HQ-18 P. O. Box 806 Sacramento, CA 95812-0806
State Native American Heritage Commission	915 Capital Mall, Room 288 Sacramento, CA 95814
Caltrans – Division of Rail	1120 N Street, MS 74 Sacramento, CA 95814
Division of Mines and Geology	801 “K” Street, MS 09-06 Sacramento, CA 95814-3531
State Lands Commission	Executive Director 100 Howe Ave., 100 South Sacramento, CA 95825

Responsible Agency	Agency
Office of Historic Preservation	P.O. Box 942896 Sacramento, CA 94296-0001
Department of General Services	Div. of the State Archtect 1515 Clay Street, Suite 1201 Oakland, CA 94612
County/Regional	
Contra Costa Transportation Authority	Paul Maxwell, Chief Deputy 2999 Oak Road, Suite 100 Walnut Creek, CA 94597
Contra Costa County Flood Control and Water Conservation District	255 Glacier Drive Martinez, CA 94553
Bay Area Rapid Transit (BART)	Real Estate Dept. Mgr. 300 Lakeside, 22nd Floor Oakland, CA 94612
Bay Area Air Quality Management District	939 Ellis Street San Francisco, CA 94109 Dir. for CC County
East Bay Regional Park District (EBRPD)	Mr. B. Holt 2950 Peralta Oaks Court Oakland, CA 94605
Metropolitan Transportation Commission (MTC)	Craig Goldblatt 101 8th Street Oakland, CA 94607-4700
Capitol Corridor Joint Powers Authority (CCJPA)	300 Lakeside Drive 14th Floor, East Oakland, CA 94612
Contra Costa County Community Development Department	Director 651 Pine Street, 4th Fl, N. Wing Martinez, CA 94553
Contra Costa County Health Department	Environmental Division 2120 Diamond Blvd., Suite 200 Concord, CA 94520
Association of Bay Area Governments (ABAG)	Janet McBride P. O. Box 2050 Oakland, CA 94604-2050
Western Contra Costa Transit Authority (WestCAT)	Charlie Anderson 601 Walter Avenue Pinole, CA 94564
West Contra Costa Transportation Advisory Committee (WCCTAC) (West County)	Christina M. Atienza, P.E. 13831 San Pablo Avenue San Pablo CA 94806

Responsible Agency	Agency
Contra Costa County Clerk	822 Main Street Martinez, CA 94553
Contra Costa County Historical Society	Raymond J. O'Brien 610 Main Street Martinez, CA 94553-1129
Bay Conservation and Development Commission (BCDC)	Ming Yeung 50 California St. San Francisco, CA 94111
Water Emergency Transportation Authority (WETA)	John Sindzinski Pier 9, Suite 111, The Embarcadero San Francisco, CA 94111
City	
Hercules Library	109 Civic Drive Hercules, CA 94547
Hercules Municipal Utility (HMU)	111 Civic Drive Hercules, CA 94547
Rodeo-Hercules Fire Protection District (RHFPD)	Fire Chief 326 3rd Street Rodeo, CA 94572
Other Local Area	
City of San Pablo	Planning Division 13831 San Pablo Ave San Pablo, CA 94806
Vallejo Ferry	Planning Division P.O. Box 2287 Vallejo, CA 94592
Solano County	Planning Division 675 Texas St Fairfield, CA 94533
City of Vallejo	Planning Division 555 Santa Clara St. Vallejo, CA 94590
Vallejo Transit	Planning Division 1850 Broadway St. Vallejo, CA 94589
City of Richmond	Planning Division 1401 Marina Way South Richmond, CA 94804
Local Agency Formation Commission (LAFCO)	c/o Lou Ann Texeira 651 Pine St. 6th Floor Martinez, Ca 94553

Responsible Agency	Agency
City of Pinole	Community Development Director 2131 Pear Street Pinole, CA 94564
Richmond Sanitary Service	PO Box 4100 Richmond, CA 94804
West CCC Unified School Dist.	Superintendent 1108 Bissell Avenue Richmond, CA 94801-3135
John Swett Unified School District	Superintendent 400 Parker Avenue Rodeo, CA 94572-1400
West County Times	Attention: Tom Lochner 4301 Lakeside Drive Richmond, CA 94806-5281
Golden Gateway Associates	1163 Chess Drive, Ste. J Foster City, CA 94404
Other Parties	
AT&T Cablevision	2900 Technology Richmond, CA 94806
PG&E	Attn: Envir. and/or New Business 1100 S. 27th St. Richmond, CA 94804
AT & T Corporate	Attn: Envir. and/or New Business 175 East Houston Street San Antonio, TX 78205
East Bay Municipal Utility District (EBMUD)	D. Rehstrom/ Sr. Civil Engr. Planning Division 375 11th Street/ MS 701 Oakland, CA. 94607
Bixby Development Company LLC	Attention: John Baucke 125 East Victoria Street, Suite L Santa Barbara, CA 93101
M. R. Wolfe & Associates	49 Geary Street, Suite 200 San Francisco, CA 94108
Jeffrey Wisniewski	1102 Avocet Drive Hercules, CA 94547
Mohamed Ibrahim	Environmental Project Scientist 3800 Watt Avenue, Suite 210 Sacramento, CA 95821
Joanna Malaczynski	1225 Cole Street San Francisco, CA 94117

Responsible Agency	Agency
Patrick P., Emily M. & Kaylynn K. c/o Allen Matkins Leck Gamble Mallory & Natsis LLP	515 S. Figueroa St., 9th Floor Los Angeles, CA 90071
Adams Broadwell Joseph & Cordozo	601 Gateway Blvd., Ste. 100 So San Francisco, CA 94080-7037
Retail Solutions	P.O. Box 834 Bloomington, CA 92316-0834
The Friends of Hercules	P.O. Box 5613 Hercules, California 94547
Nor-Cal Carpenters Rgnl Cncl Alex Lantsberg Research Department	265 Hegenberger Rd., Ste. 220 Oakland, CA 94621
Anderson Pacific	Ethan Sischo 6701 Center Dr. West, Ste. 710 Los Angeles, CA 90045
Robert Spencer	1700 Broadway, 6th Floor Oakland, CA 94612
ZG Planning and Design	PO Box 77105 San Francisco, CA 94107
C. Wade Albritton	1124 Promenade St. Hercules, CA 94547
David Cury	200 7th Avenue Santa Cruz, CA 95062
Union Pacific Railroad	James Smith 9451 Atkinson St. Roseville, CA 95747
Bio-Rad Laboratories	John Stier 6000 James Watson Drive Hercules, CA 94547
Verizon Business	Rebecca Daniels 2175 North California Blvd. Suite 303 Walnut Creek, CA 94596
Qwest Communications	Brett Hankins 1009 Enterprise Way, Suite 300 Roseville, CA 95678
Level 3	Matt Williams 1025 El Dorado Blvd. Broomfield, CO 80021
Kinder Morgan	Gregg Lies 1100 Town and Country Road Orange, CA 92868

Responsible Agency	Agency
Shell Pipeline LLC	Russell J. Guidry Jr. 20945 S. Wilmington Ave. Carson, CA 90810

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DRAFT ENVIRONMENTAL IMPACT REPORT/ENVIRONMENTAL IMPACT STATEMENT

FOR THE HERCULES INTERMODAL TRANSIT CENTER

VOLUME 2: APPENDICES

STATE CLEARINGHOUSE #2009112087

Prepared by:

City of Hercules California

FTA Federal Transit Administration

SEPTEMBER 2010

APPENDIX A

List of Preparers

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

LIST OF PREPARERS

Name	Qualifications	Role
City of Hercules		***CEQA Lead Agency and Project Sponsor***
Lisa Hammon		Assistant City Manager
Robert Reber		Assistant Planner
Federal Transit Administration		***Federal Lead Agency***
Ray Sukys		Director, Planning & Program Development
Paul Page		Community Planner
HDR Inc.		***Environmental Consultant***
Laurie Warner Herson	B.A., 33 years	Project Director
Serge Stanich	B.A., 15 years	Project Manager; Regulatory and Biological Resources
Michele Stern	Ph.D., 40 years	Project Description, Water Resources
David McCrossan	M.S., 28 years	Transportation Planner
Linda Rimbach	B.S., 23 years	Project Engineer
Richard Sykes	M.A., 20 years	Parklands and Recreational Facilities, Utilities, Public Services, Aesthetics and Visual Resources
John Meerscheidt	M.S., 30 years	Transportation and Circulation, Socioeconomics and Environmental Justice
Jeannette Winter	B.S., 10 years	Hazardous Materials
Cristina Ramirez	B.S., 1 Year	Land Use, Plans and Policies, Administrative Record
Richard Norwood	M.A., 32 years	Cultural Resources
Dan Kramer	M.S., 25 years	Biological Resources
Dustin Watson	M.S., 20 years	Noise and Vibration, Air Quality
Jelica Arsenijevic	B.S., 8 years	Aquatic Resources, Geology and Soils
Neal Morgan	M.A., 3 years	Aquatic Resources, Biological Resources
Stephen Stringer	M.S., 8 years	Biological Resources and Wetlands
Sean Marquis	B.S., 10 years	Biological Resources and Wetlands
LaTisha Saare	M.S., 5 years	Biological Resources and Wetlands
Janie Jennings	High School, 11 years	Project Coordinator, Administrative Record, Word Processing Support
Carol Brown	High School, 28 years	Editorial Support

Name	Qualifications	Role
Rob Murray	M.S., 5 years	Graphic Support
Andy Arnold	High School, 16 years	Graphic Support
Kim Pallari	B.S., 13 years	Public Involvement
DKSAssociates		***Transportation Analysis***
Mark E. Spencer	M.S., 20 years	Traffic Analysis
Patricia Camacho de Cano	B.S., 10 years	Traffic Analysis

APPENDIX B

Scoping: Notice of Intent, Notice of Preparation, Agency Notification, Scoping Comments

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

Notice of Intent

Federal Register / Vol. 74, No. 223 / Friday, November 20, 2009 / Notices 60307

benefits and costs of these technologies compared to conventional vehicle technologies.

Respondents: State and local government and public transportation authorities located in areas designated as non-attainment or maintenance for ozone or carbon monoxide.

Estimated Annual Burden on Respondents: 32 hours for each respondent.

Estimated Total Annual Burden: 512.

Frequency: Semi-annual.

Issued: November 16, 2009.

Ann M. Linnertz,

Associate Administrator for Administration.

[FR Doc. E9–27897 Filed 11–19–09; 8:45 am]

BILLING CODE 4910–57–P

DEPARTMENT OF TRANSPORTATION

Surface Transportation Board

[STB Finance Docket No. 35237]

City of Davenport, IA—Construction and Operation Exemption—in Scott County, IA

AGENCY: Surface Transportation Board, DOT.

ACTION: Correction to Notice of Availability of the Environmental Assessment.

SUMMARY: This document contains a correction to the title of the Notice of Availability of the Environmental Assessment served and published in the **Federal Register** on Monday, October 26, 2009 (74 FR 55085) by the Board's Section of Environmental Analysis. That notice, published in this docket, was titled "Eastern Iowa Industrial Center Rail Project—Construction and Operation Exemption—City of Davenport, Iowa." The correct title should read, "City of Davenport, IA—Construction and Operation Exemption—in Scott County, IA."

FOR FURTHER INFORMATION CONTACT: Christa Dean, (202) 245–0299. [Assistance for the hearing impaired is available through the Federal Information Relay Service (FIRS) at: (800) 877–8339.]

SUPPLEMENTARY INFORMATION: On October 26, 2009, the Board served a Notice of Availability of the Environmental Assessment in this docket. The notice is related to a petition filed on July 21, 2009, by the City of Davenport, IA, seeking an exemption under 49 U.S.C. 10502 from the prior approval requirements [1] of 49 U.S.C. 10901 to construct approximately 2.8 miles of rail line in Scott County, IA. The Board instituted a proceeding in this matter under 49 U.S.C. 10502(b) by decision served October 19, 2009. This notice corrects the title of the Notice of Availability of the Environmental Assessment.

Decided: November 16, 2009.

By the Board, Rachel D. Campbell, Director, Office of Proceedings.

Kulunie L. Cannon,

Clearance Clerk.

[FR Doc. E9–27884 Filed 11–19–09; 8:45 am]

BILLING CODE 4915–01–P

[1] In an amendment filed on September 8, 2009, the City clarified that it also seeks operation authority.

DEPARTMENT OF TRANSPORTATION

Surface Transportation Board

[STB Docket No. AB–331 (Sub-No. 1X)]

Bi-State Development Agency of the Missouri-Illinois Metropolitan District—Discontinuance of Service Exemption—in the City of St. Louis, MO

On November 2, 2009, Bi-State Development Agency of the Missouri-Illinois Metropolitan District (Bi-State) filed with the Surface Transportation Board a petition under 49 U.S.C. 10502 for exemption from the provisions of 49 U.S.C. 10903 to discontinue service over a 1.43-mile line of railroad extending from milepost 1.8 in St. Louis, MO, to milepost 3.23 in St. Louis, MO. The line traverses U.S. Postal Service Zip Codes 63110 and 63108.[1]

According to Bi-State, the line does not contain federally granted rights-of-way. Any documentation in Bi-State's possession will be made available promptly to those requesting it.

The interest of railroad employees will be protected by the conditions set forth in *Oregon Short Line R. Co.—Abandonment—Goshen*, 360 I.C.C. 91 (1979).

By issuance of this notice, the Board is instituting an exemption proceeding pursuant to 49 U.S.C. 10502(b). A final decision will be issued by February 19, 2010.

Any offer of financial assistance (OFA) under 49 CFR 1152.27(b)(2) to subsidize continued rail service will be due no later than 10 days after service of a decision granting the petition for exemption. Each offer must be accompanied by a $1,500 filing fee. *See* 49 CFR 1002.2(f)(25).[2]

All filings in response to this notice must refer to STB Docket No. AB–331 (Sub-No. 1X), and must be sent to: (1) Surface Transportation Board, 395 E Street, SW., Washington, DC 20423–0001; and (2) Theodore J. Williams, Jr., Williams Venker & Sanders LLC, 100 North Broadway, Suite 2100, St. Louis, MO 63102. Replies to the Bi-State petition are due on or before December 10, 2009.

Persons seeking further information concerning discontinuance procedures may contact the Board's Office of Public Assistance, Governmental Affairs, and Compliance at (202) 245–0230 or refer to the full abandonment and discontinuance regulations at 49 CFR part 1152. Questions concerning environmental issues may be directed to the Board's Section of Environmental Analysis (SEA) at (202) 245–0305. Assistance for the hearing impaired is available through the Federal Information Relay Service (FIRS) at 1–800–877–8339.

Board decisions and notices are available on our Web site at: *http://www.stb.dot.gov.*

Decided: November 13, 2009.

By the Board, Rachel D. Campbell, Director, Office of Proceedings.

Anne K. Quinlan,

Acting Secretary.

[FR Doc. E9–27794 Filed 11–19–09; 8:45 am]

BILLING CODE 4915–01–P

[1] Bi-State initially filed this petition for exemption on October 1, 2009, but supplemented it on November 2, 2009, to comply with the newspaper publication requirements of 49 CFR 1105.12. Under that provision, a petitioner must notify the public by publishing a notice of the proposed action in a newspaper of general circulation in each county that the line traverses and must certify to the Board that it has done so by the date its petition is filed. On November 2, 2009, Bi-State certified to the Board that it has satisfied the newspaper publication requirement. Therefore, November 2, 2009, will be considered the official filing date of the petition for exemption.

[2] Because this is a discontinuance proceeding and not an abandonment, trail use/rail banking and public use conditions are not appropriate. Similarly, no environmental or historic documentation is required under 49 CFR1105.6(c)(2) and 1105.8.

DEPARTMENT OF TRANSPORTATION

Federal Transit Administration

Intent To Prepare an Environmental Impact Statement for Proposed Intermodal Transit Improvements in Hercules, CA

AGENCY: Federal Transit Administration (FTA), U.S. Department of Transportation.

ACTION: Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS).

SUMMARY: The Federal Transit Administration (FTA) in cooperation with the City of Hercules, CA (City) is planning to prepare a joint Environmental Impact Statement/ Environmental Impact Report (EIS/EIR) for the construction of a proposed intermodal transit center project which includes a new passenger train station on the existing Capitol Corridor line, a transit bus terminal, access roadways, and parking facilities, located in Hercules, California. The project would serve commuters, visitors and recreational users who desire an alternative way to travel to and from the City of Hercules and the San Francisco Bay area and the Sacramento area to access employment, entertainment, and recreational destinations. This EIS/EIR will not study a ferry terminal as part of the proposed project. Any future ferry terminal will be evaluated under a separate environmental document. However, the potential for a future ferry terminal will be considered in the cumulative impact analysis for this project. The purpose of this Notice of Intent (NOI) is to alert interested parties on the preparation of an EIS/EIR, to provide information on the proposed transit project, to invite participation in the EIS/EIR process, including comments on the scope of the EIS/EIR, and to announce the public scoping meeting that will be conducted.

DATES: The City of Hercules has already initiated coordination with Federal, State and local agencies. On November 18th, 2009, the City of Hercules participated in an interagency meeting hosted at the U.S. Army Corps of Engineers office in San Francisco, California and presented an overview of the project and invited agency comment on the proposed project. Through the development of a public and agency coordination plan, coordination with responsible and cooperating agencies will continue throughout the review of the EIR/EIS and through permit coordination.

A scoping meeting will be held on December 8th, 2009 at 5:30 p.m. at the Hercules Library, Large Conference Room, 109 Civic Drive, Hercules, CA. Written comments on the scope of the EIS/EIR including the project's purpose and need, the alternatives to be considered, the impacts to be evaluated, and the methodologies to be used in the evaluations should be sent to Lisa Hammon, Assistant City Manager, City of Hercules, 111 Civic Drive, Hercules CA 94547 by December 23, 2009. Comments may also be offered at the scoping meeting.

The general public and agency representatives with an interest in the proposed project are encouraged to attend this public meeting. The project's purpose and need and the description of alternatives for the proposed project will be presented at this meeting. Representatives of Native American Tribal governments and all Federal, State, regional and local agencies that may have an interest in any aspect of the project will be invited to be participating or cooperating agencies, as appropriate.

ADDRESSES: The scoping meeting will be held on December 8th, 2009 at 5:30 p.m. at the Hercules Library, Large Conference Room, 109 Civic Drive, Hercules, CA. The meeting facilities will be accessible to persons with disabilities. If special translation or signing services or other special accommodations are needed, please contact Lisa Hammon, Assistant City Manager, at (510) 799–8251, or by e-mail at: *LHammon@ci.hercules.ca.us* at least 48 hours before the scoping meeting. Paper copies of scoping materials may be obtained from Lisa Hammon. Also, scoping materials will be available at the meetings and on the City of Hercules Web site [*http://www.ci.hercules.ca.us*].

Written comments on proposed project should be sent to Lisa Hammon, Assistant City Manager, City of Hercules, 111 Civic Drive, Hercules, CA 94547 by December 23, 2009.

Further Information: For further information contact Paul Page, Federal Transit Administration, San Francisco Regional Office at (415) 744–3133.

SUPPLEMENTARY INFORMATION: *Scoping:* The FTA and the City of Hercules invite all interested individuals, and organizations, public agencies and Native American Tribes to comment on the scope of the EIS, including the project's purpose and need, the alternatives to be studied, the impacts to be evaluated and the evaluation methods to be used. Comments should focus on: alternatives that may be less costly or have fewer environmental or community impacts while achieving similar transportation objectives, and the identification of any significant social, economic or environmental issues related to alternatives. This is not considered a transit project of unusual complexity. Therefore, in line with CEQ 1502.7 (page limits) FTA is setting a limit of 250 pages (exclusive of technical appendices) for this EIS. The document should emphasize graphics, maps and visual simulations, minimize technical jargon and be accessible to members of the public with limited technical expertise.

Description of Study Area and Proposed Project: The project site is located in Hercules, California, on the shoreline of San Pablo Bay (a part of San Francisco Bay), approximately 1 mile northwest of Interstate 80 (I–80). This is the City's Waterfront District which has been planned for transit oriented development. Project components would include: (1) Grade separation and realignment of a portion of the existing Union Pacific railroad tracks, including the construction of a rail platform, retaining walls and the replacement of a bridge crossing Refugio Creek; (2) construction of a station building; (3) extension of John Muir Parkway, including the construction of Bayfront Boulevard over Refugio Creek, a new Transit Loop Drive, Civic Plaza and surface parking; (4) realignment and restoration of a portion of Refugio Creek from San Pablo Bay upstream approximately 1000 feet to the existing restored segment; (5) construction of segments of the East Bay Park Regional District's recreational trail along the shoreline from Pinole trail to Victoria by the Bay; and, (6) a pedestrian walkway over the railroad tracks to provide a connection to the Hercules Point open space area. The project will also require the relocation of existing utility and gas lines and an outfall to Refugio Creek.

Purpose and Need for the Project: Residents of the San Francisco Bay Area depend heavily on region wide and transbay commuting. Despite the use of existing public transit services, particularly rail and buses, traffic congestion continues to increase, affecting hundreds of thousands of Bay Area residents and creating both economic and environmental costs. The severity of congestion will increase in the future as population and employment in the Bay Area increase. The purpose of the proposed project is to increase local and regional mobility and transportation options by providing new and expanded transit services with intermodal connections that will encourage use of public transit. The project would provide bus-to-train connections, in addition to providing car commuters with access to new transit options that would divert traffic from I–80, the most congested corridor in the Bay Area for the past six years. An expanded and more convenient transit system with new train connections to existing bus services would provide commuters with more options and would primarily decrease car usage and its associated impacts, rather than divert riders from existing

buses, BART, or Capitol Corridor. Key project objectives are to:

1. Reduce vehicle trips on Interstate 80, the most congested freeway in the Bay Area, by providing alternatives to commuting in single occupant vehicles.

2. Provide coordinated, intermodal transit connections by bus, train, and a potential future ferry and human-powered connections by bicycling and walking for transport to/from jobs, recreational uses, educational opportunities, *etc.*

3. Improve emergency response by having rail and (ultimately) ferry service available in case of a natural or man-made disaster that disables the Bay Bridge or other highways/roadways. Ferry and rail service could also deliver goods and services in an emergency.

4. Support transit-oriented development and "new urbanist" standards by providing the transportation links within the 43-acre waterfront development which also includes housing (including affordable housing), retail, office, and commercial space.

5. Improve safety along the railroad corridor by providing completely grade-separated access to the railroad tracks from the adjacent development by constructing a series of retaining walls and fences for approximately one mile along the waterfront and by constructing over-crossings to Hercules Point and the future ferry terminal.

6. Implement the Goals, Policies and Programs in the City of Hercules General Plan to:

- Develop transportation facilities to provide access to the region, particularly public transit systems (buses, ridesharing, rail transit, as well as potential over-water transit) (Land Use Policy 3A, Circulation Policy e).
- Establish trail linkage between Pinole and Rodeo as part of the regional bay access trail system (Land Use Program 14A.2 and Open Space/Conservation Policy 1b) and continue to improve and protect Refugio Creek as a major environmental amenity (Program 14.A.3).

7. Improve Refugio Creek to allow adequate flows into the Bay without resulting in flooding.

8. Implement the City of Hercules Waterfront Master Plan Initiative and its directive to construct an intermodal transit center on Block I.

Alternatives: The EIS/EIR will include a Build alternative. Included in the Build analysis will be design alternatives to the proposed project that will meet both NEPA and CEQA requirements and are intended to reduce potential environmental effects, including impacts to sensitive biological habitat. A No Action (No Build) alternative will also be evaluated in the EIS/EIR which would continue with the existing bus services without the construction of a train station and a new bus terminal at the same location. This alternative serves as the baseline against which the environmental effects of the proposed project and other alternatives will be evaluated.

Traffic congestion is an ongoing and steadily increasing problem in the Bay Area, regardless of economic conditions. Alternatives to reduce traffic congestion have been explored in numerous previous studies. According to the Metropolitan Transportation Commission (MTC), the Bay Bridge approach corridor along Interstate 80 (I–80) from State Route 4 (SR–4) in Hercules to the Bay Bridge experiences the worst congestion in the Bay Area. Caltrans' Bay Area monitoring program found that between 1992 and 2005, traffic delay in the region as a whole more than doubled from 64,100 hours to 135,700 hours. According to Caltrans' 2006 report, between 2001 and 2005, traffic delay on the I–80 segment from SR–4 to the Bay Bridge metering lights increased by 16 percent, from 9,410 hours to 10,930 hours (MTC 2007). This segment includes the stretch of I–80 that passes near the proposed HITC project. MTC projects that traffic congestion will continue to worsen; by 2020, MTC expects that Bay Bridge traffic will increase by 50 percent and be "at capacity" for nearly five hours a day during the morning and afternoon peak hours. MTC also predicts that many more Bay Area workers, due to high housing costs, will be living far from their jobs, demanding that they spend more time commuting and polluting on roadways. Even during an economic downturn, BART runs at capacity through the Transbay Tube during peak hours. Improvements in commuter bus service are dependent upon traffic flow, and are limited by the need for more road capacity and more dedicated High Occupancy Vehicle (HOV) lanes for significant expansion. Increased train and transit services would provide expanded commute capacity while avoiding corresponding increases in traffic congestion.

Additionally, the San Francisco Bay Area Water Transit Authority (WTA), now the Water Emergency Transportation Authority (WETA), is a regional agency authorized by the State of California to operate a comprehensive San Francisco Bay Area public water transit system. In 2003, the WTA's plan, "A Strategy to Improve Public Transit with an Environmentally Friendly Ferry System" (the Plan) was approved by statute (Senate Bill 915, Ch. 714, stats of 2003). The Plan drew on extensive technical studies that examined ridership demand, cost effectiveness, vessel design, environmental impacts, safety, and operations. A Hercules-San Francisco route was identified in the Plan as a potential future ferry route. The potential environmental effects of proposed new ferry service on San Francisco Bay under the WTA Plan were studied at a program planning level in the Program Environmental Impact Report (Program EIR) prepared in 2003. The 2003 Program EIR included analysis of a Hercules/Rodeo location and seven other potential new ferry service locations around the Bay and Delta. While ferry service is anticipated for the city of Hercules, current planning for the ferry is still in development and is considered a future project. The current project proposes only to construct a rail and bus transit facility.

As part of the General Plan for the City of Hercules, the proposed project is intended to be the central element of a transit-oriented development (TOD) project that will include residential and commercial development clustered around transit facilities to enable local residents to use public transit and reduce the need for automobile use. The planned TOD, known as Hercules Bayfront, is not part of the project considered in this EIR/EIS, and will be the subject of a separate environmental review.

Probable Effects/Potential Impacts for Analysis: The purpose of the EIS process is to explore in a public setting potentially significant effects of implementing the proposed project and alternatives on the physical, human, and natural environment.

Implementation of the project components will result in direct effects to the physical environment and may include the loss of special aquatic sites such as tidal wetlands, mudflats, and riparian areas. Mitigation will be incorporated into the project design by first avoiding and minimizing impacts to resources. Compensatory mitigation will be provided for unavoidable impacts. Based on preliminary investigations for special status species the project may affect, but is unlikely to adversely affect, any species listed as threatened or endangered under the State or Federal endangered species acts.

The proposed project would extend the John Muir Parkway, provide parking for short-term and long-term parking, and develop a new access point to commuter rail. Each of these activities may encourage automobile traffic in the

area that could adversely affect levels of service at nearby intersections.

FTA Procedures: Regulations implementing NEPA, as well as provisions of SAFETEA–LU, call for public involvement in the EIS process. Section 6002 of SAFETEA–LU requires that FTA do the following: (1) Extend an invitation to other Federal and non-Federal agencies and Indian Tribes that may have an interest in the proposed project to become participating agencies; (2) provide an opportunity for involvement by participating agencies and the public in helping to define the purpose and need for a proposed project, as well as the range of alternatives for consideration; and (3) establish a plan for coordinating public and agency participation in and comment on the environmental review process. An invitation to become a participating agency will be extended to other Federal and non-Federal agencies and Indian Tribes that may have an interest in the proposed project. It is possible that we may not be able to identify all Federal and non-Federal agencies and Indian Tribes that may have such an interest. Any Federal or non-Federal agency or Indian Tribe interested in the proposed project that does not receive an invitation to become a participating agency should notify, at the earliest opportunity, the City at the **ADDRESSES** or phone number above.

A comprehensive public involvement program has been developed. A technical advisory committee called the Project Development Team, consisting of representatives of State, regional and local agencies, is in place. The program also includes a public scoping process, a public review/comment period and public hearing on the Draft Environmental Impact Statement, development and distribution of project newsletters and posting of information on the project Web site. The purposes of and need for the proposed project have been preliminarily identified in this notice. We invite the public and participating agencies to consider the preliminary statement of purposes of and need for the proposed project, as well as potential alternatives, and the public is welcome to use the public scoping process to further define the issues of concern among all parties interested in the project. Comments on potential significant environmental impacts that may be associated with the proposed project are also welcomed. All comments and suggestions will be given serious consideration. Comments on potentially significant environmental impacts that may be associated with the proposed project are also welcomed. There will be additional opportunities to participate in the scoping process at the public meetings announced in this notice. In accordance with 23 CFR 771.105(a) and 771.133, FTA will comply with all Federal environmental laws, regulations and executive orders applicable to the proposed project during the environmental review process to the maximum extent practicable. These requirements include, but are not limited to, the regulations of the Council on Environmental Quality implementing NEPA (40 CFR parts 1500–1508 and 23 CFR part 771), the project-level air quality conformity regulation of the U.S. Environmental Protection Agency (EPA) (40 CFR part 93), section 404(b)(1) guidelines of EPA (40 CFR part 230), Executive Orders 11988, 11990 and 12898 regarding floodplains, wetlands, and environmental justice, respectively; Section 106 of the National Historic Preservation Act (36 CFR Part 800); Section 7 of the Endangered Species Act (50 CFR part 402); and Section 4(f) of the Department of Transportation Act (23 CFR 774). The EIR portion of the document will be prepared in accordance with the California Environmental Quality Act (CEQA) and the California Code of Regulations, Title 14, section 15000 *et seq.*

Dated: November 13, 2009.

Leslie T. Rogers,

Federal Transit Administration.

[FR Doc. E9–27896 Filed 11–19–09; 8:45 am]

BILLING CODE 4910–57–P

DEPARTMENT OF TRANSPORTATION

Maritime Administration

[USCG–2006–24644]

TORP Terminal LP, Bienville Offshore Energy Terminal Liquefied Natural Gas Deepwater Port License Application; Preparation of Supplemental Environmental Impact Statement

AGENCY: Maritime Administration, DOT.

ACTION: Notice of availability; Notice of public meeting; Request for comments.

SUMMARY: The Maritime Administration, in cooperation with the U.S. Coast Guard announces the availability of the Draft Supplemental Environmental Impact Statement (DSEIS) for the TORP Terminal LP, Bienville Offshore Energy Terminal (BOET) Liquefied Natural Gas (LNG) Deepwater Port license amended application. The amended application describes a project that would be located in the Gulf of Mexico, in Main Pass block MP 258, approximately 63 miles south of Mobile Point, Alabama. Publication of this notice begins a 45 day comment period and provides information on how to participate in the process.

DATES: The public meeting will be held in Mobile, Alabama on December 9, 2009, from 6 p.m. to 8 p.m., and will be preceded by an open house from 5 p.m. to 6 p.m. The public meeting may end later than the stated time, depending on the number of persons wishing to speak. Material submitted in response to this request for comments must reach the Docket Management Facility by January 4, 2010.

ADDRESSES: The open house and public meeting will be held at the: Mobile Convention Center, One South Water Street, Mobile, Alabama 36602; *telephone:* 251–208–2100.

The amended application, comments and associated documentation are available for viewing at the Federal Docket Management System (FDMS) Web site: *http://www.regulations.gov* under docket number USCG–2006–24644.

Docket submissions for USCG–2006–24644 should be addressed to: Department of Transportation, Docket Management Facility, West Building, Ground Floor, Room W12–140, 1200 New Jersey Avenue, SE., Washington, DC 20590–0001.

The Docket Management Facility accepts hand-delivered submissions, and makes docket contents available for public inspection and copying at the above address between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The Facility telephone number is 202–366–9329, the fax number is 202–493–2251, and the Web site for electronic submissions or for electronic access to docket contents is *http://www.regulations.gov.*

FOR FURTHER INFORMATION CONTACT: Mr. Patrick Marchman, Maritime Administration, telephone: 202–366–8805, e-mail: *Patrick.Marchman@dot.gov;* or Mr. Linden Houston, Maritime Administration, telephone: 202–366–4839, e-mail: *Linden.Houston@dot.gov.* If you have questions on viewing the docket, call Renee V. Wright, Program Manager, Docket Operations, telephone 202–493–0402.

SUPPLEMENTARY INFORMATION:

Public Meeting and Open House

We invite you to learn about the proposed deepwater port at an informational open house and to comment at a public meeting immediately afterwards on the proposed action and the evaluation contained in the DSEIS. In order to allow everyone a

Notice of Preparation

STATE OF CALIFORNIA

GOVERNOR'S OFFICE *of* PLANNING AND RESEARCH

STATE CLEARINGHOUSE AND PLANNING UNIT

ARNOLD SCHWARZENEGGER
GOVERNOR

CYNTHIA BRYANT
DIRECTOR

Notice of Preparation

November 24, 2009

To: Reviewing Agencies

Re: Hercules Intermodal Transit Center
SCH# 2009112087

Attached for your review and comment is the Notice of Preparation (NOP) for the Hercules Intermodal Transit Center draft Environmental Impact Report (EIR).

Responsible agencies must transmit their comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of the NOP from the Lead Agency. This is a courtesy notice provided by the State Clearinghouse with a reminder for you to comment in a timely manner. We encourage other agencies to also respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

Lisa Hammon
City of Hercules
111 Civic Drive
Hercules, CA 94547

with a copy to the State Clearinghouse in the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the environmental document review process, please call the State Clearinghouse at (916) 445-0613.

Sincerely,

Scott Morgan
Acting Director

Attachments
cc: Lead Agency

1400 10th Street P.O. Box 3044 Sacramento, California 95812-3044

Document Details Report
State Clearinghouse Data Base

SCH#	2009112087
Project Title	Hercules Intermodal Transit Center
Lead Agency	Hercules, City of

Type	**NOP** Notice of Preparation
Description	The City, in cooperation with the Federal Transit Administration (FTA), is planning to prepare a joint EIS/EIR for the construction of a proposed intermodal transit center project which includes a new passenger train station on the existing Capitol Corridor line, a bus terminal, and parking facilities. Specific project improvements include: 1) realignment of a portion of the existing Union Pacific railroad tracks, including the construction of a rail platform, retaining walls and the replacement of a railroad bridge crossing Refugio Creek; 2) construction of a train station building with grade separated pedestrian access; 3) extension of John Muir Parkway, including the construction Bayfront Boulevard over Refugio Creek, Transit Loop Drive, and a surface parking lot; 4) realignment and restoration of approximately 1,000 ft. of Refugio Creek from San Pablo Bay to the existing restored upper segment and including the North Channel; 5) construction of segments of the East Bay Park Regional District's recreational Bay Trail along the shoreline from Pinole trail to Victoria by the Bay; 6) a pedestrian walkway over the railroad tracks to provide a connection to the proposed Hercules Point open space area, and 7) relocation of existing utility and gas lines and an storm drainage outfall to Refugio Creek.

Lead Agency Contact

Name	Lisa Hammon		
Agency	City of Hercules		
Phone	(510) 799-8251	***Fax***	
email	lhammon@ci.hercules.ca.us		
Address	111 Civic Drive		
City	Hercules	***State*** CA	***Zip*** 94547

Project Location

County	Contra Costa			
City				
Region				
Cross Streets				
Lat / Long				
Parcel No.				
Township		***Range***	***Section***	***Base***

Proximity to:

Highways	I-80
Airports	
Railways	
Waterways	San Pablo Bay
Schools	
Land Use	

Project Issues	Traffic/Circulation; Air Quality; Noise; Aesthetic/Visual; Geologic/Seismic; Biological Resources; Archaeologic-Historic; Toxic/Hazardous; Water Quality; Landuse; Population/Housing Balance; Recreation/Parks; Other Issues; Forest Land/Fire Hazard; Cumulative Effects
Reviewing Agencies	Resources Agency; Department of Boating and Waterways; Department of Conservation; Office of Historic Preservation; Department of Parks and Recreation; San Francisco Bay Conservation and Development Commission; Department of Water Resources; Native American Heritage Commission; State Lands Commission; California Highway Patrol; Department of Toxic Substances Control; Regional Water Quality Control Board, Region 2

Document Details Report
State Clearinghouse Data Base

Date Received 11/24/2009 ***Start of Review*** 11/24/2009 ***End of Review*** 12/23/2009

NOP Distribution List

County: CONTRA COSTA SCH#

esources Agency

- Resources Agency
  Nadell Gayou
- Dept. of Boating & Waterways
  Mike Sotelo
- California Coastal Commission
  Elizabeth A. Fuchs
- Colorado River Board
  Gerald R. Zimmerman
- Dept. of Conservation
  Rebecca Salazar
- California Energy Commission
  Eric Knight
- Cal Fire
  Allen Robertson
- Office of Historic Preservation
  Wayne Donaldson
- Dept of Parks & Recreation
  Environmental Stewardship Section
- Central Valley Flood Protection Board
  James Herota
- S.F. Bay Conservation & Dev't. Comm.
  Steve McAdam
- Dept. of Water Resources
  Resources Agency
  Nadell Gayou
- _____
  Conservancy

sh and Game

- Depart. of Fish & Game
  Scott Flint
  Environmental Services Division
- Fish & Game Region 1
  Donald Koch
- Fish & Game Region 1E
  Laurie Harnsberger
- Fish & Game Region 2
  Jeff Drongesen
- Fish & Game Region 3
  Charles Armor
- Fish & Game Region 4
  Julie Vance
- Fish & Game Region 5
  Don Chadwick
  Habitat Conservation Program
- Fish & Game Region 6
  Gabrina Gatchel
  Habitat Conservation Program
- Fish & Game Region 6 I/M
  Brad Henderson
  Inyo/Mono, Habitat Conservation Program
- Dept. of Fish & Game M
  George Isaac
  Marine Region

Other Departments

- Food & Agriculture
  Steve Shaffer
  Dept. of Food and Agriculture
- Depart. of General Services
  Public School Construction
- Dept. of General Services
  Anna Garbeff
  Environmental Services Section
- Dept. of Public Health
  Bridgette Binning
  Dept. of Health/Drinking Water

Independent Commissions,Boards

- Delta Protection Commission
  Linda Flack
- Office of Emergency Services
  Dennis Castrillo
- Governor's Office of Planning & Research
  State Clearinghouse
- Native American Heritage Comm.
  Debbie Treadway
- Public Utilities Commission
  Leo Wong
- Santa Monica Bay Restoration
  Guangyu Wang
- State Lands Commission
  Marina Brand
- Tahoe Regional Planning Agency (TRPA)
  Cherry Jacques

Business, Trans & Housing

- Caltrans - Division of Aeronautics
  Sandy Hesnard
- Caltrans - Planning
  Terri Pencovic
- California Highway Patrol
  Scott Loetscher
  Office of Special Projects
- Housing & Community Development
  CEQA Coordinator
  Housing Policy Division

Dept. of Transportation

- Caltrans, District 1
  Rex Jackman
- Caltrans, District 2
  Marcelino Gonzalez
- Caltrans, District 3
  Bruce de Terra
- Caltrans, District 4
  Lisa Carboni
- Caltrans, District 5
  David Murray
- Caltrans, District 6
  Michael Navarro
- Caltrans, District 7
  Elmer Alvarez
- Caltrans, District 8
  Dan Kopulsky
- Caltrans, District 9
  Gayle Rosander
- Caltrans, District 10
  Tom Dumas
- Caltrans, District 11
  Jacob Armstrong
- Caltrans, District 12
  Chris Herre

Cal EPA

Air Resources Board

- Airport Projects
  Jim Lerner
  - Transportation Projects
    Douglas Ito
  - Industrial Projects
    Mike Tollstrup
- California Integrated Waste Management Board
  Sue O'Leary
- State Water Resources Control Board
  Regional Programs Unit
  Division of Financial Assistance
- State Water Resources Control Board
  Student Intern, 401 Water Quality Certification Unit
  Division of Water Quality
- State Water Resouces Control Board
  Steven Herrera
  Division of Water Rights
- Dept. of Toxic Substances Control
  CEQA Tracking Center
- Department of Pesticide Regulation
  CEQA Coordinator

Regional Water Quality Control Board (RWQCB)

- RWQCB 1
  Cathleen Hudson
  North Coast Region (1)
- RWQCB 2
  Environmental Document Coordinator
  San Francisco Bay Region (2)
- RWQCB 3
  Central Coast Region (3)
- RWQCB 4
  Teresa Rodgers
  Los Angeles Region (4)
- RWQCB 5S
  Central Valley Region (5)
  - RWQCB 5F
    Central Valley Region (5)
    Fresno Branch Office
  - RWQCB 5R
    Central Valley Region (5)
    Redding Branch Office
- RWQCB 6
  Lahontan Region (6)
  - RWQCB 6V
    Lahontan Region (6)
    Victorville Branch Office
- RWQCB 7
  Colorado River Basin Region (7)
- RWQCB 8
  Santa Ana Region (8)
- RWQCB 9
  San Diego Region (9)
- Other _____

Last Updated on 11/16/2009

Agency Notification

Sample Letter of Invitation

[Insert Date]

[Insert Agency Representative]
[Insert Agency Name and Address]

Re: Invitation to Participate in the Environmental Review Process for the Hercules Intermodal Transit Center Project

Dear *[Agency Representative]*:

The City of Hercules, in cooperation with the Federal Transit Administration (FTA), is initiating the preparation of a joint Environmental Impact Report (EIR)/Environmental Impact Statement (EIS) for the proposed Hercules Intermodal Transit Center Project. The proposed project is described in the attached Notice of Intent. The purpose of the project, as currently defined, is to increase local and regional mobility and transportation options by providing new and expanded transit services with intermodal connections that will encourage use of public transit. The enclosed scoping information packet provides more details. A preliminary coordination plan and schedule are also enclosed.

Section 6002 of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users establishes an enhanced environmental review process for certain FTA projects, increasing the transparency of the process, as well as opportunities for participation. The requirements of section 6002 apply to the project that is the subject of this memorandum. As part of the environmental review process for this project, the lead agencies must identify, as early as practicable, any other Federal and non-Federal agencies that may have an interest in the project, and invite such agencies to become participating agencies in the environmental review process.[1] Your agency has been identified preliminarily as one that may have an interest in this project, accordingly, you are being extended this invitation to become actively involved as a participating agency in the environmental review process for the project.

As a participating agency, you will be afforded the opportunity, together with the public, to be involved in defining the purpose of and need for the project, as well as in determining the range of alternatives to be considered for the project. In addition, you will be asked to:

- Provide input on the impact assessment methodologies and level of detail in your agency's area of expertise;

[1] Designation as a "participation agency" does not imply that the participating agency supports the proposed project or has any jurisdiction over, or special expertise concerning the proposed project or its potential impacts. A "participating agency" differs from a "cooperating agency," which is defined in regulations implementing the National Environmental Policy Act as "any Federal agency other than a lead agency which has jurisdiction by law or special expertise with respect to any environmental impact involved in a proposal (or a reasonable alternative) for legislation or other major Federal action significantly affecting the quality of the human environment." 40 C.F.R. § 1508.5.

- Participate in coordination meetings, conference calls, and joint field reviews, as appropriate; and
- Review and comment on sections of the pre-draft or pre-final environmental documents to communicate any concerns of your agency on the adequacy of the document, the alternatives considered, and the anticipated impacts and mitigation.

Your agency does not have to accept this invitation. If, however, your agency is a Federal agency, and you elect not to become a participating agency, you must decline this invitation in writing, indicating that your agency has no jurisdiction or authority with respect to the project, no expertise or information relevant to the project, and does not intend to submit comments on the project. The declination may be transmitted electronically to Lisa Hammon [LHammon@ci.hercules.ca.us]; please include the title of the official responding. In order to give Federal agencies adequate opportunity to weigh the relevance of their participation in this environmental review process, written responses to this invitation are not due until after the close of the scoping process, now scheduled to conclude *December 30, 2009*. Written responses from Federal agencies declining designation as participating agencies should be transmitted to this office not later than January 15, 2010.

If you have questions regarding this invitation, please contact Lisa Hammon at (510) 799-8251.

Sincerely,

Attachments: Scoping Information
Draft Coordination Plan

cc: *Federal Transit Administration*

Scoping Comment Table.

Last name	First name	Agency, Organization, or Self	Letter Title	Date	Purpose and Need	Cumulative Impacts	Alternatives	Green Design	Transit Plaza	Pedestrian/Bike	Access	Parking	Transportation	Traffic	Safety	Noise	Air Quality	Water Resources	Wastewater	Flood Protection	Biological Resources	Utilites	Climate Change	Mitigation	Permits	Environ. Justice	Climate Change	Agency Coordination
Page	Paul	U.S. EPA	Scoping Comments	12/17/2009	X			X						X			X	X								X	X	
Townsend	Jim	East Bay Regional Park Dist.	Scoping Comments	12/22/2009																								x
Albritton	Wade	Self	Scoping Comments	12/24/2009			X		X			X																
Albritton	Wade	Self	Scoping Comments	12/23/2009												X	X											
Browermaster	Mike	Self	Scoping Comments	12/23/2009					X					X														
Allison	Jim	Capitol Cooridor JPA	Scoping Comments	12/23/2009			X			X				X														X
Carboni	Lisa	Caltrans D-4	Scoping Comments	12/28/2009																								X
Rhodes	Winston	City of Pinole	Scoping Comments	12/18/2009									X			X			X	X								X
Murphy	Daniel	Dept. of Toxic Substance Control	Scoping Comments	12/9/2009																								X
Wisniewski	Jeffrey	Self	Scoping Comments	12/9/2009					X	X	X																	
Stites	Moses	State Public Utilities Commission	Scoping Comments	12/21/2009						X		X	X		X													
Yeung	Ming	SF Bay Conservation Development Commission	Scoping Comments	1/4/2010																								X
Goetz	Steven	Contra Costa County	Scoping Comments	12/29/2009			X					X																
Giacalone	Matilde	Dept. of Conservation and Development	Scoping Comments	1/4/2010																								
Kirkpatrick	William	EBMUD	Scoping Comments	12/23/2009														X										
Brand	Marina	State Lands Commission	Scoping Comments	12/10/2009			X														X						X	X
Dowell	Rhaphaelle	PG&E	Scoping Comments	11/30/2009																		X						
Shafaq	Homira	Contra Costa Flood Control & Water Cons. Dist.	Scoping Comments	1/14/2010							X						X	X			X			X	X			
Rhinehart	Bimla	Ca. Transporation Commission	Scoping Comments	1/12/2010																								X

APPENDIX C

Agency Participation and Consultation

Recipients of Participating Agency Letter

Jacqueline Wyland	Environmental Protection Agency, Region 9
	California Department of Conservation
	California Regional Water Quality Control Board
Gunther Moskat	California Department of Toxic Substance Control
	California Department of Conservation, Division of Mines and Geology
	Bay Area Rapid Transit, Real Estate Dept.
Craig Goldblatt	Metropolitan Transportation Commission
	Contra Costa County Health Department, Environmental Division
Barney Opton	U.S. Army Corps of Engineers
Robert Nagel	AMTRAK
	California Department of Transportation, District 4
	California Department of Transportation, Division of Rail
Carl Wilcox	California Department of Fish & Game
	California State Native American Heritage Commission
	California State Lands Commission
Paul Maxwell	Contra Costa Transportation Authority
	Bay Area Air Quality Management District
	Contra Costa Joint Powers Authority
Janet McBride	Association of Bay Area Governments
Don Hankins	U.S. Fish & Wildlife Service
	California Governor's Office of Planning & Research
	California Office of Historic Preservation
	Contra Costa County Flood Control and Water Conservation Dist.
Jim Townsend	East Bay Regional Park District
	Contra Costa County Community Development Department
Charlie Anderson	Western Contra Costa Transit Authority
	Federal Aviation Administration
	National Oceanic and Atmospheric Administration, Fisheries Service
	U.S. Coast Guard
	U.S. Department of Homeland Security – Transit Security Agency

	California Public Utilities Commission
	West Contra Costa Unified School District
	Contra Costa Water District

Agency Letter of Invitation

Sample Letter of Invitation

[Insert Date]

[Insert Agency Representative]
[Insert Agency Name and Address]

Re: Invitation to Participate in the Environmental Review Process for the Hercules Intermodal Transit Center Project

Dear *[Agency Representative]*:

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- Provide input on the impact assessment methodologies and level of detail in your agency's area of expertise;

[1] Designation as a "participation agency" does not imply that the participating agency supports the proposed project or has any jurisdiction over, or special expertise concerning the proposed project or its potential impacts. A "participating agency" differs from a "cooperating agency," which is defined in regulations implementing the National Environmental Policy Act as "any Federal agency other than a lead agency which has jurisdiction by law or special expertise with respect to any environmental impact involved in a proposal (or a reasonable alternative) for legislation or other major Federal action significantly affecting the quality of the human environment." 40 C.F.R. § 1508.5.

- Participate in coordination meetings, conference calls, and joint field reviews, as appropriate; and
- Review and comment on sections of the pre-draft or pre-final environmental documents to communicate any concerns of your agency on the adequacy of the document, the alternatives considered, and the anticipated impacts and mitigation.

Your agency does not have to accept this invitation. If, however, your agency is a Federal agency, and you elect not to become a participating agency, you must decline this invitation in writing, indicating that your agency has no jurisdiction or authority with respect to the project, no expertise or information relevant to the project, and does not intend to submit comments on the project. The declination may be transmitted electronically to Lisa Hammon [LHammon@ci.hercules.ca.us]; please include the title of the official responding. In order to give Federal agencies adequate opportunity to weigh the relevance of their participation in this environmental review process, written responses to this invitation are not due until after the close of the scoping process, now scheduled to conclude *December 30, 2009*. Written responses from Federal agencies declining designation as participating agencies should be transmitted to this office not later than January 15, 2010.

If you have questions regarding this invitation, please contact Lisa Hammon at (510) 799-8251.

Sincerely,

Attachments: Scoping Information
Draft Coordination Plan

cc: *Federal Transit Administration*

Interagency Meeting

HERCULES INTERMODAL TRANSIT CENTER PROJECT
HERCULES, CALIFORNIA
USACE INTERAGENCY MEETING
NOVEMBER 18, 2009
1:00 – 2:00 PM

USACE Regulatory No. 2008-00382S

MEETING SUMMARY

PARTICIPANTS

- Jesse Harder – City of Hercules
- David McCrossan – HDR
- Serge Stanich – HDR
- William Silva – d'Oro Construction Management
- Ian Liffman – USACE
- Katarina Galacatos – USACE
- Jason Brush – USEPA
- Katie Hart – SFRWQCB
- Sandi Potter – SFRWQCB
- Paul Page – FTA (via telephone)
- Ben Solveski – USFWS (via telephone)

SUMMARY

The meeting began late due to technical difficulties with conference telephone. Serge Stanich started the meeting with a PowerPoint presentation of the proposed project (see agenda).

Following the presentation, Katarina Galacatos and Jason Brush initiated the conversation by inquiring if the FTA would be the lead federal agency for the purposes of compliance with National Environmental Policy Act (NEPA). HDR confirmed that FTA would be the lead with respect to federal compliance for NEPA, as well as coordination with the US Fish and Wildlife Service (USFWS), for Section 7 of the Endangered Species Act (ESA) and with State Historic Preservation Office (SHPO) for compliance with Section 106 of the National Historic Preservation Act (NHPA).

Ms. Galacatos further expressed concerns that by separating the development and environmental review of the Hercules Intermodal Transit Center (HITC) from the future ferry terminal proposed by the San Francisco Bay Area Water Emergency Transportation Authority (WETA) results in

piecemealing the project. Mr. Brush acknowledged that the two projects may have separate utility which would allow for the separate documents. However, he also noted that as the transit center would provide bus and rail service, it is not a water dependent project. Consequently, Mr. Brush inquired what alternative locations have been investigated that would provide for lesser environmentally damaging effects. Mr. Brush and Ms. Galacatos further added that their concerns regarding the perceived segmenting of the projects is that locating the transit center before the ferry service is analyzed dictates the ultimate location of the ferry and would limit the potential for alternatives. The project team discussed work that had been completed to date and the environmental analysis that included the point and locations closer to Rodeo. However, the team also identified the limitations to safety and track geometry and that the proposed center platform must be located on a portion of track that is straight. No other locations provide for sufficient track length without also being situated on a curve of the track. Mr. Brush clarified that his inquiries were a matter of procedural documentation required both for satisfying NEPA as well as the CWA Section 404 (b)(1) Guidelines for the disposal of fill. Mr. Brush noted that the location of the facility may be appropriate; however, the document should address and include adequate analysis of alternative locations.

While discussing the effects of the project on aquatic resources, the USACE and EPA also discussed the realignment and restoration of Refugio Creek. Using recent photographs of the site, Serge Stanich explained the proposed restoration of Refugio Creek to include realignment to straighten two 90-degree turns of the creek prior to its crossing under the rail road tracks through three 72-inch culverts. Additionally, an historic culvert and fill crossing, sandbags along the banks, and concrete fill would be removed. The channel would be realigned to include greater diversity with meanders and adjacent wetlands. Under existing conditions, localized flooding occurs during peak events at the current UP crossing. Mr. Brush inquired as to the restoration work that had been completed upstream and what permits had been secured to complete the work. The San Francisco Regional Water Quality Control Board (SFRWQCB) commented that the work had been completed as mitigation for development work in the area. Mr. Brush clarified his concerns stating that including the restoration work for Refugio Creek with the project development may restrict the alternatives for restoring the creek and the available permitting options. Mr. Brush indicated that EPA's preference would be to separate the restoration of the creek from the development of the project so that that the "needs of the creek" could be explored and addressed without influence of the "needs of the development." Jesse Harder explained that the extension of John Muir Parkway will require a crossing of the Northern Channel and the installation of an outfall at Refugio Creek. With the civil improvements that would affect Refugio Creek, restoration and realignment activities of Refugio Creek seemed most prudent to be included under one comprehensive plan.

Conversation at the meeting returned regularly to how the different projects related to each other. Agencies requested additional clarification regarding the development of the HITC and the

future ferry terminal, particularly with respect to the construction of the third platform that will cross over the tracks and may result in fill to the bay and to wetland features. The HDR design team explained that ferry service has been identified as a reasonably foreseeable future project and that the location had been set by WETA. Additionally, to satisfy safety code restriction established by Union Pacific, the California Public Utilities Commission (CPUC), as well as local fire safety code a third access and egress was required. Additionally, the design team is currently evaluating specific location and design alternatives that would further avoid and minimize placement of fill into the bay.

Serge Stanich discussed the potential for the project to affect species listed as threatened or endangered under the state and federal ESA, particularly the salt marsh harvest mouse, clapper rail and black rail. Ben Solveski of the USFWS commented that he did not believe these species were likely present due to the lack of viable habitat but commented that he was most concerned about California red-legged frog (CRLF). Serge Stanich then explained that CLRF was known to exist approximately 1 mile upstream in Refugio Creek on the other side of Interstate 80. However site conditions at the HITC were likely too saline due to the proximity to the bay. Mr. Stanich also noted that while the FTA would be the lead in initiating consultation with the USFWS, the FTA has also indicated that it would allow either the City of Hercules or HDR to act as the official designee in coordinating with the USFWS. Paul Page of the FTA confirmed this statement.

Staff at the SFRWQCB commented that as a responsible agency, the SFRWQCB would make every effort to comment on the EIR/EIS during the public comment period; however, agency staff is overextended and may not be able to do so. SFRWQCB also commented that they would have permitting authority over the project on the disposal of fill as well as stormwater compliance. Serge Stanich responded that the City of Hercules has a municipal stormwater permit and that new municipal stormwater facilities would be consistent with current permitting requirements. Additionally, the project would also require compliance with the State of California's Construction Stormwater Permit and a Storm Water Pollution Prevention Plan would be prepared for the project.

Serge Stanich closed the presentation with a discussion of affected resources of concern to regulatory agencies present, particularly USACE. Wetland delineation and special status species surveys have been completed by a number of consulting firms including Vollmar Consulting, Wetlands and Water Resources, Inc. and WRA. Currently, HDR is compiling all existing environmental documentation and identifying data gaps. Ian Liffman identified himself as the individual at the USACE who verified the Vollmar delineation and he would also be the primary contact for the permitting of the project. Ben Solveski of the USFWS also identified himself as the primary contact for the USFWS.

ACTION ITEMS FROM MEETING

- Expand discussion of alternatives for the proposed project and identify previous environmental documentation completed for tiering.
- Review project description to ensure clear distinction between HITC, Bayfront Development, and Ferry Terminal.
- Coordinate with the USACE to obtain wetland delineation data and/or finalize jurisdictional determination. Develop impact analysis with quantities.
- Confirm needs of bayside platform (ferry, fire code, and public access) and analyze alternatives.
- Coordinate with the USFWS to incorporate technical assistance on development of biological assessment.

Agency Consultation

Agency	Name	Method	Date	Topic
See interagency meeting summary above.		Meeting	11/18/2009	Introduce project to agencies; discussion potential issues and coordination
USFWS	Ryan Olah	E-mail	11/18/2009	USFWS authorized wet season surveys for the project
USFWS	Ben Solvesky	Verbal	12/7/2009	Authorization from USFWS to commence federally listed branchiopod surveys, once access permission was granted
NMFS	Gary Stern	Telephone	2/9/2010	Discussed proposed project and proposed conservation and mitigation measures
BCDC	Bob Batha Ming Yeung	Telephone	3/18/2010	Discussed permitting and coordination processes
USFWS	Ben Solvesky	E-mail	4/8/2010	USFWS received California red-legged frog site assessment report
NMFS	Korie Schaeffer	Telephone	4/12/2010	Discussed the need for eelgrass surveys and impacts to intertidal habitat
USFWS	Ben Solvesky Stephanie Jentsch	Site Visit	4/27/2010	Discussed and toured proposed project site with USFWS
USFWS	Stephanie Jentsch	E-mail	5/6/2010	USFWS sent e-mail allowing discontinuation of federally listed branchiopod surveys
USFWS	Stephanie Jentsch	E-mail	5/20/2010	USFWS received brief meeting summary of 4/27/2010 field site visit
USACE	Ian Liffmann	E-mail	6/24/2010	Comments on Administrative Draft EIR/EIS
USFWS	Chris Nagano	Letter	7/23/2010	Technical assistance

APPENDIX D

State Historic Preservation Office, Native American Heritage Commission and Northwest Information Center Consultation

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

State Historic Preservation Office Consultation

Coordination with the SHPO office is ongoing.

Native American Heritage Commission Consultation

01/20/2010 14:44 FAX 916 657 5390 NAHC 001

STATE OF CALIFORNIA Arnold Schwarzenegger, Governor

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-6251
Fax (916) 657-5390
Web Site www.nahc.ca.gov
e-mail: ds_nahc@pacbell.net

January 20, 2010

Richard Norwood
HDR
2720 Gateway Oaks Drive, Suite 300
Sacramento, CA 95833

Sent by Fax: 916-564-4203
Number of Pages: 2

Re: Proposed Hercules Intermodal Transit Center, Contra Costa County

Dear Ms. Norwood:

A record search of the sacred land file has failed to indicate the presence of Native American cultural resources in the immediate project area. The absence of specific site information in the sacred lands file does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Enclosed is a list of Native Americans individuals/organizations who may have knowledge of cultural resources in the project area. The Commission makes no recommendation or preference of a single individual, or group over another. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated, if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe or group. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at (916) 653-4038.

Sincerely,

Karen Lee

for: Debbie Pilas-Treadway
Environmental Specialist III

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January 19, 2010

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This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed Hercules Intermodal Transit Center, Contra Costa County

Northwest Information Center Consultation

CALIFORNIA HISTORICAL RESOURCES INFORMATION SYSTEM

ALAMEDA
COLUSA
CONTRA COSTA
LAKE
MARIN
MENDOCINO
MONTEREY
NAPA
SAN BENITO
SAN FRANCISCO
SAN MATEO
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http://www.sonoma.edu/nwic

June 8, 2009

NWIC File No.: 08-1320

Sara Morton
Impact Sciences, Inc.
2101 Webster Street, Suite 1825
Oakland, CA 94612

Re: Record search results for the proposed Hercules Intermodal Transit Center, Hercules, Contra Costa, California.

Dear Ms. Morton:

Per your request received by our office on April 28, 2009, a records search was conducted for the above referenced project by reviewing pertinent Northwest Information Center (NWIC) base maps that reference cultural resources records and reports, historic-period maps, and literature for Contra Costa County. Please note that use of the term cultural resources includes both archaeological resources and historical buildings and/or structures.

Review of this information indicates that there has been one cultural resource study that covers approximately 10% of the Hercules Intermodal Transit Center project area (Holman 1993: S-15312). This project area contains no recorded cultural resources. Local, state and federal inventories include one recorded historic district, the Hercules Powder Plant (4547-0003-9999) that may include areas within the proposed project area, This property has a status code of 7R, meaning it was identified in a reconnaissance level survey, but has not been evaluated. In addition to these inventories, the NWIC base maps show no recorded buildings/structures.

At the time of Euroamerican contact the Native Americans that lived in the area were speakers of the Karkin language, part of the Costanoan language family (Levy 1978:485). There are no Native American resources in or adjacent to the proposed project area referenced in the ethnographic literature.

Based on an evaluation of the environmental setting and features associated with known sites, Native American resources in this part of Contra Costa County have been found in areas marginal to the San Pablo Bay shore and inland near intermittent and perennial watercourses. The Hercules Intermodal Transit Center project area is located in a valley inlet adjacent to San Pablo Bay shore, and is located adjacent to Refugio Creek. Given the similarity of one or more of these environmental factors, there is a moderate potential of identifying unrecorded Native American resources in the proposed Hercules Intermodal Transit Center project area.

Review of historical literature and maps indicated the possibility of historic-period archaeological resources within the Hercules Intermodal Transit Center project area. The 1916 USGS Mare Island 15' quadrangle map indicates one or two buildings within the proposed project area. With this in mind, there is a moderate potential of identifying unrecorded historic-period archaeological resources in the proposed Hercules Intermodal Transit Center project area.

The 1959 USGS Mare Island 7.5-minute topographic quadrangle depicts one building or structure within the Hercules Intermodal Transit Center project area. These unrecorded buildings/structures meet the Office of Historic Preservation's minimum age standard that buildings, structures, and objects 45 years or older may be of historical value.

RECOMMENDATIONS:

1) There is a moderate possibility of identifying Native American archaeological resources and a moderate possibility of identifying historic-period archaeological resources in the project area. We recommend a qualified archaeologist conduct further archival and field study to identify cultural resources. Field study may include, but is not limited to, pedestrian survey, hand auger sampling, shovel test units, or geoarchaeological analyses as well as other common methods used to identify the presence of archaeological resources. Please refer to the list of consultants who meet the Secretary of Interior's Standards at http://www.chrisinfo.org.

2) The area of potential effect may contain buildings or structures within the recorded Hercules Powder Plant Historic District (4547-0003-9999), therefore, it is recommended that the agency responsible for Section 106 compliance consult with the Office of Historic Preservation regarding potential impacts to these buildings/structures.

Project Review and Compliance Unit
Office of Historic Preservation
P.O. Box 942896
Sacramento, CA 94296-0001
(916) 653-6624

3) Review for possible historic-period buildings or structures has included only those sources listed in the attached bibliography and should not be considered comprehensive.

4) If archaeological resources are encountered **during construction,** work should be temporarily halted in the vicinity of the discovered materials and workers should avoid altering the materials and their context until a qualified professional archaeologist has evaluated the situation and provided appropriate recommendations. Project personnel should not collect cultural resources. Native American resources include chert or obsidian flakes, projectile points, mortars, and pestles; and dark friable soil containing shell and bone dietary debris, heat-affected rock, or human burials. Historic-period

resources include stone or adobe foundations or walls; structures and remains with square nails; and refuse deposits or bottle dumps, often located in old wells or privies.

5) It is recommended that any identified cultural resources be recorded on DPR 523 historic resource recordation forms, available online from the Office of Historic Preservation's website: http://ohp.parks.ca.gov/default.asp?page_id=1069

Thank you for using our services. Please contact this office if you have any questions, (707) 664-0880.

Sincerely,

Jillian E. Guldenbrein

Jillian E. Guldenbrein
Researcher

APPENDIX E

Hercules ITC Traffic Impact Analysis Report

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

Administrative Draft Report

Hercules Intermodal Transit Center (HITC)

Traffic Impact Analysis

Prepared for:

HDR, Inc

Prepared by:

DKS Associates
TRANSPORTATION SOLUTIONS
1000 Broadway
Suite 450
Oakland, CA 94607-4039

February 10, 2010

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

DKS *Associates*

TRANSPORTATION SOLUTIONS

February 10, 2010

Mr. John Meerscheidt
Senior Environmental Project Manager
HDR, Inc.
1610 Arden Way, Suite 175
Sacramento, CA 95815-4041

Subject: **Hercules Intermodal Transit Center**
Traffic Impact Analysis – Administrative Draft Report

P 09139-000

Dear Mr. Meerscheidt:

DKS Associates is pleased to submit this Administrative Draft Traffic Impact Analysis Report for the proposed Hercules Intermodal Transit Center in Hercules, CA. The report includes an evaluation of potential transportation impacts associated with the proposed project, and makes recommendations to improve parking and vehicular circulation in the study area.

Please do not hesitate to call with any questions regarding this report. DKS has enjoyed being of service on this project.

Sincerely,

DKS *Associates*
A California Corporation

Mark Spencer, P.E.
Principal

1000 Broadway
Suite 450
Oakland, CA 94607-4039

(510) 763-2061
(510) 268-1739 fax
www.dksassociates.com

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

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Hercules Intermodal Transit Center (HITC)

TRAFFIC IMPACT ANALYSIS

EXECUTIVE SUMMARY

This report provides an evaluation of traffic and transportation issues related to the proposed Hercules Intermodal Transit Center (HITC) which includes a new passenger train station on the existing Capitol Corridor line, a bus terminal and parking facilities on the San Pablo Bay shoreline in the City of Hercules, California in Contra Costa County. The project site, shown in **Figure 1**, is located on Bayfront Boulevard on the former Hercules Powder Company property in the City of Hercules, approximately one mile northwest of Interstate 80 (I-80).

While future ferry service is planned for Hercules, the potential for future ferry service is not part of this project. For the purpose of this project, ferry service is being addressed as part of the cumulative condition, section 6.0 of this report.

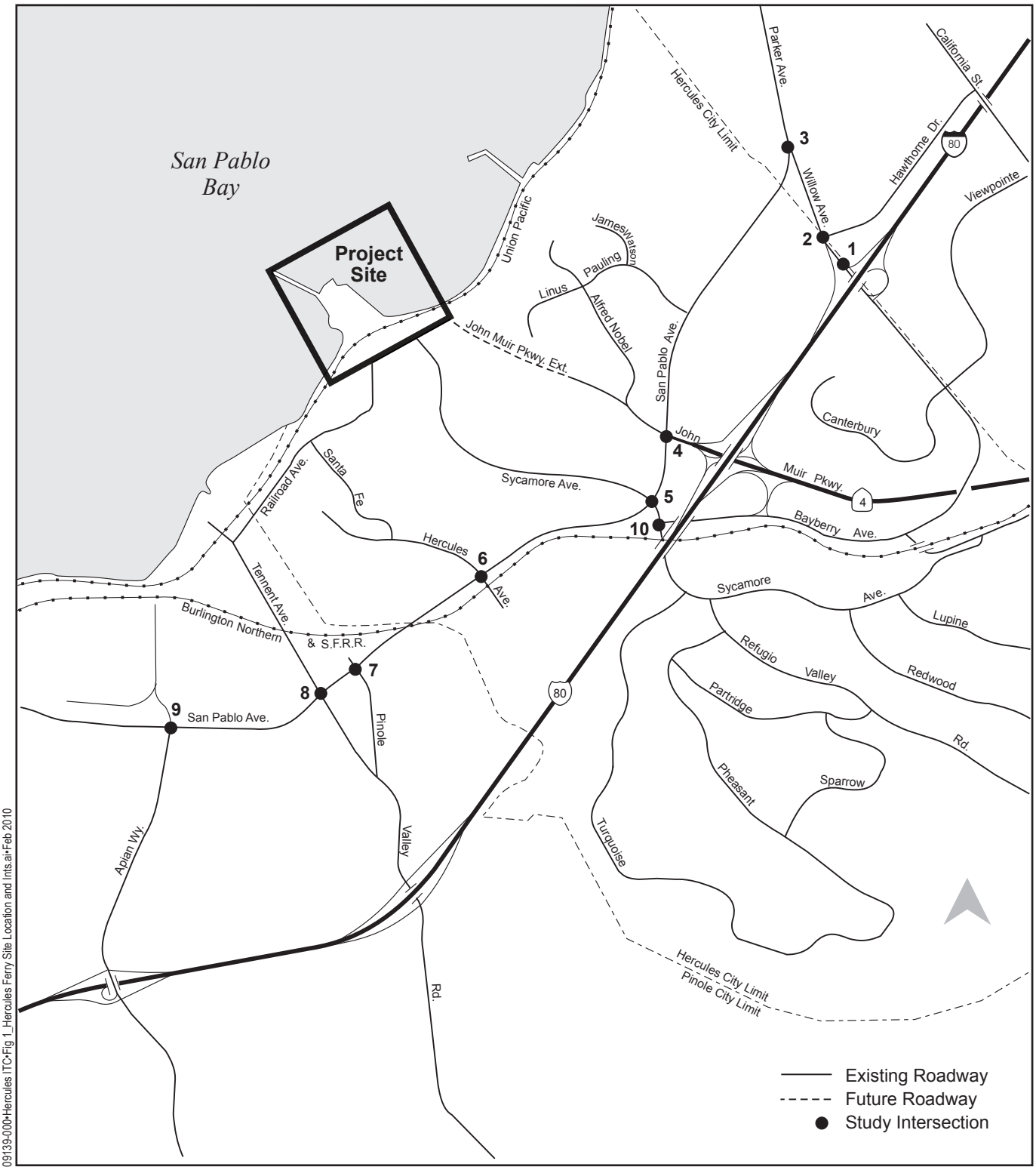
The project study area, which extends beyond the project site itself for the purpose of analyzing potential project impacts, is bounded by Willow Avenue to the north, Apian Way to the south, Interstate 80 to the east and San Pablo Avenue to the west. **Figure 1** illustrates the project site location and roadway network.

Vehicular access to the project site would be provided via John Muir Parkway, Sycamore Avenue and San Pablo Avenue. This report provides a general description of the transportation facilities in the project vicinity and summarizes existing, background, project, cumulative year 2035 (no project) and cumulative year 2035 (with project) conditions within the study area. Particular attention is given to impacts on vehicular, parking, transit, bicycle and pedestrian facilities.

For the purpose of this project, two project alternatives were considered:

Project Alternative 1: The HITC would be located immediately to the east of Hercules Point and west of the point where Refugio Creek enters San Pablo Bay. The site plan for Alternative 1 is shown in **Figure 2**.

Vehicle access would be provided through the extension of John Muir Parkway from its current terminus northeast of Tsushima Drive. Bus and commuter vehicles would access the train station via a transit loop comprising the John Muir Parkway extension and the Refugio Creek Bridge connecting to the extension of Bayfront Boulevard, which would also cross Refugio Creek. In addition, a new pedestrian bridge would be built across the UPRR tracks to access the future Hercules Point open space. All roads would include pedestrian and bicycle facilities.



09139-000•Hercules ITC•Fig 1_Hercules Ferry Site Location and Ints.ai•Feb 2010

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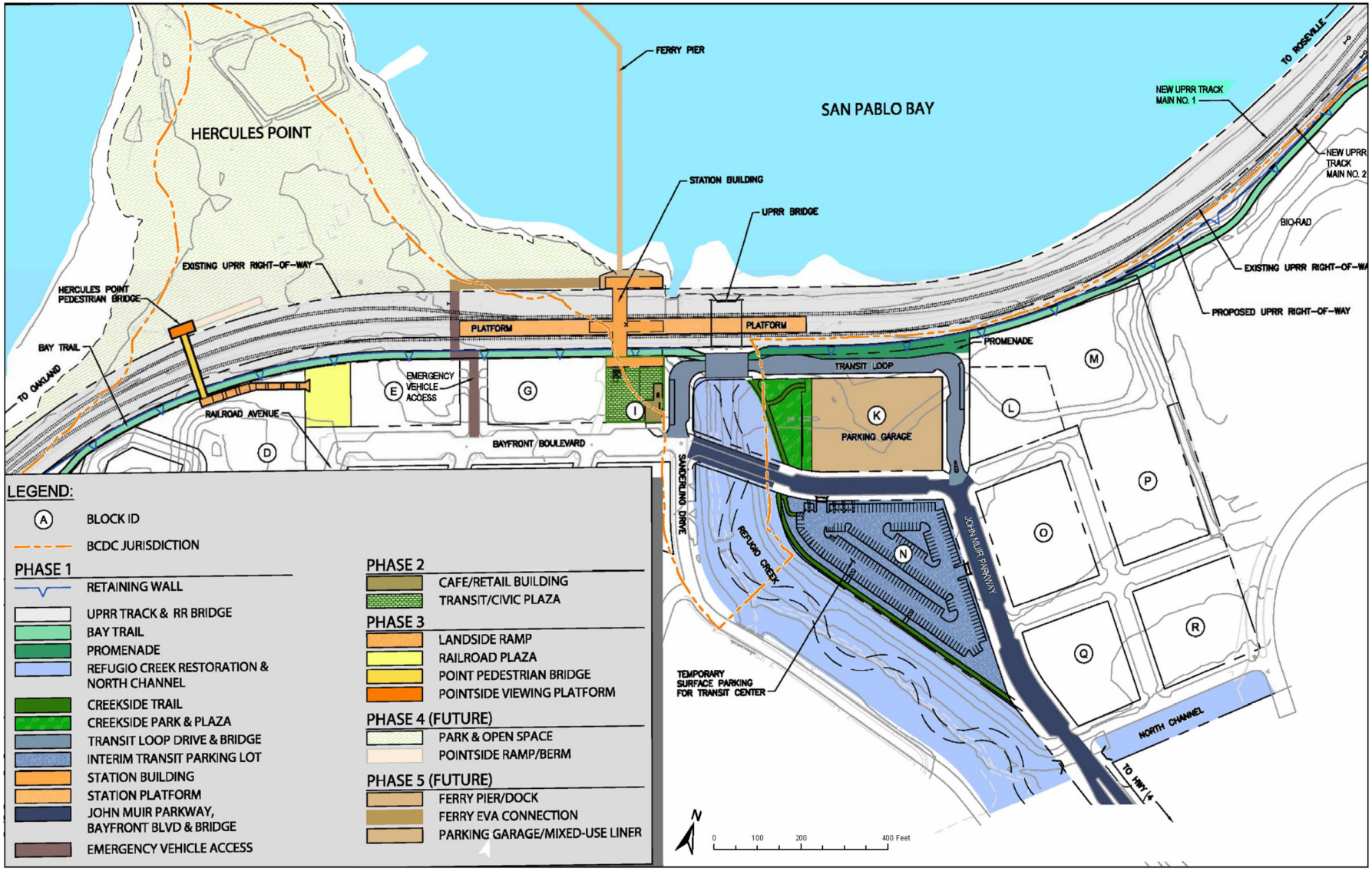
Figure 1
Site Location and Study Intersections



Source: HDR, Inc.

09139-000•Hercules ITC•Fig 2_Alternative 1.ai•Feb 2010

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Figure 2
Alternative 1 Project Site Plan

A temporary surface parking lot located off John Muir Parkway, just east of Refugio Creek, would provide access for park-and-ride passengers. This alternative is hereafter referred to as the Project Alternative 1.

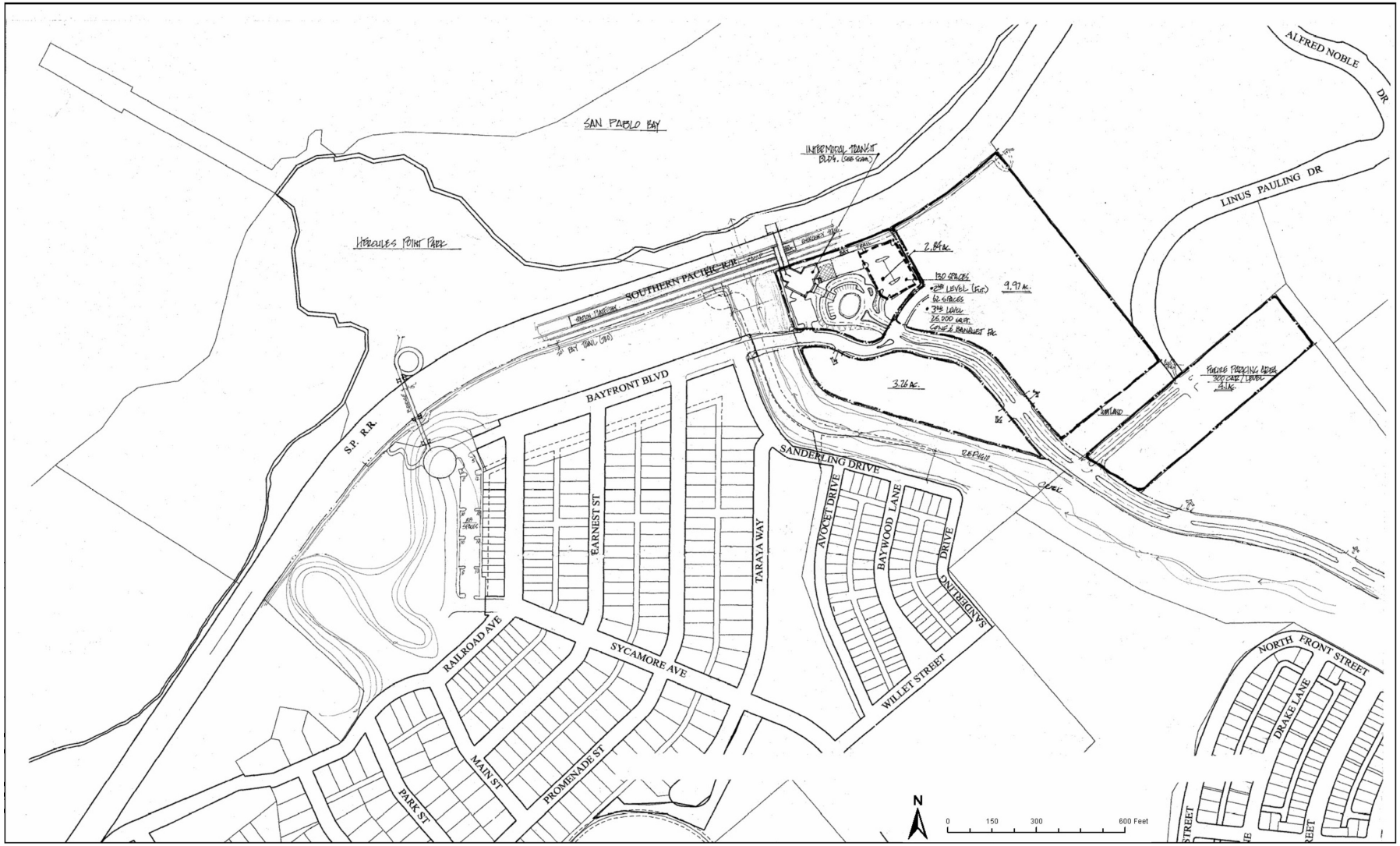
Project Alternative 2: Under this alternative, the HITC would be located immediately to the east of Refugio Creek along the John Muir Parkway extension near its intersection with Bayfront Boulevard.

Two looped driveways from John Muir Parkway would provide separate vehicle access for commuter bus/paratransit drop-off and turnaround and one for passenger vehicle drop-off. Pedestrian access would be provided at the eastern end of the train platform. This alternative includes a parking structure located east of Refugio Creek. The site plan for Alternative 2 is shown in **Figure 3**. This project alternative is hereafter referred to as the Project Alternative 2.

Table ES-1 summarizes the intersection operation for all study intersections during the A.M. and P.M. peak hour. **Table ES-2** summarizes the intersection operation for all study intersections during the P.M. peak hour.

The proposed project would not result in significant transportation impacts at the study intersections. Several improvement measures have been recommended to improve parking and areawide circulation.

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center



Source: HDR, Inc.

09139-000•Hercules ITC•Fig 3_Alternative 2.ai•Feb 2010

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TRANSPORTATION SOLUTIONS

Figure 3
Alternative 2 Project Site Plan

TABLE ES 1 INTERSECTION LEVEL OF SERVICE SUMMARY – A.M. PEAK

Int #	Intersection Name	Existing		Background		Project		Cumulative 2035 "No Project"		Cumulative 2035 "With Project"	
		V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
1	Willow Ave /I-80 WB off-ramp	0.208	A	0.221	A	0.221	A	0.591	A	0.591	A
2	Willow Ave/Hawthorne Dr	0.284	A	0.301	A	0.301	A	0.781	C	0.781	C
3	San Pablo Ave/Willow Ave	0.244	A	0.218	A	0.22	A	0.806	D	0.807	D
4	San Pablo Ave/John Muir Pkwy	0.427	A	0.513	A	0.524	A	0.764	C	0.78	C
5	San Pablo Ave/Sycamore Ave	0.674	B	0.927	E	0.933	E	0.859	D	0.865	D
6	San Pablo Ave/Hercules Ave	0.507	A	0.598	A	0.598	A	0.758	C	0.758	C
7	San Pablo Ave/Pinole Valley Rd	0.378	A	0.48	A	0.48	A	0.889	D	0.889	D
8	San Pablo Ave/Tennent Ave	0.536	A	0.651	B	0.651	B	**1.138**	**F**	**1.138**	**F**
9	San Pablo Ave/Appian Wy	0.297	A	0.36	A	0.632	A	0.624	B	0.626	B
10	Sycamore Ave/Bayberry Ave	0.808	D	**0.975**	**E**	**0.979**	**E**	0.656	B	0.66	B

Notes: V/C: Volume to Capacity Ratio LOS: Level of Service

Intersections operating below acceptable LOS are bold.

TABLE ES 2 INTERSECTION LEVEL OF SERVICE SUMMARY – P.M. PEAK

Int #	Intersection Name	Existing		Background		Project		Cumulative 2035 "No Project"		Cumulative 2035 "With Project"	
		V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
1	Willow Ave /I-80 WB off-ramp	0.280	A	0.308	A	0.308	A	0.938	E	0.938	E
2	Willow Ave/Hawthorne Dr	0.219	A	0.241	A	0.241	A	0.733	C	0.733	C
3	San Pablo Ave/Willow Ave	0.438	A	0.442	A	0.445	A	0.712	C	0.712	C
4	San Pablo Ave/John Muir Pkwy	0.594	A	0.706	C	0.720	C	**1.239**	**F**	**1.253**	**F**
5	San Pablo Ave/Sycamore Ave	0.616	B	0.830	D	0.833	D	**1.103**	**F**	**1.110**	**F**
6	San Pablo Ave/Hercules Ave	0.430	A	0.534	A	0.534	A	0.755	C	0.755	C
7	San Pablo Ave/Pinole Valley Rd	0.476	A	0.582	A	0.582	A	**1.108**	**F**	**1.108**	**F**
8	San Pablo Ave/Tennent Ave	0.559	A	0.709	C	0.709	C	**1.259**	**F**	**1.259**	**F**
9	San Pablo Ave/Appian Wy	0.565	A	0.683	B	0.683	B	1.366	F	1.366	F
10	Sycamore Ave/Bayberry Ave	0.865	D	**1.098**	**F**	**1.098**	**F**	0.762	C	0.762	C

Notes: **V/C: Volume to Capacity Ratio** **LOS: Level of Service**

Intersections operating below acceptable LOS are bold.

1.0 INTRODUCTION

This report provides an evaluation of traffic and transportation issues related to the proposed intermodal transit center, which includes a new passenger train station on the existing Capitol Corridor line, a bus terminal and parking facilities on the San Pablo Bay shoreline in the City of Hercules, California in Contra Costa County. The project site, shown in **Figure 1**, is located on Bayfront Boulevard on the former Hercules Powder Company property in the City of Hercules, approximately one mile northwest of Interstate 80 (I-80).

Note that a potential future ferry service is not part of this project. For the purpose of this project, ferry service is being addressed as part of the cumulative condition, section 6.0 of this report.

The project location, study intersections, and surrounding roadway network are illustrated in **Figure 1**. The alternative project site plans are shown in **Figure 2** and **Figure 3**.

The transportation analysis represented in this study follows review and incorporation, where appropriate, of data provided by City of Hercules staff and the following transportation studies:

1. Hercules Bayfront Project EIR – Transportation and Circulation. *Administrative Draft Report*. Prepared for the City Hercules, by Fehr & Peers, December 11, 2009.

Consistent with prior studies in Hercules, the following 10 intersections were analyzed as part of the proposed ITC traffic impact analysis:

1. Willow Avenue/I-80 WB Ramp
2. Willow Avenue/Hawthorne Drive
3. San Pablo Avenue/Willow Avenue
4. San Pablo Avenue/John Muir Parkway
5. San Pablo Avenue/Sycamore Avenue
6. San Pablo Avenue/Hercules Avenue
7. San Pablo Avenue/Pinole Valley Road
8. San Pablo Avenue/Tennent Avenue
9. San Pablo Avenue/Appian Way
10. Sycamore Avenue/Bayberry Avenue

Operations of these intersections were analyzed during the weekday A.M. (7:00 A.M. – 9:00 A.M.) and weekday P.M. (4:00 P.M. – 6:00 P.M.) peak periods and evaluated for the following scenarios:

Scenario 1: Existing Condition: Level of Service based on existing peak hour volumes and existing intersection configurations.

Scenario 2: Future Baseline Condition: Existing peak-hour volumes plus growth from approved developments in the vicinity of the project. Approved developments may or may not be constructed as of this study but were approved or built after the existing

scenario traffic counts were taken and would be completed prior to the proposed project.

Scenario 3: Project Condition: Future Baseline Scenario plus the project-generated traffic estimated for the proposed intermodal transit center.

Scenario 4: Cumulative "No Project" Condition: Level of service based on forecasted growth estimated by year 2035.

Scenario 5: Cumulative with Project Condition: Level of service based on Cumulative Year 2035 Baseline No Project volumes plus traffic generated by the proposed project.

In addition to intersection analysis, an evaluation of the site plan, on-site circulation, transit service, access and egress points, proposed parking supply and expected demand is contained in this report.

The following section presents an analysis of the existing conditions of various transportation system components. The components include roadways, intersections, transit service, bicycles, pedestrians, and parking.

2.0 EXISTING TRANSPORTATION SYSTEM

This section summarizes the existing conditions in the study area including a description of the roadway network, vehicular traffic conditions, and operational characteristics within the project vicinity.

Roadway Network

Regional access is provided by Interstate 80 and California State Route 4. Local access is provided by primarily by San Pablo Avenue, John Muir Parkway, and Sycamore Avenue along with other connecting roadways. These roadways are described below and are illustrated in **Figure 1**.

2.1 Regional Access

Interstate 80 is a six- to eight-lane freeway that travels in a northeast-southwest direction through the City of Hercules. Located just east of the project site, Interstate 80 connects to California State Route 4 to the north, and serves as the main artery to Oakland and San Francisco to the south (west). HOV lanes are provided in both directions south of SR-4, and are under construction from SR-4 to the Carquinez Bridge. Local access is provided off of Willow Avenue and Sycamore Avenue. In the vicinity of the project, the peak hour traffic volume is approximately 12,200 vehicles per hour and the average annual daily traffic (AADT) is 182,000 vehicles per day (Caltrans, 2008).

California State Route 4 is a 4-lane expressway east of I-80 that travels in an east-west direction. West of Interstate 80, the expressway terminates and becomes John Muir Parkway just northeast of the project site. Local access is provided off of John Muir Parkway. In the vicinity of the project, the peak hour traffic volume is approximately 3,300 vehicles per hour and the average annual daily traffic Is 37,000 vehicles per day (Caltrans, 2008[1]).

2.2 Local Access

San Pablo Avenue. San Pablo Avenue extends through the City of Hercules in a north-south direction, running parallel to I-80 throughout western Contra Costa County and Alameda County. San Pablo Avenue serves as a reliever route to I-80, which is one of the most congested roadways in the Bay Area. Within the City of Hercules, San Pablo Avenue is a four lane arterial, with separate left turn lanes at major intersections. The posted speed limit is 45 miles per hour (mph).

John Muir Parkway. John Muir Parkway is a four-lane extension of the SR-4 terminus, located west of I-80. John Muir Parkway serves as a local roadway between the North Shore Business Park and San Pablo Avenue. East of San Pablo Avenue, access is provided to I-80 eastbound and westbound, and to SR-4 eastbound. John Muir Parkway has recently been extended west to the Hercules Intermodal Transit Center property line and a new bridge has

[1] Traffic volumes are for the freeway segment east of the Pinole Valley interchange and west of the State Route 4 interchange. http://traffic-counts.dot.ca.gov/2008all/r071-80i.htm

been constructed from John Muir Parkway to Tsushima Drive. SR-4 is commonly known as John Muir Parkway from the City of Hercules to the City of Martinez. John Muir Parkway has a posted speed limit of 35 mph.

Sycamore Avenue. This arterial generally runs east-west between San Pablo Avenue and SR-4. West of San Pablo Avenue, Sycamore Avenue is a two lane collector with a posted speed limit of 25 mph. Exclusive left turn lanes are provided at major intersections, and on-street parking is provided west of San Pablo Avenue. Sycamore Avenue has most of the retail/commercial activity in the City along its frontage.

Willow/Bayberry Avenue. Willow/Bayberry Avenue is a two-lane collector roadway primarily serving I-80 eastbound off-ramp traffic destined for Hercules. Willow Avenue runs east-west and currently extends between Sycamore Avenue and Palm Avenue. Vehicles exiting I-80 turn right onto Willow Avenue westbound to the Sycamore Avenue intersection. On-street parking is prohibited along the entire length of Willow Avenue. Willow Avenue is a four-lane arterial street that begins at San Pablo Avenue and ends at Sycamore Avenue. Willow Avenue provides access to I-80. It has a posted speed limit of 35 mph.

Hercules Avenue. Hercules Avenue is a two-lane local street serving primarily residential areas in the City of Hercules. In the vicinity of the project, Hercules Avenue connects Railroad Avenue to San Pablo Avenue.

Railroad Avenue. Railroad Avenue is a two-lane local street connecting Santa Fe and Bayfront Boulevard. This street currently fronts the proposed project site and is the western border of the existing housing development.

Santa Fe. Santa Fe is a two-lane local street serving residential areas that are in the vicinity of the project. This street connects Railroad Avenue to Hercules Avenue.

2.3 Transit Service[2]

The Western Contra Costa Transit Authority (WestCAT) has jurisdiction over public transit in Western Contra Costa County, including the City of Hercules. Currently, no service is provided to the waterfront area where the intermodal transit center is proposed to be located. However, most WestCAT bus routes operate out of the Hercules Transit Center which is located about one mile away at the junction of Interstate 80 and California State Route 4. Approximately 13 local, express, regional, and transbay routes are operated out of the.

Transbay Service. The Lynx is a new commuter bus route that serves the Transbay Terminal in San Francisco directly from the Hercules Transit Center. The Lynx also provides service to the Victoria by the Bay neighborhood near Rodeo. Weekday only service is provided at 15- to 30-minute headways from Hercules to San Francisco between 5:00 A.M. to 8:20 A.M. and from San Francisco to Hercules between 5:55 A.M. to 9:15 A.M. In the P.M., service is

[2] Transit service schedule and maps based on timetables effective August 3, 2009. www.westcat.org/schedules/index.html

provided from Hercules to San Francisco[3] between 3:30 to 6:50 P.M. and from San Francisco to Hercules between 3:30 P.M. and 7:45 P.M.

Regional Service. The Martinez Link 30Z is a regional bus route that provides service to the Amtrak station and VA Hospital in Martinez, and the El Cerrito del Norte BART station via the Hercules Transit Center. Only weekday service is provided at 30 to 40-minute headways during commute times and 1-hour headways at all other times between 6:24 A.M. and 6:41 P.M.

Line C: Contra Costa College shuttle provides weekday only service is provided at 60-minute headways during commute times and 80-minute headways at all other times between 7:25 A.M. and 7:48 P.M. in the westbound direction and from 7:56 A.M. to 8:21 P.M. in the eastbound direction.

Express Service. WestCAT operates express service between the Hercules Transit Center and the Richmond BART Station and El Cerrito del Norte BART station, respectively.

Route JR/JL provides weekday service at 15- to 30-minute headways from 4:46 A.M. to 11:17 P.M. in the southbound direction. Weekend service is provided at 40-minute headways from 6:03 A.M. to 9:58 P.M. on Saturdays, and from 7:24 A.m. to 6:44 P.M. on Sundays.

In the northbound direction, weekday service is provided starting at 4:39 A.M. (from San Pablo/Oakridge) and continuing from the BART Del Norte Station at 5:17 A.M. until 12:05 A.M. Weekend service is provided at 40-minute headways from 6:40A.M. to 10:40 P.M. on Saturdays, and from 8:03 A.M. to 7:21 P.M. on Sundays.

JR travels via Richmond Parkway and Blume Drive and JL travels via Lakeside Drive.

Transfers to and from BART trains are coordinated with the schedule.

Route JX/JPX provides weekday service at 15- to 60-minute headways from 5:47 A.M. to 7:50 P.M. in the northbound direction. In the northbound direction, weekday service is provided from 5:24 A.M. to 7:41 P.M.

Local Service. Local service throughout the City of Hercules is provided from the Hercules Transit Center via eight bus routes. Destinations include the Hilltop Mall Shopping Center, the Richmond Parkway Transit Center, east Hercules, Rodeo, and Crockett. All routes run on weekdays only with the exception of Route 11 to Crockett/Rodeo (weekdays and Saturday) and Route 19 to Hilltop Mall (Saturday only).

[3] Service begins at the Bio Rad Stop at 3:30 p.m. and 4:00 p.m., continues at 4:05 p.m. from Willow.

2.4 Bicycle Network and Pedestrian Facilities

The existing bicycle system[4] consists of three classifications of bicycle facilities:

- Class I facilities (bike path) – are completely separated, with paved right of way (shared with pedestrians) which excludes general motor vehicle traffic.
- Class II facilities (bike lane) – provides a striped and stenciled lane for one-way bike travel on a street or highway.
- Class III facilities (bike route) – a shared use roadway with motor vehicle traffic and is only identified by signage.

In the vicinity of the project location, bicycle lanes are provided along San Pablo Avenue in Hercules. The proposed 2009 Countywide Bicycle and Pedestrian Plan[5] includes existing and planned bikeways with the City of Hercules, including Class I facilities along San Pablo Avenue and John Muir Parkway. **Appendix A** includes the bikeway network for the City of Hercules.

The pedestrian network consist of sidewalks, crosswalks and curb ramps provided throughout the residential neighborhood surrounding the proposed site, and pedestrian push button signals are provided at the signalized intersections along San Pablo Avenue.

The Shoreline Trail runs adjacent to the railroad track near the project site.

2.5 Intersection Level of Service Methodology

To evaluate the existing traffic conditions the Level of Service (LOS) was evaluated at critical intersections using the Contra Costa Transportation Authority Level of Service Methodology (CCTALOS).

The Contra Costa Transportation Authority has adopted the Critical Lane Volume Planning Method described in Transportation Research Circular 212 to evaluate intersection levels of service (Transportation Research Board, 1980). The County has updated Circular 212 procedures to increase intersection capacity to 1,800 vehicles per hour from 1,500 vehicles per hour to account for local driving conditions (Contra Costa Transportation Authority, 1992a). Intersection levels of service using the critical lane concept are based on the volume of conflicting traffic (generally through movements versus opposing left turns) at the intersection during the peak hour of travel demand.

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[4] Based on the 2003 Countywide Bike and Pedestrian Plan. www.ccta.net/EN/main/bike/countywide.html

[5] 2009 Contra Costa Countywide Bicycle and Pedestrian Plan. Proposal for Adoption. September 17, 2009. http://www.ccta.net/assets/documents/Bike~and~Ped/CBPP%20%20I%20%20Admin%20final_08-26-09.pdf

2.6 Level of Service Definition

Level of service (LOS) is a common measure of traffic operations using letters A through F to indicate the amount of congestion and delay. LOS A is free flow conditions, LOS D is typically considered acceptable for peak hour traffic periods in urban areas, LOS E is near or at capacity, and LOS F represents congested conditions above capacity.

The correlation between volume-to-capacity (v/c) ratios for signalized intersections is contained in **Table 1.**

TABLE 1 SIGNALIZED INTERSECTION LEVEL-OF-SERVICE THRESHOLDS

Level of Service (LOS)	Typical Operating Conditions	Volume to Capacity (V/C) Ratio
A	Describes a condition where the approach to an intersection appears quite open and turning movements are made easily. Little or no delay is experienced. No vehicles wait longer than one red traffic signal indication. The traffic operation can generally be described as excellent.	0.00-0.60
B	Describes a condition where the approach to an intersection is occasionally fully utilized and some delays may be encountered. Many drivers begin to feel somewhat restricted within groups of vehicles. The traffic operation can generally be described as very good.	0.61-0.70
C	Describes a condition where the approach to an intersection is often fully utilized and back-ups may occur behind turning vehicles. Most drivers feel somewhat restricted, but not objectionably so. The driver occasionally may have to wait more than one red traffic signal indication. The traffic operation can generally be described as good.	0.71-0.80
D	Describes a condition of increasing restriction causing substantial delays and queues of vehicles on approaches to the intersection during short times within the peak period. However, there are enough signal cycles with lower demand such that queues are periodically cleared, thus preventing excessive back-ups. The traffic operation can generally be described as fair.	0.81-0.90
E	Capacity occurs at Level of Service E. It represents the most vehicles that any particular intersection can accommodate. At capacity there may be long queues of vehicles waiting upstream of the intersection and vehicles may be delayed up to several signal cycles. The traffic operation can generally be described as poor.	0.91-1.00
F	Level of Service F represents a jammed condition. Back-ups from locations downstream or on the cross street may restrict or prevent movement of vehicles out of the approach under consideration. Hence, volumes of vehicles passing through the intersection vary from signal cycle to signal cycle. Because of the jammed condition, this volume would be less than capacity.	1.01+

Source: Transportation Research Board, Circular 212, 1980.

2.7 Significance Criteria

In the City of Hercules, LOS D or better (LOS A, B, C or D) is the citywide standard for traffic operating conditions during peak hours on arterial streets and at signalized intersections. LOS D is the target service level most frequently adopted by jurisdictions in urban areas. However, the City has adopted LOS E as the target service level for signalized intersections on San Pablo Avenue.

The City of Hercules defines a traffic impact as significant if the addition of the project traffic causes an intersection operating at an acceptable LOS to operate at a lower LOS.

3.0 EXISTING CONDITION

Intersection turning movement counts for the A.M. and P.M. peak hours were provided by City of Hercules staff.

Figure 4 illustrates the current lane geometry and traffic control at each of the study area intersections. **Figure 5** illustrates the existing traffic volumes at each of the study intersections. The intersections and their corresponding existing levels of service are presented in **Table 2. Appendix B** includes the detailed level of service analysis sheets, including the weekday A.M. and P.M. peak hours.

TABLE 2 EXISTING CONDITION LEVEL OF SERVICE SUMMARY

Int #	Intersection Name	A.M. PEAK		P.M. PEAK	
		V/C	LOS	V/C	LOS
1.	Willow Avenue /I-80 WB off-ramp	0.208	A	0.280	A
2.	Willow Avenue/Hawthorne Drive	0.284	A	0.219	A
3.	San Pablo Avenue/Willow Avenue	0.244	A	0.438	A
4.	San Pablo Avenue/John Muir Parkway	0.427	A	0.594	A
5.	San Pablo Avenue/Sycamore Avenue	0.674	B	0.616	B
6.	San Pablo Avenue/Hercules Avenue	0.507	A	0.430	A
7.	San Pablo Avenue/Pinole Valley Road	0.378	A	0.476	A
8.	San Pablo Avenue/Tennent Avenue	0.536	A	0.559	A
9.	San Pablo Avenue/Appian Way	0.297	A	0.565	A
10.	Sycamore Avenue/Bayberry Avenue	0.808	D	0.865	D

Notes: V/C: Volume to Capacity Ratio **LOS: Level of Service**

3.1 Intersection Operation

According to the City of Hercules intersection level of service standards, all study intersections operate at acceptable levels of service for the existing conditions. Although several intersections operate at LOS A, there are times when queues lead to delays at intersections. These delays are not reflected in an analysis based on the CCTA LOS methodology.

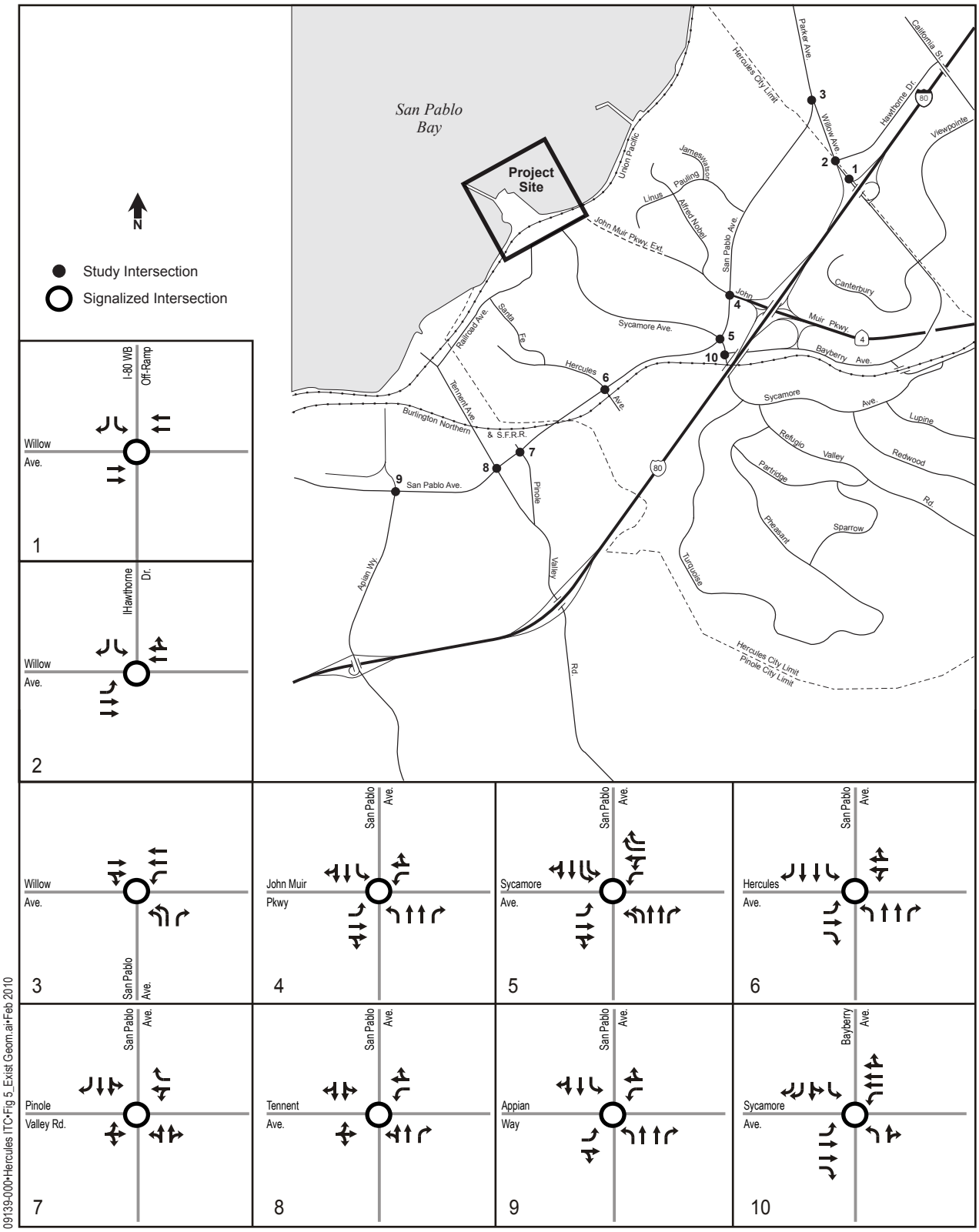

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Figure 4
Existing Study Intersections and Traffic Control

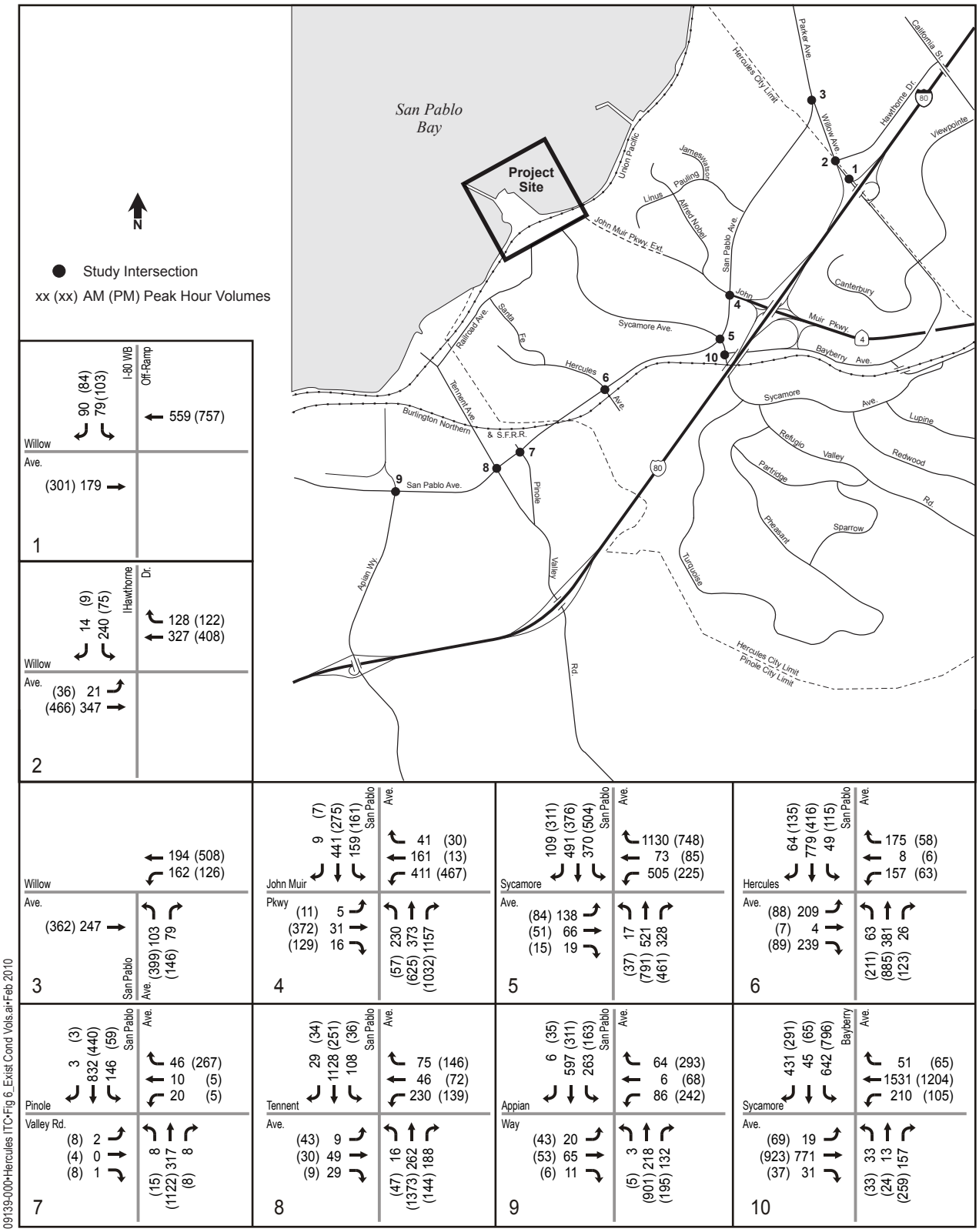

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Figure 5
Existing Conditions Peak Hour Volumes

4.0 FUTURE BASELINE CONDITION

This section discusses the traffic operating conditions at the study intersections under the future baseline scenario. The future baseline scenario includes the traffic expected to be generated by projects approved by the City of Hercules prior to the completion of the proposed project as well as those already built and occupied after the existing condition traffic counts were completed.

To obtain the intersection turning movement volumes for the future baseline scenario, forecast results from the Contra Costa County Transportation Authority's (CCTA) countywide travel demand model were analyzed. By virtue of the model forecast results, the growth factors for the intersection approaches on San Pablo Avenue and Sycamore Avenue were different from all other approaches and these are summarized in **Table 3**. Using these growth factors, the intersection turning movement volumes were factored up to year 2010 levels as illustrated in the following equation:

Future baseline scenario turning movement volumes = existing turning movement counts * (2010 model year link demand / 2006 interpolated model year link demand)

TABLE 3 FUTURE BASELINE CONDITION LINK DEMAND GROWTH FACTORS

Street	2006-2010 Annual Growth	2006-2010 P.M. Annual Growth
San Pablo Avenue	6.4%	6.4%
Sycamore Avenue	9.2%	9.2%
Other Streets	1.5%	2.4%

Figure 6 illustrates the future baseline scenario peak hour volumes. Intersection operational levels of service along with their associated delays and volume-to-capacity ratios are summarized in **Table 4**.

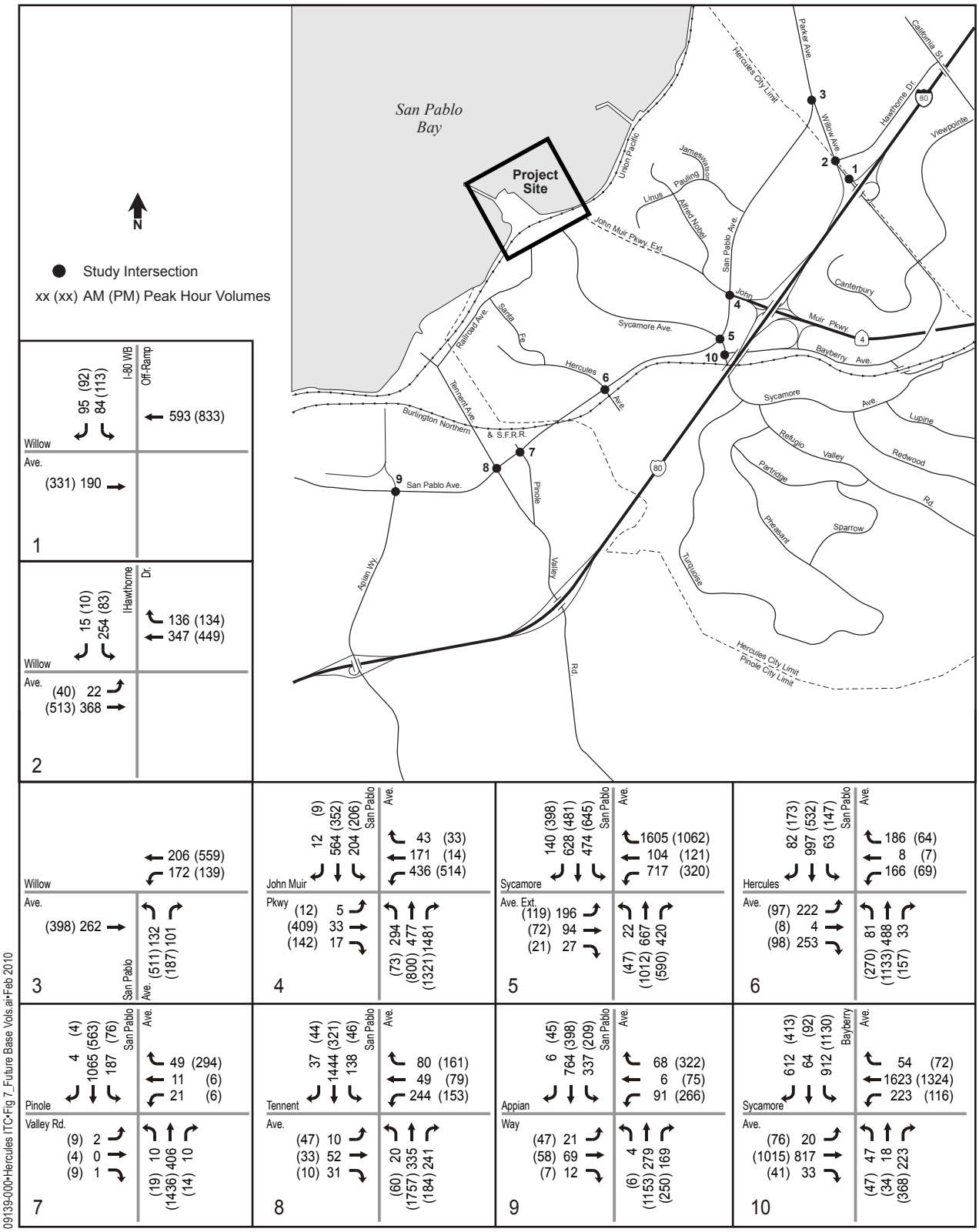

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Figure 6
Future Baseline Conditions Peak Hour Volumes

TABLE 4 FUTURE BASELINE CONDITION - LEVEL OF SERVICE SUMMARY

Int #	Intersection Name	A.M. PEAK		P.M. PEAK	
		V/C	LOS	V/C	LOS
1.	Willow Avenue /I-80 WB off-ramp	0.221	A	0.308	A
2.	Willow Avenue/Hawthorne Drive	0.301	A	0.241	A
3.	San Pablo Avenue/Willow Avenue	0.218	A	0.442	A
4.	San Pablo Avenue/John Muir Parkway	0.513	A	0.706	C
5.	San Pablo Avenue/Sycamore Avenue	0.927	E	0.830	D
6.	San Pablo Avenue/Hercules Avenue	0.598	A	0.534	A
7.	San Pablo Avenue/Pinole Valley Road	0.480	A	0.582	A
8.	San Pablo Avenue/Tennent Avenue	0.651	B	0.709	C
9.	San Pablo Avenue/Appian Way	0.360	A	0.683	B
10.	Sycamore Avenue/Bayberry Avenue	0.975	E	1.098	F

Notes: **V/C: Volume to Capacity Ratio** **LOS: Level of Service**
Intersections operating below acceptable LOS are bold.

4.1 Intersection Analysis

All study intersections would continue to operate at acceptable levels of service under the future baseline scenario with one exception:

- Sycamore Avenue/Bayberry Avenue

The Sycamore Avenue/Bayberry Avenue intersection would operate at LOS E during the A.M. peak hour and LOS F during the P.M. peak hour.

Appendix B includes the detailed level of service analysis sheets, including the weekday A.M. and P.M. peak hours.

5.0 PROJECT SCENARIO

As part of this analysis, DKS reviewed rail and bus ridership forecasts projections prepared by Fehr & Peers[6] for the Hercules Intermodal Transit Center. These projections were assumed to take into account buildout of the Hercules Intermodal Transit Center, corresponding to year 2035. For the purpose of this analysis, ridership projections for the ferry terminal were not taken into account, as the ITC project consist only of rail and bus services.

5.1 Trip Generation and Mode of Access

Based on the projections prepared by Fehr & Peers, the daily rail ridership would produce 837 daily trips, with 232 A.M. peak period and 292 P.M. peak period daily boardings.

The mode of access table, as shown in **Table 5**, details how rail passengers are forecasted to access the intermodal transit center during the A.M. peak period. Note that the mode of access data is representative of the A.M. peak period (not peak hour) as it is the critical peak period in terms of peak parking demand. Assuming the percent splits for each mode and the estimated number of P.M. peak period boardings, DKS generated P.M. peak boardings for each mode. **Table 5** list the number of rail boardings by mode access.

TABLE 5 RAIL BOARDINGS BY MODE OF ACCESS

Mode	% Boardings	# of Boardings Peak Period	
		A.M. [1]	P.M.
Drive Alone	38.6%	90	113
Dropped Off/Picked Up	23.1%	54	67
Walk	16.5%	38	48
Bike	11.5%	27	34
Transit	2.45	6	7
Carpool[2]	7.9%	18	23
Total	100%	232	292

Source: Fehr & Peers, November 2009.

Notes:
1. # of boardings for the A.M. peak period were derived from the Fehr & Peers Memorandum. December 2009.
2. Assumes a 2.5 occupancy per vehicle.

From the mode of access table, the peak period automobile trip generation, including park and ride, and kiss-and-ride trips, can be forecasted and distributed onto the local roadway

[6] Hercules Transit Center Rail and Ferry Ridership and Parking Forecasts Memorandum. December 9, 2009. Fehr & Peers Transportation Consultants.

network based on prevailing travel patterns and land uses. Of the 232 A.M. peak period, approximately 157 are automobile trips. During the P.M. peak period, of the 292 P.M. peak period daily boardings approximately 196 are automobile trips.

5.2 Trip Distribution and Assignment

The direction of approach and departure of project trips of the proposed intermodal transit center was provided by Fehr & Peers and reviewed by DKS Associates for use in this analysis. As shown in **Table 6,** trips coming from the north or south would access the intermodal transit center via San Pablo Avenue.

TABLE 6 HERCULES ITC TRIP DISTRIBUTION

Origin/Destination	Percent Distribution to/from Parcel K garage
San Pablo Avenue North	10%
Interstate 80 North	10%
State Route 84 East	5%
Refugio Valley Via Palm	5%
Refugio Valle via Willow	15%
I-80 South	10%
San Pablo Avenue South	10%
Hercules Residential	35%

Source: Fehr & Peers. Data emailed to DKS January 14, 2010.

After the trip distribution was established, DKS reviewed assignment of the ITC trips as prepared by Fehr & Peers. Based on the ITC project trip generation, trip distribution and trip assignment, the proposed project would generate 40 A.M. peak hour trips, and 71 P.M. peak hour trips. The proportion of these trips that would travel through the study intersections was used for the intersection LOS analysis under the project condition.

Figure 7 illustrates the project trip assignment at the study intersections and **Figure 8** shows the resulting project scenario intersection volumes.

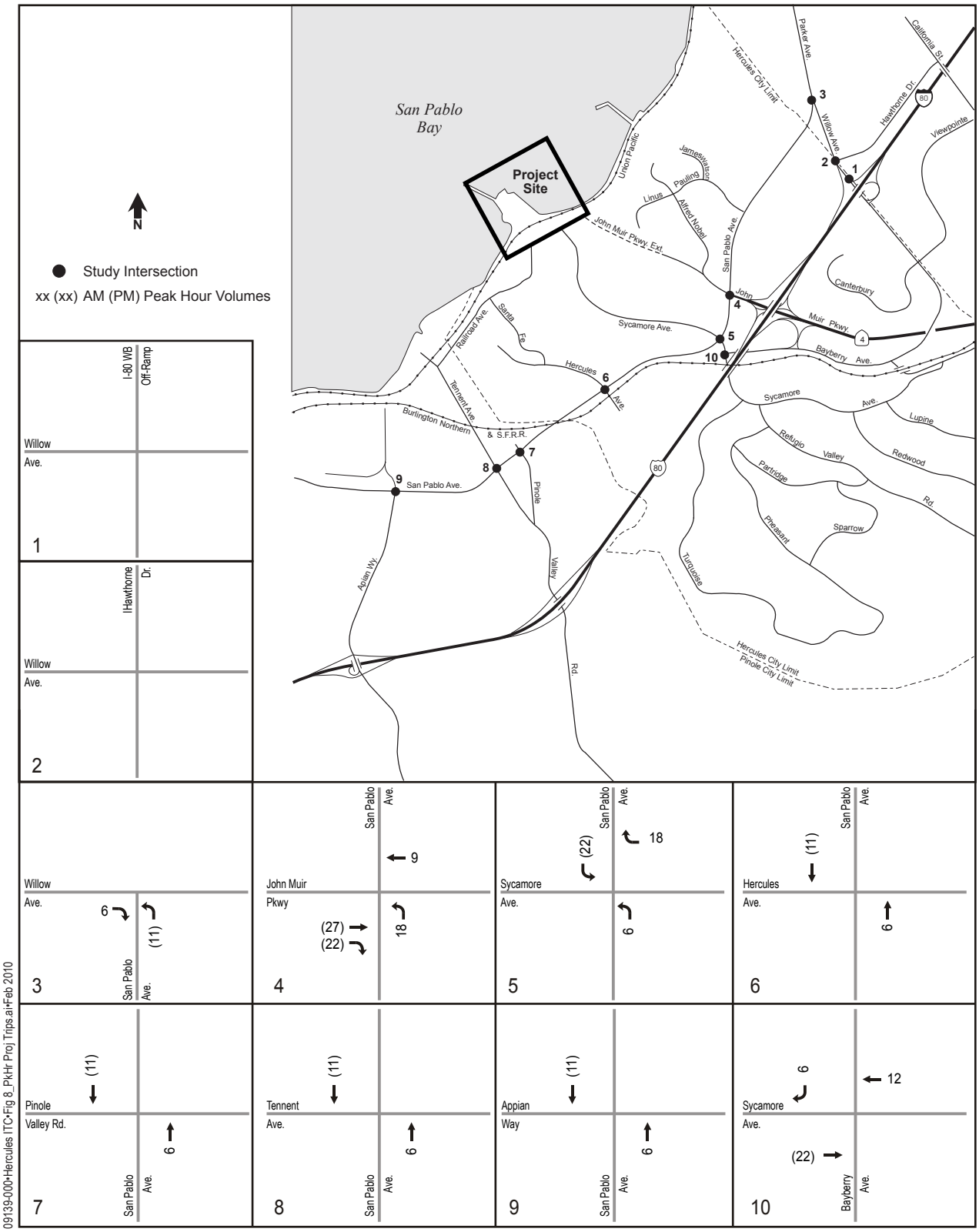

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Figure 7
Peak Hour Project Trips

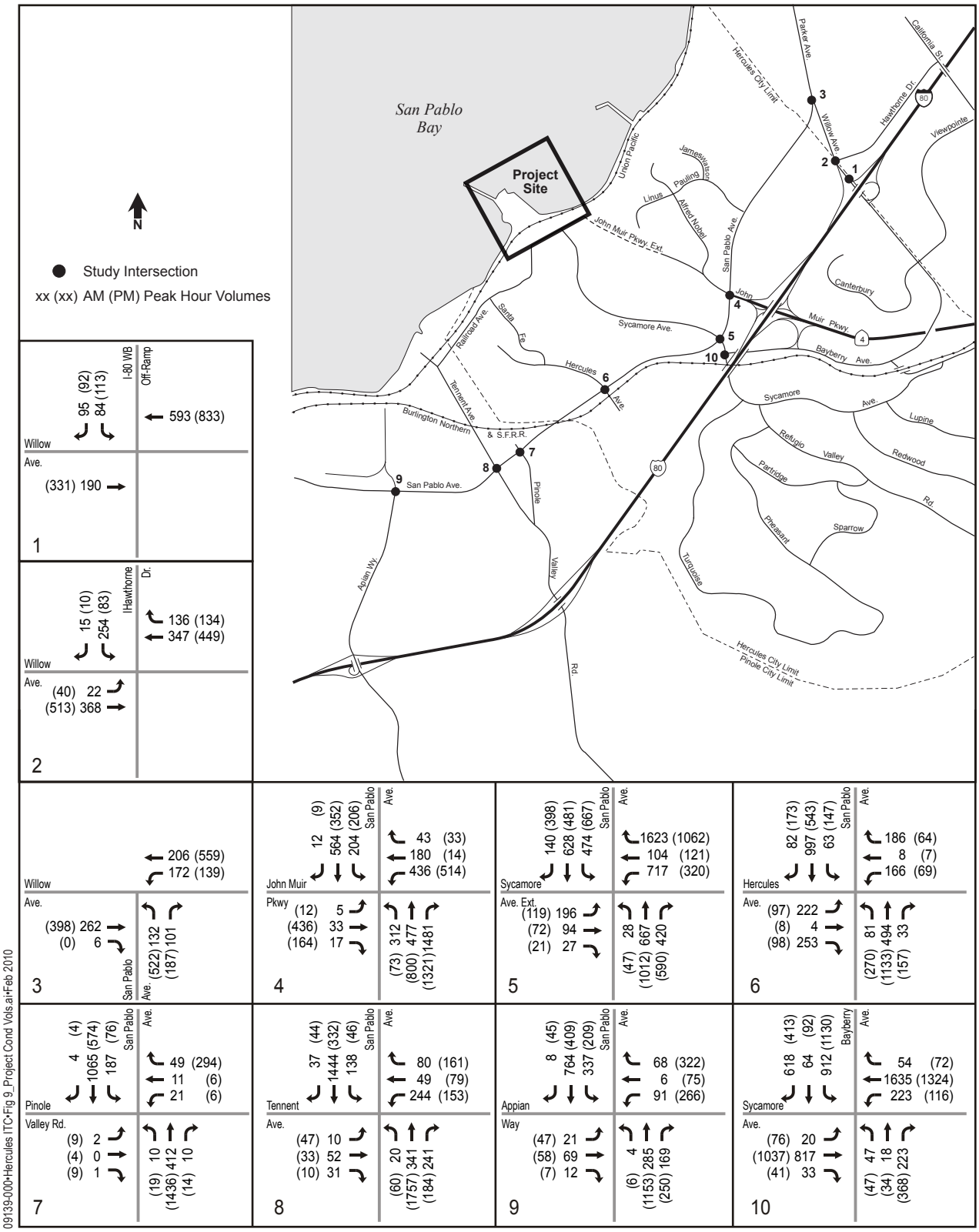

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Figure 8
Project Conditions Peak Hour Volumes

5.3 Intersection Level of Service

According to the City of Hercules intersection level of service standards, all study intersections would continue to operate at acceptable levels of service for the project scenario with the exception of:

- Sycamore Avenue/Bayberry Avenue.

The addition of project-related traffic would contribute to an already deficient level of service at this intersection. However, these project-related impacts are not considered significant. Therefore, the addition of project generated traffic would not result in a significant impact. **Table 7** provides a level of service comparison for the A.M. and P.M. peak hours, respectively.

Appendix B includes the detailed level of service analysis sheets, including the weekday A.M. and P.M. peak hours.

TABLE 7 PROJECT CONDITION - LEVEL OF SERVICE SUMMARY

Int #	Intersection Name	A.M. PEAK		P.M. PEAK	
		V/C	LOS	V/C	LOS
1.	Willow Avenue /I-80 WB off-ramp	0.221	A	0.308	A
2.	Willow Avenue/Hawthorne Drive	0.301	A	0.241	A
3.	San Pablo Avenue/Willow Avenue	0.220	A	0.445	A
4.	San Pablo Avenue/John Muir Parkway	0.524	A	0.720	C
5.	San Pablo Avenue/Sycamore Avenue	0.933	E	0.833	D
6.	San Pablo Avenue/Hercules Avenue	0.598	A	0.534	A
7.	San Pablo Avenue/Pinole Valley Road	0.480	A	0.582	A
8.	San Pablo Avenue/Tennent Avenue	0.651	B	0.709	C
9.	San Pablo Avenue/Appian Way	0.632	A	0.683	B
10.	Sycamore Avenue/Bayberry Avenue	0.979	E	**1.098**	**F**

Notes: **V/C: Volume to Capacity Ratio** LOS: Level of Service
Intersections operating below acceptable LOS are bold.

Table 8 and **Table 9** provides a level of service comparison for all study intersections during the A.M. and P.M. peak-hour, respectively.

TABLE 8 LOS COMPARISON SUMMARY – A.M. PEAK

#	Intersection	Background		Project		Difference Project-Background	Potentially Significant Impact?
		Delay	LOS	Delay	LOS	Delay	
1.	Willow Ave /I-80 WB off-ramp	0.221	A	0.221	A	0.000	No Impact
2.	Willow Ave/Hawthorne Dr	0.301	A	0.301	A	0.000	No Impact
3.	San Pablo Ave/Willow Ave	0.218	A	0.220	A	0.002	No Impact
4.	San Pablo Ave/John Muir Pkwy	0.513	A	0.524	A	0.011	No Impact
5.	San Pablo Ave/Sycamore Ave	0.927	E	0.933	E	0.006	No Impact
6.	San Pablo Ave/Hercules Ave	0.598	A	0.598	A	0.000	No Impact
7.	San Pablo Ave/Pinole Valley Rd	0.480	A	0.480	A	0.000	No Impact
8.	San Pablo Ave/Tennent Ave	0.651	B	0.651	B	0.000	No Impact
9.	San Pablo Ave/Appian Wy	0.360	A	0.632	A	0.272	No Impact
10.	Sycamore Ave/Bayberry Ave	**0.975**	**E**	**0.979**	**E**	0.004	No Impact

Notes: **V/C: Volume to Capacity Ratio** **LOS: Level of Service**

Intersections operating below acceptable LOS are bold.

TABLE 9 LOS COMPARISON SUMMARY – P.M. PEAK

#	Intersection	Background		Project		Difference Project-Background	Potentially Significant Impact?
		Delay	LOS	Delay	LOS	Delay	
1.	Willow Ave /I-80 WB off-ramp	0.308	A	0.308	A	0.000	No Impact
2.	Willow Ave/Hawthorne Dr	0.241	A	0.241	A	0.000	No Impact
3.	San Pablo Ave/Willow Ave	0.442	A	0.445	A	0.003	No Impact
4.	San Pablo Ave/John Muir Pkwy	0.706	C	0.720	C	0.014	No Impact
5.	San Pablo Ave/Sycamore Ave	0.830	D	0.833	D	0.003	No Impact
6.	San Pablo Ave/Hercules Ave	0.534	A	0.534	A	0.000	No Impact
7.	San Pablo Ave/Pinole Valley Rd	0.582	A	0.582	A	0.000	No Impact
8.	San Pablo Ave/Tennent Ave	0.709	C	0.709	C	0.000	No Impact
9.	San Pablo Ave/Appian Wy	0.683	B	0.683	B	0.000	No Impact
10.	Sycamore Ave/Bayberry Ave	**1.098**	**F**	**1.098**	**F**	0.000	No Impact

Notes: **V/C: Volume to Capacity Ratio** **LOS: Level of Service**

Intersections operating below acceptable LOS are bold.

5.4 Vehicle Site Access and Circulation

Project access and circulation were analyzed for both alternatives of the proposed project. The site plans (**Figure 2 and Figure 3**) indicate access from the John Muir Parkway extension and from Bayfront Boulevard. These roadways would allow for two-way vehicular circulation.

Under Alternative 1, vehicles traveling westbound on John Muir Parkway would turn left into the project site to park at the temporary surface parking lot while vehicles traveling eastbound on Bayfront Boulevard would turn right. Transit and kiss-n-ride vehicles would access the intermodal transit center from John Muir Parkway via a transit loop comprising the John Muir Parkway extension and the Refugio Creek Bridge connecting to the extension of Bayfront Boulevard. Transit loop drive would be a two-lane paved roadway.

For pedestrians and bicyclist, the project would include crosswalks and sidewalks. Both, pedestrians and bicyclists would be separated from vehicular traffic (by island or curbs), where feasible. A new pedestrian bridge would be built across the UPRR tracks to access the future Hercules Point open space. Pedestrian access to the platform would be provided from the pedestrian overpass by a combination of stairs, ramps, or elevators.

Emergency vehicles would have access from Bayfront Boulevard to the north into the UPRR right-of-way and connect to the west end of the station platform.

Under Alternative 2, vehicles traveling westbound on John Muir Parkway would turn right into the project site to park at the proposed parking structure while vehicles traveling eastbound on Bayfront Boulevard would turn left. Two looped driveways from John Muir Parkway would provide separate vehicle access for commuter bus/paratransit drop-off and turnaround and one for passenger vehicle drop-off. Pedestrian access would be provided at the eastern end of the train platform. This alternative includes a three-level parking structure located east of Refugio Creek.

The overall project internal design appears acceptable. No adverse internal circulation impacts related to the proposed project are anticipated.

5.5 Parking Analysis

The parking analysis consisted of an evaluation of the proposed parking supply and comparison to the anticipated demand. In the near term, a 150-space surface parking (Block N) lot located east of the planned intersection of John Muir Parkway and Bayfront Boulevard would provide temporary parking for train and bus patrons. **Figure 2** identifies the surrounding parcels and their locations.

This parking lot would eventually be replaced by mixed-use and residential development as part of the proposed Bayfront Development project at Block K; replacement parking available to transit terminal commuters would be included in that development project.

Additional long-term parking would be provided in one or more multistory, mixed-use buildings on the waterfront parcels to the east and west of the proposed Alternative 1 site (identified as Block I on **Figure 2**). The public parking included in these buildings could be made available to transit center users.

Table 10 provides a summary of the public parking available within the vicinity of the proposed ITC Project.

TABLE 10 PARKING SUPPLY SUMMARY

Block	Number of Public Parking Spaces	Number of resident-only spaces	Total # of Parking Spaces
N	150		150
K	347	91	438
G	157	55	212
E	152	55	207
D	62	101	163
Total			

Source: Hercules ITC Project Description. HDR Inc.

According to the mode-of-access analysis in Section 6.1, there would be a park-and-ride demand of 150 vehicles during the A.M. peak and 189 during the P.M. peak period. Under Alternative 1, the proposed project would provide approximately 150 interim surface parking spaces. This would result in a deficit of 39 parking spaces during the P.M. peak period. Under Alternative 2, the proposed project would provide 385 parking spaces within a proposed three-level parking structure adjacent and east of the proposed ITC. With a projected park-and-ride demand of 150 vehicles during the A.M. peak period and 189 during the P.M. peak period, there would be a sufficient supply of parking.

5.6 Transit Operations

Together with the rail terminal there would be a proposed transit terminal for local and regional express bus service. Local and express service would be operated by the West Contra Costa Transit Authority (WestCAT) other area transit providers.

Under Alternative 1, all bus service would access the intermodal transit center via John Muir Parkway at Bayfront Boulevard and a planned transit loop roadway. A passenger loading and unloading area for local and regional buses would be provided along the transit loop roadway.

Under Alternative 2, the transit terminal would be located adjacent to the parking structure and would include bus layover spaces to serve intermodal transit center passengers. Bus service would be provided at the terminal located off of the John Muir Parkway extension, adjacent to the intermodal transit center and parking structure.

According to the trip generation and mode of access analysis presented in Section 6.1, approximately 2.4 percent of peak of peak period rail ridership would take transit to access the intermodal transit center. This equates to approximately 7 bus passengers during the peak period. Under either alternative, the increase in passenger demand should be

accommodated by the additional, re-routed transit service at the intermodal transit center. No significant transit impacts are expected to occur due to the project.

5.7 Pedestrian and Bicycle Facilities

According to the trip generation and mode of access analysis presented in Section 6.1, approximately 28 percent of the peak period ridership (65 A.M. and 82 P.M. passengers) for the rail would access the intermodal transit center by non-motorized means. For pedestrians, access along the adjacent roadway network would continue to be accommodated by the provided sidewalks that connect the surrounding neighborhood to the intermodal transit center. For bicyclists, a bike lane is provided on San Pablo Avenue from Willow Avenue to Hercules Avenue. West of San Pablo Avenue, bicyclists would share Sycamore Avenue with motor vehicles to access the intermodal transit center.

The study intersections are currently signalized and equipped with pedestrian crossing signals and crosswalks. The expected increase in vehicular traffic volumes at these intersections would not significantly impact pedestrian or bicycle movements.

The proposed project includes extension of the Bay Trail and the Creekside Trail. The Bay Trail would extend from the Bio-Rad Campus on the east end of the project and connect to the existing Bay Trail head near the west end of the project. It would cross over Refugio Creek. The Creekside trail would provide bicyclist and pedestrian access from John Muir Parkway to the transit parking lot on Block N.

6.0 CUMULATIVE "NO PROJECT" CONDITION

To evaluate the cumulative no project scenario, DKS reviewed recent travel forecasts model output projections for several intersections within the vicinity of the project. These projections were derived as part of the Hercules Bayfront EIR Project and correspond to the Year 2035. Note that only five of the intersections from the Hercules Bayfront EIR correspond to the study intersections being evaluated as part of the Hercules ITC.

For all other study intersections (#1-2, 7-9), DKS derived intersection volumes per the Contra Costa Transportation Authority's (CCTA) countywide travel demand model. Growth factors obtained from the model for turning movement volumes at the study intersections are summarized in **Table 11.**

TABLE 11 CUMULATIVE NO PROJECT CONDITION LINK DEMAND GROWTH FACTORS

Street	2006-2035 AM	2006-2035 PM
San Pablo Avenue	2.0%	2.0%
Sycamore Avenue	3.5%	4.3%
Other Streets	3.5%	4.3%

Using the growth factors shown in **Table 11**, the intersection turning movement volumes were factored up to year 2035 levels. By virtue of the model forecast results, approaches on San Pablo Avenue were given a different factor than all other approaches.

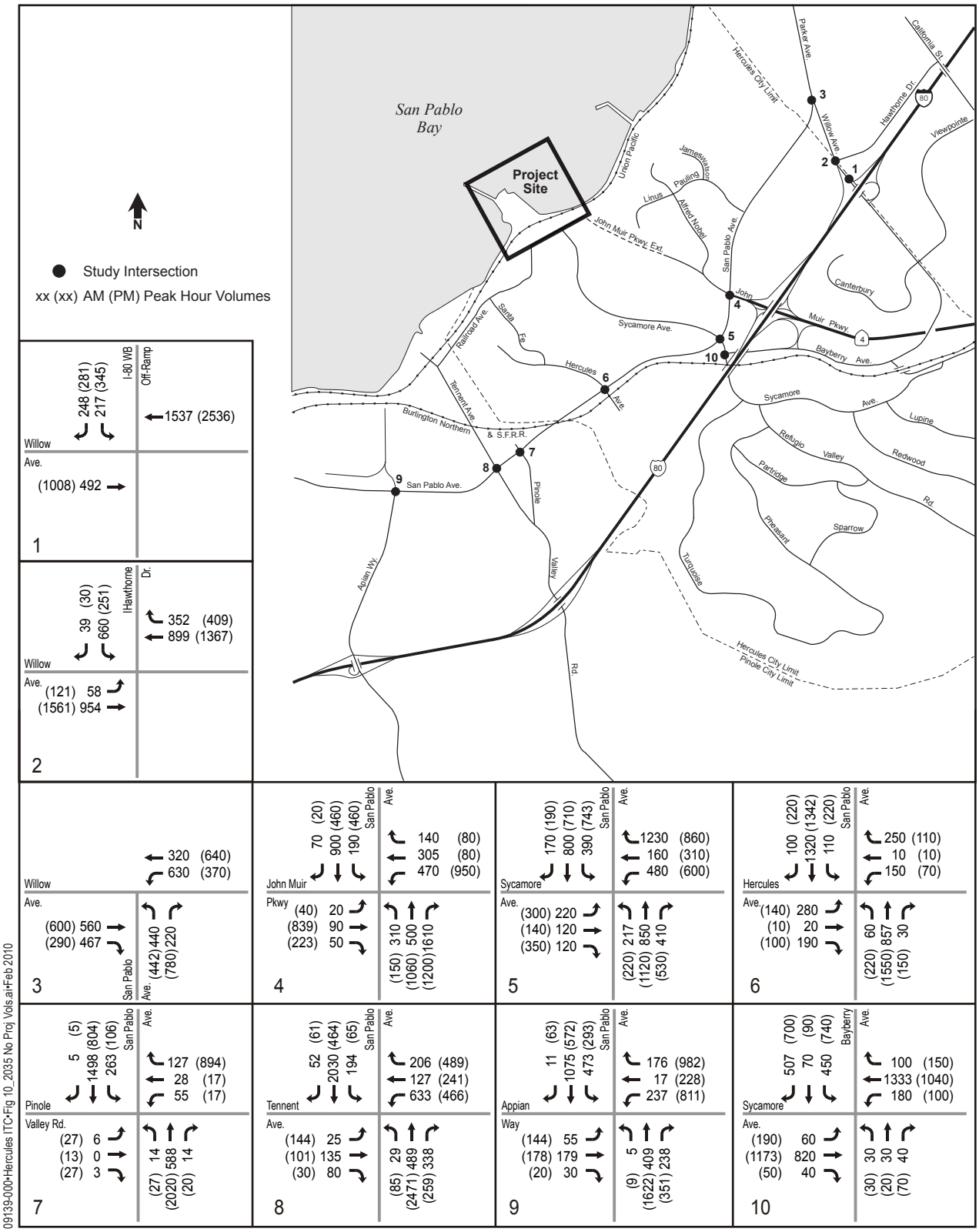
6.1 Cumulative year 2035 Baseline "No Project" Methodology

As requested by City staff and to ensure consistency with other on-going traffic impact studies in the area, DKS evaluated the 2035 Cumulative "No Project " Condition with and without project. The travel model projections[7] for intersections #3-6, and 10 assume the proposed Hercules ITC Project and a ferry terminal. To evaluate the cumulative no project scenario, the number of project trips estimated for the Hercules ITC (rail and bus) were deducted from the baseline intersection volumes at these intersections. The resulting intersection turning movement volumes (#3-6 and 10) are summarized in Figure 10.

In addition, trips estimated for the ferry terminal were added to intersection 7-9 to account for trips to/from the ferry terminal.

Figure 9 illustrates the cumulative year 2035 Baseline "No Project" intersection volumes.

[7] Travel model projections refer to the Hercules Bayfront EIR 2035 Cumulative No Project Volumes.



DKS Associates
TRANSPORTATION SOLUTIONS

Figure 9
Year 2035 No Project Conditions Peak Hour Volumes

6.2 Intersection Operation

According to the City of Hercules intersection level of service standards, several of the study intersections would operate at less than acceptable levels of service for the cumulative no project scenario. **Table 12** provides a level of service comparison for the A.M. and P.M. peak hours, respectively.

Appendix B includes the detailed level of service analysis sheets, including the weekday A.M. and P.M. peak hours.

TABLE 12 CUMULATIVE "NO PROJECT" CONDITION - LEVEL OF SERVICE SUMMARY

Int #	Intersection Name	A.M. PEAK		P.M. PEAK	
		V/C	LOS	V/C	LOS
1.	Willow Avenue /I-80 WB off-ramp	0.591	A	**0.938**	**E**
2.	Willow Avenue/Hawthorne Drive	0.781	C	0.733	C
3.	San Pablo Avenue/Willow Avenue	0.806	D	0.712	C
4.	San Pablo Avenue/John Muir Parkway	0.764	C	**1.239**	**F**
5.	San Pablo Avenue/Sycamore Avenue	0.859	D	**1.103**	**F**
6.	San Pablo Avenue/Hercules Avenue	0.758	C	0.755	C
7.	San Pablo Avenue/Pinole Valley Road	0.889	D	**1.108**	**F**
8.	San Pablo Avenue/Tennent Avenue	**1.138**	**F**	**1.259**	**F**
9.	San Pablo Avenue/Appian Way	0.624	B	**1.366**	**F**
10.	Sycamore Avenue/Bayberry Avenue	0.656	B	0.762	C

Notes: **V/C: Volume to Capacity Ratio** **LOS: Level of Service**

Intersections operating below acceptable LOS are bold.

7.0 CUMULATIVE PROJECT SCENARIO

As part of this study, DKS also evaluated whether the project would result in significant cumulative impacts at the study intersections. Trips associated with the project were added to the cumulative no project scenario and the resulting intersection turning movement volumes for the cumulative with project scenario are shown in **Figure 10**. **Table 13** provides a level of service comparison for the A.M. and P.M. peak hours, respectively.

Appendix B includes the detailed level of service analysis sheets, including the weekday A.M. and P.M. peak hours.

TABLE 13 CUMULATIVE "WITH PROJECT" CONDITION - LEVEL OF SERVICE SUMMARY

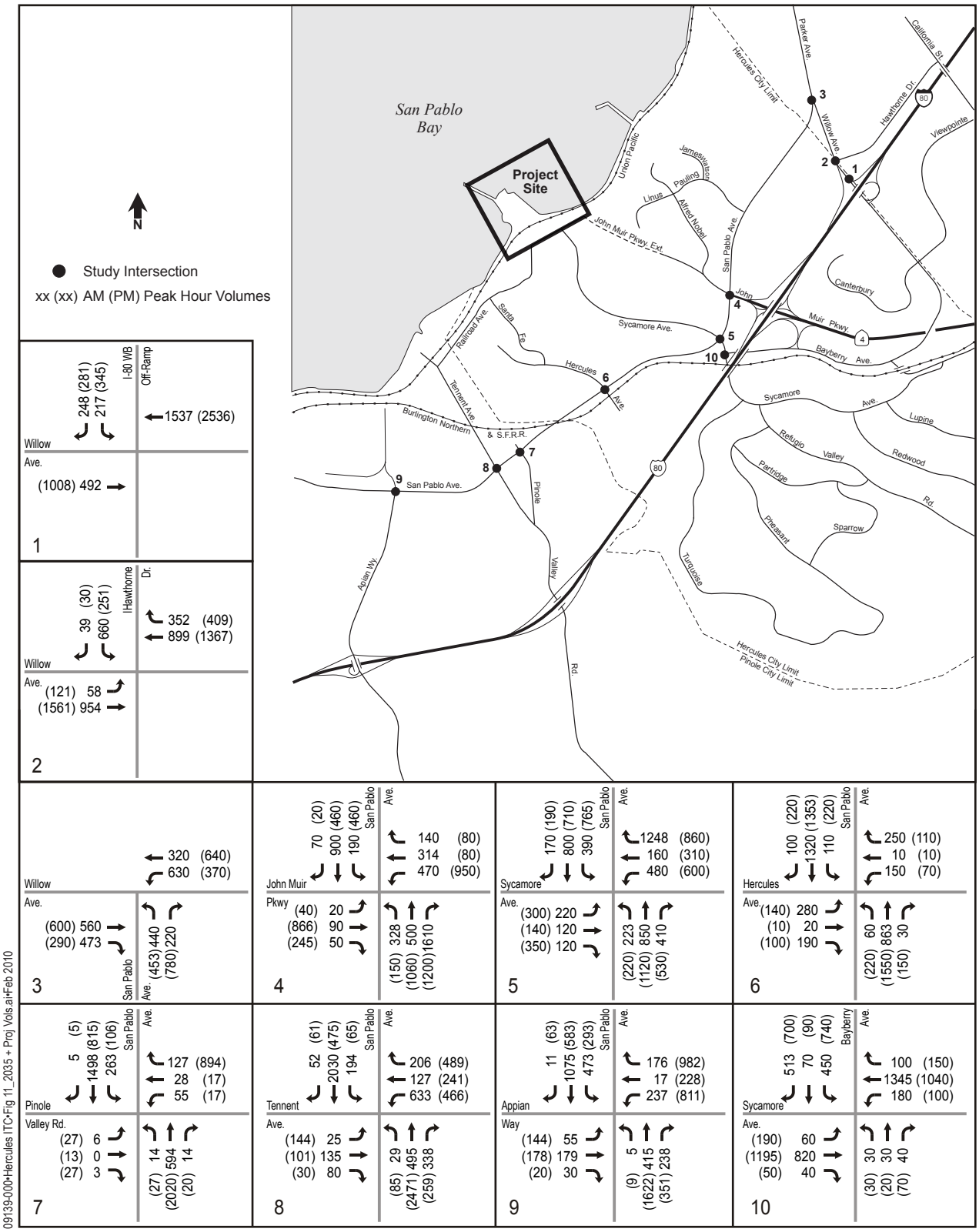
Int #	Intersection Name	A.M. PEAK		P.M. PEAK	
		V/C	LOS	V/C	LOS
1.	Willow Avenue /I-80 WB off-ramp	0.591	A	**0.938**	**E**
2.	Willow Avenue/Hawthorne Drive	0.781	C	0.733	C
3.	San Pablo Avenue/Willow Avenue	0.807	D	0.712	C
4.	San Pablo Avenue/John Muir Parkway	0.780	C	**1.253**	**F**
5.	San Pablo Avenue/Sycamore Avenue	0.865	D	**1.110**	**F**
6.	San Pablo Avenue/Hercules Avenue	0.758	C	0.755	C
7.	San Pablo Avenue/Pinole Valley Road	0.889	D	**1.108**	**F**
8.	San Pablo Avenue/Tennent Avenue	**1.138**	**F**	**1.259**	**F**
9.	San Pablo Avenue/Appian Way	0.626	B	**1.366**	**F**
10.	Sycamore Avenue/Bayberry Avenue	0.660	B	0.762	C

Notes: **V/C: Volume to Capacity Ratio** **LOS: Level of Service**
Intersections operating below acceptable LOS are bold.

7.1 Intersection Operations

As in the previous scenario, several intersections would operate at less than acceptable levels in the cumulative with project scenario. Because the addition of project-related traffic would contribute to an already deficient level of service at these intersections, the project would not result in a significant impact at these intersections.

Table 14 and **Table 15** provides a level of service comparison for all study intersection during the A.M. and P.M. peak-hour, respectively.



DKS Associates
TRANSPORTATION SOLUTIONS

Figure 10
Year 2035 Plus Project Conditions Peak Hour Volumes

TABLE 14 LOS COMPARISON SUMMARY – A.M. PEAK

#	Intersection	Cumulative No Project		Cumulative with Project		Difference Project vs. No Project	Potentially Significant Impact?
		Delay	LOS	Delay	LOS	Delay	
1.	Willow Ave /I-80 WB off-ramp	0.591	A	0.591	A	0.000	No Impact
2.	Willow Ave/Hawthorne Dr	0.781	C	0.781	C	0.000	No Impact
3.	San Pablo Ave/Willow Ave	0.806	D	0.807	D	0.001	No Impact
4.	San Pablo Ave/John Muir Pkwy	0.764	C	0.780	C	0.016	No Impact
5.	San Pablo Ave/Sycamore Ave	0.859	D	0.865	D	0.006	No Impact
6.	San Pablo Ave/Hercules Ave	0.758	C	0.758	C	0.000	No Impact
7.	San Pablo Ave/Pinole Valley Rd	0.889	D	0.889	D	0.000	No Impact
8.	San Pablo Ave/Tennent Ave	**1.138**	**F**	**1.138**	**F**	0.000	No Impact
9.	San Pablo Ave/Appian Wy	0.624	B	0.626	B	0.002	No Impact
10.	Sycamore Ave/Bayberry Ave	0.656	B	0.660	B	0.004	No Impact

Notes: **V/C: Volume to Capacity Ratio** **LOS: Level of Service**

Intersections operating below acceptable LOS are bold.

TABLE 15 LOS COMPARISON SUMMARY – P.M. PEAK

#	Intersection	Cumulative No Project		Cumulative with Project		Difference Project vs. No Project	Potentially Significant Impact?
		Delay	LOS	Delay	LOS	Delay	
1.	Willow Ave /I-80 WB off-ramp	**0.938**	**E**	**0.938**	**E**	0.000	No Impact
2.	Willow Ave/Hawthorne Dr	0.733	C	0.733	C	0.000	No Impact
3.	San Pablo Ave/Willow Ave	0.712	C	0.712	C	0.000	No Impact
4.	San Pablo Ave/John Muir Pkwy	**1.239**	**F**	**1.253**	**F**	0.030	No Impact
5.	San Pablo Ave/Sycamore Ave	**1.103**	**F**	**1.110**	**F**	0.015	No Impact
6.	San Pablo Ave/Hercules Ave	0.755	C	0.755	C	0.000	No Impact
7.	San Pablo Ave/Pinole Valley Rd	**1.108**	**F**	**1.108**	**F**	0.000	No Impact
8.	San Pablo Ave/Tennent Ave	**1.259**	**F**	**1.259**	**F**	0.000	No Impact
9.	San Pablo Ave/Appian Wy	**1.366**	**F**	**1.366**	**F**	0.000	No Impact
10.	Sycamore Ave/Bayberry Ave	0.762	C	0.762	C	0.000	No Impact

Notes: **V/C: Volume to Capacity Ratio** **LOS: Level of Service**

Intersections operating below acceptable LOS are bold.

8.0 RECOMMENDED IMPROVEMENT MEASURES

While there were no significant transportation impacts identified, three recommended improvement measures were identified as a result of this study:

Parking

Under Alternative 1 of the Proposed Project, a parking deficiency may occur. The proposed 150 space interim surface parking lot would not meet the expected demand of 189 park-and-ride vehicles during the P.M. peak period. It is recommended that the lot be expanded to accommodate the expected demand and/or arrange for adjacent parking facilities to provide parking for ITC users.

Pedestrian and Bicycle Facilities

To improve access to the intermodal transit center for pedestrians and bicyclists, two recommended improvement measures have been identified:

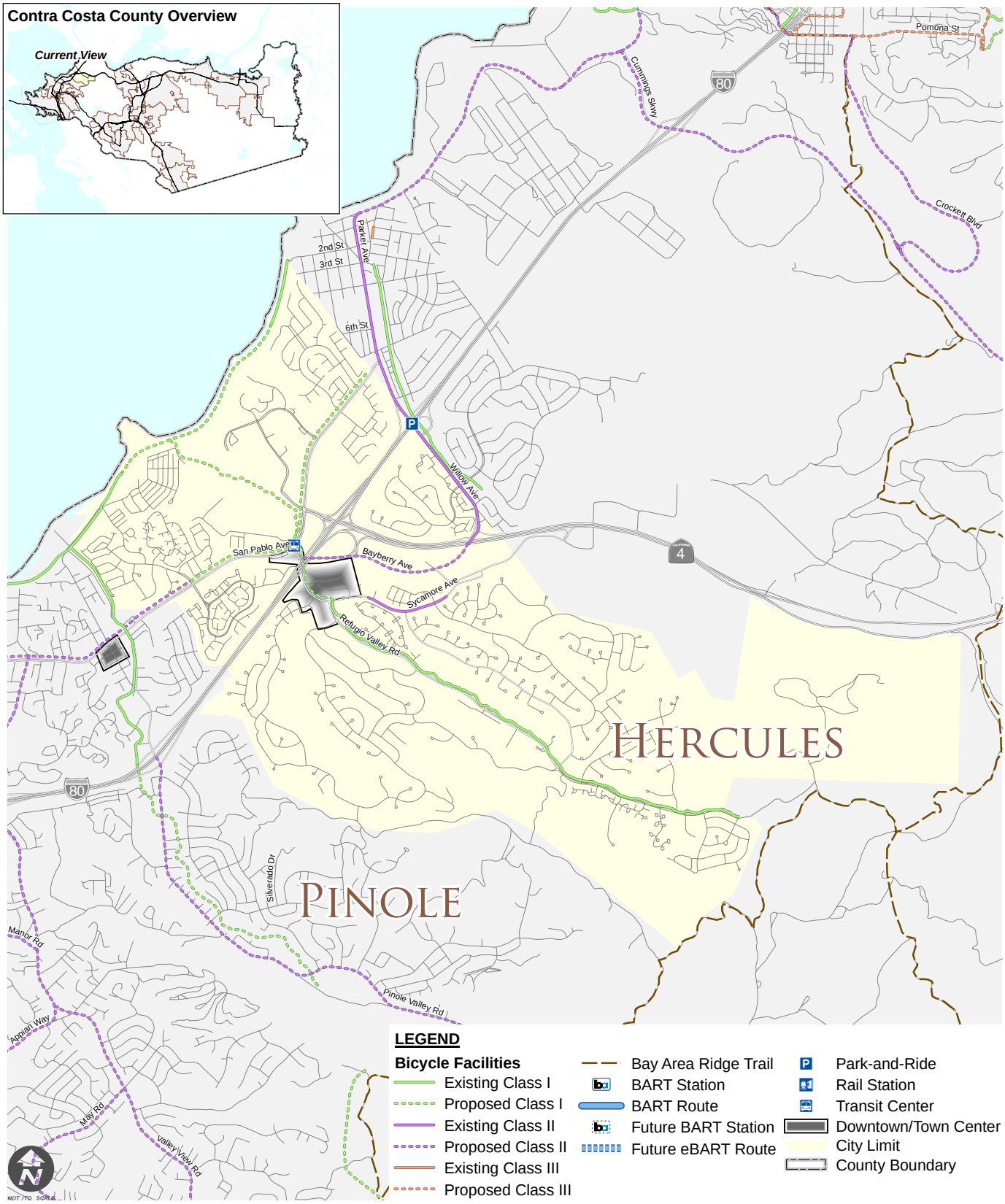
1. It is recommended that the future John Muir Parkway extension include bicycle lanes.
2. Bicycle parking should be provided at the intermodal transit center to accommodate bicycle access.

APPENDICES

Appendix A

Bicycle Network

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center



The existing and proposed bicycle facilities on this map reflect plans adopted by the local jurisdiction.

FEHR & PEERS
TRANSPORTATION CONSULTANTS

COUNTYWIDE BIKEWAY NETWORK
HERCULES
FIGURE

Appendix B

INTERSECTION LEVEL OF SERVICE ANALYSIS

Existing Condition

A.M. Peak

```
Existing AM                Mon Feb 1, 2010 16:36:41                  Page 3-1
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #1 Willow Ave / I-80 WB Off-ramp
*******************************************************************************
Cycle (sec):          90                Critical Vol./Cap.(X):         0.208
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        22                Level Of Service:                  A
*******************************************************************************
Street Name:         I-80 WB Off-ramp                     Willow Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Ignore           Ignore
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        0  0  0  0  0    1  0  0  0  1    0  0  2  0  0    0  0  2  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 23 Mar 2006 <<
Base Vol:       0    0     0    79    0    90     0  179     0     0  559     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    79    0    90     0  179     0     0  559     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0    79    0    90     0  179     0     0  559     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0    79    0    90     0  179     0     0  559     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0    79    0    90     0  179     0     0  559     0
RTOR Reduct:    0    0     0     0    0     0     0    0     0     0    0     0
RTOR Vol:       0    0     0    79    0    90     0  179     0     0  559     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0    79    0    90     0  179     0     0  559     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1720 1720  1720  1720 1720  1720  1720 1720  1720  1720 1720  1720
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.00 0.00  0.00  1.00 0.00  1.00  0.00 2.00  0.00  0.00 2.00  0.00
Final Sat.:     0    0     0  1720    0  1720     0 3440     0     0 3440     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.05 0.00  0.05  0.00 0.05  0.00  0.00 0.16  0.00
Crit Volume:         0          79                 0                    280
Crit Moves:                    ****               ****                 ****
*******************************************************************************
```

```
Existing AM                Mon Feb 1, 2010 16:36:41                  Page 4-1
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #2 Willow Ave / Hawthorne Ave
*******************************************************************************
Cycle (sec):          90                Critical Vol./Cap.(X):         0.284
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        24                Level Of Service:                  A
*******************************************************************************
Street Name:          Hawthorne Ave                       Willow Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     5    5     5     5    5     0     0    5     5
Lanes:        0  0  0  0  0    0  0  2! 0  0    1  0  2  0  0    0  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0   240    0    14    21  347     0     0  327   128
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   240    0    14    21  347     0     0  327   128
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0   240    0    14    21  347     0     0  327   128
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0   240    0    14    21  347     0     0  327   128
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0   240    0    14    21  347     0     0  327   128
RTOR Reduct:    0    0     0     0    0     0     0    0     0     0    0     0
RTOR Vol:       0    0     0   240    0    14    21  347     0     0  327   128
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0   240    0    14    21  347     0     0  327   128
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1720 1720  1720  1720 1720  1720  1720 1720  1720  1720 1720  1720
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.00 0.00  0.00  1.00 0.89  0.11  1.00 2.00  0.00  0.00 1.44  0.56
Final Sat.:     0    0     0  1720 1530   190  1720 3440     0     0 2472   968
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.14 0.00  0.07  0.01 0.10  0.00  0.00 0.13  0.13
Crit Volume:         0         240               21                          228
Crit Moves:                    ****              ****                        ****
*******************************************************************************
```

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Existing AM                Mon Feb 1, 2010 16:36:41                  Page 5-1
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #3 San Pablo Ave / Willow Ave
*******************************************************************************
Cycle (sec):          90                Critical Vol./Cap.(X):         0.244
Loss Time (sec):      12 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        30                Level Of Service:                   A
*******************************************************************************
Street Name:          San Pablo Ave                       Willow Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted      Split Phase      Split Phase
Rights:           Include          Include          Ignore           Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        2  0  0  0  1    0  0  0  0  0    0  0  1  1  0    1  0  2  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 23 Mar 2006 <<
Base Vol:     103    0    79     0    0     0     0  247   155   162  194     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  103    0    79     0    0     0     0  247   155   162  194     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  103    0    79     0    0     0     0  247   155   162  194     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   103    0    79     0    0     0     0  247   155   162  194     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  103    0    79     0    0     0     0  247   155   162  194     0
RTOR Reduct:    0    0    79     0    0     0     0    0     0     0    0     0
RTOR Vol:     103    0     0     0    0     0     0  247   155   162  194     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  103    0     0     0    0     0     0  247   155   162  194     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1720 1720  1720  1720 1720  1720  1720 1720  1720  1720 1720  1720
Adjustment:  0.91 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       2.00 0.00  1.00  0.00 0.00  0.00  0.00 1.23  0.77  1.00 2.00  0.00
Final Sat.:  3127    0  1720     0    0     0     0 2114  1326  1720 3440     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.00  0.00  0.00 0.00  0.00  0.00 0.12  0.12  0.09 0.06  0.00
Crit Volume:   52                     0              201         162
Crit Moves:  ****                                   ****        ****
*******************************************************************************
```

```
Existing AM                Mon Feb 1, 2010 16:36:41                  Page 6-1
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #4 San Pablo Ave / John Muir Pkwy
*******************************************************************************
Cycle (sec):         120                Critical Vol./Cap.(X):         0.427
Loss Time (sec):      16 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        50                Level Of Service:                  A
*******************************************************************************
Street Name:          San Pablo Ave                     John Muir Pkwy
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Ignore           Include          Include          Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        1  0  2  0  1    1  0  1  1  0    1  0  1  1  0    2  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 23 Mar 2006 <<
Base Vol:     230  373  1157   159  441     9     5   31    16   411  161    41
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  230  373  1157   159  441     9     5   31    16   411  161    41
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  230  373  1157   159  441     9     5   31    16   411  161    41
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   230  373  1157   159  441     9     5   31    16   411  161    41
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  230  373  1157   159  441     9     5   31    16   411  161    41
RTOR Reduct:    0    0     0     0    0     0     0    0     0     0    0     0
RTOR Vol:     230  373  1157   159  441     9     5   31    16   411  161    41
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  230  373  1157   159  441     9     5   31    16   411  161    41
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1650 1650  1650  1650 1650  1650  1650 1650  1650  1650 1650  1650
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  0.91 1.00  1.00
Lanes:       1.00 2.00  1.00  1.00 1.96  0.04  1.00 1.32  0.68  2.00 0.80  0.20
Final Sat.:  1650 3300  1650  1650 3234    66  1650 2177  1123  3000 1315   335
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.14 0.11  0.70  0.10 0.14  0.14  0.00 0.01  0.01  0.14 0.12  0.12
Crit Volume:  230                   225               24         206
Crit Moves:  ****                  ****             ****        ****
*******************************************************************************
```

```
Existing AM                Mon Feb 1, 2010 16:36:41                  Page 7-1
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #5 San Pablo Ave / Sycamore Ave
*******************************************************************************
Cycle (sec):         120                Critical Vol./Cap.(X):         0.674
Loss Time (sec):      16 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        87                Level Of Service:                   B
*******************************************************************************
Street Name:          San Pablo Ave                      Sycamore Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        2  0  2  0  1    2  0  1  1  0    1  0  1  1  0    1  1  0  0  2
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 23 Mar 2006 << AM
Base Vol:      17  521   328   370  491   109   138   66    19   505   73  1130
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   17  521   328   370  491   109   138   66    19   505   73  1130
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   17  521   328   370  491   109   138   66    19   505   73  1130
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    17  521   328   370  491   109   138   66    19   505   73  1130
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   17  521   328   370  491   109   138   66    19   505   73  1130
RTOR Reduct:    0    0   278     0    0     0     0    0     0     0    0   204
RTOR Vol:      17  521    50   370  491   109   138   66    19   505   73   927
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   17  521    50   370  491   109   138   66    19   505   73   927
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1650 1650  1650  1650 1650  1650  1650 1650  1650  1650 1650  1650
Adjustment:  0.91 1.00  1.00  0.91 1.00  1.00  1.00 1.00  1.00  0.91 1.00  0.91
Lanes:       2.00 2.00  1.00  2.00 1.64  0.36  1.00 1.55  0.45  1.75 0.25  2.00
Final Sat.:  3000 3300  1650  3000 2701   600  1650 2562   738  2621  417  3000
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.01 0.16  0.03  0.12 0.18  0.18  0.08 0.03  0.03  0.19 0.18  0.31
Crit Volume:       261         185              138                          463
Crit Moves:       ****        ****             ****                          ****
*******************************************************************************
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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #6 San Pablo Ave / Hercules Ave
*******************************************************************************
Cycle (sec):         120                Critical Vol./Cap.(X):         0.507
Loss Time (sec):      16 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        58                Level Of Service:                  A
*******************************************************************************
Street Name:          San Pablo Ave                      Hercules Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        1  0  2  0  1    1  0  2  0  1    1  0  1  0  1    0  1  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 23 Mar 2006 <<
Base Vol:      63  381    26    49  779    64   209    4   239   157    8   175
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   63  381    26    49  779    64   209    4   239   157    8   175
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   63  381    26    49  779    64   209    4   239   157    8   175
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    63  381    26    49  779    64   209    4   239   157    8   175
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   63  381    26    49  779    64   209    4   239   157    8   175
RTOR Reduct:    0    0    26     0    0    64     0    0    63     0    0     0
RTOR Vol:      63  381     0    49  779     0   209    4   176   157    8   175
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   63  381     0    49  779     0   209    4   176   157    8   175
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1650 1650  1650  1650 1650  1650  1650 1650  1650  1650 1650  1650
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 2.00  1.00  1.00 2.00  1.00  1.00 1.00  1.00  0.92 0.08  1.00
Final Sat.:  1650 3300  1650  1650 3300  1650  1650 1650  1650  1524  126  1650
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.12  0.00  0.03 0.24  0.00  0.13 0.00  0.11  0.10 0.06  0.11
Crit Volume:   63                   390         209                          175
Crit Moves:  ****                  ****        ****                         ****
*******************************************************************************
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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #7 San Pablo Ave / Pinole Valley Rd
*******************************************************************************
Cycle (sec):          60                Critical Vol./Cap.(X):         0.378
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        28                Level Of Service:                   A
*******************************************************************************
Street Name:          San Pablo Ave                    Pinole Valley Rd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        0  1  0  1  0    0  1  1  0  1    0  0  1! 0  0    0  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       8  317     8   146  832     3     2    0     1    20   10    46
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    8  317     8   146  832     3     2    0     1    20   10    46
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    8  317     8   146  832     3     2    0     1    20   10    46
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     8  317     8   146  832     3     2    0     1    20   10    46
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    8  317     8   146  832     3     2    0     1    20   10    46
RTOR Reduct:    0    0     0     0    0     2     0    0     0     0    0    46
RTOR Vol:       8  317     8   146  832     1     2    0     1    20   10     0
PCE Adj:     4.00 1.00  1.00  2.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   32  317     8   292  832     1     2    0     1    20   10     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1800 1800  1800  1800 1800  1800  1800 1800  1800  1800 1800  1800
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.05 1.91  0.04  0.70 1.30  1.00  0.67 0.00  0.33  0.67 0.33  1.00
Final Sat.:    93 3426    81  1263 2337  1800  1200    0   600  1200  600  1800
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.09 0.09  0.10  0.12 0.36  0.00  0.00 0.00  0.00  0.02 0.02  0.00
Crit Volume:    8                   641           2                    30
Crit Moves:  ****                 ****        ****                 ****
*******************************************************************************
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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #8 San Pablo Ave / Tennent Ave
*******************************************************************************
Cycle (sec):          60                Critical Vol./Cap.(X):         0.536
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        37                Level Of Service:                  A
*******************************************************************************
Street Name:          San Pablo Ave                      Tennent Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Ignore           Ignore           Ignore           Ignore
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        0  1  1  0  1    0  1  0  1  0    0  0  1! 0  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      16  262   188   108 1128    29     9   49    29   230   46    75
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   16  262   188   108 1128    29     9   49    29   230   46    75
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   16  262   188   108 1128    29     9   49    29   230   46    75
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    16  262   188   108 1128    29     9   49    29   230   46    75
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   16  262   188   108 1128    29     9   49    29   230   46    75
RTOR Reduct:    0    0     0     0    0     0     0    0     0     0    0     0
RTOR Vol:      16  262   188   108 1128    29     9   49    29   230   46    75
PCE Adj:     6.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   96  262   188   108 1128    29     9   49    29   230   46    75
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1800 1800  1800  1800 1800  1800  1800 1800  1800  1800 1800  1800
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.97 1.03  1.00  0.17 1.78  0.05  0.10 0.57  0.33  1.00 0.38  0.62
Final Sat.:  1745 1855  1800   307 3210    83   186 1014   600  1800  684  1116
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.01 0.14  0.10  0.35 0.35  0.35  0.05 0.05  0.05  0.13 0.07  0.07
Crit Volume:   16                   632               87         230
Crit Moves:  ****                  ****             ****        ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #9 San Pablo Ave / Appian Wy
*******************************************************************************
Cycle (sec):          60                Critical Vol./Cap.(X):         0.297
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        24                Level Of Service:                   A
*******************************************************************************
Street Name:          San Pablo Ave                       Appian Wy
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        1  0  2  0  1    1  0  1  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       3  218   132   263  597     6    20   65    11    86    6    64
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    3  218   132   263  597     6    20   65    11    86    6    64
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    3  218   132   263  597     6    20   65    11    86    6    64
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     3  218   132   263  597     6    20   65    11    86    6    64
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    3  218   132   263  597     6    20   65    11    86    6    64
RTOR Reduct:    0    0    86     0    0     0     0    0     0     0    0     0
RTOR Vol:       3  218    46   263  597     6    20   65    11    86    6    64
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    3  218    46   263  597     6    20   65    11    86    6    64
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1800 1800  1800  1800 1800  1800  1800 1800  1800  1800 1800  1800
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 2.00  1.00  1.00 1.98  0.02  1.00 0.86  0.14  1.00 0.09  0.91
Final Sat.:  1800 3600  1800  1800 3564    36  1800 1539   261  1800  154  1646
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.06  0.03  0.15 0.17  0.17  0.01 0.04  0.04  0.05 0.04  0.04
Crit Volume:       109         263                     76          86
Crit Moves:       ****        ****                    ****        ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #10 Sycamore Ave / Bayberry Ave
*******************************************************************************
Cycle (sec):         120                Critical Vol./Cap.(X):         0.808
Loss Time (sec):      16 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       148                Level Of Service:                   D
*******************************************************************************
Street Name:           Bayberry Ave                      Sycamore Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Include          Ignore
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        1  0  0  1  0    1  1  0  0  2    1  0  2  1  0    1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 23 Mar 2006 <<
Base Vol:      33   13   157   642   45   431    19  771    31   210 1531    51
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   33   13   157   642   45   431    19  771    31   210 1531    51
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   33   13   157   642   45   431    19  771    31   210 1531    51
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    33   13   157   642   45   431    19  771    31   210 1531    51
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   33   13   157   642   45   431    19  771    31   210 1531    51
RTOR Reduct:    0    0     0     0    0    19     0    0     0     0    0     0
RTOR Vol:      33   13   157   642   45   412    19  771    31   210 1531    51
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   33   13   157   642   45   412    19  771    31   210 1531    51
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1650 1650  1650  1650 1650  1650  1650 1650  1650  1650 1650  1650
Adjustment:  1.00 1.00  1.00  0.91 1.00  0.91  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 0.08  0.92  1.87 0.13  2.00  1.00 2.88  0.12  1.00 2.00  1.00
Final Sat.:  1650  126  1524  2803  216  3000  1650 4759   191  1650 3300  1650
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.02 0.10  0.10  0.23 0.21  0.14  0.01 0.16  0.16  0.13 0.46  0.03
Crit Volume:       170         344               19                    766
Crit Moves:       ****        ****              ****                  ****
*******************************************************************************
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P.M. PEAK

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #1 Willow Ave / I-80 WB Off-ramp
*******************************************************************************
Cycle (sec):          90                Critical Vol./Cap.(X):         0.280
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        24                Level Of Service:                   A
*******************************************************************************
Street Name:         I-80 WB Off-ramp                     Willow Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Ignore           Ignore
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        0  0  0  0  0    1  0  0  0  1    0  0  2  0  0    0  0  2  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0   103    0    84     0  301     0     0  757     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   103    0    84     0  301     0     0  757     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0   103    0    84     0  301     0     0  757     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0   103    0    84     0  301     0     0  757     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0   103    0    84     0  301     0     0  757     0
RTOR Reduct:    0    0     0     0    0     0     0    0     0     0    0     0
RTOR Vol:       0    0     0   103    0    84     0  301     0     0  757     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0   103    0    84     0  301     0     0  757     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1720 1720  1720  1720 1720  1720  1720 1720  1720  1720 1720  1720
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.00 0.00  0.00  1.00 0.00  1.00  0.00 2.00  0.00  0.00 2.00  0.00
Final Sat.:     0    0     0  1720    0  1720     0 3440     0     0 3440     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.06 0.00  0.05  0.00 0.09  0.00  0.00 0.22  0.00
Crit Volume:         0         103                 0                    379
Crit Moves:                   ****               ****                  ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #2 Willow Ave / Hawthorne Ave
*******************************************************************************
Cycle (sec):          90                Critical Vol./Cap.(X):         0.219
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        23                Level Of Service:                   A
*******************************************************************************
Street Name:          Hawthorne Ave                       Willow Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     5    5     5     5    5     0     0    5     5
Lanes:        0  0  0  0  0    0  0  2! 0  0    1  0  2  0  0    0  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0    75    0     9    36  466     0     0  408   122
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    75    0     9    36  466     0     0  408   122
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0    75    0     9    36  466     0     0  408   122
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0    75    0     9    36  466     0     0  408   122
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0    75    0     9    36  466     0     0  408   122
RTOR Reduct:    0    0     0     0    0     0     0    0     0     0    0     0
RTOR Vol:       0    0     0    75    0     9    36  466     0     0  408   122
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0    75    0     9    36  466     0     0  408   122
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1720 1720  1720  1720 1720  1720  1720 1720  1720  1720 1720  1720
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.00 0.00  0.00  1.00 0.79  0.21  1.00 2.00  0.00  0.00 1.54  0.46
Final Sat.:     0    0     0  1720 1351   369  1720 3440     0     0 2648   792
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.04 0.00  0.02  0.02 0.14  0.00  0.00 0.15  0.15
Crit Volume:         0          75               36                    265
Crit Moves:                    ****             ****                  ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #3 San Pablo Ave / Willow Ave
*******************************************************************************
Cycle (sec):          90                Critical Vol./Cap.(X):         0.438
Loss Time (sec):      12 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        41                Level Of Service:                  A
*******************************************************************************
Street Name:          San Pablo Ave                       Willow Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted      Split Phase      Split Phase
Rights:           Include          Include          Ignore           Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        2  0  0  0  1    0  0  0  0  0    0  0  1  1  0    1  0  2  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     399    0   146     0    0     0     0  362   199   126  508     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  399    0   146     0    0     0     0  362   199   126  508     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  399    0   146     0    0     0     0  362   199   126  508     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   399    0   146     0    0     0     0  362   199   126  508     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  399    0   146     0    0     0     0  362   199   126  508     0
RTOR Reduct:    0    0   126     0    0     0     0    0     0     0    0     0
RTOR Vol:     399    0    20     0    0     0     0  362   199   126  508     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  399    0    20     0    0     0     0  362   199   126  508     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1720 1720  1720  1720 1720  1720  1720 1720  1720  1720 1720  1720
Adjustment:  0.91 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       2.00 0.00  1.00  0.00 0.00  0.00  0.00 1.29  0.71  1.00 2.00  0.00
Final Sat.:  3127    0  1720     0    0     0     0 2220  1220  1720 3440     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.13 0.00  0.01  0.00 0.00  0.00  0.00 0.16  0.16  0.07 0.15  0.00
Crit Volume:  200                     0              280              254
Crit Moves:  ****                                   ****             ****
*******************************************************************************
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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #4 San Pablo Ave / John Muir Pkwy
*******************************************************************************
Cycle (sec):         120                Critical Vol./Cap.(X):         0.594
Loss Time (sec):      16 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        70                Level Of Service:                   A
*******************************************************************************
Street Name:          San Pablo Ave                     John Muir Pkwy
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Ignore           Include          Include          Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        1  0  2  0  1    1  0  1  1  0    1  0  1  1  0    2  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      57  625  1032   161  275     7    11  372   129   467   13    30
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   57  625  1032   161  275     7    11  372   129   467   13    30
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   57  625  1032   161  275     7    11  372   129   467   13    30
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    57  625  1032   161  275     7    11  372   129   467   13    30
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   57  625  1032   161  275     7    11  372   129   467   13    30
RTOR Reduct:    0    0     0     0    0     0     0    0     0     0    0     0
RTOR Vol:      57  625  1032   161  275     7    11  372   129   467   13    30
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   57  625  1032   161  275     7    11  372   129   467   13    30
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1650 1650  1650  1650 1650  1650  1650 1650  1650  1650 1650  1650
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  0.91 1.00  1.00
Lanes:       1.00 2.00  1.00  1.00 1.95  0.05  1.00 1.49  0.51  2.00 0.30  0.70
Final Sat.:  1650 3300  1650  1650 3218    82  1650 2450   850  3000  499  1151
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.19  0.63  0.10 0.09  0.09  0.01 0.15  0.15  0.16 0.03  0.03
Crit Volume:       313         161                    251         234
Crit Moves:       ****        ****                   ****        ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #5 San Pablo Ave / Sycamore Ave
*******************************************************************************
Cycle (sec):         120                Critical Vol./Cap.(X):         0.616
Loss Time (sec):      16 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        74                Level Of Service:                   B
*******************************************************************************
Street Name:          San Pablo Ave                      Sycamore Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        2  0  2  0  1    2  0  1  1  0    1  0  1  1  0    1  1  0  0  2
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      37  791   461   504  376   311    84   51    15   225   85   748
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   37  791   461   504  376   311    84   51    15   225   85   748
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   37  791   461   504  376   311    84   51    15   225   85   748
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    37  791   461   504  376   311    84   51    15   225   85   748
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   37  791   461   504  376   311    84   51    15   225   85   748
RTOR Reduct:    0    0   124     0    0     0     0    0     0     0    0   277
RTOR Vol:      37  791   337   504  376   311    84   51    15   225   85   471
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   37  791   337   504  376   311    84   51    15   225   85   471
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1650 1650  1650  1650 1650  1650  1650 1650  1650  1650 1650  1650
Adjustment:  0.91 1.00  1.00  0.91 1.00  1.00  1.00 1.00  1.00  0.91 1.00  0.91
Lanes:       2.00 2.00  1.00  2.00 1.09  0.91  1.00 1.55  0.45  1.45 0.55  2.00
Final Sat.:  3000 3300  1650  3000 1806  1494  1650 2550   750  2177  905  3000
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.01 0.24  0.20  0.17 0.21  0.21  0.05 0.02  0.02  0.10 0.09  0.16
Crit Volume:       396         252               84                          235
Crit Moves:       ****        ****              ****                         ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #6 San Pablo Ave / Hercules Ave
*******************************************************************************
Cycle (sec):         120                Critical Vol./Cap.(X):         0.430
Loss Time (sec):      16 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        50                Level Of Service:                  A
*******************************************************************************
Street Name:          San Pablo Ave                      Hercules Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        1  0  2  0  1    1  0  2  0  1    1  0  1  0  1    0  1  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     211  885   123   115  416   135    88    7    89    63    6    58
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  211  885   123   115  416   135    88    7    89    63    6    58
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  211  885   123   115  416   135    88    7    89    63    6    58
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   211  885   123   115  416   135    88    7    89    63    6    58
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  211  885   123   115  416   135    88    7    89    63    6    58
RTOR Reduct:    0    0    63     0    0    88     0    0    89     0    0     0
RTOR Vol:     211  885    60   115  416    47    88    7     0    63    6    58
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  211  885    60   115  416    47    88    7     0    63    6    58
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1650 1650  1650  1650 1650  1650  1650 1650  1650  1650 1650  1650
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 2.00  1.00  1.00 2.00  1.00  1.00 1.00  1.00  1.00 0.09  0.91
Final Sat.:  1650 3300  1650  1650 3300  1650  1650 1650  1650  1637  156  1507
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.13 0.27  0.04  0.07 0.13  0.03  0.05 0.00  0.00  0.04 0.04  0.04
Crit Volume:       443         115               88                     64
Crit Moves:       ****        ****              ****                   ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #7 San Pablo Ave / Pinole Valley Rd
*******************************************************************************
Cycle (sec):          60                Critical Vol./Cap.(X):         0.476
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        33                Level Of Service:                  A
*******************************************************************************
Street Name:          San Pablo Ave                     Pinole Valley Rd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        0  1  0  1  0    0  1  1  0  1    0  0  1! 0  0    0  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      15 1122    11    59  440     3     8    4     8     5    5   267
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   15 1122    11    59  440     3     8    4     8     5    5   267
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   15 1122    11    59  440     3     8    4     8     5    5   267
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    15 1122    11    59  440     3     8    4     8     5    5   267
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   15 1122    11    59  440     3     8    4     8     5    5   267
RTOR Reduct:    0    0     0     0    0     3     0    0     0     0    0    59
RTOR Vol:      15 1122    11    59  440     0     8    4     8     5    5   208
PCE Adj:     2.00 1.00  1.00  6.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   30 1122    11   354  440     0     8    4     8     5    5   208
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1800 1800  1800  1800 1800  1800  1800 1800  1800  1800 1800  1800
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.03 1.95  0.02  1.00 1.00  1.00  0.40 0.20  0.40  0.50 0.50  1.00
Final Sat.:    48 3518    34  1800 1800  1800   720  360   720   900  900  1800
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.31 0.32  0.32  0.03 0.24  0.00  0.01 0.01  0.01  0.01 0.01  0.12
Crit Volume:             582    59                8                          208
Crit Moves:             ****  ****              ****                        ****
*******************************************************************************
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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #8 San Pablo Ave / Tennent Ave
*******************************************************************************
Cycle (sec):          60                Critical Vol./Cap.(X):         0.559
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        39                Level Of Service:                  A
*******************************************************************************
Street Name:          San Pablo Ave                      Tennent Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Ignore           Ignore           Ignore           Ignore
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        0  1  1  0  1    0  1  0  1  0    0  0  1! 0  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      47 1373   144    36  251    34    43   30     9   139   72   146
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   47 1373   144    36  251    34    43   30     9   139   72   146
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   47 1373   144    36  251    34    43   30     9   139   72   146
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    47 1373   144    36  251    34    43   30     9   139   72   146
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   47 1373   144    36  251    34    43   30     9   139   72   146
RTOR Reduct:    0    0     0     0    0     0     0    0     0     0    0     0
RTOR Vol:      47 1373   144    36  251    34    43   30     9   139   72   146
PCE Adj:     1.00 1.00  1.00  6.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   47 1373   144   216  251    34    43   30     9   139   72   146
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1800 1800  1800  1800 1800  1800  1800 1800  1800  1800 1800  1800
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.07 1.93  1.00  0.51 1.35  0.14  0.52 0.37  0.11  1.00 0.33  0.67
Final Sat.:   119 3481  1800   919 2437   244   944  659   198  1800  594  1206
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.39 0.39  0.08  0.04 0.10  0.14  0.05 0.05  0.05  0.08 0.12  0.12
Crit Volume:       710          36                43                     218
Crit Moves:       ****         ****              ****                    ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #9 San Pablo Ave / Appian Wy
*******************************************************************************
Cycle (sec):          60                Critical Vol./Cap.(X):         0.565
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        40                Level Of Service:                  A
*******************************************************************************
Street Name:          San Pablo Ave                       Appian Wy
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        1  0  2  0  1    1  0  1  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       5  901   195   163  311    35    43   53     6   242   68   293
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    5  901   195   163  311    35    43   53     6   242   68   293
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    5  901   195   163  311    35    43   53     6   242   68   293
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     5  901   195   163  311    35    43   53     6   242   68   293
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    5  901   195   163  311    35    43   53     6   242   68   293
RTOR Reduct:    0    0   195     0    0     0     0    0     0     0    0     0
RTOR Vol:       5  901     0   163  311    35    43   53     6   242   68   293
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    5  901     0   163  311    35    43   53     6   242   68   293
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1800 1800  1800  1800 1800  1800  1800 1800  1800  1800 1800  1800
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 2.00  1.00  1.00 1.80  0.20  1.00 0.90  0.10  1.00 0.19  0.81
Final Sat.:  1800 3600  1800  1800 3236   364  1800 1617   183  1800  339  1461
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.25  0.00  0.09 0.10  0.10  0.02 0.03  0.03  0.13 0.20  0.20
Crit Volume:       451         163               43                    361
Crit Moves:       ****        ****              ****                  ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #10 Sycamore Ave / Bayberry Ave
*******************************************************************************
Cycle (sec):         120                Critical Vol./Cap.(X):         0.865
Loss Time (sec):      16 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180                Level Of Service:                  D
*******************************************************************************
Street Name:           Bayberry Ave                      Sycamore Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Include          Ignore
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        1  0  0  1  0    1  1  0  0  2    1  0  2  1  0    1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      33   24   259   796   65   291    69  923    37   105 1204    65
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   33   24   259   796   65   291    69  923    37   105 1204    65
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   33   24   259   796   65   291    69  923    37   105 1204    65
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    33   24   259   796   65   291    69  923    37   105 1204    65
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   33   24   259   796   65   291    69  923    37   105 1204    65
RTOR Reduct:    0    0     0     0    0    69     0    0     0     0    0     0
RTOR Vol:      33   24   259   796   65   222    69  923    37   105 1204    65
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   33   24   259   796   65   222    69  923    37   105 1204    65
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1650 1650  1650  1650 1650  1650  1650 1650  1650  1650 1650  1650
Adjustment:  1.00 1.00  1.00  0.91 1.00  0.91  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 0.08  0.92  1.85 0.15  2.00  1.00 2.88  0.12  1.00 2.00  1.00
Final Sat.:  1650  140  1510  2773  249  3000  1650 4759   191  1650 3300  1650
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.02 0.17  0.17  0.29 0.26  0.07  0.04 0.19  0.19  0.06 0.36  0.04
Crit Volume:             283   431               69                    602
Crit Moves:             ****  ****              ****                  ****
*******************************************************************************
```

Background Condition

A.M. Peak

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #1 Willow Ave / I-80 WB Off-ramp
*******************************************************************************
Cycle (sec):          90                Critical Vol./Cap.(X):         0.221
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        22                Level Of Service:                   A
*******************************************************************************
Street Name:         I-80 WB Off-ramp                     Willow Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Ignore           Ignore
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        0  0  0  0  0    1  0  0  0  1    0  0  2  0  0    0  0  2  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0    84    0    95     0  190     0     0  593     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    84    0    95     0  190     0     0  593     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0    84    0    95     0  190     0     0  593     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0    84    0    95     0  190     0     0  593     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0    84    0    95     0  190     0     0  593     0
RTOR Reduct:    0    0     0     0    0     0     0    0     0     0    0     0
RTOR Vol:       0    0     0    84    0    95     0  190     0     0  593     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0    84    0    95     0  190     0     0  593     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1720 1720  1720  1720 1720  1720  1720 1720  1720  1720 1720  1720
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.00 0.00  0.00  1.00 0.00  1.00  0.00 2.00  0.00  0.00 2.00  0.00
Final Sat.:     0    0     0  1720    0  1720     0 3440     0     0 3440     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.05 0.00  0.06  0.00 0.06  0.00  0.00 0.17  0.00
Crit Volume:                0    84                0                    297
Crit Moves:                    ****              ****                   ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #2 Willow Ave / Hawthorne Ave
*******************************************************************************
Cycle (sec):          90                Critical Vol./Cap.(X):         0.301
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        25                Level Of Service:                  A
*******************************************************************************
Street Name:          Hawthorne Ave                       Willow Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     5    5     5     5    5     0     0    5     5
Lanes:        0  0  0  0  0    0  0  2! 0  0    1  0  2  0  0    0  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0   254    0    15    22  368     0     0  347   136
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   254    0    15    22  368     0     0  347   136
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0   254    0    15    22  368     0     0  347   136
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0   254    0    15    22  368     0     0  347   136
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0   254    0    15    22  368     0     0  347   136
RTOR Reduct:    0    0     0     0    0     0     0    0     0     0    0     0
RTOR Vol:       0    0     0   254    0    15    22  368     0     0  347   136
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0   254    0    15    22  368     0     0  347   136
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1720 1720  1720  1720 1720  1720  1720 1720  1720  1720 1720  1720
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.00 0.00  0.00  1.00 0.89  0.11  1.00 2.00  0.00  0.00 1.44  0.56
Final Sat.:     0    0     0  1720 1528   192  1720 3440     0     0 2471   969
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.15 0.00  0.08  0.01 0.11  0.00  0.00 0.14  0.14
Crit Volume:         0         254               22                    242
Crit Moves:                    ****              ****                  ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #3 San Pablo Ave / Willow Ave
*******************************************************************************
Cycle (sec):          90                Critical Vol./Cap.(X):         0.218
Loss Time (sec):      12 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        29                Level Of Service:                   A
*******************************************************************************
Street Name:          San Pablo Ave                       Willow Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted      Split Phase      Split Phase
Rights:           Include          Include          Ignore           Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        2  0  0  0  1    0  0  0  0  0    0  0  1  1  0    1  0  2  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     132    0   101     0    0     0     0  262     0   172  206     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  132    0   101     0    0     0     0  262     0   172  206     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  132    0   101     0    0     0     0  262     0   172  206     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   132    0   101     0    0     0     0  262     0   172  206     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  132    0   101     0    0     0     0  262     0   172  206     0
RTOR Reduct:    0    0   101     0    0     0     0    0     0     0    0     0
RTOR Vol:     132    0     0     0    0     0     0  262     0   172  206     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  132    0     0     0    0     0     0  262     0   172  206     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1720 1720  1720  1720 1720  1720  1720 1720  1720  1720 1720  1720
Adjustment:  0.91 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       2.00 0.00  1.00  0.00 0.00  0.00  0.00 2.00  0.00  1.00 2.00  0.00
Final Sat.:  3127    0  1720     0    0     0     0 3440     0  1720 3440     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.00  0.00  0.00 0.00  0.00  0.00 0.08  0.00  0.10 0.06  0.00
Crit Volume:   66                      0              131         172
Crit Moves:  ****                                    ****        ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #4 San Pablo Ave / John Muir Pkwy
*******************************************************************************
Cycle (sec):         120                Critical Vol./Cap.(X):         0.513
Loss Time (sec):      16 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        58                Level Of Service:                  A
*******************************************************************************
Street Name:          San Pablo Ave                     John Muir Pkwy
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Ignore           Include          Include          Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        1  0  2  0  1    1  0  1  1  0    1  0  1  1  0    2  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     294  477  1481   204  564    12     5   33    17   436  171    43
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  294  477  1481   204  564    12     5   33    17   436  171    43
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  294  477  1481   204  564    12     5   33    17   436  171    43
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   294  477  1481   204  564    12     5   33    17   436  171    43
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  294  477  1481   204  564    12     5   33    17   436  171    43
RTOR Reduct:    0    0     0     0    0     0     0    0     0     0    0     0
RTOR Vol:     294  477  1481   204  564    12     5   33    17   436  171    43
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  294  477  1481   204  564    12     5   33    17   436  171    43
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1650 1650  1650  1650 1650  1650  1650 1650  1650  1650 1650  1650
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  0.91 1.00  1.00
Lanes:       1.00 2.00  1.00  1.00 1.96  0.04  1.00 1.32  0.68  2.00 0.80  0.20
Final Sat.:  1650 3300  1650  1650 3231    69  1650 2178  1122  3000 1318   332
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.18 0.14  0.90  0.12 0.17  0.17  0.00 0.02  0.02  0.15 0.13  0.13
Crit Volume:  294                   288               25         218
Crit Moves:  ****                  ****             ****        ****
*******************************************************************************
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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #5 San Pablo Ave / Sycamore Ave
*******************************************************************************
Cycle (sec):         120                Critical Vol./Cap.(X):         0.927
Loss Time (sec):      16 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180                Level Of Service:                   E
*******************************************************************************
Street Name:          San Pablo Ave                      Sycamore Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        2  0  2  0  1    2  0  1  1  0    1  0  1  1  0    1  1  0  0  2
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      22  667   420   474  628   140   196   94    27   717  104  1605
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   22  667   420   474  628   140   196   94    27   717  104  1605
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   22  667   420   474  628   140   196   94    27   717  104  1605
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    22  667   420   474  628   140   196   94    27   717  104  1605
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   22  667   420   474  628   140   196   94    27   717  104  1605
RTOR Reduct:    0    0   394     0    0     0     0    0     0     0    0   261
RTOR Vol:      22  667    26   474  628   140   196   94    27   717  104  1344
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   22  667    26   474  628   140   196   94    27   717  104  1344
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1650 1650  1650  1650 1650  1650  1650 1650  1650  1650 1650  1650
Adjustment:  0.91 1.00  1.00  0.91 1.00  1.00  1.00 1.00  1.00  0.91 1.00  0.91
Lanes:       2.00 2.00  1.00  2.00 1.64  0.36  1.00 1.55  0.45  1.75 0.25  2.00
Final Sat.:  3000 3300  1650  3000 2698   602  1650 2564   736  2620  418  3000
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.01 0.20  0.02  0.16 0.23  0.23  0.12 0.04  0.04  0.27 0.25  0.45
Crit Volume:       334         237              196                          672
Crit Moves:       ****        ****             ****                         ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #6 San Pablo Ave / Hercules Ave
*******************************************************************************
Cycle (sec):         120                Critical Vol./Cap.(X):         0.598
Loss Time (sec):      16 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        71                Level Of Service:                  A
*******************************************************************************
Street Name:          San Pablo Ave                      Hercules Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        1  0  2  0  1    1  0  2  0  1    1  0  1  0  1    0  1  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      81  488    33    63  997    82   222    4   253   166    8   186
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   81  488    33    63  997    82   222    4   253   166    8   186
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   81  488    33    63  997    82   222    4   253   166    8   186
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    81  488    33    63  997    82   222    4   253   166    8   186
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   81  488    33    63  997    82   222    4   253   166    8   186
RTOR Reduct:    0    0    33     0    0    82     0    0    81     0    0     0
RTOR Vol:      81  488     0    63  997     0   222    4   172   166    8   186
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   81  488     0    63  997     0   222    4   172   166    8   186
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1650 1650  1650  1650 1650  1650  1650 1650  1650  1650 1650  1650
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 2.00  1.00  1.00 2.00  1.00  1.00 1.00  1.00  0.92 0.08  1.00
Final Sat.:  1650 3300  1650  1650 3300  1650  1650 1650  1650  1522  128  1650
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.05 0.15  0.00  0.04 0.30  0.00  0.13 0.00  0.10  0.11 0.06  0.11
Crit Volume:   81                   499         222                          186
Crit Moves:  ****                  ****        ****                         ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #7 San Pablo Ave / Pinole Valley Rd
*******************************************************************************
Cycle (sec):          60                Critical Vol./Cap.(X):         0.480
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        33                Level Of Service:                  A
*******************************************************************************
Street Name:          San Pablo Ave                     Pinole Valley Rd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        0  1  0  1  0    0  1  1  0  1    0  0  1! 0  0    0  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      10  406    10   187 1065     4     2    0     1    21   11    49
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   10  406    10   187 1065     4     2    0     1    21   11    49
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   10  406    10   187 1065     4     2    0     1    21   11    49
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    10  406    10   187 1065     4     2    0     1    21   11    49
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   10  406    10   187 1065     4     2    0     1    21   11    49
RTOR Reduct:    0    0     0     0    0     2     0    0     0     0    0    49
RTOR Vol:      10  406    10   187 1065     2     2    0     1    21   11     0
PCE Adj:     6.00 1.00  1.00  2.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   60  406    10   374 1065     2     2    0     1    21   11     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1800 1800  1800  1800 1800  1800  1800 1800  1800  1800 1800  1800
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.05 1.91  0.04  0.70 1.30  1.00  0.67 0.00  0.33  0.66 0.34  1.00
Final Sat.:    96 3429    76  1264 2336  1800  1200    0   600  1181  619  1800
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.10 0.12  0.13  0.15 0.46  0.00  0.00 0.00  0.00  0.02 0.02  0.00
Crit Volume:   10                   821           2                    32
Crit Moves:  ****                  ****        ****                 ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #8 San Pablo Ave / Tennent Ave
*******************************************************************************
Cycle (sec):          60                Critical Vol./Cap.(X):         0.651
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        49                Level Of Service:                  B
*******************************************************************************
Street Name:          San Pablo Ave                      Tennent Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Ignore           Ignore           Ignore           Ignore
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        0  1  1  0  1    0  1  0  1  0    0  0  1! 0  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      20  335   241   138 1444    37    10   52    31   244   49    80
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   20  335   241   138 1444    37    10   52    31   244   49    80
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   20  335   241   138 1444    37    10   52    31   244   49    80
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    20  335   241   138 1444    37    10   52    31   244   49    80
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   20  335   241   138 1444    37    10   52    31   244   49    80
RTOR Reduct:    0    0     0     0    0     0     0    0     0     0    0     0
RTOR Vol:      20  335   241   138 1444    37    10   52    31   244   49    80
PCE Adj:     6.00 1.00  1.00  2.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  120  335   241   276 1444    37    10   52    31   244   49    80
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1800 1800  1800  1800 1800  1800  1800 1800  1800  1800 1800  1800
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.94 1.06  1.00  0.19 1.77  0.04  0.11 0.56  0.33  1.00 0.38  0.62
Final Sat.:  1694 1906  1800   335 3189    76   194 1006   600  1800  684  1116
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.01 0.18  0.13  0.41 0.45  0.49  0.05 0.05  0.05  0.14 0.07  0.07
Crit Volume:   20                   815               93         244
Crit Moves:  ****                  ****             ****        ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #9 San Pablo Ave / Appian Wy
*******************************************************************************
Cycle (sec):          60                Critical Vol./Cap.(X):         0.360
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        27                Level Of Service:                  A
*******************************************************************************
Street Name:          San Pablo Ave                       Appian Wy
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        1  0  2  0  1    1  0  1  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       4  279   169   337  764     8    21   69    12    91    6    68
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    4  279   169   337  764     8    21   69    12    91    6    68
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    4  279   169   337  764     8    21   69    12    91    6    68
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     4  279   169   337  764     8    21   69    12    91    6    68
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    4  279   169   337  764     8    21   69    12    91    6    68
RTOR Reduct:    0    0    91     0    0     0     0    0     0     0    0     0
RTOR Vol:       4  279    78   337  764     8    21   69    12    91    6    68
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    4  279    78   337  764     8    21   69    12    91    6    68
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1800 1800  1800  1800 1800  1800  1800 1800  1800  1800 1800  1800
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 2.00  1.00  1.00 1.98  0.02  1.00 0.85  0.15  1.00 0.08  0.92
Final Sat.:  1800 3600  1800  1800 3563    37  1800 1533   267  1800  146  1654
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.08  0.04  0.19 0.21  0.21  0.01 0.05  0.04  0.05 0.04  0.04
Crit Volume:       140         337                     81          91
Crit Moves:       ****        ****                    ****        ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #10 Sycamore Ave / Bayberry Ave
*******************************************************************************
Cycle (sec):         120                Critical Vol./Cap.(X):         0.975
Loss Time (sec):      16 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180                Level Of Service:                   E
*******************************************************************************
Street Name:           Bayberry Ave                      Sycamore Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Include          Ignore
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        1  0  0  1  0    1  1  0  0  2    1  0  2  1  0    1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      47   18   223   912   64   612    20  817    33   223 1623    54
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   47   18   223   912   64   612    20  817    33   223 1623    54
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   47   18   223   912   64   612    20  817    33   223 1623    54
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    47   18   223   912   64   612    20  817    33   223 1623    54
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   47   18   223   912   64   612    20  817    33   223 1623    54
RTOR Reduct:    0    0     0     0    0    20     0    0     0     0    0     0
RTOR Vol:      47   18   223   912   64   592    20  817    33   223 1623    54
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   47   18   223   912   64   592    20  817    33   223 1623    54
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1650 1650  1650  1650 1650  1650  1650 1650  1650  1650 1650  1650
Adjustment:  1.00 1.00  1.00  0.91 1.00  0.91  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 0.07  0.93  1.87 0.13  2.00  1.00 2.88  0.12  1.00 2.00  1.00
Final Sat.:  1650  123  1527  2803  216  3000  1650 4758   192  1650 3300  1650
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.15  0.15  0.33 0.30  0.20  0.01 0.17  0.17  0.14 0.49  0.03
Crit Volume:       241         488               20                    812
Crit Moves:       ****        ****              ****                  ****
*******************************************************************************
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P.M. PEAK

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #1 Willow Ave / I-80 WB Off-ramp
*******************************************************************************
Cycle (sec):          90                Critical Vol./Cap.(X):         0.308
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        25                Level Of Service:                   A
*******************************************************************************
Street Name:         I-80 WB Off-ramp                     Willow Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Ignore           Ignore
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        0  0  0  0  0    1  0  0  0  1    0  0  2  0  0    0  0  2  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0   113    0    92     0  331     0     0  833     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   113    0    92     0  331     0     0  833     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0   113    0    92     0  331     0     0  833     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0   113    0    92     0  331     0     0  833     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0   113    0    92     0  331     0     0  833     0
RTOR Reduct:    0    0     0     0    0     0     0    0     0     0    0     0
RTOR Vol:       0    0     0   113    0    92     0  331     0     0  833     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0   113    0    92     0  331     0     0  833     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1720 1720  1720  1720 1720  1720  1720 1720  1720  1720 1720  1720
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.00 0.00  0.00  1.00 0.00  1.00  0.00 2.00  0.00  0.00 2.00  0.00
Final Sat.:     0    0     0  1720    0  1720     0 3440     0     0 3440     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.07 0.00  0.05  0.00 0.10  0.00  0.00 0.24  0.00
Crit Volume:         0         113                 0                    417
Crit Moves:                    ****               ****                  ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #2 Willow Ave / Hawthorne Ave
*******************************************************************************
Cycle (sec):          90                Critical Vol./Cap.(X):         0.241
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        23                Level Of Service:                  A
*******************************************************************************
Street Name:          Hawthorne Ave                       Willow Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     5    5     5     5    5     0     0    5     5
Lanes:        0  0  0  0  0    0  0  2! 0  0    1  0  2  0  0    0  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0    83    0    10    40  513     0     0  449   134
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    83    0    10    40  513     0     0  449   134
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0    83    0    10    40  513     0     0  449   134
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0    83    0    10    40  513     0     0  449   134
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0    83    0    10    40  513     0     0  449   134
RTOR Reduct:    0    0     0     0    0     0     0    0     0     0    0     0
RTOR Vol:       0    0     0    83    0    10    40  513     0     0  449   134
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0    83    0    10    40  513     0     0  449   134
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1720 1720  1720  1720 1720  1720  1720 1720  1720  1720 1720  1720
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.00 0.00  0.00  1.00 0.78  0.22  1.00 2.00  0.00  0.00 1.54  0.46
Final Sat.:     0    0     0  1720 1350   370  1720 3440     0     0 2649   791
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.05 0.00  0.03  0.02 0.15  0.00  0.00 0.17  0.17
Crit Volume:         0          83               40                          292
Crit Moves:                    ****             ****                         ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #3 San Pablo Ave / Willow Ave
*******************************************************************************
Cycle (sec):          90                Critical Vol./Cap.(X):         0.442
Loss Time (sec):      12 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        41                Level Of Service:                   A
*******************************************************************************
Street Name:          San Pablo Ave                       Willow Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted      Split Phase      Split Phase
Rights:           Include          Include          Ignore           Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        2  0  0  0  1    0  0  0  0  0    0  0  1  1  0    1  0  2  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     511    0   187     0    0     0     0  398     0   139  559     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  511    0   187     0    0     0     0  398     0   139  559     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  511    0   187     0    0     0     0  398     0   139  559     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   511    0   187     0    0     0     0  398     0   139  559     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  511    0   187     0    0     0     0  398     0   139  559     0
RTOR Reduct:    0    0   139     0    0     0     0    0     0     0    0     0
RTOR Vol:     511    0    48     0    0     0     0  398     0   139  559     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  511    0    48     0    0     0     0  398     0   139  559     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1720 1720  1720  1720 1720  1720  1720 1720  1720  1720 1720  1720
Adjustment:  0.91 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       2.00 0.00  1.00  0.00 0.00  0.00  0.00 2.00  0.00  1.00 2.00  0.00
Final Sat.:  3127    0  1720     0    0     0     0 3440     0  1720 3440     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.16 0.00  0.03  0.00 0.00  0.00  0.00 0.12  0.00  0.08 0.16  0.00
Crit Volume:  256                     0              199              280
Crit Moves:  ****                                   ****             ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #4 San Pablo Ave / John Muir Pkwy
*******************************************************************************
Cycle (sec):         120                Critical Vol./Cap.(X):         0.706
Loss Time (sec):      16 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        96                Level Of Service:                   C
*******************************************************************************
Street Name:          San Pablo Ave                     John Muir Pkwy
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Ignore           Include          Include          Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        1  0  2  0  1    1  0  1  1  0    1  0  1  1  0    2  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      73  800  1321   206  352     9    12  409   142   514   14    33
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   73  800  1321   206  352     9    12  409   142   514   14    33
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   73  800  1321   206  352     9    12  409   142   514   14    33
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    73  800  1321   206  352     9    12  409   142   514   14    33
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   73  800  1321   206  352     9    12  409   142   514   14    33
RTOR Reduct:    0    0     0     0    0     0     0    0     0     0    0     0
RTOR Vol:      73  800  1321   206  352     9    12  409   142   514   14    33
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   73  800  1321   206  352     9    12  409   142   514   14    33
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1650 1650  1650  1650 1650  1650  1650 1650  1650  1650 1650  1650
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  0.91 1.00  1.00
Lanes:       1.00 2.00  1.00  1.00 1.95  0.05  1.00 1.48  0.52  2.00 0.30  0.70
Final Sat.:  1650 3300  1650  1650 3218    82  1650 2450   850  3000  491  1159
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.24  0.80  0.12 0.11  0.11  0.01 0.17  0.17  0.17 0.03  0.03
Crit Volume:       400         206                          276   257
Crit Moves:       ****        ****                         ****  ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #5 San Pablo Ave / Sycamore Ave
*******************************************************************************
Cycle (sec):         120                Critical Vol./Cap.(X):         0.830
Loss Time (sec):      16 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       167                Level Of Service:                  D
*******************************************************************************
Street Name:          San Pablo Ave                      Sycamore Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        2  0  2  0  1    2  0  1  1  0    1  0  1  1  0    1  1  0  0  2
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      47 1012   590   645  481   398   119   72    21   320  121  1062
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   47 1012   590   645  481   398   119   72    21   320  121  1062
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   47 1012   590   645  481   398   119   72    21   320  121  1062
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    47 1012   590   645  481   398   119   72    21   320  121  1062
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   47 1012   590   645  481   398   119   72    21   320  121  1062
RTOR Reduct:    0    0   176     0    0     0     0    0     0     0    0   355
RTOR Vol:      47 1012   414   645  481   398   119   72    21   320  121   707
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   47 1012   414   645  481   398   119   72    21   320  121   707
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1650 1650  1650  1650 1650  1650  1650 1650  1650  1650 1650  1650
Adjustment:  0.91 1.00  1.00  0.91 1.00  1.00  1.00 1.00  1.00  0.91 1.00  0.91
Lanes:       2.00 2.00  1.00  2.00 1.09  0.91  1.00 1.55  0.45  1.45 0.55  2.00
Final Sat.:  3000 3300  1650  3000 1806  1494  1650 2555   745  2177  905  3000
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.02 0.31  0.25  0.22 0.27  0.27  0.07 0.03  0.03  0.15 0.13  0.24
Crit Volume:       506         323              119                          354
Crit Moves:       ****        ****             ****                          ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #6 San Pablo Ave / Hercules Ave
*******************************************************************************
Cycle (sec):         120                Critical Vol./Cap.(X):         0.534
Loss Time (sec):      16 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        61                Level Of Service:                  A
*******************************************************************************
Street Name:          San Pablo Ave                      Hercules Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        1  0  2  0  1    1  0  2  0  1    1  0  1  0  1    0  1  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     270 1133   157   147  532   173    97    8    98    69    7    64
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  270 1133   157   147  532   173    97    8    98    69    7    64
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  270 1133   157   147  532   173    97    8    98    69    7    64
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   270 1133   157   147  532   173    97    8    98    69    7    64
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  270 1133   157   147  532   173    97    8    98    69    7    64
RTOR Reduct:    0    0    69     0    0    97     0    0    98     0    0     0
RTOR Vol:     270 1133    88   147  532    76    97    8     0    69    7    64
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  270 1133    88   147  532    76    97    8     0    69    7    64
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1650 1650  1650  1650 1650  1650  1650 1650  1650  1650 1650  1650
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 2.00  1.00  1.00 2.00  1.00  1.00 1.00  1.00  0.99 0.10  0.91
Final Sat.:  1650 3300  1650  1650 3300  1650  1650 1650  1650  1626  165  1509
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.16 0.34  0.05  0.09 0.16  0.05  0.06 0.00  0.00  0.04 0.04  0.04
Crit Volume:       567         147               97                    70
Crit Moves:       ****        ****              ****                  ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #7 San Pablo Ave / Pinole Valley Rd
*******************************************************************************
Cycle (sec):          60                Critical Vol./Cap.(X):         0.582
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        41                Level Of Service:                  A
*******************************************************************************
Street Name:          San Pablo Ave                    Pinole Valley Rd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        0  1  0  1  0    0  1  1  0  1    0  0  1! 0  0    0  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      19 1436    14    76  563     4     9    4     9     6    6   294
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   19 1436    14    76  563     4     9    4     9     6    6   294
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   19 1436    14    76  563     4     9    4     9     6    6   294
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    19 1436    14    76  563     4     9    4     9     6    6   294
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   19 1436    14    76  563     4     9    4     9     6    6   294
RTOR Reduct:    0    0     0     0    0     4     0    0     0     0    0    76
RTOR Vol:      19 1436    14    76  563     0     9    4     9     6    6   218
PCE Adj:     2.00 1.00  1.00  6.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   38 1436    14   456  563     0     9    4     9     6    6   218
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1800 1800  1800  1800 1800  1800  1800 1800  1800  1800 1800  1800
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.03 1.95  0.02  1.00 1.00  1.00  0.41 0.18  0.41  0.50 0.50  1.00
Final Sat.:    47 3519    34  1800 1800  1800   736  327   736   900  900  1800
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.40 0.41  0.41  0.04 0.31  0.00  0.01 0.01  0.01  0.01 0.01  0.12
Crit Volume:             744    76                9                          218
Crit Moves:             ****  ****              ****                        ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #8 San Pablo Ave / Tennent Ave
*******************************************************************************
Cycle (sec):          60                Critical Vol./Cap.(X):         0.709
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        59                Level Of Service:                  C
*******************************************************************************
Street Name:          San Pablo Ave                      Tennent Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Ignore           Ignore           Ignore           Ignore
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        0  1  1  0  1    0  1  0  1  0    0  0  1! 0  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      60 1757   184    46  321    44    47   33    10   153   79   161
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   60 1757   184    46  321    44    47   33    10   153   79   161
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   60 1757   184    46  321    44    47   33    10   153   79   161
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    60 1757   184    46  321    44    47   33    10   153   79   161
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   60 1757   184    46  321    44    47   33    10   153   79   161
RTOR Reduct:    0    0     0     0    0     0     0    0     0     0    0     0
RTOR Vol:      60 1757   184    46  321    44    47   33    10   153   79   161
PCE Adj:     2.00 1.00  1.00  6.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  120 1757   184   276  321    44    47   33    10   153   79   161
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1800 1800  1800  1800 1800  1800  1800 1800  1800  1800 1800  1800
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.14 1.86  1.00  0.51 1.35  0.14  0.52 0.37  0.11  1.00 0.33  0.67
Final Sat.:   246 3354  1800   915 2438   247   940  660   200  1800  593  1208
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.24 0.52  0.10  0.05 0.13  0.18  0.05 0.05  0.05  0.09 0.13  0.13
Crit Volume:       943          46                47                    240
Crit Moves:       ****         ****              ****                   ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #9 San Pablo Ave / Appian Wy
*******************************************************************************
Cycle (sec):          60                Critical Vol./Cap.(X):         0.683
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        54                Level Of Service:                  B
*******************************************************************************
Street Name:          San Pablo Ave                       Appian Wy
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        1  0  2  0  1    1  0  1  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       6 1153   250   209  398    45    47   58     7   266   75   322
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    6 1153   250   209  398    45    47   58     7   266   75   322
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    6 1153   250   209  398    45    47   58     7   266   75   322
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     6 1153   250   209  398    45    47   58     7   266   75   322
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    6 1153   250   209  398    45    47   58     7   266   75   322
RTOR Reduct:    0    0   250     0    0     0     0    0     0     0    0     0
RTOR Vol:       6 1153     0   209  398    45    47   58     7   266   75   322
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    6 1153     0   209  398    45    47   58     7   266   75   322
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1800 1800  1800  1800 1800  1800  1800 1800  1800  1800 1800  1800
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 2.00  1.00  1.00 1.80  0.20  1.00 0.89  0.11  1.00 0.19  0.81
Final Sat.:  1800 3600  1800  1800 3234   366  1800 1606   194  1800  340  1460
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.32  0.00  0.12 0.12  0.12  0.03 0.04  0.04  0.15 0.22  0.22
Crit Volume:       577         209               47                          397
Crit Moves:       ****        ****              ****                         ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #10 Sycamore Ave / Bayberry Ave
*******************************************************************************
Cycle (sec):         120                Critical Vol./Cap.(X):         1.098
Loss Time (sec):      16 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180                Level Of Service:                   F
*******************************************************************************
Street Name:           Bayberry Ave                      Sycamore Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Include          Ignore
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        1  0  0  1  0    1  1  0  0  2    1  0  2  1  0    1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      47   34   368  1130   92   413    76 1015    41   116 1324    72
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   47   34   368  1130   92   413    76 1015    41   116 1324    72
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   47   34   368  1130   92   413    76 1015    41   116 1324    72
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    47   34   368  1130   92   413    76 1015    41   116 1324    72
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   47   34   368  1130   92   413    76 1015    41   116 1324    72
RTOR Reduct:    0    0     0     0    0    76     0    0     0     0    0     0
RTOR Vol:      47   34   368  1130   92   337    76 1015    41   116 1324    72
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   47   34   368  1130   92   337    76 1015    41   116 1324    72
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1650 1650  1650  1650 1650  1650  1650 1650  1650  1650 1650  1650
Adjustment:  1.00 1.00  1.00  0.91 1.00  0.91  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 0.08  0.92  1.85 0.15  2.00  1.00 2.88  0.12  1.00 2.00  1.00
Final Sat.:  1650  140  1510  2774  248  3000  1650 4758   192  1650 3300  1650
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.24  0.24  0.41 0.37  0.11  0.05 0.21  0.21  0.07 0.40  0.04
Crit Volume:             402   611               76                    662
Crit Moves:             ****  ****              ****                  ****
*******************************************************************************
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Project Condition

A.M. Peak

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #1 Willow Ave / I-80 WB Off-ramp
*******************************************************************************
Cycle (sec):          90                Critical Vol./Cap.(X):         0.221
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        22                Level Of Service:                  A
*******************************************************************************
Street Name:         I-80 WB Off-ramp                     Willow Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Ignore           Ignore
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        0  0  0  0  0    1  0  0  0  1    0  0  2  0  0    0  0  2  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0    84    0    95     0  190     0     0  593     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    84    0    95     0  190     0     0  593     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0    84    0    95     0  190     0     0  593     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0    84    0    95     0  190     0     0  593     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0    84    0    95     0  190     0     0  593     0
RTOR Reduct:    0    0     0     0    0     0     0    0     0     0    0     0
RTOR Vol:       0    0     0    84    0    95     0  190     0     0  593     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0    84    0    95     0  190     0     0  593     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1720 1720  1720  1720 1720  1720  1720 1720  1720  1720 1720  1720
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.00 0.00  0.00  1.00 0.00  1.00  0.00 2.00  0.00  0.00 2.00  0.00
Final Sat.:     0    0     0  1720    0  1720     0 3440     0     0 3440     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.05 0.00  0.06  0.00 0.06  0.00  0.00 0.17  0.00
Crit Volume:                0    84                0                    297
Crit Moves:                    ****              ****                   ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #2 Willow Ave / Hawthorne Ave
*******************************************************************************
Cycle (sec):          90                Critical Vol./Cap.(X):         0.301
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        25                Level Of Service:                   A
*******************************************************************************
Street Name:          Hawthorne Ave                       Willow Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     5    5     5     5    5     0     0    5     5
Lanes:        0  0  0  0  0    0  0  2! 0  0    1  0  2  0  0    0  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0   254    0    15    22  368     0     0  347   136
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   254    0    15    22  368     0     0  347   136
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0   254    0    15    22  368     0     0  347   136
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0   254    0    15    22  368     0     0  347   136
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0   254    0    15    22  368     0     0  347   136
RTOR Reduct:    0    0     0     0    0     0     0    0     0     0    0     0
RTOR Vol:       0    0     0   254    0    15    22  368     0     0  347   136
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0   254    0    15    22  368     0     0  347   136
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1720 1720  1720  1720 1720  1720  1720 1720  1720  1720 1720  1720
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.00 0.00  0.00  1.00 0.89  0.11  1.00 2.00  0.00  0.00 1.44  0.56
Final Sat.:     0    0     0  1720 1528   192  1720 3440     0     0 2471   969
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.15 0.00  0.08  0.01 0.11  0.00  0.00 0.14  0.14
Crit Volume:         0         254               22                    242
Crit Moves:                    ****              ****                  ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #3 San Pablo Ave / Willow Ave
*******************************************************************************
Cycle (sec):          90                Critical Vol./Cap.(X):         0.220
Loss Time (sec):      12 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        29                Level Of Service:                   A
*******************************************************************************
Street Name:          San Pablo Ave                       Willow Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted      Split Phase      Split Phase
Rights:           Include          Include          Ignore           Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        2  0  0  0  1    0  0  0  0  0    0  0  1  1  0    1  0  2  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     132    0   101     0    0     0     0  262     6   172  206     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  132    0   101     0    0     0     0  262     6   172  206     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  132    0   101     0    0     0     0  262     6   172  206     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   132    0   101     0    0     0     0  262     6   172  206     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  132    0   101     0    0     0     0  262     6   172  206     0
RTOR Reduct:    0    0   101     0    0     0     0    0     0     0    0     0
RTOR Vol:     132    0     0     0    0     0     0  262     6   172  206     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  132    0     0     0    0     0     0  262     6   172  206     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1720 1720  1720  1720 1720  1720  1720 1720  1720  1720 1720  1720
Adjustment:  0.91 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       2.00 0.00  1.00  0.00 0.00  0.00  0.00 1.96  0.04  1.00 2.00  0.00
Final Sat.:  3127    0  1720     0    0     0     0 3363    77  1720 3440     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.00  0.00  0.00 0.00  0.00  0.00 0.08  0.08  0.10 0.06  0.00
Crit Volume:   66                      0              134         172
Crit Moves:  ****                                    ****        ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #4 San Pablo Ave / John Muir Pkwy
*******************************************************************************
Cycle (sec):         120                Critical Vol./Cap.(X):         0.524
Loss Time (sec):      16 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        60                Level Of Service:                  A
*******************************************************************************
Street Name:          San Pablo Ave                     John Muir Pkwy
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Ignore           Include          Include          Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        1  0  2  0  1    1  0  1  1  0    1  0  1  1  0    2  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     312  477  1481   204  564    12     5   33    17   436  180    43
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  312  477  1481   204  564    12     5   33    17   436  180    43
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  312  477  1481   204  564    12     5   33    17   436  180    43
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   312  477  1481   204  564    12     5   33    17   436  180    43
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  312  477  1481   204  564    12     5   33    17   436  180    43
RTOR Reduct:    0    0     0     0    0     0     0    0     0     0    0     0
RTOR Vol:     312  477  1481   204  564    12     5   33    17   436  180    43
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  312  477  1481   204  564    12     5   33    17   436  180    43
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1650 1650  1650  1650 1650  1650  1650 1650  1650  1650 1650  1650
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  0.91 1.00  1.00
Lanes:       1.00 2.00  1.00  1.00 1.96  0.04  1.00 1.32  0.68  2.00 0.81  0.19
Final Sat.:  1650 3300  1650  1650 3231    69  1650 2178  1122  3000 1332   318
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.19 0.14  0.90  0.12 0.17  0.17  0.00 0.02  0.02  0.15 0.14  0.14
Crit Volume:  312                    288               25         218
Crit Moves:  ****                   ****             ****        ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #5 San Pablo Ave / Sycamore Ave
*******************************************************************************
Cycle (sec):         120                Critical Vol./Cap.(X):         0.933
Loss Time (sec):      16 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180                Level Of Service:                   E
*******************************************************************************
Street Name:          San Pablo Ave                      Sycamore Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        2  0  2  0  1    2  0  1  1  0    1  0  1  1  0    1  1  0  0  2
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      28  667   420   474  628   140   196   94    27   717  104  1623
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   28  667   420   474  628   140   196   94    27   717  104  1623
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   28  667   420   474  628   140   196   94    27   717  104  1623
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    28  667   420   474  628   140   196   94    27   717  104  1623
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   28  667   420   474  628   140   196   94    27   717  104  1623
RTOR Reduct:    0    0   394     0    0     0     0    0     0     0    0   261
RTOR Vol:      28  667    26   474  628   140   196   94    27   717  104  1362
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   28  667    26   474  628   140   196   94    27   717  104  1362
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1650 1650  1650  1650 1650  1650  1650 1650  1650  1650 1650  1650
Adjustment:  0.91 1.00  1.00  0.91 1.00  1.00  1.00 1.00  1.00  0.91 1.00  0.91
Lanes:       2.00 2.00  1.00  2.00 1.64  0.36  1.00 1.55  0.45  1.75 0.25  2.00
Final Sat.:  3000 3300  1650  3000 2698   602  1650 2564   736  2620  418  3000
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.01 0.20  0.02  0.16 0.23  0.23  0.12 0.04  0.04  0.27 0.25  0.45
Crit Volume:       334         237              196                          681
Crit Moves:       ****        ****             ****                         ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #6 San Pablo Ave / Hercules Ave
*******************************************************************************
Cycle (sec):         120                Critical Vol./Cap.(X):         0.598
Loss Time (sec):      16 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        71                Level Of Service:                  A
*******************************************************************************
Street Name:          San Pablo Ave                      Hercules Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        1  0  2  0  1    1  0  2  0  1    1  0  1  0  1    0  1  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      81  494    33    63  997    82   222    4   253   166    8   186
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   81  494    33    63  997    82   222    4   253   166    8   186
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   81  494    33    63  997    82   222    4   253   166    8   186
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    81  494    33    63  997    82   222    4   253   166    8   186
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   81  494    33    63  997    82   222    4   253   166    8   186
RTOR Reduct:    0    0    33     0    0    82     0    0    81     0    0     0
RTOR Vol:      81  494     0    63  997     0   222    4   172   166    8   186
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   81  494     0    63  997     0   222    4   172   166    8   186
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1650 1650  1650  1650 1650  1650  1650 1650  1650  1650 1650  1650
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 2.00  1.00  1.00 2.00  1.00  1.00 1.00  1.00  0.92 0.08  1.00
Final Sat.:  1650 3300  1650  1650 3300  1650  1650 1650  1650  1522  128  1650
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.05 0.15  0.00  0.04 0.30  0.00  0.13 0.00  0.10  0.11 0.06  0.11
Crit Volume:   81                   499         222                          186
Crit Moves:  ****                  ****        ****                         ****
*******************************************************************************
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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #7 San Pablo Ave / Pinole Valley Rd
*******************************************************************************
Cycle (sec):          60                Critical Vol./Cap.(X):         0.480
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        33                Level Of Service:                  A
*******************************************************************************
Street Name:          San Pablo Ave                     Pinole Valley Rd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        0  1  0  1  0    0  1  1  0  1    0  0  1! 0  0    0  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      10  412    10   187 1065     4     2    0     1    21   11    49
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   10  412    10   187 1065     4     2    0     1    21   11    49
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   10  412    10   187 1065     4     2    0     1    21   11    49
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    10  412    10   187 1065     4     2    0     1    21   11    49
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   10  412    10   187 1065     4     2    0     1    21   11    49
RTOR Reduct:    0    0     0     0    0     2     0    0     0     0    0    49
RTOR Vol:      10  412    10   187 1065     2     2    0     1    21   11     0
PCE Adj:     6.00 1.00  1.00  2.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   60  412    10   374 1065     2     2    0     1    21   11     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1800 1800  1800  1800 1800  1800  1800 1800  1800  1800 1800  1800
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.05 1.91  0.04  0.70 1.30  1.00  0.67 0.00  0.33  0.66 0.34  1.00
Final Sat.:    94 3431    75  1264 2336  1800  1200    0   600  1181  619  1800
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.12  0.13  0.15 0.46  0.00  0.00 0.00  0.00  0.02 0.02  0.00
Crit Volume:   10                   821           2                    32
Crit Moves:  ****                  ****        ****                 ****
*******************************************************************************
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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #8 San Pablo Ave / Tennent Ave
*******************************************************************************
Cycle (sec):          60                Critical Vol./Cap.(X):         0.651
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        49                Level Of Service:                  B
*******************************************************************************
Street Name:          San Pablo Ave                      Tennent Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Ignore           Ignore           Ignore           Ignore
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        0  1  1  0  1    0  1  0  1  0    0  0  1! 0  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      20  341   241   138 1444    37    10   52    31   244   49    80
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   20  341   241   138 1444    37    10   52    31   244   49    80
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   20  341   241   138 1444    37    10   52    31   244   49    80
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    20  341   241   138 1444    37    10   52    31   244   49    80
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   20  341   241   138 1444    37    10   52    31   244   49    80
RTOR Reduct:    0    0     0     0    0     0     0    0     0     0    0     0
RTOR Vol:      20  341   241   138 1444    37    10   52    31   244   49    80
PCE Adj:     6.00 1.00  1.00  2.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  120  341   241   276 1444    37    10   52    31   244   49    80
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1800 1800  1800  1800 1800  1800  1800 1800  1800  1800 1800  1800
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.92 1.08  1.00  0.19 1.77  0.04  0.11 0.56  0.33  1.00 0.38  0.62
Final Sat.:  1655 1945  1800   335 3189    76   194 1006   600  1800  684  1116
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.01 0.18  0.13  0.41 0.45  0.49  0.05 0.05  0.05  0.14 0.07  0.07
Crit Volume:   20                   815               93         244
Crit Moves:  ****                  ****             ****        ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #9 San Pablo Ave / Appian Wy
*******************************************************************************
Cycle (sec):          60                Critical Vol./Cap.(X):         0.362
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        27                Level Of Service:                  A
*******************************************************************************
Street Name:          San Pablo Ave                       Appian Wy
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        1  0  2  0  1    1  0  1  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       4  285   169   337  764     8    21   69    12    91    6    68
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    4  285   169   337  764     8    21   69    12    91    6    68
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    4  285   169   337  764     8    21   69    12    91    6    68
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     4  285   169   337  764     8    21   69    12    91    6    68
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    4  285   169   337  764     8    21   69    12    91    6    68
RTOR Reduct:    0    0    91     0    0     0     0    0     0     0    0     0
RTOR Vol:       4  285    78   337  764     8    21   69    12    91    6    68
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    4  285    78   337  764     8    21   69    12    91    6    68
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1800 1800  1800  1800 1800  1800  1800 1800  1800  1800 1800  1800
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 2.00  1.00  1.00 1.98  0.02  1.00 0.85  0.15  1.00 0.08  0.92
Final Sat.:  1800 3600  1800  1800 3563    37  1800 1533   267  1800  146  1654
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.08  0.04  0.19 0.21  0.21  0.01 0.05  0.04  0.05 0.04  0.04
Crit Volume:       143         337                     81          91
Crit Moves:       ****        ****                    ****        ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #10 Sycamore Ave / Bayberry Ave
*******************************************************************************
Cycle (sec):         120                Critical Vol./Cap.(X):         0.979
Loss Time (sec):      16 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180                Level Of Service:                   E
*******************************************************************************
Street Name:           Bayberry Ave                      Sycamore Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Include          Ignore
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        1  0  0  1  0    1  1  0  0  2    1  0  2  1  0    1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      47   18   223   912   64   618    20  817    33   223 1635    54
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   47   18   223   912   64   618    20  817    33   223 1635    54
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   47   18   223   912   64   618    20  817    33   223 1635    54
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    47   18   223   912   64   618    20  817    33   223 1635    54
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   47   18   223   912   64   618    20  817    33   223 1635    54
RTOR Reduct:    0    0     0     0    0    20     0    0     0     0    0     0
RTOR Vol:      47   18   223   912   64   598    20  817    33   223 1635    54
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   47   18   223   912   64   598    20  817    33   223 1635    54
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1650 1650  1650  1650 1650  1650  1650 1650  1650  1650 1650  1650
Adjustment:  1.00 1.00  1.00  0.91 1.00  0.91  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 0.07  0.93  1.87 0.13  2.00  1.00 2.88  0.12  1.00 2.00  1.00
Final Sat.:  1650  123  1527  2803  216  3000  1650 4758   192  1650 3300  1650
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.15  0.15  0.33 0.30  0.20  0.01 0.17  0.17  0.14 0.50  0.03
Crit Volume:       241         488               20                   818
Crit Moves:       ****        ****              ****                 ****
*******************************************************************************
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P.M. PEAK

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #1 Willow Ave / I-80 WB Off-ramp
*******************************************************************************
Cycle (sec):          90                Critical Vol./Cap.(X):         0.308
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        25                Level Of Service:                  A
*******************************************************************************
Street Name:         I-80 WB Off-ramp                     Willow Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Ignore           Ignore
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        0  0  0  0  0    1  0  0  0  1    0  0  2  0  0    0  0  2  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0   113    0    92     0  331     0     0  833     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   113    0    92     0  331     0     0  833     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0   113    0    92     0  331     0     0  833     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0   113    0    92     0  331     0     0  833     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0   113    0    92     0  331     0     0  833     0
RTOR Reduct:    0    0     0     0    0     0     0    0     0     0    0     0
RTOR Vol:       0    0     0   113    0    92     0  331     0     0  833     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0   113    0    92     0  331     0     0  833     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1720 1720  1720  1720 1720  1720  1720 1720  1720  1720 1720  1720
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.00 0.00  0.00  1.00 0.00  1.00  0.00 2.00  0.00  0.00 2.00  0.00
Final Sat.:     0    0     0  1720    0  1720     0 3440     0     0 3440     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.07 0.00  0.05  0.00 0.10  0.00  0.00 0.24  0.00
Crit Volume:         0         113                 0                   417
Crit Moves:                   ****               ****                 ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #2 Willow Ave / Hawthorne Ave
*******************************************************************************
Cycle (sec):          90                Critical Vol./Cap.(X):         0.241
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        23                Level Of Service:                  A
*******************************************************************************
Street Name:          Hawthorne Ave                       Willow Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     5    5     5     5    5     0     0    5     5
Lanes:        0  0  0  0  0    0  0  2! 0  0    1  0  2  0  0    0  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0    83    0    10    40  513     0     0  449   134
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    83    0    10    40  513     0     0  449   134
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0    83    0    10    40  513     0     0  449   134
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0    83    0    10    40  513     0     0  449   134
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0    83    0    10    40  513     0     0  449   134
RTOR Reduct:    0    0     0     0    0     0     0    0     0     0    0     0
RTOR Vol:       0    0     0    83    0    10    40  513     0     0  449   134
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0    83    0    10    40  513     0     0  449   134
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1720 1720  1720  1720 1720  1720  1720 1720  1720  1720 1720  1720
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.00 0.00  0.00  1.00 0.78  0.22  1.00 2.00  0.00  0.00 1.54  0.46
Final Sat.:     0    0     0  1720 1350   370  1720 3440     0     0 2649   791
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.05 0.00  0.03  0.02 0.15  0.00  0.00 0.17  0.17
Crit Volume:         0          83               40                          292
Crit Moves:                    ****             ****                         ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #3 San Pablo Ave / Willow Ave
*******************************************************************************
Cycle (sec):          90                Critical Vol./Cap.(X):         0.445
Loss Time (sec):      12 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        41                Level Of Service:                  A
*******************************************************************************
Street Name:          San Pablo Ave                       Willow Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted      Split Phase      Split Phase
Rights:           Include          Include          Ignore           Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        2  0  0  0  1    0  0  0  0  0    0  0  1  1  0    1  0  2  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     522    0   187     0    0     0     0  398     0   139  559     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  522    0   187     0    0     0     0  398     0   139  559     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  522    0   187     0    0     0     0  398     0   139  559     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   522    0   187     0    0     0     0  398     0   139  559     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  522    0   187     0    0     0     0  398     0   139  559     0
RTOR Reduct:    0    0   139     0    0     0     0    0     0     0    0     0
RTOR Vol:     522    0    48     0    0     0     0  398     0   139  559     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  522    0    48     0    0     0     0  398     0   139  559     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1720 1720  1720  1720 1720  1720  1720 1720  1720  1720 1720  1720
Adjustment:  0.91 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       2.00 0.00  1.00  0.00 0.00  0.00  0.00 2.00  0.00  1.00 2.00  0.00
Final Sat.:  3127    0  1720     0    0     0     0 3440     0  1720 3440     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.17 0.00  0.03  0.00 0.00  0.00  0.00 0.12  0.00  0.08 0.16  0.00
Crit Volume:  261                     0              199              280
Crit Moves:  ****                                   ****             ****
*******************************************************************************
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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #4 San Pablo Ave / John Muir Pkwy
*******************************************************************************
Cycle (sec):         120                Critical Vol./Cap.(X):         0.720
Loss Time (sec):      16 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       102                Level Of Service:                   C
*******************************************************************************
Street Name:          San Pablo Ave                     John Muir Pkwy
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Ignore           Include          Include          Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        1  0  2  0  1    1  0  1  1  0    1  0  1  1  0    2  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      73  800  1321   206  352     9    12  436   164   514   14    33
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   73  800  1321   206  352     9    12  436   164   514   14    33
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   73  800  1321   206  352     9    12  436   164   514   14    33
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    73  800  1321   206  352     9    12  436   164   514   14    33
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   73  800  1321   206  352     9    12  436   164   514   14    33
RTOR Reduct:    0    0     0     0    0     0     0    0     0     0    0     0
RTOR Vol:      73  800  1321   206  352     9    12  436   164   514   14    33
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   73  800  1321   206  352     9    12  436   164   514   14    33
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1650 1650  1650  1650 1650  1650  1650 1650  1650  1650 1650  1650
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  0.91 1.00  1.00
Lanes:       1.00 2.00  1.00  1.00 1.95  0.05  1.00 1.45  0.55  2.00 0.30  0.70
Final Sat.:  1650 3300  1650  1650 3218    82  1650 2398   902  3000  491  1159
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.24  0.80  0.12 0.11  0.11  0.01 0.18  0.18  0.17 0.03  0.03
Crit Volume:       400         206                    300         257
Crit Moves:       ****        ****                   ****        ****
*******************************************************************************
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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #5 San Pablo Ave / Sycamore Ave
*******************************************************************************
Cycle (sec):         120                Critical Vol./Cap.(X):         0.833
Loss Time (sec):      16 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       170                Level Of Service:                   D
*******************************************************************************
Street Name:          San Pablo Ave                      Sycamore Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        2  0  2  0  1    2  0  1  1  0    1  0  1  1  0    1  1  0  0  2
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      47 1012   590   667  481   398   119   72    21   320  121  1062
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   47 1012   590   667  481   398   119   72    21   320  121  1062
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   47 1012   590   667  481   398   119   72    21   320  121  1062
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    47 1012   590   667  481   398   119   72    21   320  121  1062
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   47 1012   590   667  481   398   119   72    21   320  121  1062
RTOR Reduct:    0    0   176     0    0     0     0    0     0     0    0   367
RTOR Vol:      47 1012   414   667  481   398   119   72    21   320  121   695
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   47 1012   414   667  481   398   119   72    21   320  121   695
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1650 1650  1650  1650 1650  1650  1650 1650  1650  1650 1650  1650
Adjustment:  0.91 1.00  1.00  0.91 1.00  1.00  1.00 1.00  1.00  0.91 1.00  0.91
Lanes:       2.00 2.00  1.00  2.00 1.09  0.91  1.00 1.55  0.45  1.45 0.55  2.00
Final Sat.:  3000 3300  1650  3000 1806  1494  1650 2555   745  2177  905  3000
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.02 0.31  0.25  0.22 0.27  0.27  0.07 0.03  0.03  0.15 0.13  0.23
Crit Volume:       506         334              119                          348
Crit Moves:       ****        ****             ****                          ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #6 San Pablo Ave / Hercules Ave
*******************************************************************************
Cycle (sec):         120                Critical Vol./Cap.(X):         0.534
Loss Time (sec):      16 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        61                Level Of Service:                  A
*******************************************************************************
Street Name:          San Pablo Ave                      Hercules Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        1  0  2  0  1    1  0  2  0  1    1  0  1  0  1    0  1  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     270 1133   157   147  543   173    97    8    98    69    7    64
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  270 1133   157   147  543   173    97    8    98    69    7    64
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  270 1133   157   147  543   173    97    8    98    69    7    64
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   270 1133   157   147  543   173    97    8    98    69    7    64
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  270 1133   157   147  543   173    97    8    98    69    7    64
RTOR Reduct:    0    0    69     0    0    97     0    0    98     0    0     0
RTOR Vol:     270 1133    88   147  543    76    97    8     0    69    7    64
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  270 1133    88   147  543    76    97    8     0    69    7    64
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1650 1650  1650  1650 1650  1650  1650 1650  1650  1650 1650  1650
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 2.00  1.00  1.00 2.00  1.00  1.00 1.00  1.00  0.99 0.10  0.91
Final Sat.:  1650 3300  1650  1650 3300  1650  1650 1650  1650  1626  165  1509
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.16 0.34  0.05  0.09 0.16  0.05  0.06 0.00  0.00  0.04 0.04  0.04
Crit Volume:       567         147               97                    70
Crit Moves:       ****        ****              ****                  ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #7 San Pablo Ave / Pinole Valley Rd
*******************************************************************************
Cycle (sec):          60                Critical Vol./Cap.(X):         0.582
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        41                Level Of Service:                  A
*******************************************************************************
Street Name:          San Pablo Ave                    Pinole Valley Rd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        0  1  0  1  0    0  1  1  0  1    0  0  1! 0  0    0  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      19 1436    14    76  574     4     9    4     9     6    6   294
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   19 1436    14    76  574     4     9    4     9     6    6   294
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   19 1436    14    76  574     4     9    4     9     6    6   294
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    19 1436    14    76  574     4     9    4     9     6    6   294
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   19 1436    14    76  574     4     9    4     9     6    6   294
RTOR Reduct:    0    0     0     0    0     4     0    0     0     0    0    76
RTOR Vol:      19 1436    14    76  574     0     9    4     9     6    6   218
PCE Adj:     2.00 1.00  1.00  6.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   38 1436    14   456  574     0     9    4     9     6    6   218
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1800 1800  1800  1800 1800  1800  1800 1800  1800  1800 1800  1800
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.03 1.95  0.02  1.00 1.00  1.00  0.41 0.18  0.41  0.50 0.50  1.00
Final Sat.:    47 3519    34  1800 1800  1800   736  327   736   900  900  1800
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.40 0.41  0.41  0.04 0.32  0.00  0.01 0.01  0.01  0.01 0.01  0.12
Crit Volume:             744    76                9                          218
Crit Moves:             ****  ****              ****                        ****
*******************************************************************************
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                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #8 San Pablo Ave / Tennent Ave
*******************************************************************************
Cycle (sec):          60                Critical Vol./Cap.(X):         0.709
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        59                Level Of Service:                  C
*******************************************************************************
Street Name:          San Pablo Ave                      Tennent Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Ignore           Ignore           Ignore           Ignore
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        0  1  1  0  1    0  1  0  1  0    0  0  1! 0  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      60 1757   184    46  332    44    47   33    10   153   79   161
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   60 1757   184    46  332    44    47   33    10   153   79   161
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   60 1757   184    46  332    44    47   33    10   153   79   161
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    60 1757   184    46  332    44    47   33    10   153   79   161
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   60 1757   184    46  332    44    47   33    10   153   79   161
RTOR Reduct:    0    0     0     0    0     0     0    0     0     0    0     0
RTOR Vol:      60 1757   184    46  332    44    47   33    10   153   79   161
PCE Adj:     2.00 1.00  1.00  6.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  120 1757   184   276  332    44    47   33    10   153   79   161
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1800 1800  1800  1800 1800  1800  1800 1800  1800  1800 1800  1800
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.14 1.86  1.00  0.48 1.39  0.13  0.52 0.37  0.11  1.00 0.33  0.67
Final Sat.:   246 3354  1800   863 2495   243   940  660   200  1800  593  1208
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.24 0.52  0.10  0.05 0.13  0.18  0.05 0.05  0.05  0.09 0.13  0.13
Crit Volume:       943          46               47                    240
Crit Moves:       ****         ****             ****                   ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #9 San Pablo Ave / Appian Wy
*******************************************************************************
Cycle (sec):          60                Critical Vol./Cap.(X):         0.683
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        54                Level Of Service:                  B
*******************************************************************************
Street Name:          San Pablo Ave                       Appian Wy
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        1  0  2  0  1    1  0  1  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       6 1153   250   209  409    45    47   58     7   266   75   322
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    6 1153   250   209  409    45    47   58     7   266   75   322
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    6 1153   250   209  409    45    47   58     7   266   75   322
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     6 1153   250   209  409    45    47   58     7   266   75   322
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    6 1153   250   209  409    45    47   58     7   266   75   322
RTOR Reduct:    0    0   250     0    0     0     0    0     0     0    0     0
RTOR Vol:       6 1153     0   209  409    45    47   58     7   266   75   322
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    6 1153     0   209  409    45    47   58     7   266   75   322
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1800 1800  1800  1800 1800  1800  1800 1800  1800  1800 1800  1800
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 2.00  1.00  1.00 1.80  0.20  1.00 0.89  0.11  1.00 0.19  0.81
Final Sat.:  1800 3600  1800  1800 3243   357  1800 1606   194  1800  340  1460
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.32  0.00  0.12 0.13  0.13  0.03 0.04  0.04  0.15 0.22  0.22
Crit Volume:       577         209               47                          397
Crit Moves:       ****        ****              ****                         ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #10 Sycamore Ave / Bayberry Ave
*******************************************************************************
Cycle (sec):         120                Critical Vol./Cap.(X):         1.098
Loss Time (sec):      16 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180                Level Of Service:                   F
*******************************************************************************
Street Name:           Bayberry Ave                      Sycamore Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Include          Ignore
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        1  0  0  1  0    1  1  0  0  2    1  0  2  1  0    1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      47   34   368  1130   92   413    76 1037    41   116 1324    72
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   47   34   368  1130   92   413    76 1037    41   116 1324    72
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   47   34   368  1130   92   413    76 1037    41   116 1324    72
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    47   34   368  1130   92   413    76 1037    41   116 1324    72
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   47   34   368  1130   92   413    76 1037    41   116 1324    72
RTOR Reduct:    0    0     0     0    0    76     0    0     0     0    0     0
RTOR Vol:      47   34   368  1130   92   337    76 1037    41   116 1324    72
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   47   34   368  1130   92   337    76 1037    41   116 1324    72
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1650 1650  1650  1650 1650  1650  1650 1650  1650  1650 1650  1650
Adjustment:  1.00 1.00  1.00  0.91 1.00  0.91  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 0.08  0.92  1.85 0.15  2.00  1.00 2.89  0.11  1.00 2.00  1.00
Final Sat.:  1650  140  1510  2774  248  3000  1650 4762   188  1650 3300  1650
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.24  0.24  0.41 0.37  0.11  0.05 0.22  0.22  0.07 0.40  0.04
Crit Volume:             402   611               76                    662
Crit Moves:             ****  ****              ****                  ****
*******************************************************************************
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Year 2035 Cumulative Baseline Condition

A.M. Peak

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #1 Willow Ave / I-80 WB Off-ramp
*******************************************************************************
Cycle (sec):          90                Critical Vol./Cap.(X):         0.591
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        42                Level Of Service:                  A
*******************************************************************************
Street Name:         I-80 WB Off-ramp                     Willow Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Ignore           Ignore
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        0  0  0  0  0    1  0  0  0  1    0  0  2  0  0    0  0  2  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0   217    0   248     0  492     0     0 1537     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   217    0   248     0  492     0     0 1537     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0   217    0   248     0  492     0     0 1537     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0   217    0   248     0  492     0     0 1537     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0   217    0   248     0  492     0     0 1537     0
RTOR Reduct:    0    0     0     0    0     0     0    0     0     0    0     0
RTOR Vol:       0    0     0   217    0   248     0  492     0     0 1537     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0   217    0   248     0  492     0     0 1537     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1720 1720  1720  1720 1720  1720  1720 1720  1720  1720 1720  1720
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.00 0.00  0.00  1.00 0.00  1.00  0.00 2.00  0.00  0.00 2.00  0.00
Final Sat.:     0    0     0  1720    0  1720     0 3440     0     0 3440     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.13 0.00  0.14  0.00 0.14  0.00  0.00 0.45  0.00
Crit Volume:    0                          248     0                   769
Crit Moves:                               ****  ****                 ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #2 Willow Ave / Hawthorne Ave
*******************************************************************************
Cycle (sec):          90                Critical Vol./Cap.(X):         0.781
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        79                Level Of Service:                  C
*******************************************************************************
Street Name:          Hawthorne Ave                       Willow Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     5    5     5     5    5     0     0    5     5
Lanes:        0  0  0  0  0    0  0  2! 0  0    1  0  2  0  0    0  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0   660    0    39    58  954     0     0  899   352
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   660    0    39    58  954     0     0  899   352
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0   660    0    39    58  954     0     0  899   352
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0   660    0    39    58  954     0     0  899   352
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0   660    0    39    58  954     0     0  899   352
RTOR Reduct:    0    0     0     0    0     0     0    0     0     0    0     0
RTOR Vol:       0    0     0   660    0    39    58  954     0     0  899   352
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0   660    0    39    58  954     0     0  899   352
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1720 1720  1720  1720 1720  1720  1720 1720  1720  1720 1720  1720
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.00 0.00  0.00  1.00 0.89  0.11  1.00 2.00  0.00  0.00 1.44  0.56
Final Sat.:     0    0     0  1720 1528   192  1720 3440     0     0 2472   968
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.38 0.00  0.20  0.03 0.28  0.00  0.00 0.36  0.36
Crit Volume:         0         660               58                    626
Crit Moves:                    ****              ****                  ****
*******************************************************************************
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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #3 San Pablo Ave / Willow Ave
*******************************************************************************
Cycle (sec):          90                Critical Vol./Cap.(X):         0.806
Loss Time (sec):      12 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       117                Level Of Service:                  D
*******************************************************************************
Street Name:          San Pablo Ave                       Willow Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted      Split Phase      Split Phase
Rights:           Include          Include          Ignore           Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        2  0  0  0  1    0  0  0  0  0    0  0  1  1  0    1  0  2  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     440    0   220     0    0     0     0  560   467   630  320     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  440    0   220     0    0     0     0  560   467   630  320     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  440    0   220     0    0     0     0  560   467   630  320     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   440    0   220     0    0     0     0  560   467   630  320     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  440    0   220     0    0     0     0  560   467   630  320     0
RTOR Reduct:    0    0   220     0    0     0     0    0     0     0    0     0
RTOR Vol:     440    0     0     0    0     0     0  560   467   630  320     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  440    0     0     0    0     0     0  560   467   630  320     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1720 1720  1720  1720 1720  1720  1720 1720  1720  1720 1720  1720
Adjustment:  0.91 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       2.00 0.00  1.00  0.00 0.00  0.00  0.00 1.09  0.91  1.00 2.00  0.00
Final Sat.:  3127    0  1720     0    0     0     0 1876  1564  1720 3440     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.14 0.00  0.00  0.00 0.00  0.00  0.00 0.30  0.30  0.37 0.09  0.00
Crit Volume:  220                     0              513         630
Crit Moves:  ****                                   ****        ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #4 San Pablo Ave / John Muir Pkwy
*******************************************************************************
Cycle (sec):         120                Critical Vol./Cap.(X):         0.764
Loss Time (sec):      16 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       120                Level Of Service:                  C
*******************************************************************************
Street Name:          San Pablo Ave                     John Muir Pkwy
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Ignore           Include          Include          Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        1  0  2  0  1    1  0  1  1  0    1  0  1  1  0    2  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     310  500  1610   190  900    70    20   90    50   470  305   140
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  310  500  1610   190  900    70    20   90    50   470  305   140
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  310  500  1610   190  900    70    20   90    50   470  305   140
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   310  500  1610   190  900    70    20   90    50   470  305   140
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  310  500  1610   190  900    70    20   90    50   470  305   140
RTOR Reduct:    0    0     0     0    0     0     0    0     0     0    0     0
RTOR Vol:     310  500  1610   190  900    70    20   90    50   470  305   140
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  310  500  1610   190  900    70    20   90    50   470  305   140
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1650 1650  1650  1650 1650  1650  1650 1650  1650  1650 1650  1650
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  0.91 1.00  1.00
Lanes:       1.00 2.00  1.00  1.00 1.86  0.14  1.00 1.29  0.71  2.00 0.69  0.31
Final Sat.:  1650 3300  1650  1650 3062   238  1650 2121  1179  3000 1131   519
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.19 0.15  0.98  0.12 0.29  0.29  0.01 0.04  0.04  0.16 0.27  0.27
Crit Volume:  310                   485          20                          445
Crit Moves:  ****                  ****        ****                        ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #5 San Pablo Ave / Sycamore Ave
*******************************************************************************
Cycle (sec):         120                Critical Vol./Cap.(X):         0.859
Loss Time (sec):      16 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180                Level Of Service:                   D
*******************************************************************************
Street Name:          San Pablo Ave                      Sycamore Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        2  0  2  0  1    2  0  1  1  0    1  0  1  1  0    1  1  0  0  2
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     217  850   410   390  800   170   220  120   120   480  160  1230
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  217  850   410   390  800   170   220  120   120   480  160  1230
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  217  850   410   390  800   170   220  120   120   480  160  1230
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   217  850   410   390  800   170   220  120   120   480  160  1230
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  217  850   410   390  800   170   220  120   120   480  160  1230
RTOR Reduct:    0    0   264     0    0     0     0    0     0     0    0   215
RTOR Vol:     217  850   146   390  800   170   220  120   120   480  160  1016
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  217  850   146   390  800   170   220  120   120   480  160  1016
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1650 1650  1650  1650 1650  1650  1650 1650  1650  1650 1650  1650
Adjustment:  0.91 1.00  1.00  0.91 1.00  1.00  1.00 1.00  1.00  0.91 1.00  0.91
Lanes:       2.00 2.00  1.00  2.00 1.65  0.35  1.00 1.00  1.00  1.50 0.50  2.00
Final Sat.:  3000 3300  1650  3000 2722   578  1650 1650  1650  2250  825  3000
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.26  0.09  0.13 0.29  0.29  0.13 0.07  0.07  0.21 0.19  0.34
Crit Volume:       425         195              220                          508
Crit Moves:       ****        ****             ****                         ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #6 San Pablo Ave / Hercules Ave
*******************************************************************************
Cycle (sec):         120                Critical Vol./Cap.(X):         0.758
Loss Time (sec):      16 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       117                Level Of Service:                  C
*******************************************************************************
Street Name:          San Pablo Ave                      Hercules Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        1  0  2  0  1    1  0  2  0  1    1  0  1  0  1    0  1  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      60  857    30   110 1320   100   280   20   190   150   10   250
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   60  857    30   110 1320   100   280   20   190   150   10   250
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   60  857    30   110 1320   100   280   20   190   150   10   250
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    60  857    30   110 1320   100   280   20   190   150   10   250
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   60  857    30   110 1320   100   280   20   190   150   10   250
RTOR Reduct:    0    0    30     0    0   100     0    0    60     0    0     0
RTOR Vol:      60  857     0   110 1320     0   280   20   130   150   10   250
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   60  857     0   110 1320     0   280   20   130   150   10   250
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1650 1650  1650  1650 1650  1650  1650 1650  1650  1650 1650  1650
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 2.00  1.00  1.00 2.00  1.00  1.00 1.00  1.00  0.73 0.27  1.00
Final Sat.:  1650 3300  1650  1650 3300  1650  1650 1650  1650  1207  443  1650
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.26  0.00  0.07 0.40  0.00  0.17 0.01  0.08  0.12 0.02  0.15
Crit Volume:   60                   660         280                          250
Crit Moves:  ****                  ****        ****                         ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #7 San Pablo Ave / Pinole Valley Rd
*******************************************************************************
Cycle (sec):          60                Critical Vol./Cap.(X):         0.889
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       156                Level Of Service:                  D
*******************************************************************************
Street Name:          San Pablo Ave                     Pinole Valley Rd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        0  1  0  1  0    0  1  1  0  1    0  0  1! 0  0    0  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      14  588    14   263 1498     5     6    0     3    55   28   127
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   14  588    14   263 1498     5     6    0     3    55   28   127
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   14  588    14   263 1498     5     6    0     3    55   28   127
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    14  588    14   263 1498     5     6    0     3    55   28   127
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   14  588    14   263 1498     5     6    0     3    55   28   127
RTOR Reduct:    0    0     0     0    0     5     0    0     0     0    0   127
RTOR Vol:      14  588    14   263 1498     0     6    0     3    55   28     0
PCE Adj:     6.00 1.00  1.00  4.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   84  588    14  1052 1498     0     6    0     3    55   28     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1800 1800  1800  1800 1800  1800  1800 1800  1800  1800 1800  1800
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.05 1.91  0.04  1.00 1.00  1.00  0.67 0.00  0.33  0.66 0.34  1.00
Final Sat.:    92 3434    73  1800 1800  1800  1200    0   600  1193  607  1800
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.15 0.17  0.19  0.15 0.83  0.00  0.01 0.00  0.01  0.05 0.05  0.00
Crit Volume:   14                   1498           6                     83
Crit Moves:  ****                   ****        ****                    ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #8 San Pablo Ave / Tennent Ave
*******************************************************************************
Cycle (sec):          60                Critical Vol./Cap.(X):         1.138
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180                Level Of Service:                   F
*******************************************************************************
Street Name:          San Pablo Ave                      Tennent Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Ignore           Ignore           Ignore           Ignore
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        0  1  1  0  1    0  1  0  1  0    0  0  1! 0  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      29  489   338   194 2030    52    25  135    80   633  127   206
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   29  489   338   194 2030    52    25  135    80   633  127   206
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   29  489   338   194 2030    52    25  135    80   633  127   206
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    29  489   338   194 2030    52    25  135    80   633  127   206
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   29  489   338   194 2030    52    25  135    80   633  127   206
RTOR Reduct:    0    0     0     0    0     0     0    0     0     0    0     0
RTOR Vol:      29  489   338   194 2030    52    25  135    80   633  127   206
PCE Adj:     6.00 1.00  1.00  2.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  174  489   338   388 2030    52    25  135    80   633  127   206
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1800 1800  1800  1800 1800  1800  1800 1800  1800  1800 1800  1800
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.93 1.07  1.00  0.19 1.77  0.04  0.10 0.57  0.33  1.00 0.38  0.62
Final Sat.:  1679 1921  1800   335 3189    76   188 1013   600  1800  686  1114
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.02 0.25  0.19  0.58 0.64  0.69  0.13 0.13  0.13  0.35 0.18  0.19
Crit Volume:   29                   1146              240         633
Crit Moves:  ****                   ****             ****        ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #9 San Pablo Ave / Appian Wy
*******************************************************************************
Cycle (sec):          60                Critical Vol./Cap.(X):         0.624
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        46                Level Of Service:                  B
*******************************************************************************
Street Name:          San Pablo Ave                       Appian Wy
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        1  0  2  0  1    1  0  1  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       5  409   238   473 1075    11    55  179    30   237   17   176
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    5  409   238   473 1075    11    55  179    30   237   17   176
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    5  409   238   473 1075    11    55  179    30   237   17   176
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     5  409   238   473 1075    11    55  179    30   237   17   176
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    5  409   238   473 1075    11    55  179    30   237   17   176
RTOR Reduct:    0    0   237     0    0     0     0    0     0     0    0     0
RTOR Vol:       5  409     1   473 1075    11    55  179    30   237   17   176
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    5  409     1   473 1075    11    55  179    30   237   17   176
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1800 1800  1800  1800 1800  1800  1800 1800  1800  1800 1800  1800
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 2.00  1.00  1.00 1.98  0.02  1.00 0.86  0.14  1.00 0.09  0.91
Final Sat.:  1800 3600  1800  1800 3564    36  1800 1542   258  1800  159  1641
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.11  0.00  0.26 0.30  0.30  0.03 0.12  0.12  0.13 0.11  0.11
Crit Volume:       205         473                    209         237
Crit Moves:       ****        ****                   ****        ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #10 Sycamore Ave / Bayberry Ave
*******************************************************************************
Cycle (sec):         120                Critical Vol./Cap.(X):         0.656
Loss Time (sec):      16 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        83                Level Of Service:                  B
*******************************************************************************
Street Name:           Bayberry Ave                      Sycamore Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Include          Ignore
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        1  0  0  1  0    1  1  0  0  2    1  0  2  1  0    1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      30   30    40   450   70   507    60  820    40   180 1333   100
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   30   30    40   450   70   507    60  820    40   180 1333   100
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   30   30    40   450   70   507    60  820    40   180 1333   100
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    30   30    40   450   70   507    60  820    40   180 1333   100
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   30   30    40   450   70   507    60  820    40   180 1333   100
RTOR Reduct:    0    0     0     0    0    60     0    0     0     0    0     0
RTOR Vol:      30   30    40   450   70   447    60  820    40   180 1333   100
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   30   30    40   450   70   447    60  820    40   180 1333   100
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1650 1650  1650  1650 1650  1650  1650 1650  1650  1650 1650  1650
Adjustment:  1.00 1.00  1.00  0.91 1.00  0.91  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 0.43  0.57  1.73 0.27  2.00  1.00 2.86  0.14  1.00 2.00  1.00
Final Sat.:  1650  707   943  2596  444  3000  1650 4720   230  1650 3300  1650
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.02 0.04  0.04  0.17 0.16  0.15  0.04 0.17  0.17  0.11 0.40  0.06
Crit Volume:              70   260               60                    667
Crit Moves:             ****  ****             ****                  ****
*******************************************************************************
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P.M. PEAK

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #1 Willow Ave / I-80 WB Off-ramp
*******************************************************************************
Cycle (sec):          90                Critical Vol./Cap.(X):         0.938
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180                Level Of Service:                   E
*******************************************************************************
Street Name:         I-80 WB Off-ramp                     Willow Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Ignore           Ignore
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        0  0  0  0  0    1  0  0  0  1    0  0  2  0  0    0  0  2  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0   345    0   281     0 1008     0     0 2536     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   345    0   281     0 1008     0     0 2536     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0   345    0   281     0 1008     0     0 2536     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0   345    0   281     0 1008     0     0 2536     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0   345    0   281     0 1008     0     0 2536     0
RTOR Reduct:    0    0     0     0    0     0     0    0     0     0    0     0
RTOR Vol:       0    0     0   345    0   281     0 1008     0     0 2536     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0   345    0   281     0 1008     0     0 2536     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1720 1720  1720  1720 1720  1720  1720 1720  1720  1720 1720  1720
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.00 0.00  0.00  1.00 0.00  1.00  0.00 2.00  0.00  0.00 2.00  0.00
Final Sat.:     0    0     0  1720    0  1720     0 3440     0     0 3440     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.20 0.00  0.16  0.00 0.29  0.00  0.00 0.74  0.00
Crit Volume:         0         345                 0                   1268
Crit Moves:                   ****               ****                   ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #2 Willow Ave / Hawthorne Ave
*******************************************************************************
Cycle (sec):          90                Critical Vol./Cap.(X):         0.733
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        64                Level Of Service:                  C
*******************************************************************************
Street Name:          Hawthorne Ave                       Willow Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     5    5     5     5    5     0     0    5     5
Lanes:        0  0  0  0  0    0  0  2! 0  0    1  0  2  0  0    0  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0   251    0    30   121 1561     0     0 1367   409
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   251    0    30   121 1561     0     0 1367   409
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0   251    0    30   121 1561     0     0 1367   409
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0   251    0    30   121 1561     0     0 1367   409
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0   251    0    30   121 1561     0     0 1367   409
RTOR Reduct:    0    0     0     0    0     0     0    0     0     0    0     0
RTOR Vol:       0    0     0   251    0    30   121 1561     0     0 1367   409
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0   251    0    30   121 1561     0     0 1367   409
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1720 1720  1720  1720 1720  1720  1720 1720  1720  1720 1720  1720
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.00 0.00  0.00  1.00 0.79  0.21  1.00 2.00  0.00  0.00 1.54  0.46
Final Sat.:     0    0     0  1720 1353   367  1720 3440     0     0 2648   792
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.15 0.00  0.08  0.07 0.45  0.00  0.00 0.52  0.52
Crit Volume:         0         251              121                    888
Crit Moves:                    ****             ****                   ****
*******************************************************************************
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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #3 San Pablo Ave / Willow Ave
*******************************************************************************
Cycle (sec):          90                Critical Vol./Cap.(X):         0.712
Loss Time (sec):      12 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        79                Level Of Service:                   C
*******************************************************************************
Street Name:          San Pablo Ave                       Willow Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted      Split Phase      Split Phase
Rights:           Include          Include          Ignore           Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        2  0  0  0  1    0  0  0  0  0    0  0  1  1  0    1  0  2  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     442    0   780     0    0     0     0  600   290   370  640     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  442    0   780     0    0     0     0  600   290   370  640     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  442    0   780     0    0     0     0  600   290   370  640     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   442    0   780     0    0     0     0  600   290   370  640     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  442    0   780     0    0     0     0  600   290   370  640     0
RTOR Reduct:    0    0   370     0    0     0     0    0     0     0    0     0
RTOR Vol:     442    0   410     0    0     0     0  600   290   370  640     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  442    0   410     0    0     0     0  600   290   370  640     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1720 1720  1720  1720 1720  1720  1720 1720  1720  1720 1720  1720
Adjustment:  0.91 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       2.00 0.00  1.00  0.00 0.00  0.00  0.00 1.35  0.65  1.00 2.00  0.00
Final Sat.:  3127    0  1720     0    0     0     0 2319  1121  1720 3440     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.14 0.00  0.24  0.00 0.00  0.00  0.00 0.26  0.26  0.22 0.19  0.00
Crit Volume:             410     0                    445         370
Crit Moves:             ****                         ****        ****
*******************************************************************************
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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #4 San Pablo Ave / John Muir Pkwy
*******************************************************************************
Cycle (sec):         120                Critical Vol./Cap.(X):         1.239
Loss Time (sec):      16 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180                Level Of Service:                   F
*******************************************************************************
Street Name:          San Pablo Ave                     John Muir Pkwy
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Ignore           Include          Include          Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        1  0  2  0  1    1  0  1  1  0    1  0  1  1  0    2  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     150 1060  1200   460  460    20    40  839   223   950   80    80
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  150 1060  1200   460  460    20    40  839   223   950   80    80
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  150 1060  1200   460  460    20    40  839   223   950   80    80
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   150 1060  1200   460  460    20    40  839   223   950   80    80
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  150 1060  1200   460  460    20    40  839   223   950   80    80
RTOR Reduct:    0    0     0     0    0     0     0    0     0     0    0     0
RTOR Vol:     150 1060  1200   460  460    20    40  839   223   950   80    80
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  150 1060  1200   460  460    20    40  839   223   950   80    80
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1650 1650  1650  1650 1650  1650  1650 1650  1650  1650 1650  1650
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  0.91 1.00  1.00
Lanes:       1.00 2.00  1.00  1.00 1.92  0.08  1.00 1.58  0.42  2.00 0.50  0.50
Final Sat.:  1650 3300  1650  1650 3163   138  1650 2607   693  3000  825   825
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.09 0.32  0.73  0.28 0.15  0.15  0.02 0.32  0.32  0.32 0.10  0.10
Crit Volume:       530         460                          531   475
Crit Moves:       ****        ****                          ****  ****
*******************************************************************************
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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #5 San Pablo Ave / Sycamore Ave
*******************************************************************************
Cycle (sec):         120                Critical Vol./Cap.(X):         1.103
Loss Time (sec):      16 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180                Level Of Service:                   F
*******************************************************************************
Street Name:          San Pablo Ave                      Sycamore Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        2  0  2  0  1    2  0  1  1  0    1  0  1  1  0    1  1  0  0  2
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     220 1120   530   743  710   190   300  140   350   600  310   860
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  220 1120   530   743  710   190   300  140   350   600  310   860
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  220 1120   530   743  710   190   300  140   350   600  310   860
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   220 1120   530   743  710   190   300  140   350   600  310   860
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  220 1120   530   743  710   190   300  140   350   600  310   860
RTOR Reduct:    0    0   330     0    0     0     0    0     0     0    0   409
RTOR Vol:     220 1120   200   743  710   190   300  140   350   600  310   451
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  220 1120   200   743  710   190   300  140   350   600  310   451
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1650 1650  1650  1650 1650  1650  1650 1650  1650  1650 1650  1650
Adjustment:  0.91 1.00  1.00  0.91 1.00  1.00  1.00 1.00  1.00  0.91 1.00  0.91
Lanes:       2.00 2.00  1.00  2.00 1.58  0.42  1.00 1.00  1.00  1.32 0.68  2.00
Final Sat.:  3000 3300  1650  3000 2603   697  1650 1650  1650  1978 1124  3000
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.34  0.12  0.25 0.27  0.27  0.18 0.08  0.21  0.30 0.28  0.15
Crit Volume:       560         372                          350   455
Crit Moves:       ****        ****                         ****  ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #6 San Pablo Ave / Hercules Ave
*******************************************************************************
Cycle (sec):         120                Critical Vol./Cap.(X):         0.755
Loss Time (sec):      16 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       116                Level Of Service:                  C
*******************************************************************************
Street Name:          San Pablo Ave                      Hercules Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        1  0  2  0  1    1  0  2  0  1    1  0  1  0  1    0  1  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     220 1550   150   220 1342   220   140   10   100    70   10   110
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  220 1550   150   220 1342   220   140   10   100    70   10   110
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  220 1550   150   220 1342   220   140   10   100    70   10   110
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   220 1550   150   220 1342   220   140   10   100    70   10   110
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  220 1550   150   220 1342   220   140   10   100    70   10   110
RTOR Reduct:    0    0    70     0    0   140     0    0   100     0    0     0
RTOR Vol:     220 1550    80   220 1342    80   140   10     0    70   10   110
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  220 1550    80   220 1342    80   140   10     0    70   10   110
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1650 1650  1650  1650 1650  1650  1650 1650  1650  1650 1650  1650
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 2.00  1.00  1.00 2.00  1.00  1.00 1.00  1.00  0.74 0.26  1.00
Final Sat.:  1650 3300  1650  1650 3300  1650  1650 1650  1650  1216  434  1650
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.13 0.47  0.05  0.13 0.41  0.05  0.08 0.01  0.00  0.06 0.02  0.07
Crit Volume:       775         220              140                          110
Crit Moves:       ****        ****             ****                         ****
*******************************************************************************
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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #7 San Pablo Ave / Pinole Valley Rd
*******************************************************************************
Cycle (sec):          60                Critical Vol./Cap.(X):         1.108
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180                Level Of Service:                   F
*******************************************************************************
Street Name:          San Pablo Ave                     Pinole Valley Rd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        0  1  0  1  0    0  1  1  0  1    0  0  1! 0  0    0  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      27 2020    20   106  804     5    27   13    27    17   17   894
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   27 2020    20   106  804     5    27   13    27    17   17   894
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   27 2020    20   106  804     5    27   13    27    17   17   894
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    27 2020    20   106  804     5    27   13    27    17   17   894
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   27 2020    20   106  804     5    27   13    27    17   17   894
RTOR Reduct:    0    0     0     0    0     5     0    0     0     0    0   106
RTOR Vol:      27 2020    20   106  804     0    27   13    27    17   17   788
PCE Adj:     4.00 1.00  1.00  6.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  108 2020    20   636  804     0    27   13    27    17   17   788
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1800 1800  1800  1800 1800  1800  1800 1800  1800  1800 1800  1800
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.03 1.95  0.02  1.00 1.00  1.00  0.41 0.19  0.40  0.50 0.50  1.00
Final Sat.:    49 3518    34  1800 1800  1800   725  349   725   900  900  1800
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.55 0.57  0.60  0.06 0.45  0.00  0.04 0.04  0.04  0.02 0.02  0.44
Crit Volume:            1074   106               27                          788
Crit Moves:             ****  ****              ****                        ****
*******************************************************************************
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                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #8 San Pablo Ave / Tennent Ave
*******************************************************************************
Cycle (sec):          60                Critical Vol./Cap.(X):         1.259
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180                Level Of Service:                   F
*******************************************************************************
Street Name:          San Pablo Ave                      Tennent Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Ignore           Ignore           Ignore           Ignore
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        0  1  1  0  1    0  1  0  1  0    0  0  1! 0  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      85 2471   259    65  464    61   144  101    30   466  241   489
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   85 2471   259    65  464    61   144  101    30   466  241   489
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   85 2471   259    65  464    61   144  101    30   466  241   489
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    85 2471   259    65  464    61   144  101    30   466  241   489
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   85 2471   259    65  464    61   144  101    30   466  241   489
RTOR Reduct:    0    0     0     0    0     0     0    0     0     0    0     0
RTOR Vol:      85 2471   259    65  464    61   144  101    30   466  241   489
PCE Adj:     2.00 1.00  1.00  6.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  170 2471   259   390  464    61   144  101    30   466  241   489
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1800 1800  1800  1800 1800  1800  1800 1800  1800  1800 1800  1800
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.14 1.86  1.00  0.49 1.38  0.13  0.52 0.37  0.11  1.00 0.33  0.67
Final Sat.:   248 3352  1800   883 2477   240   943  661   196  1800  594  1206
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.34 0.74  0.14  0.07 0.19  0.25  0.15 0.15  0.15  0.26 0.41  0.41
Crit Volume:      1327          65               144                    730
Crit Moves:       ****        ****              ****                   ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #9 San Pablo Ave / Appian Wy
*******************************************************************************
Cycle (sec):          60                Critical Vol./Cap.(X):         1.366
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180                Level Of Service:                   F
*******************************************************************************
Street Name:          San Pablo Ave                       Appian Wy
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        1  0  2  0  1    1  0  1  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       9 1622   351   293  572    63   144  178    20   811  228   982
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    9 1622   351   293  572    63   144  178    20   811  228   982
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    9 1622   351   293  572    63   144  178    20   811  228   982
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     9 1622   351   293  572    63   144  178    20   811  228   982
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    9 1622   351   293  572    63   144  178    20   811  228   982
RTOR Reduct:    0    0   351     0    0     0     0    0     0     0    0     0
RTOR Vol:       9 1622     0   293  572    63   144  178    20   811  228   982
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    9 1622     0   293  572    63   144  178    20   811  228   982
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1800 1800  1800  1800 1800  1800  1800 1800  1800  1800 1800  1800
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 2.00  1.00  1.00 1.80  0.20  1.00 0.90  0.10  1.00 0.19  0.81
Final Sat.:  1800 3600  1800  1800 3243   357  1800 1618   182  1800  339  1461
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.01 0.45  0.00  0.16 0.18  0.18  0.08 0.11  0.11  0.45 0.67  0.67
Crit Volume:       811         293              144                  1210
Crit Moves:       ****        ****             ****                  ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #10 Sycamore Ave / Bayberry Ave
*******************************************************************************
Cycle (sec):         120                Critical Vol./Cap.(X):         0.762
Loss Time (sec):      16 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       119                Level Of Service:                   C
*******************************************************************************
Street Name:           Bayberry Ave                      Sycamore Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Include          Ignore
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        1  0  0  1  0    1  1  0  0  2    1  0  2  1  0    1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      30   20    70   740   90   700   190 1173    50   100 1040   150
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   30   20    70   740   90   700   190 1173    50   100 1040   150
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   30   20    70   740   90   700   190 1173    50   100 1040   150
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    30   20    70   740   90   700   190 1173    50   100 1040   150
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   30   20    70   740   90   700   190 1173    50   100 1040   150
RTOR Reduct:    0    0     0     0    0   190     0    0     0     0    0     0
RTOR Vol:      30   20    70   740   90   510   190 1173    50   100 1040   150
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   30   20    70   740   90   510   190 1173    50   100 1040   150
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1650 1650  1650  1650 1650  1650  1650 1650  1650  1650 1650  1650
Adjustment:  1.00 1.00  1.00  0.91 1.00  0.91  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 0.22  0.78  1.78 0.22  2.00  1.00 2.88  0.12  1.00 2.00  1.00
Final Sat.:  1650  367  1283  2674  358  3000  1650 4748   202  1650 3300  1650
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.02 0.05  0.05  0.28 0.25  0.17  0.12 0.25  0.25  0.06 0.32  0.09
Crit Volume:              90   415              190                   520
Crit Moves:             ****  ****             ****                  ****
*******************************************************************************
```

Year 2035 Cumulative Baseline with Project Condition

A.M. Peak

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #1 Willow Ave / I-80 WB Off-ramp
*******************************************************************************
Cycle (sec):          90                Critical Vol./Cap.(X):         0.591
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        42                Level Of Service:                  A
*******************************************************************************
Street Name:         I-80 WB Off-ramp                     Willow Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Ignore           Ignore
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        0  0  0  0  0    1  0  0  0  1    0  0  2  0  0    0  0  2  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0   217    0   248     0  492     0     0 1537     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   217    0   248     0  492     0     0 1537     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0   217    0   248     0  492     0     0 1537     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0   217    0   248     0  492     0     0 1537     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0   217    0   248     0  492     0     0 1537     0
RTOR Reduct:    0    0     0     0    0     0     0    0     0     0    0     0
RTOR Vol:       0    0     0   217    0   248     0  492     0     0 1537     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0   217    0   248     0  492     0     0 1537     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1720 1720  1720  1720 1720  1720  1720 1720  1720  1720 1720  1720
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.00 0.00  0.00  1.00 0.00  1.00  0.00 2.00  0.00  0.00 2.00  0.00
Final Sat.:     0    0     0  1720    0  1720     0 3440     0     0 3440     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.13 0.00  0.14  0.00 0.14  0.00  0.00 0.45  0.00
Crit Volume:    0                          248     0                    769
Crit Moves:                               ****  ****                  ****
*******************************************************************************
```

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------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
******************************************************************************
Intersection #2 Willow Ave / Hawthorne Ave
******************************************************************************
Cycle (sec):          90                Critical Vol./Cap.(X):         0.781
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        79                Level Of Service:                  C
******************************************************************************
Street Name:          Hawthorne Ave                       Willow Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     5    5     5     5    5     0     0    5     5
Lanes:        0  0  0  0  0    0  0  2! 0  0    1  0  2  0  0    0  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0   660    0    39    58  954     0     0  899   352
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   660    0    39    58  954     0     0  899   352
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0   660    0    39    58  954     0     0  899   352
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0   660    0    39    58  954     0     0  899   352
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0   660    0    39    58  954     0     0  899   352
RTOR Reduct:    0    0     0     0    0     0     0    0     0     0    0     0
RTOR Vol:       0    0     0   660    0    39    58  954     0     0  899   352
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0   660    0    39    58  954     0     0  899   352
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1720 1720  1720  1720 1720  1720  1720 1720  1720  1720 1720  1720
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.00 0.00  0.00  1.00 0.89  0.11  1.00 2.00  0.00  0.00 1.44  0.56
Final Sat.:     0    0     0  1720 1528   192  1720 3440     0     0 2472   968
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.38 0.00  0.20  0.03 0.28  0.00  0.00 0.36  0.36
Crit Volume:         0         660               58                    626
Crit Moves:                   ****              ****                  ****
******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #3 San Pablo Ave / Willow Ave
*******************************************************************************
Cycle (sec):          90                Critical Vol./Cap.(X):         0.807
Loss Time (sec):      12 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       118                Level Of Service:                  D
*******************************************************************************
Street Name:          San Pablo Ave                       Willow Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted      Split Phase      Split Phase
Rights:           Include          Include          Ignore           Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        2  0  0  0  1    0  0  0  0  0    0  0  1  1  0    1  0  2  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     440    0   220     0    0     0     0  560   473   630  320     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  440    0   220     0    0     0     0  560   473   630  320     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  440    0   220     0    0     0     0  560   473   630  320     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   440    0   220     0    0     0     0  560   473   630  320     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  440    0   220     0    0     0     0  560   473   630  320     0
RTOR Reduct:    0    0   220     0    0     0     0    0     0     0    0     0
RTOR Vol:     440    0     0     0    0     0     0  560   473   630  320     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  440    0     0     0    0     0     0  560   473   630  320     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1720 1720  1720  1720 1720  1720  1720 1720  1720  1720 1720  1720
Adjustment:  0.91 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       2.00 0.00  1.00  0.00 0.00  0.00  0.00 1.08  0.92  1.00 2.00  0.00
Final Sat.:  3127    0  1720     0    0     0     0 1865  1575  1720 3440     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.14 0.00  0.00  0.00 0.00  0.00  0.00 0.30  0.30  0.37 0.09  0.00
Crit Volume:  220                      0              517         630
Crit Moves:  ****                                    ****        ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #4 San Pablo Ave / John Muir Pkwy
*******************************************************************************
Cycle (sec):         120                Critical Vol./Cap.(X):         0.780
Loss Time (sec):      16 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       129                Level Of Service:                   C
*******************************************************************************
Street Name:          San Pablo Ave                     John Muir Pkwy
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Ignore           Include          Include          Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        1  0  2  0  1    1  0  1  1  0    1  0  1  1  0    2  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     328  500  1610   190  900    70    20   90    50   470  314   140
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  328  500  1610   190  900    70    20   90    50   470  314   140
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  328  500  1610   190  900    70    20   90    50   470  314   140
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   328  500  1610   190  900    70    20   90    50   470  314   140
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  328  500  1610   190  900    70    20   90    50   470  314   140
RTOR Reduct:    0    0     0     0    0     0     0    0     0     0    0     0
RTOR Vol:     328  500  1610   190  900    70    20   90    50   470  314   140
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  328  500  1610   190  900    70    20   90    50   470  314   140
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1650 1650  1650  1650 1650  1650  1650 1650  1650  1650 1650  1650
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  0.91 1.00  1.00
Lanes:       1.00 2.00  1.00  1.00 1.86  0.14  1.00 1.29  0.71  2.00 0.69  0.31
Final Sat.:  1650 3300  1650  1650 3062   238  1650 2121  1179  3000 1141   509
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.20 0.15  0.98  0.12 0.29  0.29  0.01 0.04  0.04  0.16 0.28  0.28
Crit Volume:  328                   485          20                          454
Crit Moves:  ****                  ****        ****                        ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #5 San Pablo Ave / Sycamore Ave
*******************************************************************************
Cycle (sec):         120                Critical Vol./Cap.(X):         0.865
Loss Time (sec):      16 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180                Level Of Service:                   D
*******************************************************************************
Street Name:          San Pablo Ave                      Sycamore Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        2  0  2  0  1    2  0  1  1  0    1  0  1  1  0    1  1  0  0  2
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     223  850   410   390  800   170   220  120   120   480  160  1248
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  223  850   410   390  800   170   220  120   120   480  160  1248
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  223  850   410   390  800   170   220  120   120   480  160  1248
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   223  850   410   390  800   170   220  120   120   480  160  1248
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  223  850   410   390  800   170   220  120   120   480  160  1248
RTOR Reduct:    0    0   264     0    0     0     0    0     0     0    0   215
RTOR Vol:     223  850   146   390  800   170   220  120   120   480  160  1034
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  223  850   146   390  800   170   220  120   120   480  160  1034
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1650 1650  1650  1650 1650  1650  1650 1650  1650  1650 1650  1650
Adjustment:  0.91 1.00  1.00  0.91 1.00  1.00  1.00 1.00  1.00  0.91 1.00  0.91
Lanes:       2.00 2.00  1.00  2.00 1.65  0.35  1.00 1.00  1.00  1.50 0.50  2.00
Final Sat.:  3000 3300  1650  3000 2722   578  1650 1650  1650  2250  825  3000
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.26  0.09  0.13 0.29  0.29  0.13 0.07  0.07  0.21 0.19  0.34
Crit Volume:       425         195              220                          517
Crit Moves:       ****        ****             ****                         ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #6 San Pablo Ave / Hercules Ave
*******************************************************************************
Cycle (sec):         120                Critical Vol./Cap.(X):         0.758
Loss Time (sec):      16 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       117                Level Of Service:                  C
*******************************************************************************
Street Name:          San Pablo Ave                      Hercules Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        1  0  2  0  1    1  0  2  0  1    1  0  1  0  1    0  1  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      60  863    30   110 1320   100   280   20   190   150   10   250
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   60  863    30   110 1320   100   280   20   190   150   10   250
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   60  863    30   110 1320   100   280   20   190   150   10   250
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    60  863    30   110 1320   100   280   20   190   150   10   250
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   60  863    30   110 1320   100   280   20   190   150   10   250
RTOR Reduct:    0    0    30     0    0   100     0    0    60     0    0     0
RTOR Vol:      60  863     0   110 1320     0   280   20   130   150   10   250
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   60  863     0   110 1320     0   280   20   130   150   10   250
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1650 1650  1650  1650 1650  1650  1650 1650  1650  1650 1650  1650
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 2.00  1.00  1.00 2.00  1.00  1.00 1.00  1.00  0.73 0.27  1.00
Final Sat.:  1650 3300  1650  1650 3300  1650  1650 1650  1650  1207  443  1650
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.26  0.00  0.07 0.40  0.00  0.17 0.01  0.08  0.12 0.02  0.15
Crit Volume:   60                   660         280                          250
Crit Moves:  ****                  ****        ****                         ****
*******************************************************************************
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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #7 San Pablo Ave / Pinole Valley Rd
*******************************************************************************
Cycle (sec):          60                Critical Vol./Cap.(X):         0.889
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       156                Level Of Service:                  D
*******************************************************************************
Street Name:          San Pablo Ave                     Pinole Valley Rd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        0  1  0  1  0    0  1  1  0  1    0  0  1! 0  0    0  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      14  594    14   263 1498     5     6    0     3    55   28   127
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   14  594    14   263 1498     5     6    0     3    55   28   127
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   14  594    14   263 1498     5     6    0     3    55   28   127
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    14  594    14   263 1498     5     6    0     3    55   28   127
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   14  594    14   263 1498     5     6    0     3    55   28   127
RTOR Reduct:    0    0     0     0    0     5     0    0     0     0    0   127
RTOR Vol:      14  594    14   263 1498     0     6    0     3    55   28     0
PCE Adj:     6.00 1.00  1.00  4.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   84  594    14  1052 1498     0     6    0     3    55   28     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1800 1800  1800  1800 1800  1800  1800 1800  1800  1800 1800  1800
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.05 1.91  0.04  1.00 1.00  1.00  0.67 0.00  0.33  0.66 0.34  1.00
Final Sat.:    91 3436    73  1800 1800  1800  1200    0   600  1193  607  1800
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.15 0.17  0.19  0.15 0.83  0.00  0.01 0.00  0.01  0.05 0.05  0.00
Crit Volume:   14                   1498           6                     83
Crit Moves:  ****                   ****        ****                    ****
*******************************************************************************
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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #8 San Pablo Ave / Tennent Ave
*******************************************************************************
Cycle (sec):          60                Critical Vol./Cap.(X):         1.138
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180                Level Of Service:                   F
*******************************************************************************
Street Name:          San Pablo Ave                      Tennent Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Ignore           Ignore           Ignore           Ignore
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        0  1  1  0  1    0  1  0  1  0    0  0  1! 0  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      29  495   338   194 2030    52    25  135    80   633  127   206
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   29  495   338   194 2030    52    25  135    80   633  127   206
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   29  495   338   194 2030    52    25  135    80   633  127   206
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    29  495   338   194 2030    52    25  135    80   633  127   206
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   29  495   338   194 2030    52    25  135    80   633  127   206
RTOR Reduct:    0    0     0     0    0     0     0    0     0     0    0     0
RTOR Vol:      29  495   338   194 2030    52    25  135    80   633  127   206
PCE Adj:     6.00 1.00  1.00  2.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  174  495   338   388 2030    52    25  135    80   633  127   206
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1800 1800  1800  1800 1800  1800  1800 1800  1800  1800 1800  1800
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.92 1.08  1.00  0.19 1.77  0.04  0.10 0.57  0.33  1.00 0.38  0.62
Final Sat.:  1653 1947  1800   335 3189    76   188 1013   600  1800  686  1114
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.02 0.25  0.19  0.58 0.64  0.69  0.13 0.13  0.13  0.35 0.18  0.19
Crit Volume:   29                   1146              240         633
Crit Moves:  ****                   ****             ****        ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #9 San Pablo Ave / Appian Wy
*******************************************************************************
Cycle (sec):          60                Critical Vol./Cap.(X):         0.626
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        46                Level Of Service:                  B
*******************************************************************************
Street Name:          San Pablo Ave                       Appian Wy
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        1  0  2  0  1    1  0  1  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       5  415   238   473 1075    11    55  179    30   237   17   176
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    5  415   238   473 1075    11    55  179    30   237   17   176
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    5  415   238   473 1075    11    55  179    30   237   17   176
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     5  415   238   473 1075    11    55  179    30   237   17   176
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    5  415   238   473 1075    11    55  179    30   237   17   176
RTOR Reduct:    0    0   237     0    0     0     0    0     0     0    0     0
RTOR Vol:       5  415     1   473 1075    11    55  179    30   237   17   176
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    5  415     1   473 1075    11    55  179    30   237   17   176
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1800 1800  1800  1800 1800  1800  1800 1800  1800  1800 1800  1800
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 2.00  1.00  1.00 1.98  0.02  1.00 0.86  0.14  1.00 0.09  0.91
Final Sat.:  1800 3600  1800  1800 3564    36  1800 1542   258  1800  159  1641
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.12  0.00  0.26 0.30  0.30  0.03 0.12  0.12  0.13 0.11  0.11
Crit Volume:       208         473                    209         237
Crit Moves:       ****        ****                   ****        ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #10 Sycamore Ave / Bayberry Ave
*******************************************************************************
Cycle (sec):         120                Critical Vol./Cap.(X):         0.660
Loss Time (sec):      16 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        83                Level Of Service:                  B
*******************************************************************************
Street Name:           Bayberry Ave                      Sycamore Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Include          Ignore
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        1  0  0  1  0    1  1  0  0  2    1  0  2  1  0    1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      30   30    40   450   70   513    60  820    40   180 1345   100
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   30   30    40   450   70   513    60  820    40   180 1345   100
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   30   30    40   450   70   513    60  820    40   180 1345   100
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    30   30    40   450   70   513    60  820    40   180 1345   100
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   30   30    40   450   70   513    60  820    40   180 1345   100
RTOR Reduct:    0    0     0     0    0    60     0    0     0     0    0     0
RTOR Vol:      30   30    40   450   70   453    60  820    40   180 1345   100
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   30   30    40   450   70   453    60  820    40   180 1345   100
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1650 1650  1650  1650 1650  1650  1650 1650  1650  1650 1650  1650
Adjustment:  1.00 1.00  1.00  0.91 1.00  0.91  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 0.43  0.57  1.73 0.27  2.00  1.00 2.86  0.14  1.00 2.00  1.00
Final Sat.:  1650  707   943  2596  444  3000  1650 4720   230  1650 3300  1650
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.02 0.04  0.04  0.17 0.16  0.15  0.04 0.17  0.17  0.11 0.41  0.06
Crit Volume:              70   260               60                    673
Crit Moves:             ****  ****             ****                  ****
*******************************************************************************
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P.M. PEAK

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #1 Willow Ave / I-80 WB Off-ramp
*******************************************************************************
Cycle (sec):          90                Critical Vol./Cap.(X):         0.938
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180                Level Of Service:                   E
*******************************************************************************
Street Name:         I-80 WB Off-ramp                     Willow Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Ignore           Ignore
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        0  0  0  0  0    1  0  0  0  1    0  0  2  0  0    0  0  2  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0   345    0   281     0 1008     0     0 2536     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   345    0   281     0 1008     0     0 2536     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0   345    0   281     0 1008     0     0 2536     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0   345    0   281     0 1008     0     0 2536     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0   345    0   281     0 1008     0     0 2536     0
RTOR Reduct:    0    0     0     0    0     0     0    0     0     0    0     0
RTOR Vol:       0    0     0   345    0   281     0 1008     0     0 2536     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0   345    0   281     0 1008     0     0 2536     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1720 1720  1720  1720 1720  1720  1720 1720  1720  1720 1720  1720
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.00 0.00  0.00  1.00 0.00  1.00  0.00 2.00  0.00  0.00 2.00  0.00
Final Sat.:     0    0     0  1720    0  1720     0 3440     0     0 3440     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.20 0.00  0.16  0.00 0.29  0.00  0.00 0.74  0.00
Crit Volume:         0         345                 0                   1268
Crit Moves:                   ****               ****                   ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #2 Willow Ave / Hawthorne Ave
*******************************************************************************
Cycle (sec):          90                Critical Vol./Cap.(X):         0.733
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        64                Level Of Service:                  C
*******************************************************************************
Street Name:          Hawthorne Ave                       Willow Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     5    5     5     5    5     0     0    5     5
Lanes:        0  0  0  0  0    0  0  2! 0  0    1  0  2  0  0    0  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0   251    0    30   121 1561     0     0 1367   409
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   251    0    30   121 1561     0     0 1367   409
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0   251    0    30   121 1561     0     0 1367   409
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0   251    0    30   121 1561     0     0 1367   409
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0   251    0    30   121 1561     0     0 1367   409
RTOR Reduct:    0    0     0     0    0     0     0    0     0     0    0     0
RTOR Vol:       0    0     0   251    0    30   121 1561     0     0 1367   409
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0   251    0    30   121 1561     0     0 1367   409
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1720 1720  1720  1720 1720  1720  1720 1720  1720  1720 1720  1720
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.00 0.00  0.00  1.00 0.79  0.21  1.00 2.00  0.00  0.00 1.54  0.46
Final Sat.:     0    0     0  1720 1353   367  1720 3440     0     0 2648   792
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.15 0.00  0.08  0.07 0.45  0.00  0.00 0.52  0.52
Crit Volume:         0         251              121                    888
Crit Moves:                    ****             ****                   ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #3 San Pablo Ave / Willow Ave
*******************************************************************************
Cycle (sec):          90                Critical Vol./Cap.(X):         0.712
Loss Time (sec):      12 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        79                Level Of Service:                   C
*******************************************************************************
Street Name:          San Pablo Ave                       Willow Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted      Split Phase      Split Phase
Rights:           Include          Include          Ignore           Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        2  0  0  0  1    0  0  0  0  0    0  0  1  1  0    1  0  2  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     453    0   780     0    0     0     0  600   290   370  640     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  453    0   780     0    0     0     0  600   290   370  640     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  453    0   780     0    0     0     0  600   290   370  640     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   453    0   780     0    0     0     0  600   290   370  640     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  453    0   780     0    0     0     0  600   290   370  640     0
RTOR Reduct:    0    0   370     0    0     0     0    0     0     0    0     0
RTOR Vol:     453    0   410     0    0     0     0  600   290   370  640     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  453    0   410     0    0     0     0  600   290   370  640     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1720 1720  1720  1720 1720  1720  1720 1720  1720  1720 1720  1720
Adjustment:  0.91 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       2.00 0.00  1.00  0.00 0.00  0.00  0.00 1.35  0.65  1.00 2.00  0.00
Final Sat.:  3127    0  1720     0    0     0     0 2319  1121  1720 3440     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.14 0.00  0.24  0.00 0.00  0.00  0.00 0.26  0.26  0.22 0.19  0.00
Crit Volume:             410     0                    445         370
Crit Moves:             ****                         ****        ****
*******************************************************************************
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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #4 San Pablo Ave / John Muir Pkwy
*******************************************************************************
Cycle (sec):         120                Critical Vol./Cap.(X):         1.253
Loss Time (sec):      16 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180                Level Of Service:                   F
*******************************************************************************
Street Name:          San Pablo Ave                     John Muir Pkwy
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Ignore           Include          Include          Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        1  0  2  0  1    1  0  1  1  0    1  0  1  1  0    2  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     150 1060  1200   460  460    20    40  866   245   950   80    80
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  150 1060  1200   460  460    20    40  866   245   950   80    80
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  150 1060  1200   460  460    20    40  866   245   950   80    80
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   150 1060  1200   460  460    20    40  866   245   950   80    80
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  150 1060  1200   460  460    20    40  866   245   950   80    80
RTOR Reduct:    0    0     0     0    0     0     0    0     0     0    0     0
RTOR Vol:     150 1060  1200   460  460    20    40  866   245   950   80    80
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  150 1060  1200   460  460    20    40  866   245   950   80    80
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1650 1650  1650  1650 1650  1650  1650 1650  1650  1650 1650  1650
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  0.91 1.00  1.00
Lanes:       1.00 2.00  1.00  1.00 1.92  0.08  1.00 1.56  0.44  2.00 0.50  0.50
Final Sat.:  1650 3300  1650  1650 3163   138  1650 2572   728  3000  825   825
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.09 0.32  0.73  0.28 0.15  0.15  0.02 0.34  0.34  0.32 0.10  0.10
Crit Volume:       530         460                          556   475
Crit Moves:       ****        ****                         ****  ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #5 San Pablo Ave / Sycamore Ave
*******************************************************************************
Cycle (sec):         120                Critical Vol./Cap.(X):         1.110
Loss Time (sec):      16 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180                Level Of Service:                   F
*******************************************************************************
Street Name:          San Pablo Ave                      Sycamore Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        2  0  2  0  1    2  0  1  1  0    1  0  1  1  0    1  1  0  0  2
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     220 1120   530   765  710   190   300  140   350   600  310   860
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  220 1120   530   765  710   190   300  140   350   600  310   860
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  220 1120   530   765  710   190   300  140   350   600  310   860
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   220 1120   530   765  710   190   300  140   350   600  310   860
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  220 1120   530   765  710   190   300  140   350   600  310   860
RTOR Reduct:    0    0   330     0    0     0     0    0     0     0    0   421
RTOR Vol:     220 1120   200   765  710   190   300  140   350   600  310   439
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  220 1120   200   765  710   190   300  140   350   600  310   439
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1650 1650  1650  1650 1650  1650  1650 1650  1650  1650 1650  1650
Adjustment:  0.91 1.00  1.00  0.91 1.00  1.00  1.00 1.00  1.00  0.91 1.00  0.91
Lanes:       2.00 2.00  1.00  2.00 1.58  0.42  1.00 1.00  1.00  1.32 0.68  2.00
Final Sat.:  3000 3300  1650  3000 2603   697  1650 1650  1650  1978 1124  3000
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.34  0.12  0.26 0.27  0.27  0.18 0.08  0.21  0.30 0.28  0.15
Crit Volume:       560         383                          350   455
Crit Moves:       ****        ****                         ****  ****
*******************************************************************************
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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #6 San Pablo Ave / Hercules Ave
*******************************************************************************
Cycle (sec):         120                Critical Vol./Cap.(X):         0.755
Loss Time (sec):      16 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       116                Level Of Service:                  C
*******************************************************************************
Street Name:          San Pablo Ave                      Hercules Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        1  0  2  0  1    1  0  2  0  1    1  0  1  0  1    0  1  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     220 1550   150   220 1353   220   140   10   100    70   10   110
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  220 1550   150   220 1353   220   140   10   100    70   10   110
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  220 1550   150   220 1353   220   140   10   100    70   10   110
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   220 1550   150   220 1353   220   140   10   100    70   10   110
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  220 1550   150   220 1353   220   140   10   100    70   10   110
RTOR Reduct:    0    0    70     0    0   140     0    0   100     0    0     0
RTOR Vol:     220 1550    80   220 1353    80   140   10     0    70   10   110
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  220 1550    80   220 1353    80   140   10     0    70   10   110
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1650 1650  1650  1650 1650  1650  1650 1650  1650  1650 1650  1650
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 2.00  1.00  1.00 2.00  1.00  1.00 1.00  1.00  0.74 0.26  1.00
Final Sat.:  1650 3300  1650  1650 3300  1650  1650 1650  1650  1216  434  1650
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.13 0.47  0.05  0.13 0.41  0.05  0.08 0.01  0.00  0.06 0.02  0.07
Crit Volume:       775         220              140                          110
Crit Moves:       ****        ****             ****                         ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #7 San Pablo Ave / Pinole Valley Rd
*******************************************************************************
Cycle (sec):          60                Critical Vol./Cap.(X):         1.108
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180                Level Of Service:                   F
*******************************************************************************
Street Name:          San Pablo Ave                     Pinole Valley Rd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        0  1  0  1  0    0  1  1  0  1    0  0  1! 0  0    0  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      27 2020    20   106  815     5    27   13    27    17   17   894
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   27 2020    20   106  815     5    27   13    27    17   17   894
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   27 2020    20   106  815     5    27   13    27    17   17   894
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    27 2020    20   106  815     5    27   13    27    17   17   894
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   27 2020    20   106  815     5    27   13    27    17   17   894
RTOR Reduct:    0    0     0     0    0     5     0    0     0     0    0   106
RTOR Vol:      27 2020    20   106  815     0    27   13    27    17   17   788
PCE Adj:     4.00 1.00  1.00  6.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  108 2020    20   636  815     0    27   13    27    17   17   788
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1800 1800  1800  1800 1800  1800  1800 1800  1800  1800 1800  1800
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.03 1.95  0.02  1.00 1.00  1.00  0.41 0.19  0.40  0.50 0.50  1.00
Final Sat.:    49 3518    34  1800 1800  1800   725  349   725   900  900  1800
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.55 0.57  0.60  0.06 0.45  0.00  0.04 0.04  0.04  0.02 0.02  0.44
Crit Volume:            1074   106               27                          788
Crit Moves:             ****  ****              ****                        ****
*******************************************************************************
```

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Cumulative Project PM      Tue Feb 9, 2010 12:27:21                 Page 10-1
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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #8 San Pablo Ave / Tennent Ave
*******************************************************************************
Cycle (sec):          60                Critical Vol./Cap.(X):         1.259
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180                Level Of Service:                   F
*******************************************************************************
Street Name:          San Pablo Ave                      Tennent Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Ignore           Ignore           Ignore           Ignore
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        0  1  1  0  1    0  1  0  1  0    0  0  1! 0  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      85 2471   259    65  475    61   144  101    30   466  241   489
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   85 2471   259    65  475    61   144  101    30   466  241   489
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   85 2471   259    65  475    61   144  101    30   466  241   489
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    85 2471   259    65  475    61   144  101    30   466  241   489
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   85 2471   259    65  475    61   144  101    30   466  241   489
RTOR Reduct:    0    0     0     0    0     0     0    0     0     0    0     0
RTOR Vol:      85 2471   259    65  475    61   144  101    30   466  241   489
PCE Adj:     2.00 1.00  1.00  6.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  170 2471   259   390  475    61   144  101    30   466  241   489
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1800 1800  1800  1800 1800  1800  1800 1800  1800  1800 1800  1800
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.14 1.86  1.00  0.47 1.40  0.13  0.52 0.37  0.11  1.00 0.33  0.67
Final Sat.:   248 3352  1800   848 2515   237   943  661   196  1800  594  1206
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.34 0.74  0.14  0.08 0.19  0.26  0.15 0.15  0.15  0.26 0.41  0.41
Crit Volume:      1327          65               144                    730
Crit Moves:       ****        ****              ****                   ****
*******************************************************************************
```

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Cumulative Project PM      Tue Feb 9, 2010 12:27:21                 Page 11-1
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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #9 San Pablo Ave / Appian Wy
*******************************************************************************
Cycle (sec):          60                Critical Vol./Cap.(X):         1.366
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180                Level Of Service:                  F
*******************************************************************************
Street Name:          San Pablo Ave                       Appian Wy
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        1  0  2  0  1    1  0  1  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       9 1622   351   293  583    63   144  178    20   811  228   982
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    9 1622   351   293  583    63   144  178    20   811  228   982
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    9 1622   351   293  583    63   144  178    20   811  228   982
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     9 1622   351   293  583    63   144  178    20   811  228   982
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    9 1622   351   293  583    63   144  178    20   811  228   982
RTOR Reduct:    0    0   351     0    0     0     0    0     0     0    0     0
RTOR Vol:       9 1622     0   293  583    63   144  178    20   811  228   982
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    9 1622     0   293  583    63   144  178    20   811  228   982
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1800 1800  1800  1800 1800  1800  1800 1800  1800  1800 1800  1800
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 2.00  1.00  1.00 1.80  0.20  1.00 0.90  0.10  1.00 0.19  0.81
Final Sat.:  1800 3600  1800  1800 3249   351  1800 1618   182  1800  339  1461
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.01 0.45  0.00  0.16 0.18  0.18  0.08 0.11  0.11  0.45 0.67  0.67
Crit Volume:       811         293              144                  1210
Crit Moves:       ****        ****             ****                  ****
*******************************************************************************
```

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Cumulative Project PM      Tue Feb 9, 2010 12:27:21                 Page 12-1
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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
                  CCTALOS Method (Future Volume Alternative)
*******************************************************************************
Intersection #10 Sycamore Ave / Bayberry Ave
*******************************************************************************
Cycle (sec):         120                Critical Vol./Cap.(X):         0.762
Loss Time (sec):      16 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       119                Level Of Service:                   C
*******************************************************************************
Street Name:           Bayberry Ave                      Sycamore Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Include          Ignore
Min. Green:     5    5     5     5    5     5     5    5     5     5    5     5
Lanes:        1  0  0  1  0    1  1  0  0  2    1  0  2  1  0    1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      30   20    70   740   90   700   190 1195    50   100 1040   150
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   30   20    70   740   90   700   190 1195    50   100 1040   150
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   30   20    70   740   90   700   190 1195    50   100 1040   150
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    30   20    70   740   90   700   190 1195    50   100 1040   150
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   30   20    70   740   90   700   190 1195    50   100 1040   150
RTOR Reduct:    0    0     0     0    0   190     0    0     0     0    0     0
RTOR Vol:      30   20    70   740   90   510   190 1195    50   100 1040   150
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   30   20    70   740   90   510   190 1195    50   100 1040   150
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1650 1650  1650  1650 1650  1650  1650 1650  1650  1650 1650  1650
Adjustment:  1.00 1.00  1.00  0.91 1.00  0.91  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 0.22  0.78  1.78 0.22  2.00  1.00 2.88  0.12  1.00 2.00  1.00
Final Sat.:  1650  367  1283  2674  358  3000  1650 4751   199  1650 3300  1650
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.02 0.05  0.05  0.28 0.25  0.17  0.12 0.25  0.25  0.06 0.32  0.09
Crit Volume:              90   415              190                   520
Crit Moves:             ****  ****             ****                  ****
*******************************************************************************
```

9.0 CONCLUSION

Under both alternatives of the intermodal transit center, the Proposed Project would generate 40 A.M. peak hour trips and 71 P.M. peak hour trips. All vehicle trips were assumed to be inbound to the intermodal transit center during the A.M. peak hour and outbound during the P.M. peak hour.

Under the City of Hercules traffic impact analysis guidelines, the proposed project would not result in any significant transportation impacts at the study intersections. While there were no significant transportation impacts identified, three recommended improvement measures were identified as a result of this study.

APPENDIX F

Cultural Resource Survey

This report contains confidential information. A copy is on file with the City of Hercules and the Federal Transit Administration.

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

APPENDIX G
Biological Resources Information

- Appendix G-1 – Previous Biological Studies
- Appendix G-2 – Special-Status Species Life History Descriptions
- Appendix G-3 – Preliminary Jurisdictional Wetland Delineation Report
- Appendix G-4 – Eelgrass and Widgeongrass Survey and Bathymetric Survey Report
- Appendix G-5 2007 – Wet Season Large Branchiopod Survey Report
- Appendix G-6 – Bird Survey Report
- Appendix G-7 – Listed, Proposed Species, and Critical Habitat Potentially Occurring or Known to Occur in the Project Region

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

APPENDIX G-1

Previous Biological Studies

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

PREVIOUS BIOLOGICAL STUDIES

Several biological studies, including habitat evaluation technical memorandums and presence/absence survey reports, have been prepared in support of the proposed project and earlier versions of the proposed project. Previous biological studies for the proposed project were prepared between December 2003 and April 2008 by Vollmar Consulting, Wetlands and Water Resources (WWR), Inc., Wetland Wildlife Associates (WWA), and Condor Country Consulting under contract with the City. Previously prepared biological documents that were used in the development of this biological resources evaluation are listed below.

- Terrestrial Wildlife Habitat Evaluation Hercules Ferry/Intermodal Terminal Project (Vollmar 2006)
- Hercules Multimodal Transit Facility Project Eelgrass and Widgeongrass Presence/Absence Survey and Bathymetric Survey (WWR 2007b)
- Hercules Multimodal Transit Facility Fish and Fisheries Assessment (WWR 2007a)
- Hercules Ferry Intermodal Terminal Project, 90-Day Survey Report, 2007 Wet Season Large Branchiopod Surveys (Vollmar 2007)
- Bird Surveys for the Hercules Ferry Terminal Project (WWA 2007)
- Hercules Intermodal Transit Facility Delineation of Potential Jurisdictional Waters of the U.S. (Vollmar 2008; included as part of wetland delineation report in **Appendix G-2**)
- Biological Evaluation Report – Chelsea Wetland Restoration Project (WWR 2009)

Focused biological surveys were conducted to determine presence/absence of the following species on the project site:

- Eelgrass (*Zostera marina*) and widgeongrass (*Ruppia maritima*) beds;
- Federally-listed vernal pool branchiopods;
- California clapper rail (*Rallus longirostris* spp. *obsoletus*);
- California black rail (*Laterallus jamaicensis coturniculus*);
- San Pablo song sparrow (*Melospiza melodia samuelis*); and
- Burrowing owl (*Athene cunicularia*).

These surveys are summarized below.

Eelgrass, Widgeongrass, and Bathymetric Survey

WWR conducted field surveys for sensitive aquatic habitats, particularly eelgrass and widgeongrass beds, for the Hercules ITC project (WWR 2007b) prior to the project being

redefined to not include construction of the ferry terminal and dredging operations to provide a channel for ferry access from San Pablo Bay. The survey also included a Class 1 hydrographic survey of the San Pablo Bay seafloor to provide current bathymetric data in the area near the project site. The survey footprint covered all areas within the current project boundary and included approximately 650 acres between the shoreline and -6.6 ft (-2 m) Mean Lower Low Water (MLLW) in the area where the proposed navigation channels were planned to be dredged and where ferry wake wash could be a factor. No eelgrass or widgeongrass beds or individual shoots were detected within the survey footprint. This document is included as **Appendix G-3.**

HDR conducted a visual survey for eelgrass beds in the spring of 2010(HDR 2010). HDR biologists walked the intertidal mudflat habitat within the project boundaries during low tide and visually scanned the area for eelgrass or any other type of seagrass. No eelgrass or any other type of seagrass was observed.

Surveys for Federally-listed Vernal Pool Branchiopods

Wet season surveys for federally-listed vernal pool branchiopods were conduced on the western portion of the project site during the 2003-2004 rainy season by Condor Country Consulting (Vollmar 2007); and on the eastern portion of the project site during the 2007-2008 rainy season by Vollmar Consulting (Vollmar 2007). For both surveys, the project site was monitored to determine when the puddles within the railroad ROW had filled. Surveys were conducted every two weeks, beginning when the puddles filled and ending when all pools were dry. All surveys were conducted according to the Interim Survey Guidelines to Permittees for Recovery Permits under Section 10(a)(1)(A) of the Endangered Species Act for the Listed Vernal Pool Branchiopods (USFWS 1996a). One common species of fairy shrimp, the versatile fairy shrimp (*Branchinecta lindahli*), was observed in several of the pools in the project site. No federally-listed vernal pool branchiopods were observed. Wet season surveys for federally-listed vernal pool branchiopods were also conducted during the 2009/2010 rainy season by HDR. No federally-listed vernal pool branchiopods were observed by HDR in 2009/2010. Fairy shrimp survey are included as **Appendix G-4.**

Bird Surveys

Focused surveys for California clapper rail (*Rallus longirostris* spp. *obsoletus*), California black rail (*Laterallus jamaicensis coturniculus*), and San Pablo song sparrow (*Melospiza melodia samuelis*), as well as a general bird census, were conducted during the spring and early summer of 2007 by WWA, with the assistance of rail expert Jules Evens (WWA 2007). The surveys focused on the marsh habitats bordering Hercules Point because of their proximity to the project site and potential to support special-status bird species. The clapper rail and black rail surveys were conducted according to the accepted scientific protocol. For

clapper rail, surveys used the standard "walking transect" protocol written by USFWS biologists and used by researchers throughout the San Francisco Estuary. For black rail, surveys used the widely accepted protocol for California black rail surveys developed and used by regional researchers. Additionally, standardized point count surveys were conducted simultaneously with the rail surveys during most visits. No clapper rails or black rails were observed during the surveys. Several San Pablo song sparrows were observed and their locations mapped on aerial photos. One pair of white-tailed kites was also observed during surveys. This document is included as **Appendix G-5.**

Burrowing Owl Nesting Survey

An individual burrowing owl was incidentally observed on Hercules Point by Vollmar Consulting on January 2, 2007. To determine if the owl was a winter migrant or remained on site to nest or as a resident, focused surveys were conducted according to the requirements of the Burrowing Owl Survey Protocol and Mitigation Guidelines (dated April 1993) prepared by the California Burrowing Owl Consortium and endorsed by the CDFG. Consistent with the survey requirements, four surveys were conducted during the nesting season. No burrowing owls were observed in the project site.

REFERENCES

HDR Engineering, Inc (HDR). 2010. City of Hercules Intermodal Transit Center Project – Spring 2010 Eelgrass Survey. In prep.

U.S. Fish and Wildlife Service (USFWS). 1996. Interim Survey Guidelines to Permittees for Recovery Permits under Section 10(a)(1)(A) of the Endangered Species Act for the Listed Vernal Pool Branchiopods.

Vollmar Consulting. 2006. Memo from Memo from Josh Phillips of Vollmar Consulting to Elizabeth Purl of Impact Sciences, Inc., regarding Terrestrial Wildlife Habitat Evaluation, Hercules Ferry/Intermodal Terminal Project. September 12, 2006.

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———. 2007. 90 Day Survey Report, 2007 Wet Season Large Branchiopod Surveys. Hercules Ferry Intermodal Terminal Project.

Wetland Wildlife Associates (WWA). 2007. Bird Surveys for the Hercules Ferry Terminal Project.

Wetlands Water Resources, Inc (WWR). 2009. Biological Evaluation Report – Chelsea Wetland Restoration Project. May 11, 2009. Project No. 1136. Prepared for the City of Hercules.

———. 2007a. Hercules Multimodal Transit Facility. Fish and Fisheries Assessment.

———. 2007b. Hercules Multimodal Transit Facility Project. Eelgrass and Widgeongrass Presence/Absence Survey and Bathymetric Survey. Data Collection Report.

APPENDIX G-2

Special-Status Species Life History Descriptions

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

SPECIAL-STATUS SPECIES POTENTIALLY IN THE PROJECT AREA

Special-status species and sensitive natural communities analyzed in **Appendix G-6** that were determined to have potential habitat in the project area are listed in **Appendix G-7**, the Project Study Area Sensitive Species/Natural Communities Table. This section contains an in-depth evaluation of the plant and animal species and natural communities of concern (listed in Appendix G-7) that are known to occur or have the potential to occur in the project site and vicinity.

Federally-Listed Threatened or Endangered Wildlife Species

California Red-legged Frog (CRLF; *Rana aurora draytonii*)

LISTING STATUS: Federally-listed as Threatened; California Species of Special Concern.

The CRLF was listed as a threatened species under the Federal Endangered Species Act by the USFWS on May 23, 1996 (Federal Register 61:25813).

HABITAT AND BIOLOGY: The CRLF occurs from Baja California, Mexico, north to the vicinity of Redding inland, and at least to Point Reyes, California coastally (Jennings and Hayes, 1994). Northern red-legged frog (*Rana aurora aurora*), which is a California Species of Special Concern, occurs north of the CRLF range in northern California and the species are largely geographically isolated. Traditionally a wide intergrade zone, which is an area of interbreeding between the two subspecies of red-legged frog (California red-legged frog and northern red-legged frog), was thought to exist spanning most of Sonoma, Mendocino and Humboldt counties. However, studies have shown that the intergrade zone is narrower than previously thought. The study proposed that the intergrade zone is located near Point Arena in Mendocino County. Red-legged frogs north of the intergrade zone are the northern subspecies and red-legged frogs south of the intergrade zone are the CRLF. Frogs found in the intergrade zone require genetic analysis to determine the subspecies.

The CRLF occurs from sea level to elevations of 1,500 meters (5,200 feet), occupying a fairly distinct habitat, combining both specific aquatic and riparian components. Aquatic habitat consists of low-gradient freshwater bodies, including ponds, marshes, sag ponds, dune ponds, stock ponds, lagoons, seeps, springs, and backwaters within streams and creeks. While CRLF can occur in either ephemeral or perennial streams or ponds, populations generally cannot be maintained in ephemeral streams in which surface water disappears before metamorphosis (July to September) during most years. Studies have indicated that this species can not inhabit water bodies that exceed 70° F, especially if there are no cool, deep portions (USFWS 2002). The adults require dense, shrubby or emergent riparian vegetation closely associated with deep (greater than 2 1/3-foot deep) still or slow moving water, but frogs have been observed in shallow sections of streams and ponds that are devoid of vegetative cover. The largest

densities of CRLF are associated with deep-water pools with dense stands of overhanging willows (*Salix sp.*) and an intermixed fringe of cattails (*Typha latifolia*). Well-vegetated terrestrial areas within the riparian corridor may provide important sheltering habitat during winter. Also, the species is known to utilize well-vegetated riparian zones for foraging habitat and facilitating dispersal. During summer, CRLF often disperse from their breeding habitat to forage and seek summer habitat if water is not available (USFWS, 2002). This habitat may include shelter under boulders, rocks, logs, industrial debris, agricultural drains, water troughs, small mammal burrows, incised streamed channels, or areas with moist leaf litter (Jennings and Hayes 1994, USFWS 1996b, 2002). CRLF may use these upland habitats up to approximately 200 feet from suitable aquatic habitat (USFWS 2002, USFWS 2008a). CRLF have also been found up to 100 feet from water in adjacent dense riparian vegetation.

Critical habitat for the CRLF must include: (a) essential aquatic habitat; (b) associated uplands; and (c) dispersal habitat connecting essential aquatic habitat (66 FR 14626-14758). Aquatic components consist of all still or slow-flowing freshwater aquatic features possessing minimum water depths of 20 cm (8 in.), with the exception of deep lacustrine water habitat inhabited by nonnative predators, that are essential for providing space, food, and cover needed to sustain eggs, tadpoles, metamorphosing juveniles, non-breeding sub-adults, and breeding and non-breeding adult frogs, and are found in areas with two or more suitable breeding locations and a permanent water source with no more than 2 km (1.25 mi) separating these locations. Dispersal habitat consists of upland and aquatic areas, free of barriers, essential for providing connectivity between aquatic areas identified above. Upland habitat components are areas within 150 m (500 ft) from the edge of the aquatic primary constituent element.

Adult CRLF breeding typically starts in November and continues into April (USFWS, 2002). CRLF typically lay eggs between December and early April. Eggs are attached to vegetation in shallow water. Larvae metamorphose in 3.5 to 7 months, typically between July and September. Breeding ponds must retain water until this time. CRLF may remain active throughout the year along the coast. In drier inland areas they aestivate in upland habitat from late summer to early winter (USFWS, 2002; USFWS, 2008a).

Salinity of the water is also a determinant whether CRLF have the potential to occur. Like most amphibians, the maximum salinity tolerated by ranid frogs is near 9 parts per thousand (o/oo) (Ruibal 1959 in Jennings and Hayes 1990), although notable exceptions exist (Gordan et al. 1961, Gordon and Tucker 1965 in Jennings and Hayes 1990). Embryonic stages of the CRLF have a relatively low salinity tolerance (<5 o/oo) (Jennings and Hayes 1990 and references therein). Jennings and Hayes (1990) observed embryos dying relatively quickly in salinities ≥ 6 o/oo, and significant abnormalities occurring in embryos at salinities between 5.0 and 6.5 o/oo. Ultimately, embryos exposed to the latter salinity levels were uniformly

characterized by morphological abnormalities (Jennings and Hayes 1990). In their research, Jennings and Hayes (1990) noted adult CRLF's in salinities from 0.5 o/oo to 10.8 o/oo, with most adults occurring at salinities ≤ 6.5 o/oo. Furthermore, adult CRLF vacated areas where salinities increased above 6.5 o/oo.

The decline of the red-legged frog is attributable to a variety of factors. Largescale commercial harvesting of red-legged frogs led to severe depletions of populations at the turn of the century (Jennings and Hayes 1985 as cited in Jennings and Hayes 1994). Subsequently, exotic aquatic predators such as bullfrogs (*Rana catesbeiana*), crayfish (*Procambarus clarki*), and various species of fish became established and contributed to the continued decline of the species (Hayes and Jennings 1986 as cited in Jennings and Hayes 1994). Habitat alterations such as conversion of land to agricultural and commercial uses, reservoir construction, off-road vehicle use, and abusive land-use practices (i.e., livestock grazing) threaten the remaining populations (Kauffman et al. 1983, Kauffman and Krueger 1984, Bohn and Buckhouse 1986 as cited in Jennings and Hayes 1994).

RECOVERY PLAN/CRITICAL HABITAT DESIGNATION: According to the California Red-Legged Frog Recovery Plan (USFWS 2002), factors associated with declining populations of the frog include degradation and loss of its habitat through: (1) agriculture, (2) urbanization, (3) mining, (4) overgrazing, (5) recreation, (6) timber harvesting, (7) non-native plants, (8) impoundments, (9) water diversions, (10) degraded water quality, (11) use of pesticides, and (12) introduced predators (e.g., bullfrogs, crayfish, and a variety of non-native predatory fish). Furthermore, the California Red-Legged Frog Recovery Plan reports that Contra Costa is one of two counties that contains the majority of known CRLF localities within the San Francisco Bay area, although they seem to have been nearly eliminated from the western lowland portions of these counties (west of highways 80 and 580), particularly near urbanization. The project site is not within a core recovery area for CRLF. Core recovery areas in Contra Costa County are in the eastern portion of the County, east of Interstate 680.

Critical Habitat, which is defined as "a specific area needed by an endangered or threatened animal or plant in order for it to survive, not go extinct, and recover to a healthy population" was designated for CRLF on April 13, 2006 (Federal Register 71:19243). An increase in critical habitat for the CRLF was proposed by the USFWS in a news release on September 16, 2008. The project site is not located within USFWS-designated critical habitat for the CRLF. The closest critical habitat for CRLF is located approximately 8 miles southeast of the project area (Contra Costa County) and approximately 8 miles northeast of the project area (Solano County). Given that this habitat is located well outside the project area (including across the Carquinez Strait, a natural barrier), impacts on CRLF critical habitat is not discussed further in this document.

CNDDB RECORDS: Observations of CRLF have not been reported within the project site limits; however, there is a reported occurrence of CRLF in CNDDB within one mile of the project site. CRLF (2 adults and 9 juveniles) have been recorded approximately 0.8 miles southeast of the project area footprint; in a tributary to Refugio Creek, just southeast of the intersection of I-80 and highway 4, between the cities of Pinole and Rodeo (CDFG 2009).

POTENTIAL TO OCCUR ON THE PROJECT SITE: Based on a protocol-level habitat assessment conducted by HDR and review of previous habitat assessments and focused surveys, the project site and areas within one-mile do not contain suitable breeding habitat for the CRLF. While CRLF was observed within one mile of the project site (in 2000); approximately 0.8 miles southeast of the project boundary, the occurrence was not believed to be a breeding population. Several factors contribute to make aquatic features near the project site unsuitable for breeding: (1) brackish conditions; (2) extreme dense growth of cattails and other in-channel vegetation (making movement by CRLF along the channel very difficult); (3) lack of permanent deep water; (4) lack of open water in identified pond features; (5) variability in creek depth due to tidal influence and urban runoff; (6) presence of predators (e.g., mosquito fish); (7) degraded water quality; (8) lack of connection to large pristine habitat areas; as well as the (9) long history of human disturbance. Additionally, all potential dispersal corridors identified within one mile of the project site contain dispersal barriers. Barriers included heavy traffic areas (e.g., I-80, SR-4, city streets) with more than 30 cars per hour, moderate to high-density urban, commercial, and industrial developments, and numerous culverts stretching for long distances.

Because habitats on the project site are not suitable for breeding, and potential corridors for dispersal to the site have barriers, CRLF is not expected to occur in the project site.

Vernal Pool Fairy Shrimp (VPFS; *Branchinecta lynchi*)

LISTING STATUS: Federally-listed as Threatened.

The VPFS was listed as a threatened species under the Federal Endangered Species Act by the USFWS on September 13, 1994 (Federal Register 59-48136).

HABITAT AND BIOLOGY: VPFS has only been a recognized species since 1990 and there is little information on the historical range of the species. However, this species is currently known to occur in a wide range of vernal pool habitats in the southern and Central Valley areas of California, and in two vernal pool habitats within the "Agate Desert" area of Jackson County, Oregon (USFWS 2009). VPFS is found from the vicinity of Red Bluff in Shasta County southward through much of the Central Valley. The southernmost known populations of VPFS occur in the Santa Rosa Plateau in Riverside County (Eriksen and Belk 1999). The VPFS occupies a variety of different vernal pool habitats, from small, clear, sandstone rock pools to large, turbid, alkaline, grassland valley floor pools. Although the species has been

collected from large vernal pools, including one exceeding 25 acres, it tends to occur in smaller pools. It is most frequently found in pools measuring less than 0.05 acre. These are most commonly in grass or mud bottomed swales, or basalt flow depression pools in unplowed grasslands (USFWS 2009b).

VPFS eggs either are dropped to the pool bottom or remain with the mother until the mother dies and sinks. When the pool dries out, so do the eggs. They remain in the dry pool bed until rains and other environmental stimuli hatch them (USFWS 2009). Resting fairy shrimp eggs are commonly referred to as cysts. They are capable of withstanding heat, cold and prolonged desiccation. When the pools refill, some, but not all, of the cysts may hatch. The cyst bank in the soil may contain cysts from several years of breeding.

RECOVERY PLAN/CRITICAL HABITAT DESIGNATION: Critical habitat for VPFS was originally designated by USFWS on August 6, 2003 (Federal Register 68:46683) and revised on August 11, 2005 (Federal Register 70:46923). Species by unit designations for all federally-listed vernal pool branchiopods were published on February 10, 2006 (Federal Register 71:7117). The project is not located within designated critical habitat for VPFS and there are no elements of VPFS critical habitat present in the project site. VPFS critical habitat within Contra Costa County is in the eastern and northern part of the county.

The following information on VPFS critical habitat is from the Federal Register (Federal Register 71:7117). The primary constituent elements of critical habitat for VPFS are the habitat components that provide: (i) Topographic features characterized by mounds and swales and depressions within a matrix of surrounding uplands that result in complexes of continuously, or intermittently, flowing surface water in the swales connecting the pools described below in paragraph (2)(ii), providing for dispersal and promoting hydroperiods of adequate length in the pools; (ii) Depressional features including isolated vernal pools with underlying restrictive soil layers that become inundated during winter rains and that continuously hold water for a minimum of 18 days, in all but the driest years; thereby providing adequate water for incubation, maturation, and reproduction. As these features are inundated on a seasonal basis, they do not promote the development of obligate wetland vegetation habitats typical of permanently flooded emergent wetlands; (iii) Sources of food, expected to be detritus occurring in the pools, contributed by overland flow from the pools' watershed, or the results of biological processes within the pools themselves, such as single-celled bacteria, algae, and dead organic matter, to provide for feeding; and (iv) Structure within the pools described above in paragraph (3)(ii), consisting of organic and inorganic materials, such as living and dead plants from plant species adapted to seasonally inundated environments, rocks, and other inorganic debris that may be washed, blown, or otherwise transported into the pools, that provide shelter. Existing manmade features and structures, such as buildings, roads, railroads, airports, runways, other paved areas, lawns, and other urban landscaped areas do not contain one or more of the primary constituent elements.

Federal actions limited to those areas, therefore, would not trigger a consultation under section 7 of the Act unless they may affect the species and/or primary constituent elements in adjacent critical habitat.

CNDDB RECORDS: No occurrences of this species are recorded in CNDDB within ten miles of the project site. The only record within the nine quad regional radius of the project site was from 2003, along the south end of the Napa airport, approximately 1.5 miles west of Highway 29.

POTENTIAL TO OCCUR ON THE PROJECT SITE: While some of the freshwater seasonal wetlands and unvegetated ponded depressions on the project site provide marginal habitat for VPFS, the project site is outside of the known range of this species. It is unlikely that VPFS occur on the project site. During biological reconnaissance surveys conducted by Vollmar in 2006, an unidentified species of fairy shrimp was observed in several of the seasonally ponded habitats in the project site. In order to identify the fairy shrimp, USFWS was contacted and protocol presence/absence surveys were initiated (pers. comm., Josh Phillips).

Presence/absence surveys were conducted by Vollmar in winter/spring of 2006/2007 in the eastern portion of the project site according to USFWS protocols outlined in the Interim Survey Guidelines to Permittees for Recovery Permits under Section 10(a)(1)(A) of the Endangered Species Act for the Listed Vernal Pool Branchiopods (Guidelines; USFWS 1996a). USFWS protocol wet season surveys were also conducted in winter/spring of 2003/2004 in the western portion of the project site. The results of those surveys have been submitted to USFWS and are included as **Appendix G-4**. No federally-listed vernal pool branchiopods were found in the project site during the surveys. One non special-status fairy shrimp, the versatile fairy shrimp (*Branchinecta lindahli*), was found in seasonally ponded areas throughout the project site. In order to complete the USFWS protocol, which requires two wet season surveys to be conducted within a five year period, wet season surveys are being conducted during winter/spring 2009/2010 by HDR over the entire project site. To date, no federally-listed vernal pool branchiopods have been observed within the project site.

Because the project site is outside of the known range of VPFS, the habitat on-site is marginal, and no VPFS have been found during one full wet season of protocol surveys, VPFS are not expected to occur in the project site. No impacts to VPFS are anticipated. If VPFS are found during wet season surveys in 2009/2010, the sighting will be reported to USFWS and consultation will be initiated.

California Clapper Rail (*Rallus longirostris obsoletus*)

LISTING STATUS: Federally-listed as Endangered; State Listed as Endangered and Fully Protected.

The California clapper rail was listed as an endangered species under the Federal Endangered Species Act by the USFWS on October 13, 1970 (Federal Register 35:16047) and as endangered under the California Endangered Species Act by the CDFG on June 27, 1971.

HABITAT AND BIOLOGY: Throughout their distribution, California clapper rails occur within a range of salt and brackish marshes. In south and central San Francisco Bay and along the perimeter of San Pablo Bay, rails typically inhabit salt marshes dominated by pickleweed (*Sarcocornia pacifica*) and Pacific cordgrass (*Spartina foliosa*). Pacific cordgrass dominates the middle marsh zone throughout the south and central Bay (Federal Register 35:16047).

In the north Bay (Petaluma Marsh, Napa-Sonoma marshes, Suisun Marsh), clapper rails also live in tidal brackish marshes which vary significantly in vegetation structure and composition. Use of brackish marshes by clapper rails is largely restricted to major sloughs and rivers of San Pablo Bay and Suisun Marsh, and along Coyote Creek in south San Francisco Bay. Clapper rails have rarely been recorded in nontidal marsh areas (Federal Register 35:16047).

California clapper rail is almost entirely restricted to the marshes of the San Francisco estuary, where the only known breeding populations occur. In south San Francisco Bay, populations occur in all of the larger tidal marshes (USFWS 2010). In San Pablo Bay and Suisun Bay, its distribution is patchy and discontinuous, occurring along major sloughs and rivers of San Pablo Bay and along major tidal sloughs of Suisun Marsh (USFWS 1984, USFWS 2010).

Breeding California clapper rails require tidal marshes with the following elements: a well-developed tidal channel system with full tidal influence, cordgrass, and a vegetated upper marsh/upland ecotone. The minimum marsh size likely to be used by clapper rails is estimated at approximately 2.5 acres. The maximum dispersal distance recorded in radio telemetry studies is approximately 1.9 miles (USFWS 2010).

RECOVERY PLAN/CRITICAL HABITAT DESIGNATION: A recovery plan for salt marsh harvest mouse and California clapper rail was completed in 1984, but is considered outdated. A new recovery plan that will cover both species, called the Tidal Marsh Ecosystem Recovery Plan, is being prepared but has not been finalized.

Critical habitat has not been designated for California clapper rail.

CNDDB RECORDS: Observations of California clapper rail have not been reported within the project site limits. Many occurrences of California clapper rail are reported in CNDDB within ten miles of the project site and three occurrences are reported within five miles of the project site. The closest record to the project site is from 2000 and is near Point Pinole, approximately 0.5 miles west of San Pablo Ave. and Garrity Creek, and approximately 2.5 miles west of the project site. This site was resurveyed in 2006 and no rails were present.

Another occurrence in CNDDB is from 1996 where this species was reported on the southwest tip of Mare Island Naval Shipyard, approximately 2.5 miles north of the site. A third record was reported in 1979 and is approximately 0.5 miles south of Giant Salt Marsh, approximately 4.5 miles southwest of the project site.

POTENTIAL TO OCCUR ON THE PROJECT SITE: Tidal marsh habitat at or adjacent to the project site contains cord grass and vegetated upper marsh/upland, but lacks a tidal channel system. The habitat in or adjacent to the project site is large enough to support only one pair of California clapper rails at the most. Because the project site is so isolated from other marshes with established populations, it is not likely to be colonized except after years of exceptionally high recruitment when other higher quality marshes are at carrying capacity. A bird survey was conducted in 2007 for nesting California clapper rail and other nesting marsh birds. The survey did not detect any California clapper rail in or adjacent to the project site (**Appendix G-5**). The California clapper rail is not likely to occur in or adjacent to the project site. However, there is a low potential that California clapper rail could begin nesting in or adjacent to the project site prior to construction and be impacted by construction activities.

Salt Marsh Harvest Mouse (*Reithrodontomys raviventris*)

LISTING STATUS: Federally-listed as Endangered; State Listed as Endangered and Fully Protected.

The salt marsh harvest mouse was listed as an endangered species under the Federal Endangered Species Act by the USFWS on October 13, 1970 (Federal Register 35:16047) and as endangered under the California Endangered Species Act by the CDFG on June 27, 1971.

HABITAT AND BIOLOGY: The species is endemic to tidal and brackish marsh habitats of the San Francisco Bay region. Salt marsh harvest mice are primarily found in the salt marshes along the northern San Pablo Bay, surrounding the Suisun Bay, and along the southern San Francisco Bay (USFWS 1984, Goals Project 2000). The salt marsh harvest mouse is critically dependent on dense cover and its preferred habitat is pickleweed. In marshes with an upper zone of halophytes, it uses this vegetation to escape high tides, and may also move into adjoining grasslands during the highest winter tides. The best type of pickleweed association for the species has: 100 percent cover, cover depth of 30 to 50 centimeters at summer maximum, high percentage cover of pickleweed (at least 60 percent), and additional halophytes, such as fat hen (*Atriplex patula*) and alkali heath (*Frankenia salina*). The amount of salt grass, brass buttons (*Cotula coronopifolia*), alkali bulrush (*Bolboschoenus maritimus*), or other *Scirpus* or *Typha* species should be low (USFWS 1984).

The Salt Marsh Harvest Mouse and California Clapper Rail Recovery Plan (USFWS 1984) lists five principal reasons for the decline of the salt marsh harvest mouse: habitat loss, fragmentation of the remaining marshes, widespread loss of the high marsh zone as a result of

backfilling, land subsidence, and vegetational change. It furthermore points out that small marshes separated by open land or dikes have very low immigration, and that very few areas are likely to be recolonized.

RECOVERY PLAN/CRITICAL HABITAT DESIGNATION: A recovery plan for salt marsh harvest mouse and California clapper rail was completed in 1984, but is considered outdated. A new recovery plan that will cover both species, called the Tidal Marsh Ecosystem Recovery Plan, is being prepared but has not been finalized.

Critical habitat has not been designated for salt marsh harvest mouse.

CNDDB RECORDS: Observations of salt marsh harvest mouse have not been reported within the project site limits. The closest reported populations of salt marsh harvest mouse in the CNDDB are 2.6 miles northeast of the site (across the Carquinez Strait, which is a dispersal barrier) and 4.0 miles southwest of the site (Point Pinole Regional Park).

POTENTIAL TO OCCUR ON THE PROJECT SITE: Three small patches of pickleweed tidal marsh are located at Hercules Point, on or adjacent to the project site. The patches add up to a total of less than four acres. Compared to habitats that have known populations, the project site's habitat patches are small. The closest habitat of any kind (Bayfront Park) is approximately 300 meters southwest of the site and does not support a known population. Most of the 300 meters separating the project site from Bayfront Park appears to be beach and riprap, which is unsuitable for salt marsh harvest mouse dispersal. Bayfront Park is approximately 2.5 kilometers (1.5 miles) from Point Pinole Regional Park. Nearly the entire 2.5 kilometers separating these two habitat patches is riprap adjacent to railroad, and residential development inland of the railroad, which is also unsuitable dispersal habitat for this species. For these reasons, the project site is effectively isolated from known populations and is expected to be unsuitable to support a viable salt marsh harvest mouse population. However, there is a low potential that salt marsh harvest mouse could occur in tidal marsh habitats on Hercules Point in and adjacent to the project site and be impacted by construction activities.

State Listed Threatened or Endangered Species

California Black Rail (*Laterallus jamaicensis coturniculus*)

LISTING STATUS: State Listed as Threatened.

The California black rail was listed as threatened under the California Endangered Species Act by the CDFG on June 27, 1971.

HABITAT AND BIOLOGY: In coastal California during the breeding season, the California black rail is presently found at Bodega Bay, Tomales Bay, Bolinas Lagoon, San Francisco Estuary, and Morro Bay. The bulk of the population is restricted to the tidal marshlands of the northern reaches of the San Francisco Estuary (San Pablo Bay) (Goals Project 2000). The California black rail is associated with high overall vegetation cover, high cover of small tidal channels, and low cover of saltgrass, tule (*Schoenoplectus acutus*), and California bulrush (*Schoenoplectus californicus*). The bird is more likely to be present in larger marshes with higher proportions of adjacent natural upland or agriculture, and is less likely in more isolated marshes. Particularly where the marsh vegetation is low, California black rails require access to vegetated upper marsh as refuge from predation during high tides. The black rail commonly nests in pickleweed and alkali bulrush (**Appendix G-5**).

CNDDB RECORDS: Many occurrences of California black rail are reported in CNDDB within ten miles of the project site and four occurrences are reported within five miles of the project site. The closest record to the site is on the western portion of the site and to the southwest. This record is from 1977 and was only recorded as Pinole, so the record was mapped by CNDDB as the salt marshes at the mouth of Pinole Creek. Another record from 1988 is reported at the mouth of Garrity Creek, approximately two miles west, southwest of the site. A third occurrence from 1991 is recorded east, southeast of Pinole Point, between the Southern Pacific Railroad and San Pablo Bay, approximately 3 miles west of the project site. A fourth record from 2008 is reported in Giant Marsh and Breuner Marsh, approximately four miles southwest of the site.

POTENTIAL TO OCCUR ON THE PROJECT SITE: The marsh within and adjacent to the project site is of a relatively small acreage and isolated; however, other habitat elements are present. A bird survey was conducted in 2007 for nesting California black rail and other nesting marsh birds. The survey followed the widely accepted protocol for California black rail surveys developed and used by regional researchers (Albertson and Downart 2004). The survey did not detect any California black rails; however, there is some chance that pickleweed marsh in or adjacent to the project site may be occupied in some years (**Appendix G-5**). Within the Chelsea Mitigation area, this species was documented in the nearby tidal marsh in 2001 (WWR 2009). If California black rail occupied the pickleweed marsh prior to construction, it could be impacted by construction of the proposed project.

Other Sensitive Wildlife Species

Cooper's Hawk (*Accipiter cooperi*)

LISTING STATUS: The Cooper's hawk is protected during the nesting season by Fish and Game code.

HABITAT AND BIOLOGY: Cooper's hawk is a breeding resident within California. Breeding habitat occurs in the southern Sierra Nevada foothills, New York Mountains, Owens Valley, and other areas in southern California. They range from sea level to above 2700 m (0-9000 ft). Habitats used most frequently include dense stands of live oak, riparian deciduous or other forest habitats near water. They are seldom found in areas without dense stands of trees. Nesting and foraging usually occur near open water or riparian vegetation. Nests are built in crotches of deciduous trees approximately 20-50 feet above ground. Coniferous trees are also used for nesting though the locations of nests are usually located in the main branch intersections. Nests can be recognized as a stick platform lined with bark.

CNDDB RECORDS: There is one reported occurrence of nesting Cooper's hawk in CNDDB within 10 miles of the project site. Nesting Cooper's hawk were reported approximately 3.5 miles east of the project site in 1999 alongside a public golf course.

POTENTIAL TO OCCUR ON THE PROJECT SITE:

Suitable nesting and foraging habitat for Cooper's hawk occurs in and adjacent to the project site. No Cooper's hawk were observed in the project area

Tricolored Blackbird (*Agelaius tricolor*)

LISTING STATUS: The tricolored blackbird is a CDFG species of special concern.

HABITAT AND BIOLOGY: Tricolored blackbird is common locally throughout central California. It nests and seeks cover in emergent wetland vegetation, specifically cattails and tules. Nesting areas must be large enough to support a minimum colony of 50 pairs as they are a highly colonial species. The bird forages on ground in croplands, grassy fields, flooded land, and edges of ponds.

CNDDB RECORDS: No occurrences of tricolored blackbird are recorded in CNDDB within five miles of the project site; however three records are reported within ten miles. The closest occurrence is from 1988 and is just east of Admiral Callaghan Lane in Vallejo, approximately 7.5 miles north of the site. Another occurrence is from 1987 and is near the Lake Herman Parking Lot, approximately eight miles northeast of the site. A third occurrence is reported in CNDDB approximately nine miles east of the site, however no data accompanies this record.

POTENTIAL TO OCCUR ON THE PROJECT SITE: Although records of this species have not recently been reported within the vicinity of the project site, suitable nesting habitat for the tricolored blackbird occurs within the cattail/tule habitat within Refugio Creek, adjacent to the project site and suitable foraging habitat is also present.

Burrowing Owl (*Athene cunicularia*)

LISTING STATUS: The burrowing owl is a CDFG species of special concern.

HABITAT AND BIOLOGY: Burrowing owls are often found in open, dry grasslands, agricultural and range lands, and desert habitats. They can also inhabit grass, forb, and shrub stages of pinyon and ponderosa pine habitats. Burrowing owls occur at elevations ranging from 200 feet below sea level to over 9,000 feet. In California, the highest elevation where burrowing owls are known to occur is 5,300 feet above sea level in Lassen County. In addition to natural habitats, burrowing owls can be found in urban habitats such as at the margins of airports and golf courses and in vacant urban lots.

Burrowing owls nest in burrows in the ground, often in old ground squirrel burrows or badger dens. They are also known to use artificial burrows such as abandoned pipes or culverts. The nesting season for burrowing owls can begin as early as February 1 and continues through August 31. The owl commonly perches on fence posts or on top of mounds outside its burrow. Burrowing owls forage in adjacent grasslands and other suitable habitats primarily for insects and small mammals, and less often for reptiles, amphibians, and other small birds.

CNDDB RECORDS: No occurrences of burrowing owl are reported by CNDDB within five miles of the project site; however three occurrences are recorded within ten miles. The closest occurrence is from 2004 and is just southwest of the Junction of Montgomery Ave. and 48th Street in Richmond, approximately 7.5 miles southwest of the project site. Another occurrence is reported in 1983 on the lower slopes of Sulfur Springs Mountain, approximately 8.5 miles northeast of the project site. A third occurrence is reported just off of Suisun Road on the northeast edge of Vallejo, approximately 8.5 miles north of the site. However this record has been extirpated.

POTENTIAL TO OCCUR ON THE PROJECT SITE: The project site's ruderal habitat lacks ground squirrel holes typically used by burrowing owls as dens. Upland vegetation covering most of Hercules Point is taller than in areas that burrowing owls typically inhabit. One burrowing owl was sighted incidentally in January 2007. Follow-up surveys conducted during the breeding season of 2007 did not locate any burrowing owls or burrowing owl dens. Suitable nesting habitat does not occur within the project site, however the site provides marginal wintering habitat.

Northern Harrier (*Circus cyaneus*)

LISTING STATUS: The northern harrier is a CDFG species of special concern.

HABITAT AND BIOLOGY: The northern harrier is a permanent resident of the northeastern plateau and coastal areas and a less common resident of the Central Valley. Habitat consists of coastal scrub, Great Basin grassland, marsh and swamp (coastal and fresh water), riparian scrubs, valley and foothill grassland, and wetlands. Northern harriers nest on the ground,

usually in tall, dense clumps of vegetation, either alone or in loose colonies. The species occurs from annual grassland up to lodgepole pine and alpine meadow habitats, as high as 3000 meters.

CNDDB RECORDS: No occurrences of northern harrier are reported by CNDDB within five miles of the project site; however three occurrences are recorded within ten miles. The closest occurrence is from 2004 and is at the upper end of Southampton Bay, approximately 5.5 miles northeast of the project site. Another occurrence is from 1986 and is at Wildcat Creek Marsh, approximately six miles southwest of the site. A third occurrence is from 2004 and is on an island between China Slough and South Slough, approximately nine miles north – northwest of the site.

POTENTIAL TO OCCUR ON THE PROJECT SITE: Foraging habitat occurs in the project site along Refugio Creek, on Hercules Point, adjacent to the project site, and within the Chelsea Mitigation area. Marginal nesting habitat occurs in the upper margins of marshes on Hercules Point, adjacent to the project site, and within the Chelsea Mitgiation area.

White-tailed Kite (*Elanus leucurus*)

LISTING STATUS: The white-tailed kite is a CDFG fully protected species.

HABITAT AND BIOLOGY: White-tailed kite is a common to uncommon, yearlong resident in coastal and valley lowlands and is rarely found away from agricultural areas. However, it does inhabit herbaceous and open stages of most habitats, mostly in cismontane California. The main prey of white-tailed kite is voles and other small, diurnal mammals, but it occasionally preys on birds, insects, reptiles, and amphibians. White-tailed kite forages in undisturbed, open grasslands, meadows, farmlands and emergent wetlands. Nests are made of loosely piled sticks and twigs and lined with grass, straw, or rootlets and placed near the top of a dense oak, willow, or other tree stand; usually 6-20 m (20-100 ft) above ground. Nests are located near open foraging areas in lowland grasslands, agricultural areas, wetlands, oak-woodland and savannah habitats, and riparian areas associated with open areas.

CNDDB RECORDS: No occurrences of white-tailed kite have been recorded in CNDDB within five miles of the project site; however two occurrences have been recorded within CNDDB within ten miles. One is from 1995 and is of a mating pair approximately 0.2 miles south of Dutchman Slough, approximately 6.5 miles north of the project site. A second record is from 1986 and is of a courting pair at Wildcat Creek Marsh in Richmond, approximately 6.5 miles southwest of the project site.

POTENTIAL TO OCCUR ON THE PROJECT SITE: Marginal foraging habitat occurs adjacent to the project site, in the ruderal habitat on the Point of Hercules. Marginal nesting habitat also occurs within the willow riparian forest habitat within the project site. A pair of white-tailed

kites was observed in 2007 (**Appendix G-5**) and again during HDR surveys in December 2009, although no nests were observed. WWR (2009) reports that this species is frequently observed foraging in Chelea Mitigation area.White-tailed kite uses the site for foraging and has a low potential to nest in or adjacent to the project site prior to construction.

Saltmarsh Common Yellowthroat (*Geothlypis trichas sinuosa*)

LISTING STATUS: The saltmarsh common yellowthroat is a CDFG species of special concern.

HABITAT AND BIOLOGY: Its breeding range bounded by Tomales Bay on the north, Carquinez Strait on the east, and Santa Cruz county to south, with occurrences in the Bay Area during migration and winter. The species occurs in salt marshes. It builds its nests just above ground or over water, in thick herbaceous vegetation, often at base of shrub or sapling, sometimes higher in weeds or shrubs up to about 1 meter.

CNDDB RECORDS: Several records of this species are reported within ten miles, north and east of the project site, in CNDDB. Only one occurrence is reported within five miles of the site. This record is from 2004 and consists of ten adults and one nest occurring in Southampton Bay, between Vallejo and Benicia, approximately five miles northeast of the project site.

POTENTIAL TO OCCUR ON THE PROJECT SITE: Suitable habitat for this species occurs within the marsh habitat within and adjacent to the project site. Suitable habitat is present in the Chelsea Mitigation area, as well as nearby marsh habitats along Pinole Creek.

San Pablo Song Sparrow (*Melospiza melodia samuelis*)

LISTING STATUS: The San Pablo song sparrow is a CDFG species of special concern.

HABITAT AND BIOLOGY: The San Pablo song sparrow is distributed in marshes around San Pablo Bay continuously from Gallinas Creek in the west, along the northern San Pablo bayshore, and throughout the extensive marshes along the Petaluma, Sonoma, and Napa rivers. It is commonly found in saltmarsh, brackish marsh, and fringe areas where marsh vegetation is limited to edges of dikes, land fills, or other margins of high ground bordering salt or brackish water areas.

CNDDB RECORDS: Several records of this species are reported in CNDDB within ten miles, north and southwest of the project site. Five occurrences are reported within five miles of the site. The closest occurrence is from 1947 and is recorded only as Pinole in CNDDB. This occurrence is less than 0.5 miles west of the project site. Another record from 1901 is reported in Selby, approximately 1.5 miles northeast of the site. A third record is from 2004 is reported on the southwest tip of Mare Island, approximately 2.5 miles north of the project

site. A fourth record is from 1941 in Sobrante, approximately 2.5 miles south of the site. Another record is from 1947 in San Pablo, approximately three miles southwest of the site.

POTENTIAL TO OCCUR ON THE PROJECT SITE: Suitable habitat for this species occurs within and adjacent to the project site on Hercules Point and potentially along the banks of Refugio Creek. Bird surveys recorded between seven and nine pairs of San Pablo song sparrows on Hercules Point during the 2007 breeding season (**Appendix G-5**).

Alameda Song Sparrow (*Melospiza melodia pusillula*)

LISTING STATUS: The Alameda song sparrow is a CDFG species of special concern.

HABITAT AND BIOLOGY: The Alameda song sparrow is restricted to tidal salt marshes on the fringes of south San Francisco Bay. It nests low in grinelia bushes and in salcornia. Although confined to tidal salt marsh habitat located on the fringes of the south arm of San Francisco Bay east to El Cerrito, south to Alviso, and west to San Francisco, they are found in most remnant patches of marsh vegetation along sloughs, dikes, and levees, including some highly disturbed and urbanized sites. The Alameda song sparrow inhabits tidal salt marshes that have an appropriate configuration of vegetation, water, and exposed ground. Vegetation is required for nesting sites, song perches, and concealment from predators. The dominant plants of tidal salt marshes in San Francisco Bay are cord grass (*Spartina* spp.) in low elevations of the marsh, pickleweed (*Salicornia* spp.) on slightly higher ground, and gumplant (*Grindelia* spp.) even higher along slough edges.

CNDDB RECORDS: Several records (between 1940 and 1942) of this species are reported in CNDDB within ten miles of the project site, including the Berkley shoreline in West Berkley, shoreline west of Albany Hill in North Albany, marsh located between Stege and Point Isabel, west of El Cerrito, and in the vicinity of Point Richard.

POTENTIAL TO OCCUR ON THE PROJECT SITE: Suitable habitat for this species occurs in the Chelsea Mitigation area (WWR 2009), and the species is reported to nest in this area as well.

Osprey (*Pandion haliaetus*)

LISTING STATUS: The osprey is a CDFG species of special concern.

HABITAT AND BIOLOGY: Breeding occur along ocean shores, bays, freshwater lakes, and larger streams. This species feeds primarily on fish, but will also feed on invertebrates and other small vertebrates. The osprey utilizes large trees and snags in forest and riparian habitats for nesting and cover. This species breeds from March to September and nests on platforms of sticks up to 250 feet above ground. Nests are built at the top of snags, human-made structures, dead-topped trees, or similar structures within 15 miles of foraging grounds.

CNDDB RECORDS: One record (1990) for this species is reported in CNDDB within 10 miles of the project site, in an area adajcen to the Napa River in the City of Vallejo.

POTENTIAL TO OCCUR ON THE PROJECT SITE: This species is regularly observed foraging in the Chelsea Mitigation area and could nest in this area (WWR 2009).

Pallid Bat (*Antrozus pallidus*)

LISTING STATUS: The pallid bat is a CDFG species of special concern.

HABITAT AND BIOLOGY: Pallid bat occurs from British Columbia to Texas south to Baja California and central Mexico. In California, pallid bat occurs throughout the state except in the high Sierra Nevada Range from Shasta County to Kern County. It is found in deserts, grasslands, shrublands, woodlands, and forests. It is most common in open dry habitats with rocky areas for roosting. It feeds mainly in open areas on beetles and other large insects, often landing on ground to catch prey. The bat roosts in buildings, large trees with cavities, bridges, rocky outcrops, rock crevices, and caves. Roosts must be sufficient to protect this species from high temperatures. The pallid bat is extremely sensitive to disturbance of roosting.

CNDDB RECORDS: Five occurrences of this species are recorded in CNDDB within ten miles of the project site. The closest occurrence is less than 0.5 miles west of the site and is from 1937. This record is from the Martinez Ranch, Pinole and consists of one male specimen collected. Another occurrence is from 1943, is from El Cerrito, approximately 6.5 miles south of the site, and also consists of one male specimen collected. Two more occurrences are recorded in Berkley and are from 1942 and 1945. Another record is from 1965, is from Russell Tree Farm, approximately 1.5 miles north of Lafayette, and consists of five collected specimens.

POTENTIAL TO OCCUR ON THE PROJECT SITE: While no occurrences of pallid bat have been recorded recently in the vicinity of the project site and habitat on site is marginal due to disturbance, the pallid bat may forage within the project site or use the large culverts that pass under the railroad or large trees in the willow riparian habitat for night roosting. Due to disturbance and lack of suitable habitat, no maternal colonies are expected to occur within the project site.

Hoary Bat (*Lasiurus cinereus*)

LISTING STATUS: The hoary bat does not have a USFWS or CDFG listing status, but has a global rank of G5 and a state rank of S4. A global rank of G5 indicates that the population is secure within the world and a state rank of S4 indicates that while the species is apparently secure within California, factors exist to cause some concern.

HABITAT AND BIOLOGY: The hoary bat prefers open habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for feeding. It roosts in dense foliage of medium to large trees. Its preferred sites are hidden from above, with few branches below, and have ground cover of low reflectivity. Females and young tend to roost at higher sites in trees. The bat feeds primarily on moths and requires water.

CNDDB RECORDS: No occurrences of this species are recorded in CNDDB within five miles of the project site; however two occurrences are recorded within ten miles. The closest record is from 1972 and is from Berkley, approximately six miles from the site. The other record is from 1969 and is from El Cerrito, approximately nine miles from the site.

POTENTIAL TO OCCUR ON THE PROJECT SITE: While no occurrences of hoary bat have been recorded recently in the vicinity of the project site and habitat on site is marginal, potential roosting habitat for this species may occur in exfoliating bark or tree crevices within the willow riparian habitat on site.

San Pablo Vole (*Microtus californicus sanpabloensis*)

LISTING STATUS: The San Pablo vole is a CDFG species of special concern.

HABITAT AND BIOLOGY: Habitat for this species consists of grassy habitats associated with salt marshes. This species differs from the California vole (*Microtus californicus*) in range and distinct physical characteristics. All known occurrences of San Pablo vole are in Contra Costa County, in the salt marshes of San Pablo creek, on the south shore of San Pablo Bay.

CNDDB RECORDS: Several records of this species are reported in CNDDB along the shoreline west of Point Pinole. Four occurrences are reported within five miles of the project site. The closest occurrence is from 1986 and is at Giant Salt March, east of the Southern Pacific Railroad, on the west side of Point Pinole, approximately three miles southwest of the project site. Another record is from 1998 and is in Point Pinole Regional Park, approximately four miles southwest of the project site. A third occurrence is from 1937 and is 0.5 miles south of Giant Salt Marsh, approximately 4.5 miles southwest of the project site. A fourth record is from 1986 and is adjacent to Freethy Lane, on the north end of San Pablo Creek Marsh, approximately five miles southwest of the site.

POTENTIAL TO OCCUR ON THE PROJECT SITE: While no occurrences of this species have been recorded in the immediate vicinity of the project site, marginal habitat for this species occurs within the tidal marsh habitat within the project site.

Salt-marsh Wandering Shrew (*Sorex vagrans halicoetes*)

LISTING STATUS: The salt marsh wandering shrew is a CDFG species of special concern.

HABITAT AND BIOLOGY: The salt-marsh wandering shrew occurs in salt marshes of the south arm of San Francisco bay. It prefers a low, dense cover of pickleweed and scattered debris, such as driftwood, interspersed within its habitat.

CNDDB RECORDS: Two occurrences are recorded by CNDDB within ten miles of the project site. The closest occurrence is from 1950 and is within Giant Marsh, approximately four miles southwest of the project site. Surveys conducted at this site in 1986 did not detect any salt-marsh wandering shrews. Another occurrence is from 1959 and is within San Pablo Creek Salt Marsh, approximately five miles southwest of the project site. Surveys conducted at this site in 1985 did not detect any salt-marsh wandering shrews.

POTENTIAL TO OCCUR ON THE PROJECT SITE: While this species has not recently been detected in the vicinity of the project site, marginal habitat for this species occurs within the tidal marsh habitat within the project site.

Other Migratory Birds and Bats

Several migratory bird species and bat species have potential to utilize the culverts or willow riparian forest habitat for nesting or roosting. Three 72-inch culverts under the railroad ROW connect Refugio Creek to San Pablo Bay. A few species of migratory birds commonly nest in culverts or on bridges, including black phoebe (*Sayornis nigricans*) and cliff swallows (*Petrochelidon pyrrhonota*). Pallid bat and other non-special-status bats have potential to roost in the culverts. Three patches of willow riparian forest habitat occur on the project site: two on or adjacent to railroad ROW, and one along the northern channel of Refugio Creek. Several migratory bird species have potential to nest in the willow riparian forest habitat, including western kingbird (*Tyrannus verticalis*), house finch (*Carpodacus mexicanus*), mourning dove (*Zenaida macroura*), and western scrub jay (*Aphelocoma californica*). Pallid bat and other non-special-status bats also have potential to roost in the willow riparian forest habitat.

Sensitive Plant Species

Soft Bird's-beak (*Cordylanthus mollis* ssp. *mollis*)

LISTING STATUS: Federally-listed as Endangered; State listed as Rare, CNPS 1B.2.

The soft bird's beak was listed as an endangered species under the Federal Endangered Species Act by the USFWS on November 20, 1997 (Federal Register 62:61916) and by CDFG as rare in July 1979.

HABITAT AND BIOLOGY: Soft bird's beak is found predominantly in the high marsh (upper reaches) of salt grass-pickleweed marshes at or near the limits of tidal action. It is associated with pickleweed (*Salicornia virginica*), salt grass (*Distichlis spicata*), fleshy jaumea (*Jaumea*

carnosa), alkali heath (*Frankenia salina*), and arrow-grass (*Troglochin maritima*). It is a hemiparasite whose typical host plants include salt grass and pickleweed. Historically, soft bird's beak ranged from the Petaluma River near the City of Novato in Marin County, in the west, to the mouth of the Sacramento River in Sacramento County, in the east. The species is currently restricted to widely scattered populations in Napa, Solano, and Contra Costa Counties, from Point Pinole and Fagan Slough marsh through the Carquinez Strait to Suisun Bay (USFWS 2009).

BLOOMING SEASON: This species blooms from July to November (CNPS 2010).

RECOVERY PLAN/CRITICAL HABITAT DESIGNATION: Critical habitat was designated by USFWS for soft bird's beak on April 12, 2007 (Federal Register 72:18517). There is no designated critical habitat for soft bird's beak in the project site. The closest critical habitat for this species occurs approximately three miles southwest of the project site on the Point Pinole shoreline.

CNDDB RECORDS: Two occurrences of soft bird's beak are recorded in CNDDB approximately three miles southwest of the project site on the Point Pinole shoreline. The closest record is from 1991, however only one plant was observed and surveys in 1993 failed to detect a population. Another record is from 2006, where approximately 400 plants were observed along the Point Pinole shoreline, approximately 3.5 miles west of the project site. An additional current occurrence was recorded in 2004 within Southampton Marsh, approximately five miles northeast of the project site. This record is of 99,005 plants. Three additional old occurrences are recorded within ten miles of the site, however surveys in 1993 (and other additional surveys) have failed to detect plants and these populations are considered possibly extirpated.

POTENTIAL TO OCCUR ON THE PROJECT SITE: Soft bird's-beak was not observed during plant surveys that were conducted on the project site during the August 2006 focused plant surveys and there have not been any observations in the immediate vicinity of the site. While suitable habitat for this species occurs within the tidal marsh habitat within the project site, the species is not expected to occur in the project site.

Point Reyes Bird's-beak (*Cordylanthus maritimus* ssp. *palustris*)

LISTING STATUS: CNPS 1B.2

HABITAT AND BIOLOGY: Known populations of Point Reyes bird's-beak occur in Alameda, Humboldt, Marin, Santa Clara, San Mateo and Sonoma counties. Habitat consists of coastal salt marshes and swamps, at elevations ranging from 0 to 10 meters.

BLOOMING SEASON: Point Reyes bird's beak blooms from June to October (CNPS 2010).

RECOVERY PLAN/CRITICAL HABITAT DESIGNATION: No critical habitat has been designated for this species.

CNDDB RECORDS: No occurrences of this species are recorded in CNDDB within five miles of the project site; however one occurrence is recorded within ten miles. This record is from 1906 and is west of Berkley, along the Emeryville/Berkley shoreline, approximately 9.5 miles south of the project site. Records from 1990 indicate that this occurrence has been extirpated.

POTENTIAL TO OCCUR ON THE PROJECT SITE: Point Reyes bird's-beak was not observed during plant surveys that were conducted on the project site during the August 2006 focused plant surveys and there have not been any recent observations in the vicinity of the site. While suitable habitat for this species occurs within the tidal marsh habitat within the project site, the species is not expected to occur in the project site.

Mason's Liliaeopsis (*Lilaeopsis masonii*)

LISTING STATUS: State listed as Rare, CNPS 1B.2

Mason's liliaeopsis was listed by CDFG as rare in November 1979.

HABITAT AND BIOLOGY: Mason's liliaeopsis is known to occur in Alameda, Contra Costa, Napa, Sacramento, San Joaquin, and Solano counties. Its habitat consists of marshes and swamps (brackish or freshwater) and riparian scrub, at elevations ranging from 0 to10 meters.

BLOOMING SEASON: Mason's liliaeopsis blooms from April to November (CNPS 2010).

RECOVERY PLAN/CRITICAL HABITAT DESIGNATION: No critical habitat has been designated for this species.

CNDDB RECORDS: Three occurrences of Mason's liliaeopsis are recorded in CNDDB within ten miles of the project site. The closest record is from 1995 and is at the southeast tip of Mare Island Naval Reservation; approximately three miles north of the project site, where three clumps of plants were observed. Another record is from 1995 and is on the east side of Mare Island Naval Shipyard; approximately four miles north of the site, where another three clumps of plants were observed. A third record is from 2004 and is on the shoreline of Carquinez Straight, at the west end of E Street, Benicia, approximately 6.5 miles east of the site.

POTENTIAL TO OCCUR ON THE PROJECT SITE: Mason's liliaeopsis was not observed during plant surveys that were conducted on the project site during the August 2006 focused plant surveys and there have not been any recent observations in the vicinity of the site. While suitable habitat for this species occurs within the tidal marsh habitat within the project site, the species is not expected to occur in the project site.

Special-Status Fish Species

North American Green Sturgeon, Southern Distinct Population Segment

LISTING STATUS: The Southern DPS of North American green sturgeon was listed as threatened under the Federal Endangered Species Act on April 7, 2006 (Federal Register 71:17757), and is considered a State Species of Special Concern by CDFG (2009).

HABITAT AND BIOLOGY: The Southern DPS of green sturgeon includes all green sturgeon populations south of the Eel River, with the only known spawning population being in the Sacramento River (NMFS 2009a). Green sturgeon life history can be broken down into four main stages: eggs and larvae, juveniles, sub-adults, and sexually mature adults (NMFS 2009a).

San Pablo Bay serves as important rearing habitat for juvenile green sturgeon, as well as for oversummering subadults and adults (NMFS 2008). It also serves as a migration corridor for adults en route to, and from, spawning grounds in the upper Sacramento River (NMFS 2008). Primary constituent elements (PCEs) present include food resources (e.g., *Corophium* spp., *Crago franciscorum*, *Macoma* spp., *Photis california*, *Synidotea laticauda*, unidentified crab, and fish (Ganssle, 1966)), depths, water quality, and migratory corridors to support juvenile rearing, feeding, and migration, and subadult and adult feeding and migration (NMFS 2008).

Kelly *et al.* (2007) indicated that green sturgeon enter the San Francisco Estuary during the spring and remain until autumn; Moyle et al. (1995) reported that adults may enter the estuary in late-February. Tagged subadults and adults in San Pablo Bay exhibited benthic foraging behavior as well as directional movements near the surface, and showed a high tolerance for the range of temperatures, salinities, and dissolved oxygen levels within the bay (Kelly *et al.*, 2007). Tagged adults and subadults also primarily occupied waters over shallow depths of less than 10 m, either swimming near the surface or foraging along the bottom (Kelly *et al*. 2007).

Prey species for juvenile, subadult, and adult green sturgeon within bays and estuaries primarily consist of benthic invertebrates and fish, including crangonid shrimp, callianassid shrimp, burrowing thalassinidean shrimp, amphipods, isopods, clams, annelid worms, crabs, sand lances, and anchovies (NMFS 2009a).

CRITICAL HABITAT DESIGNATION: Critical habitat was designated for the Southern DPS of green sturgeon on October 9, 2009 and includes San Francisco and San Pablo bays (74 FR 52300, October 9, 2009).

POTENTIAL TO OCCUR ON THE PROJECT SITE: Juvenile green sturgeon are present in San Pablo Bay throughout the year and subadults and adults occur throughout most of the year

(from February to December) (NMFS 2008). In a study of juvenile green sturgeon in the Delta, relatively large numbers of juveniles were captured primarily in shallow waters (3-8 feet deep), indicating that juveniles may require shallower depths for rearing and foraging (Radtke 1966). Green sturgeon could be present in and adjacent to the intertidal mudflats in the project site.

Delta Smelt

LISTING STATUS: Delta smelt was listed as threatened under the Federal Endangered Species Act on March 5, 1993 (Federal Register 58:12854), and was listed as threatened under the California Endangered Species Act in 1993. In addition, delta smelt was proposed for listing as endangered under the California Endangered Species Act by CDFG on January 16, 2009.

HABITAT AND BIOLOGY: Delta smelt are a euryhaline species, native to the Sacramento-San Joaquin estuary. Delta smelt tolerate wide-ranging salinities, but rarely occur in waters with salinities greater than 10 ppt to 14 ppt (Baxter *et al.* 1999). Similarly, Delta smelt tolerate a wide-range of water temperatures (Moyle 2002). Delta smelt feed entirely on zooplankton.

During the late winter and spring, Delta smelt migrate upstream into freshwater areas to spawn. Spawning occurs primarily during April through mid-May (Moyle 2002) in sloughs and shallow edge areas in the Delta (Wang 1986; USFWS 2008b). Spawning also has been recorded in Suisun Marsh and the Napa River (Hobbs et al. 2007, as cited in USFWS 2008b). The center of distribution for delta smelt larvae < 20 mm is usually 5-20 km upstream of X2, but larvae move closer to X2 as the spring progresses into summer (Dege and Brown 2004, as cited in USFWS 2008b). Juvenile delta smelt are most abundant in the low salinity zone (LSZ), specifically at the upstream edge of the LSZ (USFWS 2008b). Currently, young delta smelt rear throughout the Delta into June or the first week of July, but thereafter, distribution shifts to the Sacramento-San Joaquin river confluence where water temperatures are cooler and water transparencies are lower (Feyrer et al. 2007; Nobriga et al. 2008).

CRITICAL HABITAT DESIGNATION: Critical habitat for Delta smelt was designated by USFWS in 1994 (Federal Register 59:65256). Designated critical habitat includes areas of all water bounded by and contained in Suisun Bay (including the contiguous Grizzly and Honker Bays); the length of Goodyear, Suisun Cutoff, First Mallard (Spring Branch), and Montezuma Sloughs; and the existing contiguous waters contained within the Delta. The designation does not include San Pablo Bay or the project area.

POTENTIAL TO OCCUR ON THE PROJECT SITE: Delta smelt generally occur in open surface waters and shoal areas (USFWS 1996c) and do not associate strongly with structure (USFWS 2008b). As discussed above, for the majority of their one-year life span, delta smelt inhabit areas within the western Delta and Suisun Bay characterized by salinities of approximately 2 ppt. During periods of high river flow into the estuary, delta smelt distribution can transiently

extend as far west as the Napa River and San Pablo Bay (USFWS 2008b). However, because free-swimming life stages of delta smelt mainly occupy offshore waters (USFWS 2008b), delta smelt are unlikely to occur in the project area.

River Lamprey

LISTING STATUS: River lamprey is a CDFG species of special concern

HABITAT AND BIOLOGY: The anadromous river lamprey is found in coastal streams from San Francisco Bay to Alaska (Moyle 2002). Adults immigrate into freshwater during fall and spawn from April to June in small tributary streams (Wang 1986). Adults migrate into freshwater through San Pablo Bay during the fall and spawn in small tributary streams from April to June (Wang 1986, CDM and the Bay Institute of San Francisco 2000). Adults likely need clean, gravelly riffles in permanent streams for spawning, while the ammocoetes require sandy backwaters or stream edges in which to bury themselves, where water quality is continuously high and water temperatures do not exceed 77°F. The length of the ammocoete life stage is not known, but is probably three to five years (Moyle 2002). Ammocoetes begin their transformation into adults when they are about 12 cm in total length (TL), during the summer. The process of metamorphosis may take nine to ten months, the longest known for any lamprey species. Lampreys in the final stages of metamorphosis congregate immediately upriver from saltwater and enter the ocean during late spring.

CRITICAL HABITAT DESIGNATION: No critical habitat has been designated for this species.

POTENTIAL TO OCCUR ON THE PROJECT SITE: River lamprey has the potential to occur in the intertidal mudflats in the project area.

Sacramento splittail

LISTING STATUS: Sacramento splittail was removed from the list of threatened species by the USFWS on September 22, 2003, and USFWS did not identify it as a candidate for listing. This species is considered by CDFG as a species of special concern and informally as a federal species of concern.

HABITAT AND BIOLOGY: Sacramento splittail is the only extant species in a unique genus of large, native minnows. It inhabits the Sacramento-San Joaquin river system and the Delta, including the brackish northern reaches of the San Francisco Estuary (California State Coastal Conservancy and USFWS 2003). The species has been collected in tidal waters as saline as 18 ppt, but splittail abundance is greatest in salinity lower than 10 ppt. Within the San Francisco Estuary, it occurs primarily in the Suisun Bay area, but reaches northern San Pablo Bay regularly in years of high river discharge (California State Coastal Conservancy and USFWS 2003). They spawn in fresh or nearly fresh, nonsaline shallow waters with submerged

vegetation. Within the San Francisco Estuary, they are reported to be most abundant in small tidal creeks, particularly those with freshwater discharges or partially submerged marsh vegetation (Sommer 2000 as cited in California State Coastal Conservancy and USFWS 2003).

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Typically, adults migrate upstream in January and February and spawn on seasonally inundated floodplains in March and April (Moyle et al. 2004). In May the juveniles migrate back downstream to shallow, brackish water rearing grounds, where they feed on detritus and invertebrates for 1-2 years before migrating back upstream to spawn (Moyle et al. 2004). Splittail spawn in fresh or nearly fresh, shallow waters with submerged vegetation. Within the San Francisco Estuary, they are reported to be most abundant in small tidal creeks, particularly those with freshwater discharges or partially submerged marsh vegetation (Sommer 2000 as cited in California State Coastal Conservancy and USFWS 2003). Non-reproductive splittail are most abundant in moderately shallow (<4 m), brackish tidal sloughs, such as those found in Suisun Marsh, but they also can occur in freshwater areas that have either tidal or riverine flow (Moyle et al. 2004). Juveniles (<2 yrs old and <170 mm SL) are most abundant in shallow (often <2 m deep), turbid water, with tidal currents, often in narrow sloughs lined with tules and other emergent plants (Moyle et al. 2004).

Splittail are primarily benthic daytime foragers (Caywood 1974). In Suisun Marsh in the early 1980s, splittail foraged on (in rough order of importance) opossum shrimp (*Neomysis mercedis*), amphipods (*Corophium* spp.), and harpacticoid copepods, though detritus accounted for more than half of the gut contents by volume (Daniels and Moyle 1983; Feyrer and others 2003).

CRITICAL HABITAT DESIGNATION: No critical habitat has been designated for this species.

POTENTIAL TO OCCUR ON THE PROJECT SITE: Sacramento splittail have the potential to occur in the project area in San Pablo Bay, however, splittail are not known to occur or expected to occur in Refugio Creek.

Anadromous Salmonids (Chinook Salmon, Coho Salmon, and Steelhead)

San Pablo Bay is used primarily as a migration corridor for anadromous salmonids. Adult Chinook and Coho salmon and steelhead migrate through San Pablo Bay en route from the ocean to upstream spawning grounds and juvenile salmon and steelhead migrate back through San Pablo Bay on their way out to the ocean. Salmon and steelhead runs migrating through San Pablo Bay include the Sacramento River winter-run Chinook salmon ESU, Central Valley spring-run Chinook salmon ESU, Central Valley fall-/late fall-run Chinook salmon ESU, Central Valley steelhead DPS, Central California Coast steelhead DPS, and the Central California coast Coho salmon ESU.

All three salmonid species (Chinook salmon, Coho salmon, steelhead) spawn in various locations within the San Pablo Bay watershed, however, Coho have been nearly extirpated, and all species maintain significantly reduced populations (Leidy *et al.* 2005, Leidy 2007, and WWR 2007). The loss and degradation of upland stream spawning and rearing habitat appears to have had the greatest impact on anadromous salmonids in the San Pablo Bay watershed (Leidy 2000 *as cited in* California Coastal Conservancy and USFWS 2003). These impacts are due to dams or other barriers to migration, in-stream habitat conditions degraded by reduced stream flows, loss of riparian vegetation, siltation, and resultant elevated water temperatures and changes in habitat structure (e.g. loss of large woody debris) (Leidy 2000 *as cited in* California Coastal Conservancy and USFWS 2003). Historically, anadromous salmonids commonly spawned in the San Pablo Bay watershed, with some runs numbering in the tens of thousands of fish (Leidy 2000 *as cited in* California Coastal Conservancy and USFWS 2003). Refugio Creek does not support anadromous salmonids (Leidy *et al.* 2005 and Leidy 2007); however, because San Pablo Bay is used as a migration corridor for anadromous salmonids, anadromous salmonids may potentially occur in the project area.

Adult salmonids may potentially occur within the submerged habitats of San Pablo Bay adjacent to the project area, while juveniles may seek refuge in the tidal marshes and channels of the project area during high tides (WWR 2007). Juvenile Chinook salmon follow rising tides into shallow water habitats from the deeper main channels and return to the main channels when the tides recede (Healey 1991). Kjelson et al. (1981) reported that juvenile Chinook salmon demonstrated a diel migration pattern, orienting themselves to nearshore cover and structure during the day, but moving into more open, offshore waters at night. The fish also distributed themselves vertically in relation to ambient light. During the night, juveniles were distributed randomly in the water column, but would school up during the day into the upper three meters of the water column (NMFS 2009b).

Central California Coast Coho Salmon

LISTING STATUS: The Central California Coast Coho salmon ESU was listed by USFWS under the Federal Endangered Species Act as threatened on October 31, 1996 and later downgraded to endangered on June 28, 2005 (70 FR 37160). The ESU also is listed as endangered under CESA.

HABITAT AND BIOLOGY: Coho salmon juveniles may be present in the San Francisco Estuary from March through June, with a potential peak presence during May (NMFS 1997).

CRITICAL HABITAT DESIGNATION: Critical habitat for the Central California Coast ESU encompasses accessible reaches of all rivers (including estuarine areas and tributaries) between Punta Gorda and the San Lorenzo River (inclusive) in California, including two streams entering San Francisco Bay: Arroyo Corte Madera Del Presidio and Corte Madera Creek (64 FR 24049, May 5, 1999). Critical habitat does not include San Pablo Bay, and therefore, does not include the project area.

POTENTIAL TO OCCUR ON THE PROJECT SITE: Migrating adult and migrating and rearing juvenile coho salmon have the potential to occur in the project area in San Pablo Bay.

Central Valley Steelhead DPS

LISTING STATUS: On March 19, 1998, NMFS listed the Central Valley steelhead DPS as a threatened species (Federal Register 63:13347). Central Valley steelhead is not listed under the California Endangered Species Act.

HABITAT AND BIOLOGY: Central Valley steelhead adults generally leave the ocean from August through April (Busby *et al.* 1996), and spawn from December through April (Hallock *et al.* 1961, McEwan and Jackson 1996). Juvenile steelhead emigrate episodically from natal streams during fall, winter, and spring high flows (NMFS 2009a). Emigrating Central Valley steelhead use the lower reaches of the Sacramento River and the Delta for rearing and as a migration corridor to the ocean (NMFS 2009a).

CRITICAL HABITAT DESIGNATION: Critical habitat was designated for Central Valley steelhead by NMFS on September 2, 2005 (Federal Register 70:52488), but it does not include San Pablo Bay, and therefore, does not include the project area.

POTENTIAL TO OCCUR ON THE PROJECT SITE: Migrating adult and migrating and rearing juvenile steelhead have the potential to occur in the project area in San Pablo Bay.

Central California Coast steelhead

LISTING STATUS: The Central California Coast steelhead DPS was listed as threatened under the Federal Endangered Species Act on January 5, 2006 (Federal Register 71:834), and includes all naturally spawned steelhead populations below natural and manmade impassable barriers in California streams from the Russian River (inclusive) to Aptos Creek (inclusive), and the drainages of San Francisco, San Pablo, and Suisun bays eastward to Chipps Island at the confluence of the Sacramento and San Joaquin Rivers. Tributary streams to Suisun Marsh include Suisun Creek, Green Valley Creek, and an unnamed tributary to Cordelia Slough, excluding the Sacramento-San Joaquin River Basin, as well as two artificial propagation programs (NMFS 2009a).

HABITAT AND BIOLOGY: Central California coast steelhead adults and smolts travel through the western portion of Suisun Marsh and Suisun Bay as they migrate between the ocean and their natal spawning streams. (NMFS 2009a). Adults reportedly migrate upstream through the Bays from December through May (San Francisco Bay Area Water Emergency Transportation Authority 2008).

CRITICAL HABITAT DESIGNATION: Critical habitat was designated for Central California Coast steelhead by NMFS on September 2, 2005 (Federal Register 70:52488), which includes San Francisco and San Pablo bays (NMFS 2009a).

POTENTIAL TO OCCUR ON THE PROJECT SITE: Migrating adult and migrating and rearing juvenile steelhead have the potential to occur in the project area in San Pablo Bay.

Central Valley fall-/late fall-run Chinook salmon

LISTING STATUS: The Central Valley Fall- and Late Fall-Run Chinook salmon ESU is classified as a Species of Concern under the Federal Endangered Species Act and is considered a California State Species of Special Concern (Federal Register 69:19975 (April 15, 2004)).

HABITAT AND BIOLOGY: Central Valley fall-run Chinook salmon fry begin entering the Delta during January, with peak abundance occurring during February and March. Fall-run Chinook salmon smolts generally emigrate through the Delta from April through June. Fall-run Chinook salmon smolts migrate quickly through the Delta and Suisun and San Pablo Bays. Central Valley fall-run Chinook salmon smolts show little estuarine dependence and may benefit from expedited ocean entry, although emigrating fry may rear for a longer period within the Delta and estuary prior to ocean emigration. Juvenile fall-run Chinook salmon may be present in the San Francisco Estuary from December through June (NMFS 1997).

CRITICAL HABITAT DESIGNATION: No critical habitat has been designated for this ESU. Pursuant to the Magnuson-Stevens Act, EFH is designated for Central Valley Chinook salmon and includes the portions of San Pablo bay in the project site.

POTENTIAL TO OCCUR ON THE PROJECT SITE: Migrating adult and migrating and rearing juvenile Chinook salmon have the potential to occur in the project area in San Pablo Bay.

Central Valley spring-run Chinook salmon

LISTING STATUS: The Central Valley spring-run Chinook salmon ESU is listed as threatened under the Federal Endangered Species Act (Federal Register 64:50394 (September 16, 1999)) and is also listed as threatened under CESA.

HABITAT AND BIOLOGY: Adult Central Valley spring-run Chinook salmon leave the ocean to begin their upstream migration in late January and early February (CDFG 1998, as cited in NMFS 2009a). The emigration period for Central Valley spring-run Chinook salmon extends from November to early May, with up to 69 percent of the YOY fish outmigrating through the lower Sacramento River and Delta during this period (CDFG 1998, as cited in NMFS 2009a). Juvenile spring-run Chinook salmon may be present in the San Francisco Estuary from November through May, with a peak during January and February (NMFS 1997).

CRITICAL HABITAT DESIGNATION: NMFS designated critical habitat for this ESU on September 2, 2005, but it does not include San Pablo Bay (Federal Register 70:52488 (Friday, September 2, 2005)). Pursuant to the Magnuson-Stevens Act, EFH is designated for Central Valley Chinook salmon and includes the portions of San Pablo bay in the project site.

POTENTIAL TO OCCUR ON THE PROJECT SITE: Migrating adult and migrating and rearing juvenile Chinook salmon have the potential to occur in the project area in San Pablo Bay.

Sacramento River winter-run Chinook salmon

LISTING STATUS: The Sacramento River winter-run Chinook salmon ESU is currently listed as endangered under the FESA (Federal Register 59:440 (January 4, 1994)), and also is listed as endangered under CESA.

HABITAT AND BIOLOGY: Adult winter-run Chinook salmon enter San Francisco Bay from November through June (Hallock and Fisher 1985, as cited in NMFS 2009a). Winter-run Chinook salmon juveniles remain in the Delta until they reach a fork length of approximately 118 millimeters (mm) and are from 5 to 10 months of age, and then begin emigrating to the ocean as early as November and continue through May (Fisher 1994; Myers *et al.* 1998), with peak emigration occurring during March and April (NMFS 2009a). Winter-run Chinook salmon juveniles may be present in the San Francisco Estuary from July through March, with a peak presence during September and October (NMFS 1997).

CRITICAL HABITAT DESIGNATION: Critical habitat was designated for winter-run Chinook salmon by NMFS on June 16, 1993 and includes all waters of San Pablo Bay westward of the Carquinez Bridge (Federal Register 58:33212), and therefore, includes the project area.

Pursuant to the Magnuson-Stevens Act, EFH is designated for Central Valley Chinook salmon and includes portions of San Pablo bay in the project site.

POTENTIAL TO OCCUR ON THE PROJECT SITE: Migrating adult and migrating and rearing juvenile Chinook salmon have the potential to occur in the project area in San Pablo Bay.

Longfin smelt

LISTING STATUS: Longfin smelt was listed by CDFG as threatened under CESA on March 4, 2009, but is not listed under the FESA.

HABITAT AND BIOLOGY: Longfin smelt are euryhaline, occupying various areas of the San Francisco Estuary throughout their lifecycle. Their life cycle begins with spawning in Suisun Bay, the Delta and lower Sacramento and San Joaquin Rivers, followed by downstream transport of the larvae, juvenile dispersal and migration to marine waters, and an upstream spawning migration by yearlings during late fall and winter. The downstream extent of longfin spawning typically is upper Suisun Bay (Wang 1986, 1991, Moyle 2002), however, some spawning may also occur at the southern tip of South San Francisco Bay. Longfin smelt spawning may occur as early as November through as late as June, but primarily occurs from February through April.

The center of the longfin smelt population's distribution in the San Francisco Estuary gradually moves downstream during the summer. During most years adults concentrate in San Pablo Bay during April-June and become more dispersed during late summer (many moving into central San Francisco Bay) (Moyle 2002). During fall and winter the population gradually moves upstream to spawn. The exact distribution pattern of longfin smelt varies from year to year. During wet winters, high outflows may push yearlings back into San Francisco Bay, whereas during drought years they may concentrate in Suisun Bay (Armor and Herrgesell 1985, Moyle 2002). Except when spawning, longfin smelt are most abundant in Suisun and San Pablo bays (Moyle 2002).

Larvae are usually most abundant in the water column from January through April (CDFG unpublished, as cited in Reclamation 2008). The center of distribution of longfin smelt larvae varies with outflow conditions and is closely associated with the low-salinity zone (LSZ, which can be indexed as X2); the center of distribution is consistently seaward of X2 (Dege and Brown 2004, Reclamation 2008). Post-larval longfin smelt are reportedly associated with deep-water habitats (Rosenfield and Baxter 2007). During years when high outflows occur when larvae are being transported downstream, most larvae are transported to Suisun and San Pablo bays; during years with lower outflow, larvae are transported into the western Delta and Suisun Bay (Baxter 2000, Baxter et al. 1999, Moyle 2002). Strong freshwater outflow is thought to correspond with longfin smelt survival, as higher flows transport longfin smelt young to more suitable rearing habitat in Suisun and San Pablo bays (Moyle 2002).

The concentration of longfin smelt in deepwater habitats, combined with their migration into marine waters during the summer suggests that longfin smelt may be relatively intolerant of the warmer waters that occur in the estuary.

CRITICAL HABITAT DESIGNATION: No critical habitat has been designated for this species.

POTENTIAL TO OCCUR ON THE PROJECT SITE: Longfin smelt have the potential to occur in the portions of San Pablo Bay in the project area.

Essential Fish Habitat and Regionally Important Commercial and/or Recreational Fisheries

Several species of fish occur in San Pablo Bay that are managed under a federal Fishery Management Plan and have designated EFH because they provide regionally important commercial fisheries; however, they do not otherwise have a special-status designation. In addition, several species of fish and shellfish occurring in San Pablo Bay provide important commercial and/or recreational fisheries but do not have a special-status designation and are also not managed under a Fishery Management Plan and have no designated EFH. These regionally important commercial and/or recreational fisheries are listed in **Table 1** and discussed below.

Table 1. Regionally Important Commercial and/or Recreational Fisheries

Common Name	Scientific Name	Fishery Management Plan
Northern Anchovy	*Engraulis mordax*	Coastal Pelagic
Starry Flounder	*Platichthys stellatus*	Groundfish
Chinook/Coho salmon	*Oncorhynchus tshawytscha/O. kisutch*	Pacific Coast Salmon
English Sole	*Parophrys vetulus*	Groundfish
Big Skate	*Raja binoculatus*	Groundfish
Pacific Sardine	*Sardinops sagax*	Coastal Pelagic
Spiny Dogfish	*Squalus acanthias*	Groundfish
Leopard Shark	*Triakus semifasciatas*	Groundfish
Sand Sole	*Cynoglossus capensis*	Groundfish
California Halibut	*Paralichthys californicus*	--
Pacific Halibut	*Hippoglossus stenolepis*	--
Pacific herring	*Clupea pallasii*	--
Dungeness Crab	*Cancer magister*	--

Starry Flounder

Starry founder spawn in shallow (less than 45 m deep) waters near the mouths of rivers and estuaries during the winter (Goals Project 2000 as cited in Reclamation 2008), from November to February, peaking in December and January (Orcutt 1950 as cited in Reclamation 2008). Eggs and larvae are pelagic and are carried inshore by currents settling to the bottom, which require low salinity water for rearing (Orcutt 1950, Wang 1986 as cited in Orsi 1999; Moyle 2002 and references therein). While some spawning may occur in the San

Francisco Estuary, most juveniles found in the Estuary are apparently carried in from nearshore ocean waters by strong tidal currents along the bottom (Moyle 2002). Eggs are found in polyhaline to euhaline waters. Juveniles are found in mesohaline to freshwater with a preference for sandy and muddy substrates (Reclamation 2008). Starry flounder tend to rear for up to two years in estuarine areas before moving to shallow coastal marine waters (Reclamation 2008) with higher salinities (Orsi 1999 and references within). Adults move inshore during winter or early spring to spawn and move offshore to deeper waters during the summer and fall (Reclamation 2008). Adults prefer sandy and coarse substrates.

Starry flounder distribution tends to shift with growth (Reclamation 2008). Young juveniles are commonly found in fresh or brackish water of Suisun Bay, Suisun Marsh, and the Delta, older juveniles range from brackish to marine water of Suisun and San Pablo Bays, and adults tend to live in shallow marine waters within and outside the San Francisco Bay before returning to estuaries to spawn (Goals Project 2000 as cited in Reclamation 2008). More specifically, composite habitats most important for the starry flounder are estuarine (for all life stages), non-rocky shelf (for juveniles and adults), and neritic habitats (for eggs and larvae), as defined by the FMP.

English Sole

English sole spawn over soft-bottom mud substrata at depths of 50 to 70 m (Ketchen 1956 *as cited in* PFMC 2005) from September through April (Orsi 1999 and references within), but primarily during January and February in California (Jow 1969 *as cited in* Orsi 1999). Specifically, the eggs and larvae are pelagic, while juveniles and adults are demersal (Garrison and Miller 1982 *as cited in* PFMC 2005). Larvae are found primarily in waters less than 200 m deep (Laroche and Richardson 1979 *as cited in* PFMC 2005). Juveniles reside primarily in shallow-water coastal, bay, and estuarine areas (Ketchen 1956, Krygier and Pearcy 1986, Laroche and Holton 1979, Olson and Pratt 1973, Pearcy and Myers 1974, Rogers *et al.* 1988, Toole 1980, Van Cleve and El-Sayed 1969, Westrheim 1955 *as cited in* PFMC 2005). The PFMC (2005) reports juveniles often settling in estuarine and shallow near-shore areas. English sole appear to use the Bay as a nursery area, entering as transforming larvae or small juveniles during the winter-summer of their first year of life and emigrating sometime between the end of their first or second summer in the Bay. As they grow, they move to deeper waters and continue to do so after they emigrate to the open coast (PFMC 2005, Orsi 1999 and references within).

In the North pacific, English sole is an inner-shelf meshobenthal species (Allen and Smith 1988 *as cited in* PFMC 2005). English sole is an abundant species in San Pablo Bay (from San Rafael Bridge to Carquinez Bridge). The tidal currents of the Bay influence the distribution of this species (PFMC 2005).

Big Skate

The big skate is a demersal, marine species occurring at depths ranging from 3 to 800 m (PFMC 2005, FishBase 2009), however they primarily reside in depths from 3 to 110 m. Big skate produce large egg cases containing multiple embryos, typically utilizing spawning beds at depths of 60 – 65 m (DeLacy and Chapman 1935, Hitz 1964 *as cited in* PFMC 2005). Egg cases are laid year round, however some research indicates a possible seasonal egg laying (PFMC 2005 and references within).

Big skates are relatively abundant in northern and central California, occupying the inner and outer shelf areas (Allen and Smith 1988 *as cited in* PFMC 2005), particularly on soft bottom. Little is known about the movements of big skates (Martin and Zorzi 1993 *as cited in* PFMC 2005).

Spiny Dogfish

Spiny dogfish occur from the surface and intertidal areas to greater depths (Allen and Smith 1988, Bannister 1989, Castro 1983, Lineaweaver and Backus 1984, NOAA 1990 *as cited in* PFMC 2005). Spiny dogfish mate in the winter months on the ocean bottom between September and January (Jones and Geen 1977a, Ketchen 1972, NOAA 1990 *as cited in* PFMC 2005). After a gestation period ranging from 18 to 24 months, adult females occupy shallow waters during the spring to release their young in the mid-water zone (depths over 165 – 350 m) (Jones and Geen 1977a, NOAA 1990 *as cited in* PFMC 2005). Small juveniles are pelagic, while sub-adults and adults are mostly sublittoral-bathyal (NOAA 1990, Ebert 2003 *as cited in* PFMC 2005). Sub-adults are found on muddy bottoms when not found in the water column (NOAA 1990 *as cited in* PFMC 2005). Spiny dogfish are common in inland seas, such as San Francisco Bay (Ebert 1986 in PFMC 2005) and in shallow bays (Eschmeyer *et al.* 1983 *as cited in* PFMC 2005).

Leopard Shark

A coastal species, the leopard shark is abundant in northern California bays and estuaries (Ebert 2003 *as cited in* PFMC 2005), commonly occurring in littoral waters (on or near shore, especially the zone between the high and low tide marks) less than 20 m deep (PFMC 2005 and references within). In the San Francisco Estuary, most leopard sharks are resident but some emigrate from the estuary in the fall (Smith and Abramson 1990 *as cited in* Orsi 1999). They occupy various habitats including: (1) enclosed, muddy bays; (2) flat, sandy areas; (3) mudflats; (4) sandy and muddy bottoms strewn with rocks near rocky reefs; and (5) kelp beds (PFMC 2005 and references within). This species often enters shallow bays and intertidal flats during high tides and retreats on ebb tides. Although they are often found in the intertidal zone, they apparently spend little time feeding there (Russo 1975 *as cited in* Orsi 1999). Leopard sharks mate in April and May and release the pups from March to August (Compagno 1984, Emmett *et al.* 1991 *as cited in* PFMC 2005). Estuaries and shallow coastal waters (Emmett *et al.* 1991, Smith 2001 *as cited in* PFMC 2005) appear to be used as pupping

and feeding/rearing grounds. Neonate pups can be found near eel grass beds, such as those in San Francisco Bay (Ebert 2003 *as cited in* PFMC 2005).

Sand Sole

Sand sole are considered an inner shelf-outer shelf species. Spawning occurs in winter and spring, in shallow nearshore waters over sandy and muddy substrata (Garrison and Miller 1982 *as cited in* PFMC 2005). Once spawning is completed they move south and offshore in the summer to feed (Rogers and Millner 1996 *as cited in* PFMC 2005). Eggs, larvae, and small juveniles are pelagic, and are transported to estuaries and shallow nearshore bays by tidal currents (Haldorson *et al.* 1993 *as cited in* PFMC 2005). Older juveniles and adults are demersal (Haldorson *et al.* 1993 *as cited in* PFMC 2005). Adults and juveniles occupy depths between 1 and 325 m, but nearly all occur at depths shallower than 150 m (PFMC 2005 and references within).

Pacific Sardine

The Pacific sardine spawn throughout their range but most spawning takes place off southern California from January through September (Orsi 1999). Pacific sardine spawn in loosely aggregated schools in the upper 50 m of the water column, with eggs and larvae found near the water surface (PFMC 1998). The spatial and seasonal distribution of spawning is influenced by temperature (PFMC 1998). During periods of warm water, the center of sardine spawning shifts northward and spawning extends over a longer period of time (PFMC 1998 and references within). Eggs and larvae occur nearly everywhere adults are founds (PFMC 1998). Pacific sardines are pelagic at all life history stages (PFMC 1998).

Pacific sardine are a seasonally migratory species that opportunistically occur in San Pablo Bay. During the Fall Midwater Trawl surveys between 1998 and 2003, CDFG collected only 13 Pacific sardine in San Pablo Bay between mid-October to early-December (BDAT 2009). The species has occasionally been found within Suisun Marsh during pronounced salinity intrusion events during droughts and low outflow periods (Reclamation 2008).

Northern Anchovy

A small short-lived fish typically found in schools near the water surface (PFMC 1998), northern anchovy spawn during every month of the year, increasing during late winter and early spring (PFMC 1998). It is reported that peak spawning occurs from January through April (Richardson 1981 *as cited in* Reclamation 2008). The northern anchovy is a broadcast spawner and spawns in batches each year. Most spawning takes place in channels or within 60 miles of the coast in the upper mixed layers at night (Reclamation 2008). Eggs and larvae are planktonic, generally at depths of less than 50 m and in the same areas as spawning adults (PFMC 1998). Juveniles and adults are pelagic, and are found ranging from the surface to 300 m deep (MacCrae 1994 *as cited in* Reclamation 2008). The San Francisco Bay is thought to provide favorable reproductive habitat for the anchovy because of abundant food exists for

both adults and larvae and coastal upwelling keeps eggs and larvae in productive areas (Reclamation 2008).

Northern anchovy are found year-round in the San Francisco Bay area (from Suisun Bay to South Francisco Bay and occasionally in the lower Delta) (Herbold *et al.* 1992, Goals Project 2000 *as cited in* Reclamation 2008). This species is most abundant downstream of the Carquinez Strait and outside the Bay in the California Current (Herbold *et al.* 1992, Goals Project 2000 *as cited in* Reclamation 2008). Between 1970 and 2004, approximately 49,000 northern anchovy have been collected by CDFG during fall midwater trawl surveys in the project vicinity (BDAT 2009). Based on their abundance, northern anchovy are likely an important forage fish.

California Halibut

California halibut spawn in coastal waters year-round, but in the San Francisco Bay larvae are generally most numerous in the fall (CDFG Website 2009b). Both eggs and larvae are pelagic. Larvae settle to the bottom at about 10 mm TL and the juvenile halibut seek out shallow protected water for their first few years of life, moving to deeper water with growth (CDFG Website 2009b). Juvenile halibut were not common in San Francisco Bay prior to the El Nino currents of 1982-1984. Halibut numbers have increased substantially in San Francisco Bay through the late 1980s and early 1990s due to local recruitment during the numerous warm water years (CDFG Website 2009b). Halibut are now an important component of the in-Bay and nearshore recreational fishery. Increased effort has been directed at halibut due to declining striped bass and salmon populations (CDFG Website 2009b).

Pacific Halibut

Pacific halibut occur at depths from 20 to 3,600 feet and prefer deep sandy environments. Spawning takes place from November to January (CDFG Website 2009c). The eggs and young drift casually with the currents, gradually rising toward the surface as development proceeds. By early spring, the transformation is complete and the young settle to the bottom in shallow waters. The diet of the Pacific halibut includes fishes, crabs, clams, squid and other invertebrates (CDFG Website 2009c).

Pacific herring

In California, herring are found offshore during the spring and summer months foraging in the open ocean. Beginning as early as October and continuing as late as April, schools of adult herring migrate inshore into the San Francisco Estuary spawn (CDFG Website 2009a). Schools first appear in the deep water channels of bays, where they can stay for up to two weeks as their gonads mature, prior to moving into shallow areas to spawn. Most spawning areas are characterized as having reduced salinity with calm and protected waters (CDFG Website 2009a). Spawning-substrate such as marine vegetation or rocky intertidal areas are

preferred but man-made structures such as pier pilings and riprap are also frequently used spawning substrates in San Francisco Bay (CDFG Website 2009a).

The state-managed commercial herring fishery is one of the few fisheries in California that undergo annual population assessments and subsequent regulatory change. Like other short-lived coastal pelagic species, Pacific herring abundance fluctuates widely due to variable recruitment (the success of each year-class of new fish), making annual population assessments necessary for effective management (CDFG Website 2009a). Due to an historic low 2008-2009 season spawning biomass estimate and concerns over the health of the Pacific herring population, the California Fish and Game Commission adopted a zero quota for San Francisco Bay for the 2009-2010 season, resulting in a zero quota for the herring roe, fresh fish market, and herring-eggs-on-kelp fisheries in San Francisco Bay for the 2009-2010 season (CDFG Website 2009a).

Dungeness crab

Dungeness crab is a valuable sport and commercial species that reproduces in the ocean in winter and rears in nearshore coastal areas and estuaries (CDFG 2004). Small juvenile *C. magister*, 5-10 mm carapace width (CW), immigrate to San Francisco Estuary during the spring, rear for 8-10 months, and emigrate to the ocean in fall and winter at a size of approximately 100 mm CW (CDFG 2004). Clams, fish, isopods and amphipods are preferred prey items of Dungeness crab, and cannibalism is prevalent among all age groups (Hankin and Warner 2001). Predators on the various life stages of Dungeness crabs, especially pelagic larvae and small juveniles, include octopuses, larger crabs and as many as 28 species of fish, including Coho and Chinook salmon, flatfishes, lingcod, cabezon and various rockfishes (Hankin and Warner 2001).

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APPENDIX G-3

Preliminary Jurisdictional Wetland Delineation Report

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

Hercules Intermodal Transit Center

Preliminary Jurisdictional Delineation

City of Hercules

Contra Costa County

May 2010

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1.0 INTRODUCTION

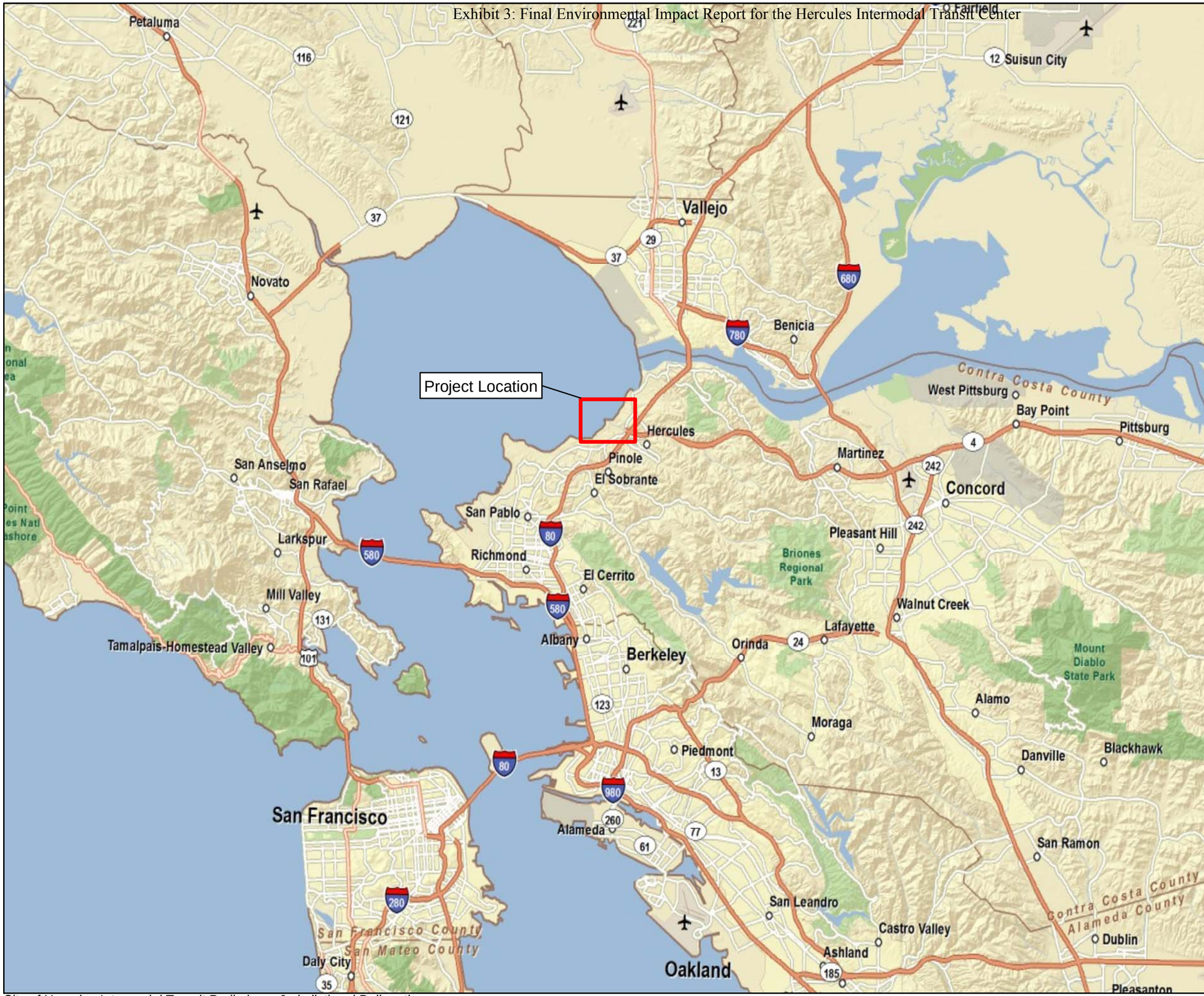
1.1 PURPOSE OF ASSESSMENT

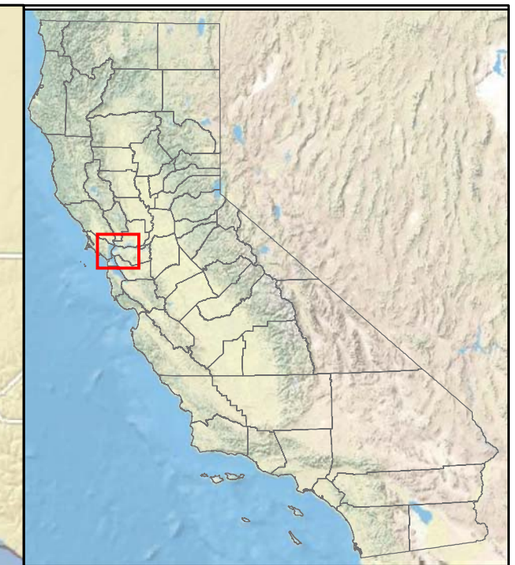
On behalf of the City of Hercules (City), HDR Engineering Inc. (HDR) has prepared a preliminary jurisdictional delineation of waters of the U.S., including wetlands, for the proposed Hercules Intermodal Transit Center (Hercules ITC). The purpose of the preliminary jurisdictional delineation is to identify potential waters of the U.S., including wetlands, occurring within the project site. The project site for the proposed project includes the project footprint, the area that would be directly impacted by construction of the proposed project, plus a buffer deemed to be of sufficient width to incorporate any indirect impacts to biological resources outside of the project footprint. The results of the jurisdictional delineation are preliminary until verified by the U.S. Army Corps of Engineers (USACE).

1.2 PROJECT DESCRIPTION AND LOCATION

The City proposes to develop an intermodal transit center, including train and bus facilities, on the San Pablo Bay shoreline in Hercules. The City is cooperating with the Federal Transit Administration (FTA) due to the anticipated use of federal funding. In compliance with the National Environmental Policy Act (NEPA), a joint Environmental Impact Report/Environmental Impact Statement (EIR/EIS) is being prepared for this project. The City is preparing the EIR/EIS in coordination with FTA the lead agency in compliance with NEPA. The purpose of the proposed project is to improve and increase local and regional mobility and transportation options by providing new and expanded transit services with intermodal connections that will encourage use of public transit. The project would provide bus-to-train connections, in addition to providing car commuters with access to new transit options that would divert traffic from Interstate 80 (I-80), the most congested corridor in the Bay Area.

The approximately 47-acre project site is located in the City of Hercules, Contra Costa County. The project site is located on the San Pablo Bay shoreline north of Bayfront Boulevard, approximately one mile northwest of I-80. The Union Pacific Railroad (UPRR) rail line passes through the site, parallel to the shoreline. A regional map showing the project location is included as **Figure 1**. The project is located within Township 2 North, Range 4 West, in an unsectioned portion of the "Mare Island, California" U.S. Geological Survey (USGS) 7.5 minute topographic quadrangle (quad). A site and vicinity map showing the location of the project site is included as **Figure 2**. An aerial photograph showing the boundary of the project site is included as **Figure 3**.





Preliminary
Subject to Change

1 in = 500 ft (at tabloid layout)

0 62.5 125 250 Meters

0 250 500 1,000 Feet

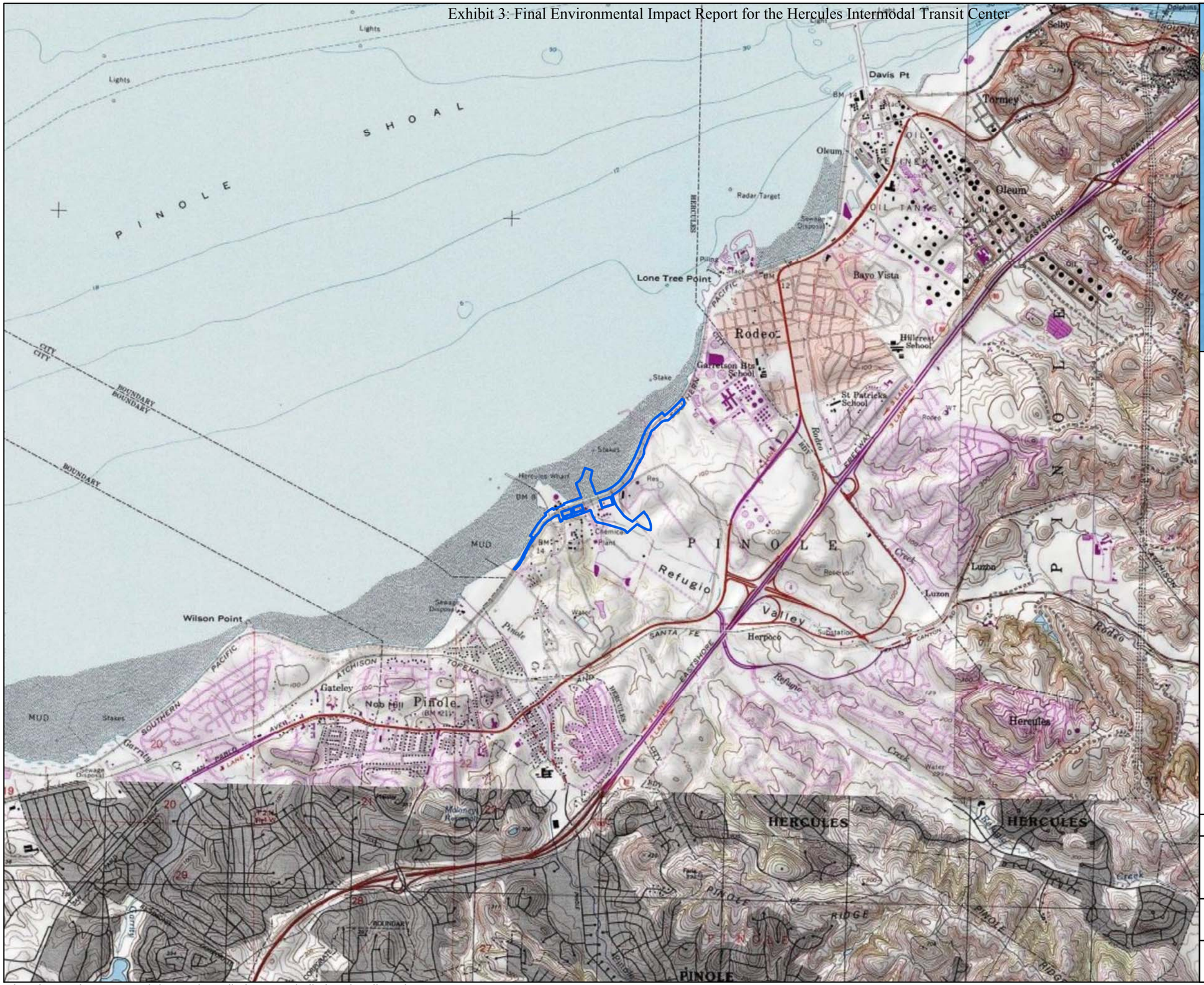
Figure 1: Regional Vicinity Map

City of Hercules
Hercules Intermodal Transit Center
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources.
No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey.
Data is State Plane Feet, NAD83 Zone 3

HDR 2365 Iron Point Road, Suite 300
Folsom, CA 95630-8709

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center



Legend

EIR/EIS Boundary

Preliminary
Subject to Change

1 in = 2,500 ft (at tabloid layout)

N

0 375 750 1,500 Meters

0 1,250 2,500 5,000 Feet

Figure 2: Site and Vicinity Map

City of Hercules
Hercules Intermodal Transit Center
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources.
No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey.
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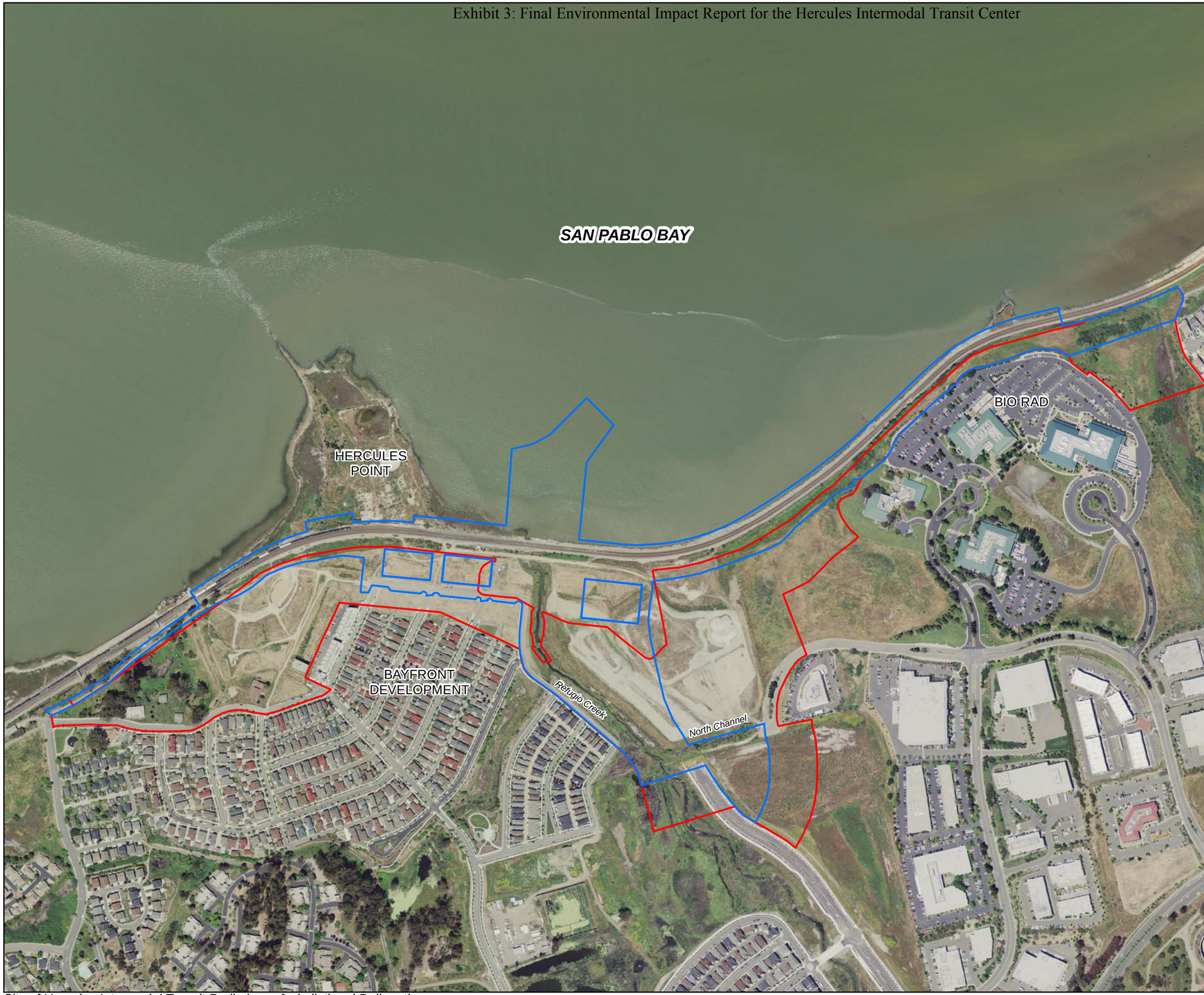

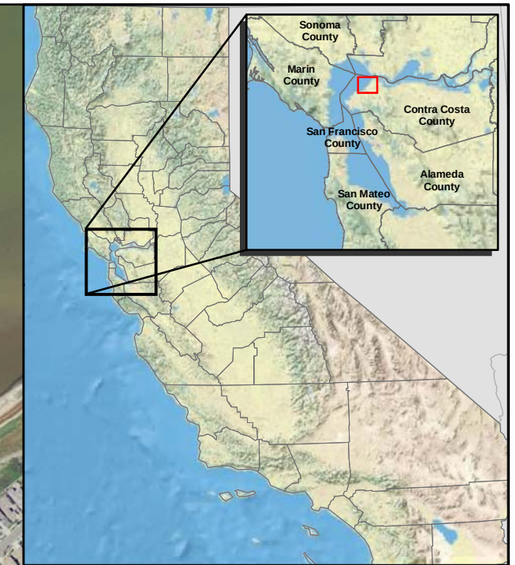

Legend

- Project Boundary
- Delineation Area

Preliminary
Subject to Change

1 in = 500 ft (at tabloid layout)

N

0 62.5 125 250 Meters

0 250 500 1,000 Feet

Figure 3: Aerial Photograph

City of Hercules
Hercules Intermodal Transit Center
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources.
No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey.
Data is State Plane Feet, NAD83 Zone 3

HDR 2365 Iron Point Road, Suite 300
Folsom, CA 95630-8709

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

1.3 DRIVING DIRECTIONS

From San Francisco

The project site can be reached from downtown San Francisco via I-80 east toward Sacramento for approximately 23 miles and taking the Hercules exit (exit 23). Follow signs for Sycamore Ave and merge onto Willow Ave and then turn right at Sycamore Ave. Afterwards turn right onto Railroad Avenue, which then turns into Bayfront Boulevard and parallels the San Pablo Bay. The project site is located just north and east of the terminus of Bayfront Boulevard.

From Sacramento

The project site can be reached from Sacramento via I-80 west toward San Francisco for approximately 58 miles and taking the Hercules exit (exit 23). Merge onto State Route (SR-4) west toward Hercules, turn left at San Pablo Ave., and then turn right to Sycamore Ave. Afterwards turn right onto Railroad Avenue which turns into Bayfront Boulevard and parallels the San Pablo Bay. The project site is located just north and east of the terminus of Bayfront Boulevard.

1.4 CONTACT INFORMATION

Project sponsor:

City of Hercules

111 Civic Drive,

Hercules, CA 94547

510-799-8200

1.5 REGULATORY SETTING

Any person, firm, or agency planning to alter or work in “waters of the U.S.”, including the discharge of dredged or fill material, must first obtain authorization from the USACE under Section 404 of the Clean Water Act (CWA; 33 USC 1344). Permits, licenses, variances, or similar authorization may also be required by other federal, state, and local statutes. Section 10 of the Rivers and Harbors Act of 1899 prohibits the obstruction or alteration of navigable waters of the U.S. without a permit from USACE (33 USC 403). The California Department of Fish and Game (CDFG) requires notification prior to commencement, and possibly a Streambed Alteration Agreement (SAA) pursuant to California Fish and Game Code Subsection 1601-1603, 5650F, if a proposed project would result in the alteration or degradation of a stream, river, or lake in California. The Regional Water Quality Control Board (RWQCB) may require State Water Quality

Certification (CWA Section 401 permit) prior to the alteration of or discharge to waters of the U.S. and the state.

Waters of the U.S. are defined as: all waters that are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters that are subject to the ebb and flow of the tide; all interstate waters including interstate wetlands; all other waters such as intrastate lakes, rivers, streams (including intermittent and ephemeral streams), mudflats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes or natural ponds, where the use, degradation, or destruction of which could affect interstate commerce; impoundments of these waters; tributaries of these waters; or wetlands adjacent to these waters (33 CFR Part 328). With non-tidal waters, in the absence of adjacent wetlands, the extent of USACE jurisdiction extends to the ordinary high water mark (OHWM) – the line on the shore established by fluctuations of water and indicated by a clear, natural line impressed on the bank, shelving, changes in soil character, destruction of terrestrial vegetation, and/or the presence of litter and debris.

Wetlands are defined as those areas that are inundated or saturated by surface or ground water at a frequency and duration to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

In accordance with the USACE Jurisdictional Determination Form Instructional Guidebook (2007 Guidance) issued jointly by the USACE and the U.S. Environmental Protection Agency (EPA), “navigable waters” or “waters of the United States” subject to jurisdiction under the Clean Water Act include (1) traditional navigable waters (TNW), (2), wetlands adjacent to TNW, (3) non-navigable tributaries of TNW that are relatively permanent where the tributaries typically flow year around or have continuous flow at least seasonally (e.g., typically three months), and (4) wetlands that abut such tributaries. A “significant nexus” determination will be made for non-navigable tributaries that are not relatively permanent and their adjacent wetlands. Such features that are determined to have a “significant nexus” to a TNW will also be subject to CWA jurisdiction. A significant nexus requires that there be “more than an insubstantial or speculative effect on the chemical, physical, and/or biological integrity of a TNW” (USACE/EPA, 2007). The 2007 Guidance also states the following features will generally not be subject to CWA jurisdiction: swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent or short duration flow) and ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water.

Federal and State regulations pertaining to Waters of the U.S., including wetlands, are discussed below.

Clean Water Act (33 U.S.C. 1251-1376). The CWA provides guidance for the restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters.

- **Section 401** requires that an applicant for a federal license or permit that allows activities resulting in a discharge to waters of the U.S., must obtain a state certification that the discharge complies with other provisions of CWA. The Regional Water Quality Boards administer the certification program in California.

- **Section 402** establishes a permitting system for the discharge of any pollutant (except dredge or fill material) into waters of the U.S.

- **Section 404** establishes a permit program administered by USACE regulating the discharge of dredged or fill material into waters of the U.S. (including wetlands). Implementing regulations by USACE are found at 33 CFR Parts 320-330. Guidelines for implementation are referred to as the Section 404 (b)(1) Guidelines and were developed by the EPA in conjunction with USACE (40 CFR Parts 230). The Guidelines allow the discharge of dredged or fill material into the aquatic system only if there is no practicable alternative that would have less adverse impacts.

Section 10 of the Rivers and Harbors Act (33 U.S.C. 401 et seq.). Section 10 of the Rivers and Harbors Act is administered by USACE. This section requires permits in navigable waters of the U.S. for all structures such as riprap, crossings, utilities, and activities such as dredging. Navigable waters are defined as those subject to the ebb and flow of the tide and susceptible to use in their natural condition or by reasonable improvements as means to transport interstate or foreign commerce. The USACE grants or denies permits based on the effects on navigation. Most activities covered under this act are also covered under Section 404 of CWA.

Fish and Wildlife Coordination Act (16 U.S.C. 661-666). This act applies to any federal project where the waters of any stream or other body of water are impounded, diverted, deepened, or otherwise modified. Project proponents are required to consult with the U.S. Fish and Wildlife Service (USFWS) and the appropriate state wildlife agency. These agencies prepare reports and recommendations that document project effects on wildlife and identify measures that may be adopted to prevent loss or damage

to wildlife resources. The term "wildlife" includes both animals and plants. Provisions of this Act are implemented through the NEPA process and Section 404 permit process.

National Wild and Scenic Rivers Act (16 U.S.C. 1271-1287). This act is administered by a variety of state and federal agencies. Designated river segments flowing through federally managed lands are administered by the land managing agency (e.g., U. S. Forest Service, Bureau of Land Management, and the National Park Service). River segments flowing through private lands are administered by the resources agency in conjunction with local government agencies. This Act prohibits federal agencies from activities that would adversely affect the values for which the river was designated.

Executive Order 11990 Protection of Wetlands (May 24, 1977). This order establishes a national policy to avoid adverse impacts on wetlands whenever there is a practicable alternative. The U. S. Department of Transportation (DOT) promulgated DOT Order 5660.1A in 1978 to comply with this direction. On federally funded projects, impacts on wetlands must be identified in the environmental document. Alternatives that avoid wetlands must be considered. If wetland impacts cannot be avoided, then all practicable measures to minimize harm must be included. This must be documented in a specific "Wetlands Only Practicable Alternative Finding" in the final environmental document. An additional requirement is to provide early public involvement in projects affecting wetlands. The Federal Highway Administration (FHWA) provides technical assistance in meeting these criteria (FHWA Technical Advisory 6640.8A) and reviews environmental documents for compliance.

Section 1600 of the Fish and Game Code. Under this section of the Fish and Game Code, agencies are required to notify CDFG prior to any project that would divert, obstruct or change the natural flow, bed, channel, or bank of any river, stream, or lake. Preliminary notification and project review generally occur during the environmental process. When an existing fish or wildlife resource may be substantially adversely affected, DFG is required to propose reasonable project changes to protect the resource. These modifications are formalized in a Streambed Alteration Agreement (Section 1600) that becomes part of the plans, specifications and bid documents for the project.

The McAteer-Petris Act (California Government Code 66600-66682). The McAteer-Petris Act created the San Francisco Bay Conservation and Development Commission (BCDC) in 1965. BCDC's mission is the preservation of San Francisco Bay from indiscriminate filling. BCDC's first task was compilation of a comprehensive study of the Bay and determining how future development of the Bay should occur. This effort

resulted in the San Francisco Bay Plan in 1968. In 1969 the findings and policies of the Bay Plan were incorporated into the McAteer-Petris Act which was amended to make BCDC a permanent state agency. The Bay Plan continues to evolve and remains the guiding document for BCDC's actions. Section 66610 of the McAteer-Petris Act establishes the boundaries of San Francisco Bay in relation to BCDC's jurisdiction. Essentially, all areas below the mean high tide line and an area within a shoreline band that extends landward for 100 feet from the mean high tide line are subject to their jurisdiction. Section 66632 of the McAteer-Petris Act establishes the permitting process for projects which would place fill in, on, or over any part of BCDC's jurisdiction as defined in Section 66610. Portions of the project within 100 feet of the mean high tide line are subject to BCDC's jurisdiction.

2.0 ENVIRONMENTAL SETTING

The project site is located in northwestern Contra Costa County. The project site is bordered to the northwest by the San Pablo Bay. The Carquinez Strait is approximately 2.5 miles to the northeast of the project site. The project site is characterized by urban development and construction disturbance south of the Union Pacific Railroad tracks that run through the site and by the Bay and the ruderal habitat of Hercules Peninsula north of the railroad tracks. The project site ranges in elevation from sea level to approximately 25 feet above mean sea level (amsl). Land use in the area is primarily residential and commercial.

The project site is located mostly in the Refugio Creek watershed. The Refugio Creek Watershed is one of a series of roughly parallel, northwest trending valleys and ridges in west Contra Costa County. The upper watershed is bordered by large, open space areas including the Muir Heritage Land Trust's Fernandez Ranch, East Bay Municipal Utility District's watershed lands, and open space owned by local homeowners associations. The lower watershed is bordered by the San Pablo Bay. Prevalent habitats in the watershed include ruderal, eucalyptus, mixed oak/bay woodland, annual grassland, mixed riparian forest, and freshwater marsh (City of Hercules 2009).

2.1 EXISTING FIELD CONDITIONS

The average rainfall for the Hercules area is approximately 23 inches per year and the average rainfall for the month of December is 3.30 inches. The City received approximately 0.34 inches of rain in the month of November and approximately 0.22 inches of rain in the first week of December. The weather during the December 8, 2009 survey was mostly sunny with a high of 50 degrees Fahrenheit (ºF) and a low of 31 ºF (Weather Channel 2009).

2.2 INTERSTATE OR FOREIGN COMMERCE CONNECTION

Refugio Creek and wetland and drainage features within the project site are not directly connected to interstate or foreign commerce and are not used for the transportation of goods. However, adjacent San Pablo Bay is used by cargo ships and vessels for the transportation of goods intended for interstate and/or foreign commerce.

3.0 METHODOLOGY

3.1 PRELIMINARY DATA GATHERING AND SYNTHESIS

Prior to conducting fieldwork for the jurisdictional delineation the following information sources were reviewed:

- USGS "Mare Island, California" 7.5 minute topographic quadrangle and eight surrounding quadrangles;
- Aerial photography of the project area taken June 2009 downloaded from DigitalGlobe ®;
- Natural Resources Conservation Service's web soil survey (NRCS 2009a);
- U.S. Fish and Wildlife Service Wetland Online Mapper (NRCS 2009b); and
- Findings from other wetland delineations and biological studies conducted for the project area (WWR 2007a and b; Wetland Wildlife Resources 2007; Vollmar 2007 and 2008; HDR in prep.).

3.2 DELINEATION BOUNDARIES

All areas within the 46.76-acre project area, excluding the area previously delineated by Vollmar Consulting (2008) and verified by the USACE, was included in the delineation. Additionally, undeveloped areas within the proposed Bayfront development were included to be able to address cumulative effects; and undeveloped areas within approximately 250 feet inland of the project and Bayfront development areas were included. A total of 66.89 acres are considered in this delineation and is hereafter considered the delineation area. Figures 2 and 3 depict delineation boundaries. Those areas within the project area that were previously delineated by Vollmar Consulting and verified by the USACE are addressed within the attached report: *Delineation of Potential Jurisdictional Waters of the United States, June 2008. Hercules Intermodal Transit Facility* (**Appendix C**).

3.3 DETERMINATION PROCEDURES

The fieldwork for the jurisdictional determination was conducted by HDR biologists Sean Marquis and Mark Ashenfelter on December 8, 2009; by Sean Marquis and Stephen Stringer on December 29, 2009; and by Stephen Stringer and LaTisha Burnaugh on March 31, 2010. The jurisdictional determination was conducted in accordance with the 1987 *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory, 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Version 2.0) (USACE, 2008). USACE regulations were used to determine the presence of jurisdictional waters of the U.S. other than wetlands.

The entire study area was assessed in such a manner as to view all areas to the degree necessary to determine the presence or absence of jurisdictional features. Data collection points were chosen in the field at representative locations and detailed information on vegetation, soils, and hydrologic characteristics were taken for each data point. Plant nomenclature follows *The Jepson Manual; Higher Plants of California* (Hickman, 1993). The *1988 National List of Plants That Occur in Wetlands* (USFWS, 1988) was used to determine the wetland indicator status of observed plants. A list of observed plant species, including their indictor status, is provided in **Appendix A**. A standard Munsell® soil color chart was used to determine soil matrix and mottle colors.

Datasheets that document the basis for determining whether an area qualifies as a jurisdictional wetland were completed for representative locations and are included as **Appendix B**. Potential wetlands and other waters of the U.S. occurring in the project site were mapped in the field using a Trimble GeoXT® sub-meter accurate global positioning system (GPS). These data were exported into ArcMap 9.2® and used to produce the map of waters of the U.S. including wetlands, including the calculation of lengths and widths of channels and acreages of wetland features in the project site.

In order for an area to qualify as a wetland, it must meet a three parameter test and contain: a) a predominance of hydrophytic vegetation; b) hydric soil; and, c) wetland hydrology. Wetland boundaries are considered to be a line across which the vegetation, soil, and hydrologic characteristics began/ceased to meet wetland criteria. Hydrophytic vegetation indicators include prevalence of hydrophytic vegetation (majority of dominant plant species that are facultative or obligate wetland plants as listed in the *1988 National List of Plants That Occur in Wetlands* (USFWS, 1988)) and morphological or physiological adaptations to saturated soil conditions. Hydric soil indicators include organic soils (histosols), mineral soils saturated and rich in organics (histic epipedon), sulfidic odor, low dissolved oxygen concentration (aquic moisture regime) and reducing

conditions, gleyed and/or low chroma soils, soils listed on national, state, or local hydric soils lists, and iron and manganese concretions. Wetland hydrology indicators include visual observations of inundation or soil saturation, watermarks and water-stained leaves, drift lines, sediment deposits, and drainage patterns.

4.0 RESULTS

4.1 PLANT COMMUNITIES/HABITAT TYPES IN THE PROJECT SITE

Plant communities/habitat types within the project site include California cordgrass tidal marsh, pickleweed tidal marsh, intertidal mudflat, brackish stream, pickleweed brackish marsh, willow riparian forest, freshwater wetland swale, cattail marsh, seasonal wetland, freshwater intermittent drainage, and unvegetated ponded depressions. Potentially jurisdictional aquatic habitat types occurring within the delineation area are discussed in further detail in **Section 4.5**.

Terrestrial Habitat Types

Four types of terrestrial habitat types occur within the project site: ruderal, railroad, rip-rap, and willow riparian forest. The majority of the project site is ruderal, both on Hercules Point and inland of the railroad tracks. The railroad bisects the project site and is unvegetated. Riprap includes areas where the coastline has been stabilized with rip-rap or rubble, and spans most of the project site's shoreline. Willow riparian forest occurs in three patches on the project site.

Ruderal

Ruderal habitats are those that occur in areas of human disturbance, such as roadsides, parking lots, or fallowed agricultural fields. Such habitats are typically dominated by nonnative annual grasses and forbs. The vast majority of the project site has been altered by development. The site was used for explosives manufacturing from the 1880's to 1960's; and fertilizer and other chemical manufacturing from the 1960's to around 1977. Tests in the 1980's identified hazardous levels of heavy metals and chemicals remaining in the soil from previous manufacturing operations. Remediation, consisting of excavation and off-site removal of contaminated sediments, was conducted on much of the project site through about 1997.

Currently, residential and commercial developments are adjacent to the project area. The project site is traversed by an active railroad. A portion of the project site is currently being prepared for development, with large unvegetated stockpiles of dirt in place to

compact the ground. The areas that are not currently developed, but have been altered or disturbed by development, are considered ruderal.

The vegetated portion of the ruderal habitat in the project site is dominated primarily by nonnative grasses and forbs. Dominant plant species include non-native grasses, such as ripgut brome (*Bromus diandrus*), Italian ryegrass (*Lolium multiflorum*), and wild oats (*Avena fatua*, *A. barbata*), and non-native forbs, such as bristly ox-tongue (*Picris echioides*), black mustard (*Brassica nigra*), wild radish (*Raphanus sativus*), redstem filaree (*Erodium cicutarium*), cutleaf geranium (*Geranium dissectum*), hairy vetch (*Vicia villosa*), poison hemlock (*Conium maculatum*), and rose clover (*Trifolium hirtum*). Coyote brush (*Baccharis pilularis*), a native shrub often found in disturbed areas, is scattered in the ruderal habitat. Also scattered are cultivated varieties of trees, such as blue gum eucalyptus (*Eucalyptus globulus*), blackwood acacia (*Acacia melanoxylon*), black walnut (*Juglans californica*), and palm trees.

The western portion of the ruderal habitat has been highly disturbed by stockpiling of dirt, previous road and trail-building, on-going railroad operation, and on- and off-trail foot traffic. Vegetation in this part of the project site is low-growing and, on the stopckpiles, non-existent.

The eastern portion of the project site follows a slope that connects a bluff to the San Pablo Bay coastline. A strip of ruderal habitat, less than 200 feet wide, follows the slope. Vegetation is not frequently disturbed in this strip.

A portion of ruderal habitat flanks Refugio Creek and its associated wetlands. The ruderal habitat surrounding Refugio Creek is in part dominated by horticultural plantings, and in part dominated by nonnative annual grasses and forbs with scattered shrubs.

Railroad

An active railroad crosses the project site immediately adjacent to the San Pablo Bay shore. The railroad right-of-way consists of ballast rock and highly compacted dirt, and is mostly unvegetated.

Riprap

Where the railroad right-of-way passes immediately adjacent to the San Pablo Bay shore, a riprap revetment is in place to stabilize the shore. Additionally, cement and other rubble, presumably from the Hercules powder plant, line much of the shore of Hercules Point.

Willow Riparian Forest

Three patches of habitats with willow riparian forest characteristics occur in the project site: one within the railroad right-of-way, one in the northeastern extent of the project site, and one on the Northern Channel of Refugio Creek. All patches are linear features. They are isolated patches and not part of a larger forest. The dominant trees in the patches are red willow (*Salix laevigata*) and arroyo willow (*Salix lasiolepis*). These areas contain brackish marsh or freshwater wetland swale features with willow riparian forest characteristics. The wetland features contained within them are discussed in detail in **Section 4.5** below.

Aquatic Habitat Types

Aquatic habitat types/vegetation communities in the project site include California cordgrass tidal marsh, pickleweed tidal marsh, intertidal mudflat, pickleweed brackish marsh, brackish stream including Refugio Creek and its Northern Channel, cattail marsh, seasonal wetland, freshwater intermittent drainage, and unvegetated ponded depression. The California cordgrass tidal marsh and pickleweed tidal marsh are located on the perimeter of Hercules Point, with California cordgrass tidal marsh at slightly lower elevation than pickleweed tidal marsh. Refugio Creek is a perennial stream with some adjacent wetlands. Cattail marshes and freshwater intermittent drainages occur adjacent to Refugio Creek and within willow riparian forest habitats. Seasonal wetlands and unvegetated ponded depressions occur within the railroad right-of-way and other ruderal habitats.

California Cordgrass Tidal Marsh

California cordgrass tidal marsh grows in limited patches along the perimeter of Hercules Point. As is typical, it is the habitat type growing closest to the open water of the San Pablo Bay. California cordgrass (*Spartina foliosa*) dominates the habitat type, growing in dense homogenous stands. Based on size and structure, all of the cordgrass at the project site appears to be the native California cordgrass.

Pickleweed Tidal Marsh

Pickleweed tidal marsh grows in patches along the perimeter of Hercules Point, in the mid-tidal zone. It grows immediately inland of California cordgrass tidal marsh. Pickleweed (*Sarcocornia pacifica*) dominates the pickleweed tidal marsh. Several other plants are dominant in places, along with pickleweed. These plants include alkali bulrush (*Bolboshoenus maritimus*), fleshy jaumea (*Jaumea carnosa*), saltgrass (*Distichlis spicata*), and marsh gumplant (*Grindelia stricta* var. *angustifolia*).

Intertidal Mudflat

Intertidal mudflats occur within the offshore portions of the project site. These sparsely vegetated intertidal areas occur from approximately mean lower low water (MLLW) to mean tide level (MTL).

Brackish Stream

Brackish streams have salinity levels between freshwater and saltwater. The project site contains two brackish streams: Refugio Creek and an unnamed stream to the east. These brackish streams are tidally influenced and contain salt-tolerant vegetation, such as pickleweed, saltgrass, or alkali bulrush. These features are all within the delineation area and are discussed in detail in **Section 4.5** below.

Pickleweed Brackish Marsh

Pickleweed brackish marsh habitat primarily occurs adjacent to the brackish stream habitats within the project site. These marsh habitat types are typically created during periods of high flow and/or high tide in their respective creeks. Some pickleweed brackish marshes in the project site may have been created/enhanced by wicking from adjacent surcharge activity (loading large amounts of fill onto an area in order to force water out of the dirt and prepare it for development). Pickleweed brackish marsh contains salt-tolerant vegetation, such as pickleweed, saltgrass, or alkali bulrush. These features are all within the delineation area and are discussed in detail in **Section 4.5** below.

Cattail Marsh

Several cattail marsh features occur within the delineation area, primarily in the vicinity of Refugio Creek and on the eastern edge of the site. They are dominated by dense stands of cattails and generally have little other vegetation. These wetland areas are likely permanently or semi permanently saturated. These features are discussed in detail in **Section 4.5** below.

Seasonal Wetland

Several non-tidal freshwater seasonal wetlands occur in shallow depressions throughout upland portions of the project site. The depressions are located on Hercules Point, near Refugio Creek, and along the eastern portion of the railroad right-of-way. Many of the depressions are the result of human activities. In shallower depressions, vegetation is dominated by bristly ox-tongue, Italian ryegrass, and curly dock (*Rumex crispus*). Deeper depressions, often bounded by soil deposit berms, support more hydrophytic

species, such as rabbitsfoot grass (*Polypogon monspeliensis*) and rough cocklebur (*Xanthium strumarium*).

Freshwater Wetland Swale

One freshwater wetland swale occurs within the delineation area, in the northeastern portion of the project site. The swale runs through a patch of willow riparian forest. Vegetation includes willow trees and understory herbaceous vegetation such as tall flatsedge (*Cyperus eragrostis*) and creeping wildrye (*Leymus triticoides*). The feature is discussed in detail in **Section 4.5** below.

Freshwater Intermittent Drainage

Four freshwater intermittent drainage features occur on the site. One drains into Refugio Creek. Refugio Creek's Northern Channel flows through the project site, supporting a willow riparian forest and, in its downstream reach, supporting salt-tolerant plants such as pickleweed, saltgrass, and alkali bulrush. Another is between the willow riparian and brackish stream habitat, and another between the cattail marsh and the same brackish stream on the eastern portion of the project site. These features are within the delineation area and are discussed in detail in **Section 4.5** below.

Unvegetated Ponded Depression

Approximately forty five unvegetated ponded depressions, or "puddles", occur within the railroad right-of-way. The puddles occur within depressions in compacted dirt and gravel. They are generally devoid of vascular vegetation. The puddles reach a maximum depth of six inches in the winter, with most pools not exceeding three inches in depth. The puddles do not meet the USACE three-parameter test to qualify as wetlands and are not considered jurisdictional under the existing USACE delineation verified in December 2008 (**Appendix C**).

The puddles provide poor to marginal habitat for aquatic wildlife but are being surveyed for potentially occurring listed species of fairy shrimp. Puddles in the eastern portion of the project site have been previously surveyed by Vollmar Consulting in 2007; and puddles in the west were surveyed by Condor Country Consulting in 2003. The puddles provide habitat for short life-cycle aquatic invertebrates, such as versatile fairy shrimp (*Branchinecta lindahli*), daphnia (Cladocera), seed shrimp (Ostracoda), water boatmen (Corixidae), midge larvae (Chironomidae), and mosquito larvae (Culicidae). To date, surveys have not detected any listed invertebrates. Tree frog egg masses and larvae were identified in one puddle.

Approximately seven puddles occur within the delineation area. They are being surveyed for listed fairy shrimp and are mapped in HDR's fairy shrimp survey report (HDR in prep.). Four of the puddles contain aquatic invertebrates, such as versatile fairy shrimp, daphnia, and seed shrimp. All of these puddles are located in dirt roads or excavations and appear to be man-made. The puddles are primarily unvegetated. The puddles do not meet soil or vegetation parameters necessary to be considered wetlands.

4.2 SOIL TYPES

A soil map of the project site and vicinity is shown as **Figure 4.** Soil descriptions are included below. Soil descriptions were modified from the Soil Resource Report for Contra Costa County (NRCS 2009a). Soil types were compared to the hydric soil list for Contra Costa County (NRCS 2009b).

Legend

Soil Unit and Description

- Cc, CLEAR LAKE CLAY
- Ja, JOICE MUCK
- LcE, LODO CLAY LOAM, 9 TO 30 PERCENT SLOPES
- MeF, MILLSHOLM LOAM, 30 TO 50 PERCENT SLOPES
- TaD, TIERRA LOAM, 9 TO 15 PERCENT SLOPES
- TaE, TIERRA LOAM, 15 TO 30 PERCENT SLOPES

Preliminary
Subject to Change

1 in = 500 ft (at tabloid layout)

N

0 62.5 125 250 Meters

0 250 500 1,000 Feet

Figure 4: Soils Map

City of Hercules
Hercules Intermodal Transit Center
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources.
No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey.
Data is State Plane Feet, NAD83 Zone 3

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Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

Clear Lake Clay (Cc)

Clear Lake soils are found in basins and swales of drainage ways at elevations between 25 and 2,000 feet amsl. Clear Lake soils are very deep, poorly drained soils that formed in fine textured alluvium derived from sandstone and shale. A typical profile of Clear Lake soil is dark grey clay from 0 to 19 inches in depth, dark grey clay with concretions from 19 to 45 inches, and grayish brown clay with light yellowish brown masses of iron accumulations from 45 to 60 inches. The typical water table depth is between 4 and 10 feet in late summer and may be very near the surface during winter months. Clear Lake soils have negligible to high runoff and slow to very slow permeability. This soil series is classified as a hydric soil when the water table is at less than or equal to one foot from the surface during the growing season if permeability is equal to or greater than six inches per hour in all layers within 20 inches.

Joice Muck (Ja)

Joice soils are typically found in flat salt water marshes, near sea level. Joice soils are very poorly drained soils formed from hydrophytic plant remains and mixed alluvium. Joice soils have upper layers that are strongly acidic, black muck mixed with light grey silts and clays and lower layers that are fibrous, moderately alkaline, black clayey muck. A typical soil profile of Joice soil is black sapric material from 0 to 20 inches in depth and very dark grey, hard, sapric material with yellowish brown mottles from 20 to 60 inches. The typical water table depth is approximately 30 inches below the surface in mid-summer and on or near the surface during the winter. Joice soils have very slow runoff and rapid permeability. This soil series is classified as a hydric soil when it is all Histels except Folistels and Histosols except Folists, when the water table is at less than or equal to one foot from the surface during the growing season if permeability is equal to or greater than six inches per hour in all layers within 20 inches, and/or when the soil is frequently flooded for long duration or very long duration during the growing season.

Tierra Loam, 15 to 30 percent slopes (TaE)

Tierra soils are found in dissected terraces and low hills at elevations between 100 and 1,200 feet amsl. Tierra soils are deep, moderately well drained soils formed in alluvial materials from sedimentary rock. A typical profile of Tierra soil is grayish brown loam from 0 to 7 inches in depth, gray loam from 7 to 11 inches, very dark grayish brown clay from 12 to 16 inches, dark brown clay loam from16 to 25 inches, light brownish grey heavy clay loam with reddish brown and yellowish brown mottles from 25 to 43 inches, and pale brown clay loam with reddish brown and yellowish brown mottles from 43 to 62

inches. Tierra loam soils have slow to rapid runoff and very slow permeability. This soil series is not classified as a hydric soil.

4.3 HYDROLOGY

Hydrology through the project area originates from direct rainfall, sheet flow, and urban runoff within the Refugio Creek watershed. Water from the Refugio Creek watershed collects in Refugio Creek and its tributaries and flows through the project site to San Pablo Bay. Additionally, part of the project site is under tidal influence. At high tide, some streams and adjacent wetlands receive inflow from San Pablo Bay.

The project site lies along the eastern boundary of San Pablo Bay, a major subembayment positioned between the heavily marine influenced Central Bay, and Suisun Bay, which lies just west of the confluence of California's largest rivers. The San Pablo Bay watershed, approximately 900 square miles in area, includes those lands in the northern reaches of the San Francisco Bay area whose streams flow into San Pablo Bay; the watershed is a major drainage basin for Marin, Sonoma, Solano, and Contra Costa counties (USACE, 1999).

Freshwater flow to San Pablo Bay is entirely dependent on precipitation, with peak flows occurring during winter storms and spring snow melt from the Sierra Nevada range, followed by a long period of dry weather with almost no freshwater input excluding human disturbances such as dams and water export. The major freshwater sources for the Bay include Novato Creek in Marin County, Petaluma River and Sonoma Creek in Sonoma County, Napa River in Napa County and San Pablo Creek in Contra Costa County (WWR, 2007b).

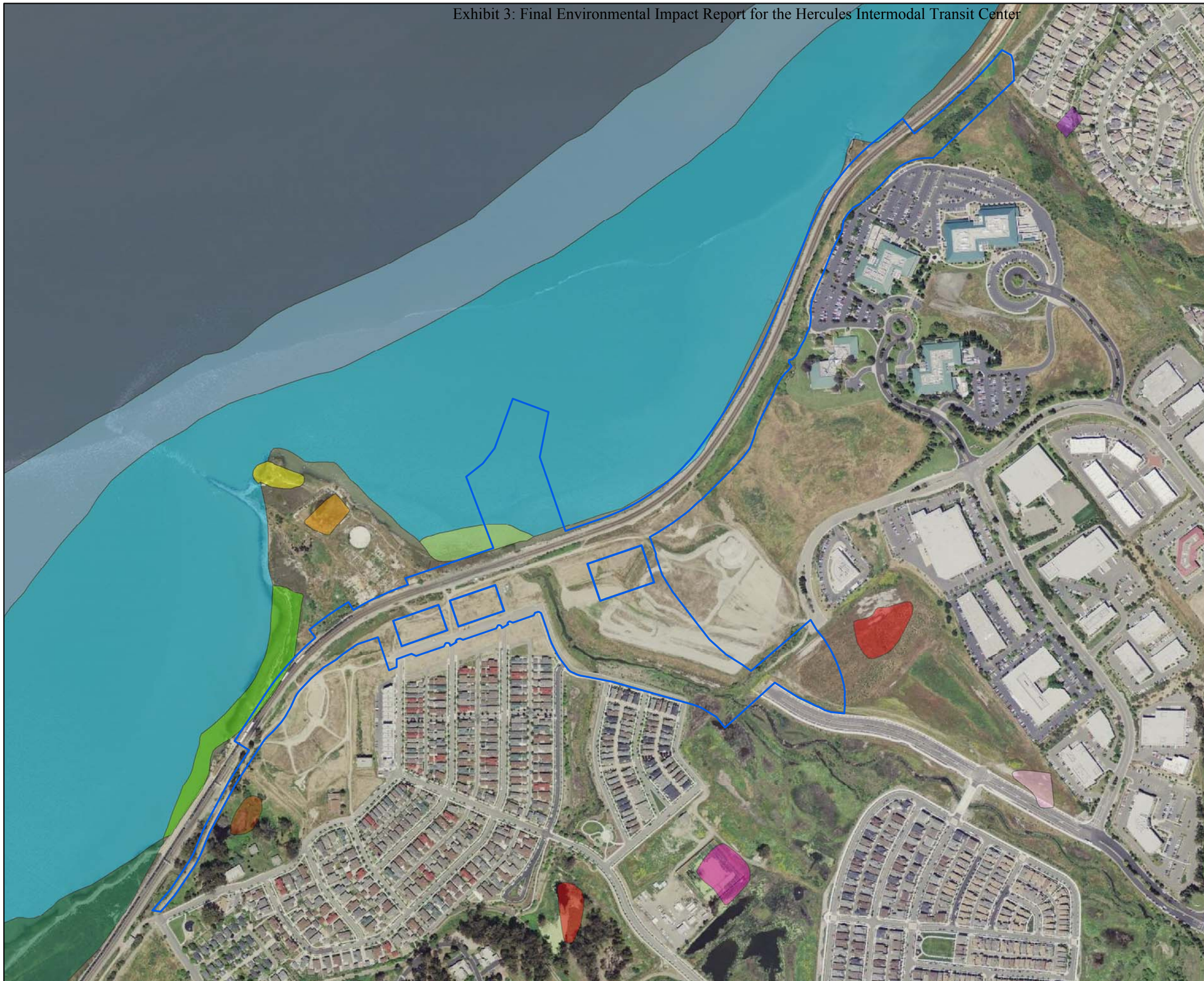
4.4 USFWS WETLAND ONLINE MAPPER

The USFWS Wetlands Online Mapper was used to determine if there are any wetlands or other waters of the U.S. known to occur on the project site. The USFWS Wetlands Online Mapper for the project site is included as **Figure 5**. There are no wetlands shown on the Wetlands Online Mapper within the project site.

4.5 JURISDICTIONAL WETLANDS AND OTHER WATERS OF THE U.S.

Below are brief descriptions of wetlands and other waters of the U.S. within the delineation boundary. All of these wetlands and other waters are believed to be jurisdictional pending USACE verification. The features are shown on the Delineation Map (**Figures 6, 6-A through 6-C)**. Representative photographs of each feature are

included in **Figures 7-A and 7-B**. Acreages of potentially jurisdictional features in the delineation area are included in **Table 1** at the end of this section.



Legend

EIR/EIS Boundary

Cowardin Class, Wetland Name

E1UBL;	*Estuarine, Subtidal, Unconsolidated Bottom, Subtidal*
E2USM;	*Estuarine, Intertidal, Unconsolidated Shore, Irregularly Exposed*
E2USN;	*Estuarine, Intertidal, Unconsolidated Shore, Regularly Flooded*
E2EMPh;	*Estuarine, Intertidal, Emergent, Irregularly Flooded, Diked/Impounded*
E2EM/USN;	*Estuarine, Intertidal, Emergent, Unconsolidated Shore, Regularly Flooded*
E2EMN;	*Estuarine, Intertidal, Emergent, Regularly Flooded*
E2EMP;	*Estuarine, Intertidal, Emergent, Irregularly Flooded*
PUBFh;	*Palustrine, Unconsolidated Bottom, Semipermanently Flooded, Diked/Impounded*
PEMC;	*Palustrine, Emergent, Seasonally Flooded*
PUBHh;	*Palustrine, Unconsolidated Bottom, Permanently Flooded, Diked/Impounded*
PUBKx;	*Palustrine, Unconsolidated Bottom, Artificially Flooded, Excavated*
PUBHx;	*Palustrine, Unconsolidated Bottom, Permanently Flooded, Excavated*
PSSCh;	*Palustrine, Scrub-Shrub, Seasonally Flooded, Diked/Impounded*

Preliminary
Subject to Change

1 in = 500 ft (at tabloid layout)

N

0 62.5 125 250 Meters

0 250 500 1,000 Feet

Figure 5: National Wetland Inventory

City of Hercules
Hercules Intermodal Transit Center
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources.
No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey.
Data is State Plane Feet, NAD83 Zone 3

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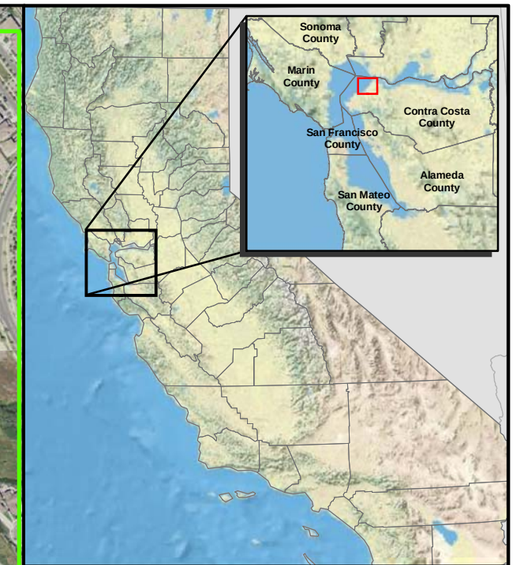
Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center



Legend

- BCDC Assumed Jurisdictional Limit
- Project Boundary
- Delineation Area
- Previously Verified Delineation (Vollmar 2008, File # 2008-00382S)
- Figure 6-A, 6-B, and 6-C Map Extents

Preliminary
Subject to Change

1 in = 500 ft (at tabloid layout)

N

0 62.5 125 250 Meters

0 250 500 1,000 Feet

Figure 6: Delineation Map

City of Hercules
Hercules Intermodal Transit Center
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources.
No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey.
Data is State Plane Feet, NAD83 Zone 3

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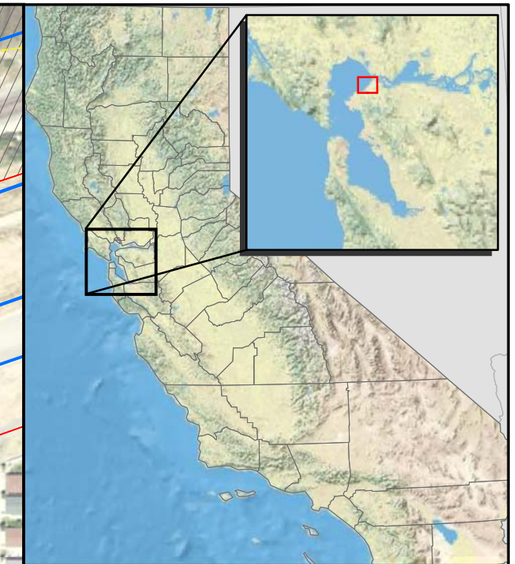
Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

Feature	Length (ft)	Ave Width (ft)	*Area (acres)/ Square Feet	**BCDC Jurisdictional (Yes,No/acres)
Wetland Features				
Cattail Marsh 1	N/A	N/A	0.62/26,929	No
Cattail Marsh 2	N/A	N/A	0.02/866	No
Cattail Marsh 3	N/A	N/A	0.34/14,745	No
Cattail Marsh 4	N/A	N/A	0.45/19,488	No
Cattail Marsh 5	N/A	N/A	0.007/284	No
Cattail Marsh 6	N/A	N/A	0.07/3,121	No
Cattail Marsh 7	N/A	N/A	0.49/21,344	No
Cattail Marsh 8	N/A	N/A	0.10/4,408	No
Cattail Marsh 9	N/A	N/A	0.07/2,894	No
Cattail Marsh 10	N/A	N/A	0.85/36,856	No
Seasonal Wetland 1	N/A	N/A	0.01/475	No
Seasonal Wetland 2	N/A	N/A	0.03/1,222	No
Seasonal Wetland 3	N/A	N/A	0.05/2,375	No
Freshwater Wetland Swale 1	N/A	N/A	0.32/13,760	No
Pickleweed Brackish Marsh 1	N/A	N/A	0.44/19,199	Yes/0.011
Pickleweed Brackish Marsh 2	N/A	N/A	0.046/2,005	No
Pickleweed Brackish Marsh 3	N/A	N/A	0.11/4,942	No
Pickleweed Brackish Marsh 4	N/A	N/A	0.031/1,349	Yes/0.006
Wetland Feature Subtotal	N/A	N/A	**4.01/176,264**	**0.017**
Other Waters of the U.S.				
Refugio Creek (Brackish Stream 1)	1,186	~14	0.476/20,748	Yes/0.008
Brackish Stream 2	130	2	0.006/274	Yes/0.001
Freshwater Intermittent Drainage 1	68	1	0.002/68	No
Northern Channel (Freshwater Intermittent Drainage 2)	506	~5	0.058/2,535	No
Freshwater Intermittent Drainage 3	18	3	0.001/18	No
Freshwater Intermittent Drainage 4	440	2	0.02/869	No
Other Waters of the U.S. Subtotal	**2,348**	N/A	**0.563/24,512**	**0.009**
Other Waters of the U.S. in the Delineation Area			**4.613/200,926**	**0.026**



Legend

- Data Points
- Freshwater Intermittent Drainage
- BCDC 100ft Buffer Line
- Project Boundary
- Delineation Area
- Brackish Stream
- Seasonal Wetland
- Freshwater Wetland Swale
- Pickleweed Brackish Marsh
- Cattail Marsh
- Previously Verified Delineation (Vollmar 2008, File # 2008-00382S)

Preliminary Subject to Change

1 in = 200 ft (at tabloid layout)

N

0 20 40 80 Meters

0 100 200 400 Feet

Figure 6-A: Delineation Map

City of Hercules
Hercules Intermodal Transit Center
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources.
No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey.
Data is State Plane Feet, NAD83 Zone 3

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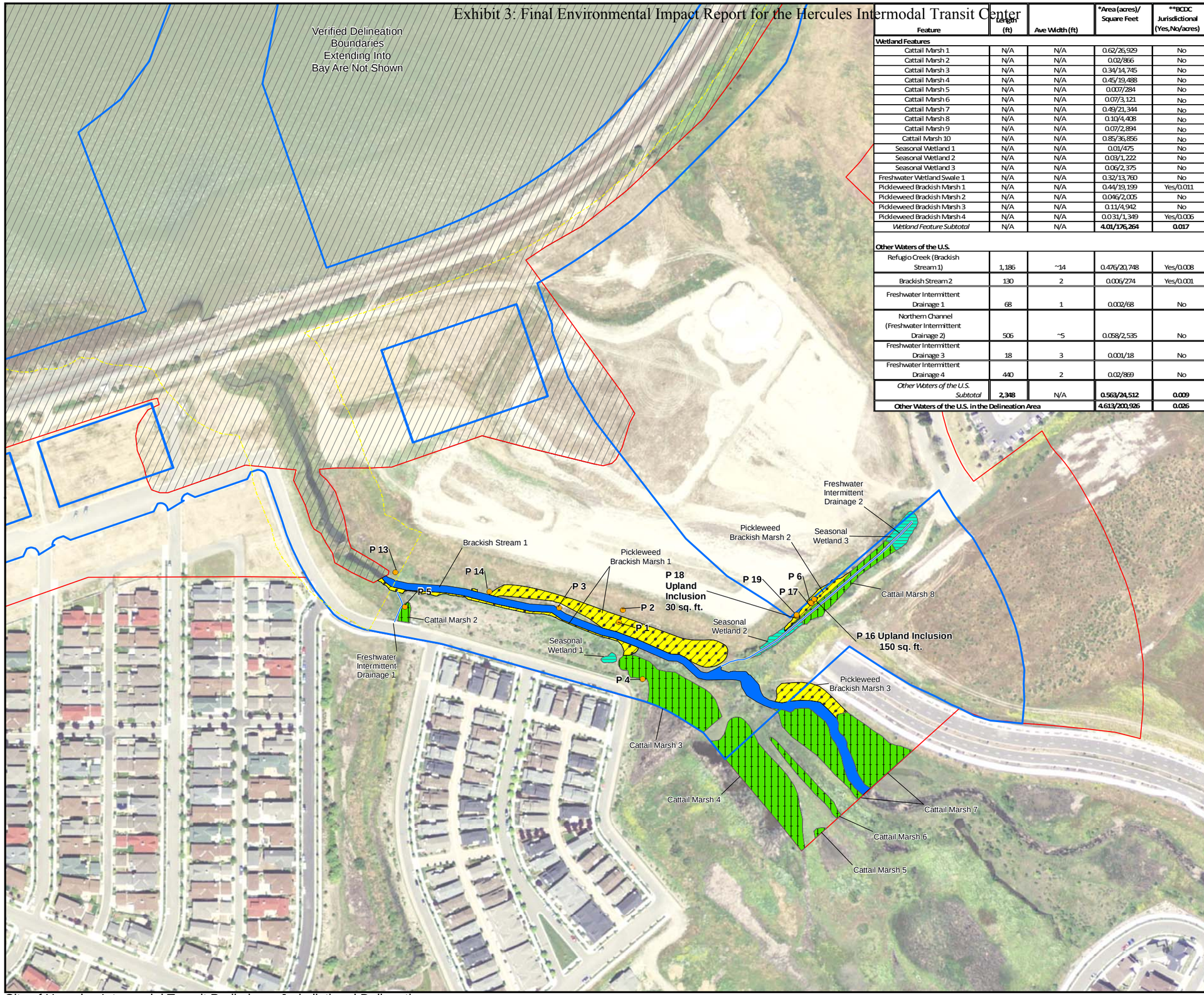
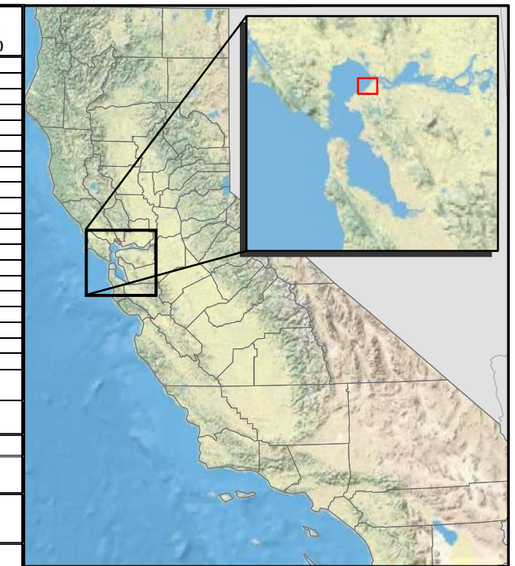
Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center



Feature	Length (ft)	Ave Width (ft)	*Area (acres)/ Square Feet	**BCDC Jurisdictional (Yes,No/acres)
Wetland Features				
Cattail Marsh 1	N/A	N/A	0.62/26,929	No
Cattail Marsh 2	N/A	N/A	0.02/866	No
Cattail Marsh 3	N/A	N/A	0.34/14,745	No
Cattail Marsh 4	N/A	N/A	0.45/19,488	No
Cattail Marsh 5	N/A	N/A	0.007/284	No
Cattail Marsh 6	N/A	N/A	0.07/3,121	No
Cattail Marsh 7	N/A	N/A	0.49/21,344	No
Cattail Marsh 8	N/A	N/A	0.10/4,408	No
Cattail Marsh 9	N/A	N/A	0.07/2,894	No
Cattail Marsh 10	N/A	N/A	0.85/36,856	No
Seasonal Wetland 1	N/A	N/A	0.01/475	No
Seasonal Wetland 2	N/A	N/A	0.03/1,222	No
Seasonal Wetland 3	N/A	N/A	0.06/2,375	No
Freshwater Wetland Swale 1	N/A	N/A	0.32/13,760	No
Pickleweed Brackish Marsh 1	N/A	N/A	0.44/19,199	Yes/0.011
Pickleweed Brackish Marsh 2	N/A	N/A	0.046/2,005	No
Pickleweed Brackish Marsh 3	N/A	N/A	0.11/4,942	No
Pickleweed Brackish Marsh 4	N/A	N/A	0.031/1,349	Yes/0.006
Wetland Feature Subtotal	N/A	N/A	**4.01/176,264**	**0.017**
Other Waters of the U.S.				
Refugio Creek (Brackish Stream 1)	1,186	~14	0.476/20,748	Yes/0.008
Brackish Stream 2	130	2	0.006/274	Yes/0.001
Freshwater Intermittent Drainage 1	68	1	0.002/68	No
Northern Channel (Freshwater Intermittent Drainage 2)	506	~5	0.058/2,535	No
Freshwater Intermittent Drainage 3	18	3	0.001/18	No
Freshwater Intermittent Drainage 4	440	2	0.02/869	No
Other Waters of the U.S. Subtotal	**2,348**	N/A	**0.563/24,512**	**0.009**
Other Waters of the U.S. in the Delineation Area			**4.613/200,926**	**0.026**



Legend

- Data Points
- Freshwater Intermittent Drainage
- BCDC 100ft Buffer Line
- Project Boundary
- Delineation Area
- Brackish Stream
- Seasonal Wetland
- Freshwater Wetland Swale
- Pickleweed Brackish Marsh
- Cattail Marsh
- Previously Verified Delineation (Vollmar 2008, File # 2008-00382S)

Preliminary
Subject to Change

1 in = 200 ft (at tabloid layout)

N

0 20 40 80 Meters

0 100 200 400 Feet

Figure 6-B: Delineation Map

City of Hercules
Hercules Intermodal Transit Center
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources. No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey. Data is State Plane Feet, NAD83 Zone 3

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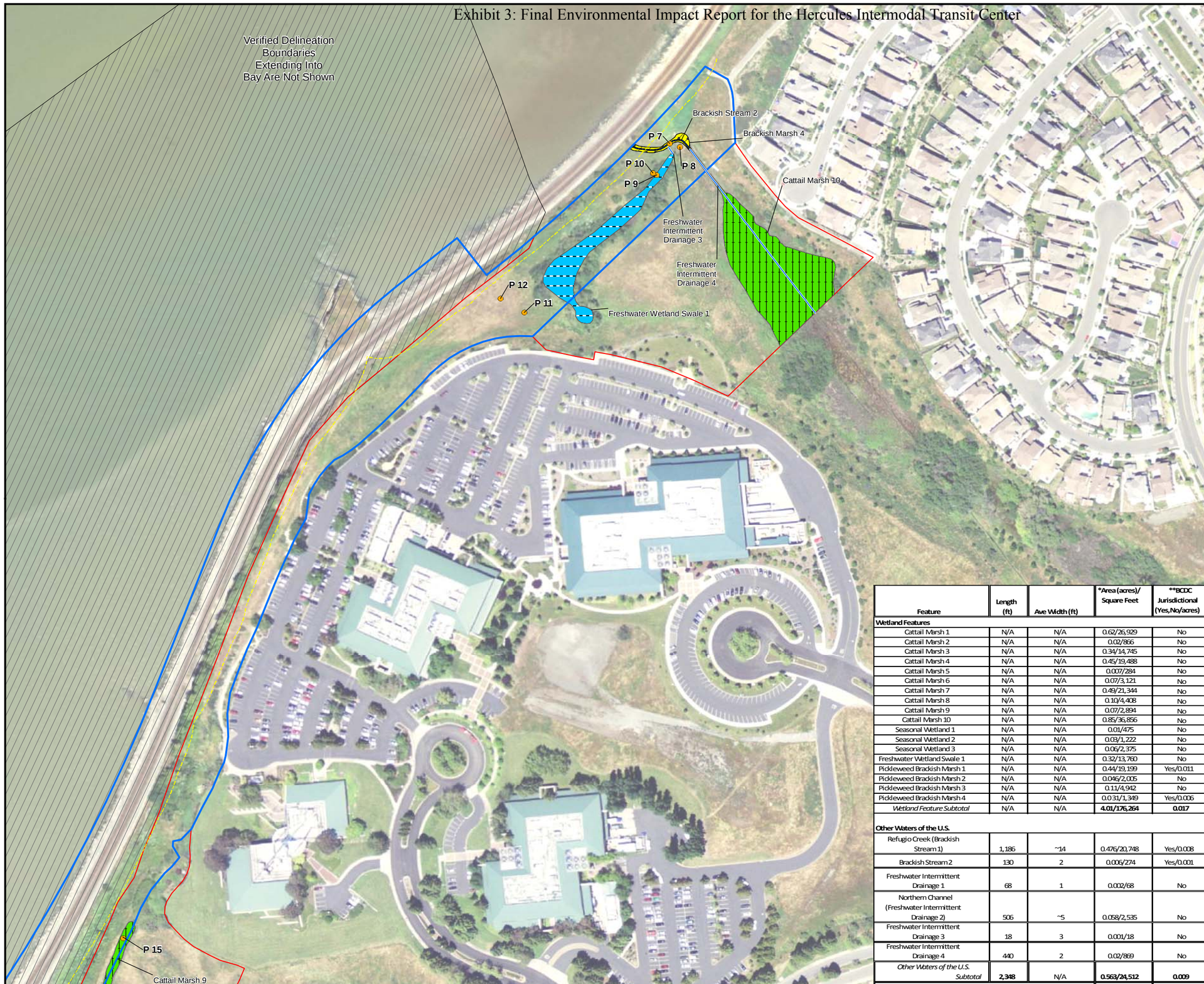
Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center



Feature	Length (ft)	Ave Width (ft)	*Area (acres)/ Square Feet	**BCDC Jurisdictional (Yes,No/acres)
Wetland Features				
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Cattail Marsh 2	N/A	N/A	0.02/866	No
Cattail Marsh 3	N/A	N/A	0.34/14,745	No
Cattail Marsh 4	N/A	N/A	0.45/19,488	No
Cattail Marsh 5	N/A	N/A	0.007/284	No
Cattail Marsh 6	N/A	N/A	0.07/3,121	No
Cattail Marsh 7	N/A	N/A	0.49/21,344	No
Cattail Marsh 8	N/A	N/A	0.10/4,408	No
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Cattail Marsh 10	N/A	N/A	0.85/36,856	No
Seasonal Wetland 1	N/A	N/A	0.01/475	No
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Wetland Feature Subtotal	N/A	N/A	**4.01/176,264**	**0.017**
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Refugio Creek (Brackish Stream 1)	1,186	~14	0.476/20,748	Yes/0.008
Brackish Stream 2	130	2	0.006/274	Yes/0.001
Freshwater Intermittent Drainage 1	68	1	0.002/68	No
Northern Channel (Freshwater Intermittent Drainage 2)	506	~5	0.058/2,535	No
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Freshwater Intermittent Drainage 4	440	2	0.02/869	No
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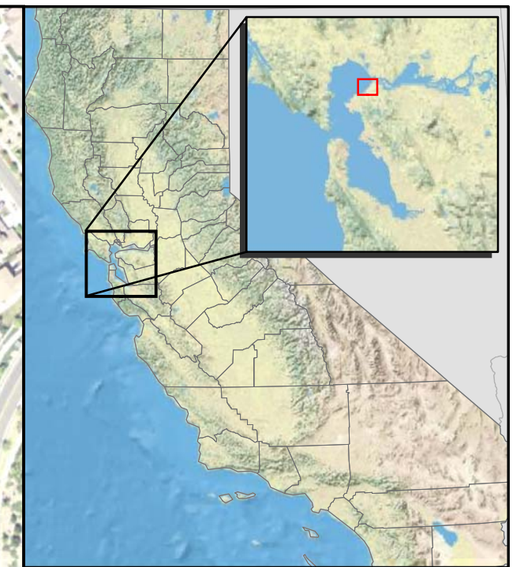

Legend

- Data Points
- Freshwater Intermittent Drainage
- BCDC 100ft Buffer Line
- Project Boundary
- Delineation Area
- Brackish Stream
- Seasonal Wetland
- Freshwater Wetland Swale
- Pickleweed Brackish Marsh
- Cattail Marsh
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Subject to Change

1 in = 200 ft (at tabloid layout)

N

0 20 40 80 Meters

0 100 200 400 Feet

Figure 6-C: Delineation Map

City of Hercules
Hercules Intermodal Transit Center
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources. No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey. Data is State Plane Feet, NAD83 Zone 3

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Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

Photo 1. View looking upstream along Refugio Creek (Brackish Stream 1) (11/10/09).	Photo 2. View looking east along the northern border of Brackish Marsh 1, taken near data point P1. Tree in background is associated with Brackish Marsh 2 (21/08/09).
Photo 3. View looking southwest at Northern Channel. Photo taken near southwest end of Northern Channel (11/10/09).	Photo 4. View looking east along Brackish Stream 2 and Brackish Marsh 4. Photo taken near western project site boundary (12/08/09).

Figure 7-A
Site Photographs

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

Photo 5. View of Seasonal Wetland 1 looking east (12/08/09).	Photo 6. View of Seasonal Wetland looking south. Photo taken near data point P4 (12/08/09).
Photo 7. View of Seasonal Wetland 3 looking southwest (12/08/09).	Photo 8. View of Freshwater Intermittent Drainage 1 looking southeast (upstream) (12/08/09).

Figure 7-B
Site Photographs

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

4.5.1 Wetlands

Cattail Marsh 1

Cattail Marsh 1 (CM 1) is a large wetland feature located in a depression adjacent to the existing Bay Trail, railroad, and San Pablo Bay (Figure 6-A). Vegetation within this feature consists primarily of broadleaf cattail (*Typha latifolia*), with saltgrass and a small amount of creeping wildrye around its perimeter. This feature was inundated at the time of the field visit. Hydrology for this feature likely comes from rainfall and urban runoff from an adjacent residential area. This feature is adjacent to the San Pablo Bay (a traditionally navigable water; TNW). The feature was mapped by the National Wetlands Inventory as PEMC (Palustrine, Emergent, Seasonally Flooded; Figure 5). This feature is likely jurisdictional.

Cattail Marsh 2

Cattail Marsh 2 (CM 2) is a small wetland feature located adjacent to Refugio Creek (Figure 6-B). Vegetation within this feature consists primarily of broadleaf cattail, with a small amount of perennial pepperweed (*Lepidium latifolium*). Soils within this feature appeared to by hydric and the soil was saturated at the surface at the time of the field visit. This feature is adjacent to and drains to Refugio Creek (a relatively permanent water; RPW), which is immediately tributary to the San Pablo Bay (a traditionally navigable water; TNW). This feature is likely jurisdictional.

Cattail Marsh 3

Cattail Marsh 3 (CM 3) is a large wetland feature located adjacent to Refugio Creek, at the southern end of the delineation area (Figure 6-B). This feature was inundated, up to approximately six inches deep at the time of the field visit. Hydrology for this feature likely comes from rainfall, urban runoff from an adjacent residential area, and from seepage from Refugio Creek. Vegetation within this feature consists primarily of broadleaf cattail, with a small amount of curly doc (*Rumex crispus*). Soil within this feature demonstrated a loamy mucky mineral texture and showed evidence of prolonged saturation. This feature is adjacent to and drains to Refugio Creek (a RPW), which is immediately tributary to the San Pablo Bay (a TNW). This feature is likely jurisdictional.

Cattail Marshes 4, 5, 6, and 7

Cattail Marshes 4, 5, 6, and 7 (CM 4, 5, 6, and 7) are large wetland features located near Refugio Creek, at the southern end of the delineation area (Figure 6-B). These features

are in an area that has been restored to wetland in an effort to realign and restore Refugio Creek. Hydrology for these features likely comes from rainfall, urban runoff from an adjacent residential area, and from overflow or seepage from Refugio Creek. Vegetation within these features consists primarily of broadleaf cattail. These features are adjacent to Refugio Creek (a RPW), which is immediately tributary to the San Pablo Bay (a TNW). These features are likely jurisdictional.

Cattail Marsh 8

Cattail Marsh 8 (CM 8) is a wetland feature located adjacent to the Northern Channel (Figure 6-B). It receives hydrology from the Northern Channel. Its hydrology may be augmented by wicking from adjacent surcharge activity. Vegetation within this feature is dominated by broadleaf cattail and alkali bulrush, with saltgrass near its perimeter, and with partial overstory of willow trees. Soil within this feature demonstrated redox dark surface. Oxidized rhizospheres were evident within this feature at the time of the field visit. This feature is directly adjacent to the Northern Channel (a RPW), with flows into Refugio Creek (a RPW), which flows immediately into San Pablo Bay (a TNW). This feature is likely jurisdictional.

Cattail Marsh 9

Cattail Marsh 9 (CM 9) is at the top of a bluff adjacent to a landscaped business park (Figure 6-C). Vegetation within this feature is dominated by broadleaf cattail. Hydrology likely comes from rainfall and runoff from excess landscape-irrigation water. Overflow from this feature likely drains to wetlands along the railroad, which are adjacent to San Pablo Bay. This feature is likely jurisdictional.

Cattail Marsh 10

Cattail Marsh 10 (CM 10) is a large wetland feature located in a widened reach of Freshwater Intermittent Drainage 4 (FID 4). It is located between the BioRad facility and Victoria-by-the-Bay housing development (Figure 6-C). Vegetation within this feature is dominated by broadleaf cattail and alkali bulrush. Hydrology likely comes from rainfall and runoff from adjacent and upstream development. A data point was not taken within this feature as direct access into the feature was difficult and the feature was inundated at the time of the field surveys. This feature is adjacent to FID 4 (a RPW), which is immediately tributary to the San Pablo Bay (a TNW). These features are likely jurisdictional.

Seasonal Wetland 1

Seasonal Wetland 1 (SW 1) is in a landscaped area near Refugio Creek (Figure 6-B). Vegetation within this feature is dominated by rabbitsfoot grass (*Polypogon monspeliensis*) and Italian ryegrass (*Loloium multiflorum*). This feature is likely jurisdictional.

Seasonal Wetlands 2 and 3

Seasonal Wetlands 2 and 3 (SW 2, 3) are wetland features located adjacent to the Northern Channel (Figure 6-B). These two seasonal wetlands receive hydrology from the Northern Channel. The hydrology of SW 2 may be augmented by wicking from adjacent surcharge activity. Vegetation within these features is dominated by Himalaya blackberry (*Rubus armeniacus*) and Italian ryegrass, with an overstory of Arroyo willow trees. These features are directly adjacent to the Northern Channel (a RPW), which flows into Refugio Creek (a RPW), which flows immediately into San Pablo Bay (a TNW). These seasonal wetlands are likely jurisdictional.

Freshwater Wetland Swale 1

Freshwater Wetland Swale 1 (FWS 1) is near the railroad tracks and San Pablo Bay (Figure 6-C). This feature has willow riparian habitat characteristics. Vegetation within this feature includes Arroyo willow (*Salix lasiolepis*), Himalaya blackberry, sedge (*Cyperus eragrostis*), and creeping wildrye. Soil within this feature was depleted below a dark surface and was saturated at three inches below the surface. In addition, drainage patterns were observed within the feature. An approximately three-foot culvert appears to supply runoff from adjacent corporate parks. This is likely the primary source of water. This feature drains to a short freshwater intermittent drainage feature, which drains to a brackish stream (an RPW), that immediately empties into San Pablo Bay (a TNW) through a three foot culvert. This feature is likely jurisdictional.

Pickleweed Brackish Marsh 1

Pickleweed Brackish Marsh (PBM 1) is a marsh feature that receives hydrology from Refugio Creek during high flow and/or high tide. Its hydrology may be augmented by wicking from adjacent surcharge activity. Vegetation within this feature includes pickleweed, Italian ryegrass (*Lolium multiflorum*), and Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*). Soil within the PBM 1 demonstrated redox dark surface characteristics and drift deposits and drainage patterns were evident within this feature at

the time of the field visit. This feature is directly adjacent to Refugio Creek (a RPW), which flows immediately into San Pablo Bay (a TNW) (Figure 6-B). This feature is likely jurisdictional.

Portions of this brackish feature also occur within BCDC jurisdiction within the delineation area. Portions of this feature within 100 feet of the shoreline are within BCDC jurisdiction.

Pickleweed Brackish Marsh 2

Pickleweed Brackish Marsh 2 (PBM 2) is a marsh feature that receives hydrology from the Northern Channel. Its hydrology may be augmented by wicking from adjacent surcharge activity. While this feature contains brackish vegetation, it has a partial overstory of willow trees as well. Vegetation within this feature includes saltgrass, pickleweed, alkali bulrush, and Arroyo willow. Soil within this feature demonstrated redox dark surface. Oxidized rhizospheres were evident within this feature at the time of the field visit. This feature is directly adjacent to the Northern Channel (a RPW), with flows into Refugio Creek (a RPW), which flows immediately into San Pablo Bay (a TNW) (Figure 6-B). This feature is likely jurisdictional.

Pickleweed Brackish Marsh 3

Pickleweed Brackish Marsh 3 (PBM 3) is a marsh feature that receives hydrology from Refugio Creek during high flow and/or high tide. It is in an area that has been restored to wetland in an effort to realign and restore Refugio Creek. Vegetation within this feature consists primarily of pickleweed. This feature is directly adjacent to Refugio Creek (a RPW), which flows immediately into San Pablo Bay (a TNW) (Figure 6-B). This feature is likely jurisdictional.

Pickleweed Brackish Marsh 4

Pickleweed Brackish Marsh 4 (PBM 4) is a brackish marsh that runs along a small brackish stream (BS 2), located on the eastern end of the project site (Figure 6-C). Vegetation within this feature includes pickleweed, saltgrass, alkali bulrush, and creeping wildrye. Soil within this feature demonstrated a depleted matrix and was saturated at seven inches below the surface, with water filling a soil pit to thirteen inches below the surface, at the time of the field visit. South and east of data point P8, the feature is contained within a concrete lining. This feature is adjacent to an RPW that flows

immediately into San Pablo Bay through a three foot culvert. This feature is likely jurisdictional.

Portions of this brackish feature also occur within BCDC jurisdiction within the delineation area. Portions of this feature within 100 feet of the shoreline are within BCDC jurisdiction.

4.5.2 Other Waters of the U.S. (Drainage Features)

Refugio Creek (Brackish Stream 1)

Refugio Creek is a tidally influenced perennial stream that flows directly into San Pablo Bay (Figure 6-B). It was altered in the early 1900s from a natural channel into a straightened, deepened, channeled waterway. At its downstream end, Refugio Creek flows through culverts under a railroad bridge. During high flows, the creek backs up from the culverts. The stream's downstream end is characterized by salt-tolerant plants, such as pickleweed and saltgrass. Its upstream end is characterized by less salt-tolerant plants, such as cattails and common tule (*Schoenoplectus acutus*). Regular tidal influence appears to extend upstream near the confluence with the Northern Channel. Within the project site, the main channel of Refugio Creek ranges from ten to fifteen feet in width. Fluctuation in creek depth from tidal influence creates brackish stream/marsh areas along the banks and flats adjacent to Refugio Creek. Refugio Creek is a RPW that flows directly into San Pablo Bay (a TNW). Refugio Creek is jurisdictional.

Portions of Refugio Creek occur within BCDC jurisdiction. Within the delineation area, approximately 25 linear feet of Refugio Creek are within BCDC jurisdiction.

Brackish Stream 2

Brackish Stream 2 (BS 2) is a brackish stream located on the eastern end of the project site (Figure 6-C). This feature has brackish marsh habitat on both sides. Vegetation within this feature includes pickleweed, saltgrass, alkali bulrush, and creeping wildrye. This feature is approximately two feet wide and had a low flow at the time of the field visit. This feature receives hydrology primarily from rainfall and urban runoff and receives hydrology from FID4 and FWS 1. South and east of data point P8, the feature is contained within a concrete lining. This feature is a small RPW that flows immediately into San Pablo Bay through a three foot culvert. This feature is likely jurisdictional.

Portions of Brackish Stream 2 occur within BCDC jurisdiction. Within the delineation area, approximately 40 linear feet of the feature are within BCDC jurisdiction.

Central Channel (Freshwater Intermittent Drainage 1)

The Central Channel of Refugio Creek is a short feature that drains water from areas south of the project site and flow into Refugio Creek (Figure 6-B). It also appears to provide water for CM 2. This feature is approximately one to two feet in width and contained water at the time of the field survey. Vegetation associated with this feature consists primarily of broadleaf cattail. This drainage feature is a small RPW that flows into Refugio Creek (a RPW), which flows directly into San Pablo Bay (a TNW). This feature is likely jurisdictional.

Northern Channel (Freshwater Intermittent Drainage 2)

The Northern Channel of Refugio Creek is a stream that conveys water from a culvert from the east and flows into Refugio Creek (Figure 6-B). It collects rainfall and runoff from nearby development. During high flows or exceptionally high tides, Refugio Creek may back up into the Northern Channel depositing brackish water into the lower reach of the channel. Vegetation in the Northern Channel supports a mix of brackish plants, such as alkali bulrush; and less-salt-tolerant plants upstream, such as cattails and red willow (*Salix laevigata*). The Northern Channel supports some willow riparian habitat vegetation. It did not have surface flow at the time of the field visit. The Northern Channel is a RPW that flows into Refugio Creek (a RPW), which flows directly into San Pablo Bay (a TNW). Northern Channel is likely jurisdictional.

Freshwater Intermittent Drainage 3

Freshwater Intermittent Drainage (FID 3) is a short feature that connects FWS 1 to BS 2 (Figure 6-C). This feature is approximately 45 feet in length and has a defined bed and bank. This feature does not exhibit brackish vegetation, but has vegetation more consistent with that of FPW 3. This feature is approximately three feet in width and did not contain water at the time of the field visit. This drainage feature is a non-relatively permanent feature that flows into BS 2 (likely a RPW), which flows into San Pablo Bay (a TNW). This feature is likely jurisdictional.

Freshwater Intermittent Drainage 4

Freshwater Intermittent Drainage (FID 4) is a feature that runs through Cattail Marsh 10 (Figure 6-C). It drains rainfall and runoff from adjacent and upstream development. In its downstream reach, it becomes tidally influenced. The tidally influenced reach is designated as Brackish Stream 2. This drainage feature is a RPW that, through Brackish Stream 2, flows into San Pablo Bay (a TNW). This feature is likely jurisdictional.

5.0 SUMMARY

HDR has conducted a jurisdictional determination of all potential waters of the U.S. including wetlands occurring within the Hercules ITC project area, excluding those areas previously delineated and verified. All areas within the delineation area were assessed to the degree necessary to determine the presence or absence of jurisdictional wetlands and other waters of the U.S. per the guidelines established by the USACE. All wetlands and other waters detected within the delineation area and discussed in Section 4.5 of this report are believed to be jurisdictional. These jurisdictional features occupy a total of 4.94 acres in the delineation area. The results of this jurisdictional determination are preliminary until verified by the USACE.

Table 1. Acreages of Potentially Jurisdictional Wetlands and Other Waters of the U.S. in the Delineation Area

Feature	Length (ft)	Ave Width (ft)	*Area (acres)/ Square Feet	**BCDC Jurisdictional (Yes,No/acres)
Wetland Features				
Cattail Marsh 1	N/A	N/A	0.62/27,007	No
Cattail Marsh 2	N/A	N/A	0.02/871	No
Cattail Marsh 3	N/A	N/A	0.34/14,810	No
Cattail Marsh 4	N/A	N/A	0.45/19,602	No
Cattail Marsh 5	N/A	N/A	0.01/305	No
Cattail Marsh 6	N/A	N/A	0.07/3,049	No
Cattail Marsh 7	N/A	N/A	0.49/21,344	No
Cattail Marsh 8	N/A	N/A	0.10/4,356	No
Cattail Marsh 9	N/A	N/A	0.07/3,049	No
Cattail Marsh 10	N/A	N/A	0.85/367,026	No
Seasonal Wetland 1	N/A	N/A	0.01/436	No
Seasonal Wetland 2	N/A	N/A	0.03/1,307	No
Seasonal Wetland 3	N/A	N/A	0.06/2,614	No
Freshwater Wetland Swale 1	N/A	N/A	0.32/13,939	No
Pickleweed Brackish Marsh 1	N/A	N/A	0.44/19,166	Yes/0.011
Pickleweed Brackish Marsh 2	N/A	N/A	0.05/2,178	No
Pickleweed Brackish Marsh 3	N/A	N/A	0.11/4,792	No
Pickleweed Brackish Marsh 4	N/A	N/A	0.03/1,307	Yes/0.006
Wetland Feature Subtotal	N/A	N/A	**4.07/177,159**	**0.017**
Other Waters of the U.S.				
Refugio Creek (Brackish Stream 1)	1,186	~14	0.48/20,909	Yes/0.008
Brackish Stream 2	130	2	0.01/261	Yes/0.001
Freshwater Intermittent Drainage 1	68	1	0.00/87	No
Northern Channel (Freshwater Intermittent Drainage 2)	506	~5	0.06/2,614	No
Freshwater Intermittent Drainage 3	18	3	0.00/44	No
Freshwater Intermittent Drainage 4	440	2	0.02/871	No

Other Waters of the U.S. Subtotal	**2,348**	N/A	**0.57/24,786**	**0.009**
Total Acreage of Potentially Jurisdictional Wetlands and Other Waters of the U.S. in the Delineation Area			**4.64/201,945**	**0.026**

* Acreage calculations were rounded to the nearest hundredth of an acre.

** All BCDC jurisdictional areas were also Corps jurisdictional. Acreage figures are included in Corps jurisdictional acreages. For example, Pickleweed Brackish Marsh 1 totals 0.44 acres, 0.011 of which are BCDC jurisdictional.

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APPENDIX A

Indicator Status of Plant Species Observed at Data Points

Scientific Name	Common Name	Indicator Status
Avena fatua	wild oat	NI
Baccharis pilularis	coyote brush	NI
Bolboschoenus maritimus	alkali bulrush	OBL
Brassica nigra	black mustard	NI
Bromus diandrus	rip gut brome	NI
Bromus hordeaceus	soft chess	FACU-
Carduus pycnocephalus	Italian thistle	NI
Cyperus eragrostis	tall flatsedge	FACW
Conium maculatum	poison hemlock	FACW
Distichlis spicata	Saltgrass	FACW
Geranium molle	geranium	NI
Frankenia salina	alkali heath	FACW+
Holcus lanatus	common velvetgrass	FAC
Hordeum marinum ssp. guessoneanum	Mediterranean barley	FAC
Juncus balticus	Baltic rush	OBL
Lemna minor	common duckweed	OBL
Lepidium latifolium	broadleaved pepperweed	FACW
Leymus triticoides	creeping wildrye	FAC+
Lolium multiflorum	Italian rye grass	FAC
Picris echioides	bristly oxtongue	FAC
Raphanus sativus	radish	NI
Rubus armeniacus	Himalaya blackberry	FACW
Rumex crispus	curly dock	FACW-
Salix laevigata	red willow	FACW
Salix lasiolepis	arroyo willow	FACW
Sarcocornia pacifica	pickleweed	OBL
Trifolium hirtum	rose clover	NI
Typha latifolia	broadleaf cattail	OBL
Vicia villosa	vetch	FACU

APPENDIX B

Data Sheets

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site:	Hercules Intermodal Transit Center	City/County:	Hercules, Contra Costa County	Sampling Date:	12/08/2009
Applicant/Owner:	City of Hercules		State: CA	Sampling Point:	P1
Investigator(s):	Sean Marquis, Mark Ashenfelter	Section, Township, Range:			
Landform (hillslope, terrace, etc.):	Floodplain	Local relief (concave, convex, none):	Concave	Slope (%):	<5%
Subregion (LRR):	LRRC	Lat: 38° 01' 10.30" N	Long: 122° 16' 56.21" W	Datum:	WGS 84
Soil Map Unit Name:	Clear Lake Clay		NWI classification:	U	

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐		
Hydric Soil Present?	Yes ☒	No ☐	**Is the Sampling Area within a Wetland?**	**Yes ☒ No ☐**
Wetland Hydrology Present?	Yes ☒	No ☐		

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
		= Total Cover	
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	
Herb Stratum			
1. **Sarcocornia pacifica**	35	Yes	OBL
2. **Hordeum marinum ssp. gussoneanum**	4	No	FAC
3. **Lolium multiflorum**	2	No	FAC
4.			
5.			
6.			
7.			
8.			
	41	= Total Cover	
Woody Vine Stratum			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum: **59** | % Cover of Biotic Crust:

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	**1**	(A)
Total Number of Dominant Species Across All Strata:	**1**	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	**100**	(A/B)

Prevalence Index worksheet:

Total %Cover of :	Multiply by:
OBL species	x1 =
FACW species	x2 =
FAC species	x3 =
FACU species	x4 =
UPL species	x5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes ☒ No ☐**

Remarks:

Project Site: Hercules Intermodal Transit Center

SOIL

Sampling Point: P1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-13	10 YR 3/1	97	5 YR 4/6	3	C	RC	Silty Clay	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) **(LRR C)**
- ☐ 1 cm Muck (A9) **(LRR D)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☒ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR C)**
- ☐ 2 cm Muck (A10) **(LRR B)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) **(Nonriverine)**
- ☐ Sediment Deposits (B2) **(Nonriverine)**
- ☐ Drift Deposits (B3) **(Nonriverine)**
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) **(Riverine)**
- ☐ Sediment Deposits (B2) **(Riverine)**
- ☒ Drift Deposits (B3) **(Riverine)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☒ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):
Water Table Present?	Yes	☐	No	☒	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site:	Hercules Intermodal Transit Center	City/County:	Hercules, Contra Costa County	Sampling Date:	12/08/2009
Applicant/Owner:	City of Hercules		State: CA	Sampling Point:	P2
Investigator(s):	Sean Marquis, Mark Ashenfelter	Section, Township, Range:			
Landform (hillslope, terrace, etc.):	Hillslope	Local relief (concave, convex, none):	Concave	Slope (%):	5%
Subregion (LRR):	LRRC	Lat: 38° 01' 10.55" N	Long: 122° 16' 56.11" W	Datum:	WGS 84
Soil Map Unit Name:	Clear Lake Clay		NWI classification:	U	

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒		
Hydric Soil Present?	Yes ☐	No ☒	**Is the Sampling Area within a Wetland?**	**Yes ☐ No ☒**
Wetland Hydrology Present?	Yes ☐	No ☒		

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
5.			
6.			
7.			
8.			
		= Total Cover	
Sapling/Shrub Stratum			
6.			
7.			
8.			
9.			
10.			
		= Total Cover	
Herb Stratum			
9. **Avena fatua**	30	Yes	NI
10. **Lolium multiflorum**	20	Yes	FAC
11. **Bromus diandrus**	16	Yes	NI
12. **Trifolium hirtum**	5	No	NI
13. **Geranium molle**	3	No	NI
14. **Hordeum marinum ssp. gussoneanum**	2	No	FAC
15. **Brassica nigra**	2	No	NI
16.			
	78	= Total Cover	
Woody Vine Stratum			
3.			
4.			
	78	= Total Cover	

% Bare Ground in Herb Stratum: **25** | % Cover of Biotic Crust:

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	**1**	(A)
Total Number of Dominant Species Across All Strata:	**3**	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	**33**	(A/B)

Prevalence Index worksheet:

Total %Cover of :		Multiply by:	
OBL species		x1 =	
FACW species		x2 =	
FAC species	**22**	x3 =	**66**
FACU species		x4 =	
UPL species	**56**	x5 =	**280**
Column Totals:	**78** (A)		**346** (B)

Prevalence Index = B/A = **4.4**

Hydrophytic Vegetation Indicators:

Dominance Test is >50%

Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** ☐ **No** ☒

Remarks:

Project Site: City of Hercules Intermodal Transit Center

SOIL

Sampling Point: P2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	10 YR 4/3	95					Silty Clay	
0-14	10 YR 2/1	3					Silty Clay	
0-14	10 YR 5/6	2					Sand	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) **(LRR C)**
- ☐ 1 cm Muck (A9) **(LRR D)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR C)**
- ☐ 2 cm Muck (A10) **(LRR B)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks: Appears to be some fill added to soil.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) **(Nonriverine)**
- ☐ Sediment Deposits (B2) **(Nonriverine)**
- ☐ Drift Deposits (B3) **(Nonriverine)**
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) **(Riverine)**
- ☐ Sediment Deposits (B2) **(Riverine)**
- ☐ Drift Deposits (B3) **(Riverine)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):
Water Table Present?	Yes	☐	No	☒	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site:	Hercules Intermodal Transit Center	City/County:	Hercules, Contra Costa County	Sampling Date:	12/08/2009
Applicant/Owner:	City of Hercules		State: CA	Sampling Point:	P3
Investigator(s):	Sean Marquis, Mark Ashenfelter	Section, Township, Range:			
Landform (hillslope, terrace, etc.):	Floodplain	Local relief (concave, convex, none):	Convex	Slope (%):	<5%
Subregion (LRR):	LRRC	Lat: 38° 01' 10.57" N	Long: 122° 16' 57.79" W	Datum:	WGS 84
Soil Map Unit Name:	Clear Lake Clay		NWI classification:	U	

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒		
Hydric Soil Present?	Yes ☐	No ☒	**Is the Sampling Area within a Wetland?**	**Yes ☐ No ☒**
Wetland Hydrology Present?	Yes ☐	No ☒		

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
9.			
10.			
11.			
12.			
		= Total Cover	
Sapling/Shrub Stratum			
11. **Baccharis pilularis**	4	Yes	NI
12.			
13.			
14.			
15.			
	4	= Total Cover	
Herb Stratum			
17. **Avena fatua**	20	Yes	NI
18. **Carduus pycnocephalus**	2	No	NI
19. **Juncus balticus**	3	No	OBL
20. **Holcus lanatus**	1	No	FAC
21. **Raphanus sativus**	1	No	NI
22. **Bromus diandrus**	1	No	NI
23. **Geranium molle**	1	No	NI
24.			
	29	= Total Cover	
Woody Vine Stratum			
5.			
6.			
	33	= Total Cover	

% Bare Ground in Herb Stratum: **70** | % Cover of Biotic Crust:

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	**0**	(A)
Total Number of Dominant Species Across All Strata:	**2**	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	**0**	(A/B)

Prevalence Index worksheet:

	Total %Cover of :		Multiply by:	
OBL species	**3**	x1 =	**3**	
FACW species		x2 =		
FAC species	**1**	x3 =	**3**	
FACU species		x4 =		
UPL species	**29**	x5 =	**145**	
Column Totals:	**33**	(A)	**151**	(B)

Prevalence Index = B/A = **4.6**

Hydrophytic Vegetation Indicators:

Dominance Test is >50%

Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present?	**Yes**	☐	**No**	☒

Remarks:

Project Site: City of Hercules Intermodal Transit Center

SOIL

Sampling Point: P3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10 YR 3/2	70						
12-14	2.5 Y 5/2	30						

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) **(LRR C)**
- ☐ 1 cm Muck (A9) **(LRR D)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR C)**
- ☐ 2 cm Muck (A10) **(LRR B)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks: Soil appears to be fill.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) **(Nonriverine)**
- ☐ Sediment Deposits (B2) **(Nonriverine)**
- ☐ Drift Deposits (B3) **(Nonriverine)**
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) **(Riverine)**
- ☐ Sediment Deposits (B2) **(Riverine)**
- ☐ Drift Deposits (B3) **(Riverine)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):
Water Table Present?	Yes	☐	No	☒	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site:	Hercules Intermodal Transit Center	City/County:	Hercules, Contra Costa County	Sampling Date:	12/08/2009
Applicant/Owner:	City of Hercules		State: CA	Sampling Point:	P4
Investigator(s):	Sean Marquis, Mark Ashenfelter	Section, Township, Range:			
Landform (hillslope, terrace, etc.):	Lowland	Local relief (concave, convex, none):	Concave	Slope (%):	<1%
Subregion (LRR):	LRRC	Lat: 38° 01' 09.12" N	Long: 122° 16' 55.56" W	Datum:	WGS 84
Soil Map Unit Name:	Clear Lake Clay		NWI classification:	U	

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐		
Hydric Soil Present?	Yes ☒	No ☐	**Is the Sampling Area within a Wetland?**	**Yes ☒ No ☐**
Wetland Hydrology Present?	Yes ☒	No ☐		

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
13.			
14.			
15.			
16.			
		= Total Cover	
Sapling/Shrub Stratum			
16.			
17.			
18.			
19.			
20.			
		= Total Cover	
Herb Stratum			
25. **Typha latifolia**	35	Yes	OBL
26. **Rumex crispus**	1	No	FACW
27.			
28.			
29.			
30.			
31.			
32.			
	36	= Total Cover	
Woody Vine Stratum			
7.			
8.			
	36	= Total Cover	

% Bare Ground in Herb Stratum: **64** | % Cover of Biotic Crust:

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	**1**	(A)
Total Number of Dominant Species Across All Strata:	**1**	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	**100**	(A/B)

Prevalence Index worksheet:

Total %Cover of :	Multiply by:
OBL species	x1 =
FACW species	x2 =
FAC species	x3 =
FACU species	x4 =
UPL species	x5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes ☒ No ☐**

Remarks:

Project Site: City of Hercules Intermodal Transit Center

SOIL

Sampling Point: P4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (Moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-2	10 YR 4/1	100					Mucky	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) **(LRR C)**
- ☐ 1 cm Muck (A9) **(LRR D)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☒ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR C)**
- ☐ 2 cm Muck (A10) **(LRR B)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☒ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) **(Nonriverine)**
- ☐ Sediment Deposits (B2) **(Nonriverine)**
- ☐ Drift Deposits (B3) **(Nonriverine)**
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) **(Riverine)**
- ☐ Sediment Deposits (B2) **(Riverine)**
- ☐ Drift Deposits (B3) **(Riverine)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	☒	No	☐	Depth (inches): 6
Water Table Present?	Yes	☐	No	☒	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site:	Hercules Intermodal Transit Center	City/County:	Hercules, Contra Costa County	Sampling Date:	12/08/2009
Applicant/Owner:	City of Hercules		State: CA	Sampling Point:	P5
Investigator(s):	Sean Marquis, Mark Ashenfelter	Section, Township, Range:			
Landform (hillslope, terrace, etc.):	Lowland	Local relief (concave, convex, none):	Concave	Slope (%):	<5%
Subregion (LRR):	LRRC	Lat: 38° 01' 10.56" N	Long: 122° 17' 01.43" W	Datum:	WGS 84
Soil Map Unit Name:	Clear Lake Clay		NWI classification:	U	

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	☒	No	☐			
Hydric Soil Present?	Yes	☒	No	☐	**Is the Sampling Area within a Wetland?**	**Yes** ☒	**No** ☐
Wetland Hydrology Present?	Yes	☒	No	☐			

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
17.			
18.			
19.			
20.			
		= Total Cover	
Sapling/Shrub Stratum			
21.			
22.			
23.			
24.			
25.			
		= Total Cover	
Herb Stratum			
33. **Typha latifolia**	55	Yes	OBL
34. **Lepidium latifolium**	2	No	FACW
35.			
36.			
37.			
38.			
39.			
40.			
		= Total Cover	
Woody Vine Stratum			
9.			
10.			
	57	= Total Cover	

% Bare Ground in Herb Stratum | **43** | % Cover of Biotic Crust

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	**1**	(A)
Total Number of Dominant Species Across All Strata:	**1**	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	**100**	(A/B)

Prevalence Index worksheet:

Total %Cover of :	Multiply by:
OBL species	x1 =
FACW species	x2 =
FAC species	x3 =
FACU species	x4 =
UPL species	x5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present?	**Yes**	☒	**No**	☐

Remarks:

Project Site: City of Hercules Intermodal Transit Center

SOIL

Sampling Point: P5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (Moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) **(LRR C)**
- ☐ 1 cm Muck (A9) **(LRR D)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR C)**
- ☐ 2 cm Muck (A10) **(LRR B)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks: Based on similarity to vegetation and hydrology at P4, hydric soils are assumed

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1) **(Nonriverine)**
- ☐ Sediment Deposits (B2) **(Nonriverine)**
- ☐ Drift Deposits (B3) **(Nonriverine)**
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) **(Riverine)**
- ☐ Sediment Deposits (B2) **(Riverine)**
- ☐ Drift Deposits (B3) **(Riverine)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	
Water Table Present?	Yes	☒	No	☐	Depth (inches):	0
Saturation Present? (includes capillary fringe)	Yes	☒	No	☐	Depth (inches):	0

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Soil saturated to surface.

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site:	Hercules Intermodal Transit Center	City/County:	Hercules, Contra Costa County	Sampling Date:	12/08/2009
Applicant/Owner:	City of Hercules		State: CA	Sampling Point:	P6
Investigator(s):	Sean Marquis, Mark Ashenfelter	Section, Township, Range:			
Landform (hillslope, terrace, etc.):	Floodplain	Local relief (concave, convex, none):	Convex	Slope (%):	<5%
Subregion (LRR):	LRRC	Lat: 38° 01' 10.83" N	Long: 122° 16' 51.16" W	Datum:	WGS 84
Soil Map Unit Name:	Clear Lake Clay		NWI classification:	U	

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐		
Hydric Soil Present?	Yes ☒	No ☐	**Is the Sampling Area within a Wetland?**	**Yes ☒ No ☐**
Wetland Hydrology Present?	Yes ☒	No ☐		

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
21. **Salix laevigata**	7	Yes	FACW
22.			
23.			
24.			
		= Total Cover	
Sapling/Shrub Stratum			
26.			
27.			
28.			
29.			
30.			
		= Total Cover	
Herb Stratum			
41. **Distichlis spicata**	60	Yes	FACW
42. **Bolboschoenus maritimus**	15	No	OBL
43. **Typha latifolia**	5	No	OBL
44. **Lolium multiflorum**	3	No	FAC
45. **Bromus diandrus**	1	No	NI
46. **Geranium molle**	1	No	NI
47.			
48.			
	85	= Total Cover	
Woody Vine Stratum			
11.			
12.			
		= Total Cover	

% Bare Ground in Herb Stratum: **15** | % Cover of Biotic Crust:

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	**1**	(A)
Total Number of Dominant Species Across All Strata:	**1**	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	**100**	(A/B)

Prevalence Index worksheet:

Total %Cover of :	Multiply by:
OBL species	x1 =
FACW species	x2 =
FAC species	x3 =
FACU species	x4 =
UPL species	x5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

Prevalence Index is $\leq 3.0^1$

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes ☒ No ☐**

Remarks:

Project Site: City of Hercules Intermodal Transit Center

SOIL

Sampling Point: P6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10 YR 3/1	98	7.5 YR 4/6	2	C	RC	Clay	
4-15	10 YR 5/3	52	7.5 YR 4/6	7	C	PL	Clay	
4-15	10 YR 3/1	40					Loamy Clay	
4-15	Gley1 4/5G	1						

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) **(LRR C)**
- ☐ 1 cm Muck (A9) **(LRR D)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☒ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR C)**
- ☐ 2 cm Muck (A10) **(LRR B)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) **(Nonriverine)**
- ☐ Sediment Deposits (B2) **(Nonriverine)**
- ☐ Drift Deposits (B3) **(Nonriverine)**
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) **(Riverine)**
- ☐ Sediment Deposits (B2) **(Riverine)**
- ☐ Drift Deposits (B3) **(Riverine)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☒ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):
Water Table Present?	Yes	☐	No	☒	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site:	Hercules Intermodal Transit Center	City/County:	Hercules, Contra Costa County	Sampling Date:	12/08/2009
Applicant/Owner:	City of Hercules		State: CA	Sampling Point:	P7
Investigator(s):	Sean Marquis, Mark Ashenfelter	Section, Township, Range:			
Landform (hillslope, terrace, etc.):	Lowland	Local relief (concave, convex, none):	Concave	Slope (%):	5%
Subregion (LRR):	LRRC	Lat: 38° 01' 41.42" N	Long: 122° 16' 36.92" W	Datum:	WGS 84
Soil Map Unit Name:	Clear Lake Clay		NWI classification:	U	

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐		
Hydric Soil Present?	Yes ☒	No ☐	**Is the Sampling Area within a Wetland?**	**Yes ☒ No ☐**
Wetland Hydrology Present?	Yes ☒	No ☐		

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
25.			
26.			
27.			
28.			
		= Total Cover	
Sapling/Shrub Stratum			
31.			
32.			
33.			
34.			
35.			
		= Total Cover	
Herb Stratum			
49. **Sarcocornia pacifica**	20	Yes	OBL
50. **Distichlis spicata**	20	Yes	FACW
51. **Bolboschoenus maritimus**	10	No	OBL
52. **Leymus triticoides**	7	No	FAC
53.			
54.			
55.			
56.			
	57	= Total Cover	
Woody Vine Stratum			
13.			
14.			
	57	= Total Cover	

% Bare Ground in Herb Stratum: **43** | % Cover of Biotic Crust:

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	**2**	(A)
Total Number of Dominant Species Across All Strata:	**2**	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	**100**	(A/B)

Prevalence Index worksheet:

Total %Cover of :	Multiply by:
OBL species	x1 =
FACW species	x2 =
FAC species	x3 =
FACU species	x4 =
UPL species	x5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** ☒ **No** ☐

Remarks:

Project Site: City of Hercules Intermodal Transit Center

SOIL

Sampling Point: P7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10 YR 4/2	100					Loamy clay	
3-11	Gley1 2.5/N	99					Loamy clay	
3-11	Gley1 4/5GY	1					Loamy clay	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) **(LRR C)**
- ☐ 1 cm Muck (A9) **(LRR D)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☒ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR C)**
- ☐ 2 cm Muck (A10) **(LRR B)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1) **(Nonriverine)**
- ☐ Sediment Deposits (B2) **(Nonriverine)**
- ☐ Drift Deposits (B3) **(Nonriverine)**
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) **(Riverine)**
- ☐ Sediment Deposits (B2) **(Riverine)**
- ☐ Drift Deposits (B3) **(Riverine)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☒ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	
Water Table Present?	Yes	☒	No	☐	Depth (inches):	13
Saturation Present? (includes capillary fringe)	Yes	☒	No	☐	Depth (inches):	7

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site:	Hercules Intermodal Transit Center	City/County:	Hercules, Contra Costa County	Sampling Date:	12/08/2009
Applicant/Owner:	City of Hercules		State: CA	Sampling Point:	P8
Investigator(s):	Sean Marquis, Mark Ashenfelter	Section, Township, Range:			
Landform (hillslope, terrace, etc.):	Hillslope	Local relief (concave, convex, none):	Convex	Slope (%):	5%
Subregion (LRR):	LRRC	Lat: 38° 01' 41.29" N	Long: 122° 16' 36.67" W	Datum:	WGS 84
Soil Map Unit Name:	Clear Lake Clay		NWI classification:	U	

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒		
Hydric Soil Present?	Yes ☐	No ☐	**Is the Sampling Area within a Wetland?**	**Yes** ☐ **No** ☐
Wetland Hydrology Present?	Yes ☐	No ☐		

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
29.			
30.			
31.			
32.			
		= Total Cover	
Sapling/Shrub Stratum			
36. **Baccharis pilularis**	2	Yes	NI
37.			
38.			
39.			
40.			
		= Total Cover	
Herb Stratum			
57. **Bromus diandrus**	18	Yes	NI
58. **Lolium multiflorum**	5	No	FAC
59. **Leymus triticoides**	4	No	FAC
60. **Frankenia salina**	4	No	FACW
61. **Carduus pycnocephalus**	3	No	NI
62.			
63.			
64.			
	34	= Total Cover	
Woody Vine Stratum			
15.			
16.			
	36	= Total Cover	

% Bare Ground in Herb Stratum: **64** | % Cover of Biotic Crust:

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	**0**	(A)
Total Number of Dominant Species Across All Strata:	**2**	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	**0**	(A/B)

Prevalence Index worksheet:

Total %Cover of :		Multiply by:	
OBL species		x1 =	
FACW species	**4**	x2 =	**8**
FAC species	**9**	x3 =	**27**
FACU species		x4 =	
UPL species	**23**	x5 =	**115**
Column Totals:	**36** (A)		**150** (B)

Prevalence Index = B/A = **4.2**

Hydrophytic Vegetation Indicators:

Dominance Test is >50%

Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present?	**Yes**	☐	**No**	☒

Remarks:

Project Site: City of Hercules Intermodal Transit Center

SOIL

Sampling Point: P8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10 YR 4/3	100					Sand	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) **(LRR C)**
- ☐ 1 cm Muck (A9) **(LRR D)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR C)**
- ☐ 2 cm Muck (A10) **(LRR B)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) **(Nonriverine)**
- ☐ Sediment Deposits (B2) **(Nonriverine)**
- ☐ Drift Deposits (B3) **(Nonriverine)**
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) **(Riverine)**
- ☐ Sediment Deposits (B2) **(Riverine)**
- ☐ Drift Deposits (B3) **(Riverine)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	☐	No	☐	Depth (inches):
Water Table Present?	Yes	☐	No	☐	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	☐	No	☐	Depth (inches):

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site:	Hercules Intermodal Transit Center	City/County:	Hercules, Contra Costa County	Sampling Date:	12/08/2009
Applicant/Owner:	City of Hercules		State: CA	Sampling Point:	P9
Investigator(s):	Sean Marquis, Mark Ashenfelter	Section, Township, Range:			
Landform (hillslope, terrace, etc.):	Lowland	Local relief (concave, convex, none):	Concave	Slope (%):	<5%
Subregion (LRR):	LRRC	Lat: 38° 01' 40.68" N	Long: 122° 16' 37.23" W	Datum:	WGS 84
Soil Map Unit Name:	Clear Lake Clay		NWI classification:	U	

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	☒	No	☐			
Hydric Soil Present?	Yes	☒	No	☐	**Is the Sampling Area within a Wetland?**	**Yes** ☒	**No** ☐
Wetland Hydrology Present?	Yes	☒	No	☐			

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
33. Salix lasiolepis	30	Yes	FACW
34.			
35.			
36.			
		= Total Cover	
Sapling/Shrub Stratum			
41.			
42.			
43.			
44.			
45.			
		= Total Cover	
Herb Stratum			
65. **Leymus triticoides**	10	Yes	FAC
66. **Cyperus eragrostis**	2	No	FACW
67. **Avena fatua**	1	No	NI
68.			
69.			
70.			
71.			
72.			
	13	= Total Cover	
Woody Vine Stratum			
17. **Rubus armeniacus**	2	Yes	FACW
18.			
		= Total Cover	

% Bare Ground in Herb Stratum: **87** % Cover of Biotic Crust:

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	**3**	(A)
Total Number of Dominant Species Across All Strata:	**3**	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	**100**	(A/B)

Prevalence Index worksheet:

Total %Cover of :	Multiply by:
OBL species	x1 =
FACW species	x2 =
FAC species	x3 =
FACU species	x4 =
UPL species	x5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present?	**Yes**	☒	**No**	☐

Remarks:

Project Site: City of Hercules Intermodal Transit Center

SOIL

Sampling Point: P9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10 YR 2/1	100					Loam	
3-12	2.5 Y 4/2	97	7.5 YR 4/6	3	C	PL	Sandy clay	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) **(LRR C)**
- ☐ 1 cm Muck (A9) **(LRR D)**
- ☒ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR C)**
- ☐ 2 cm Muck (A10) **(LRR B)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☒ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) **(Nonriverine)**
- ☐ Sediment Deposits (B2) **(Nonriverine)**
- ☐ Drift Deposits (B3) **(Nonriverine)**
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) **(Riverine)**
- ☐ Sediment Deposits (B2) **(Riverine)**
- ☐ Drift Deposits (B3) **(Riverine)**
- ☒ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☒ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	
Water Table Present?	Yes	☒	No	☐	Depth (inches):	3
Saturation Present? (includes capillary fringe)	Yes	☒	No	☐	Depth (inches):	3

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site:	Hercules Intermodal Transit Center	City/County:	Hercules, Contra Costa County	Sampling Date:	12/08/2009
Applicant/Owner:	City of Hercules		State: CA	Sampling Point:	P10
Investigator(s):	Sean Marquis, Mark Ashenfelter	Section, Township, Range:			
Landform (hillslope, terrace, etc.):	Hillslope	Local relief (concave, convex, none):	Convex	Slope (%):	<5%
Subregion (LRR):	LRRC	Lat: 38° 01' 40.72" N	Long: 122° 16' 37.33" W	Datum:	WGS 84
Soil Map Unit Name:	Clear Lake Clay			NWI classification:	U

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒		
Hydric Soil Present?	Yes ☐	No ☒	**Is the Sampling Area within a Wetland?**	**Yes ☐ No ☒**
Wetland Hydrology Present?	Yes ☐	No ☒		

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
37. Salix lasiolepis	8	Yes	FACW
38.			
39.			
40.			
	8	= Total Cover	
Sapling/Shrub Stratum			
46. **Baccharis pilularis**	15	Yes	NI
47.			
48.			
49.			
50.			
	15	= Total Cover	
Herb Stratum			
73. **Leymus triticoides**	15	Yes	FAC
74. **Avena fatua**	10	Yes	NI
75. **Bromus diandrus**	5	No	NI
76. **Vicia villosa**	5	No	NI
77. **Bromus hordeaceus**	3	No	FACU
78. **Geranium molle**	3	No	NI
79. **Lolium multiflorum**	1	No	FAC
80.			
	42	= Total Cover	
Woody Vine Stratum			
19.			
20.			
		= Total Cover	

% Bare Ground in Herb Stratum | % Cover of Biotic Crust

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	**2**	(A)
Total Number of Dominant Species Across All Strata:	**4**	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	**50**	(A/B)

Prevalence Index worksheet:

Total %Cover of :			Multiply by:	
OBL species			x1 =	
FACW species	**8**		x2 =	**16**
FAC species	**16**		x3 =	**48**
FACU species	**3**		x4 =	**12**
UPL species	**38**		x5 =	**190**
Column Totals:	**65**	(A)		**266** (B)

Prevalence Index = B/A = **4.1**

Hydrophytic Vegetation Indicators:

Dominance Test is >50%

Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present?	**Yes**	☐	**No**	☒

Remarks:

Project Site: City of Hercules Intermodal Transit Center

SOIL

Sampling Point: P10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-13	2.5 Y 5/3	90	10 YR 4/6	1	C	PL	Loamy clay	
0-13	10 YR 2/1	9					Loamy clay	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) **(LRR C)**
- ☐ 1 cm Muck (A9) **(LRR D)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR C)**
- ☐ 2 cm Muck (A10) **(LRR B)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) **(Nonriverine)**
- ☐ Sediment Deposits (B2) **(Nonriverine)**
- ☐ Drift Deposits (B3) **(Nonriverine)**
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) **(Riverine)**
- ☐ Sediment Deposits (B2) **(Riverine)**
- ☐ Drift Deposits (B3) **(Riverine)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):
Water Table Present?	Yes	☐	No	☒	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site:	Hercules Intermodal Transit Center	City/County:	Hercules, Contra Costa County	Sampling Date:	12/08/2009
Applicant/Owner:	City of Hercules		State: CA	Sampling Point:	P11
Investigator(s):	Sean Marquis, Mark Ashenfelter	Section, Township, Range:			
Landform (hillslope, terrace, etc.):	Hillslope	Local relief (concave, convex, none):	Convex	Slope (%):	5%
Subregion (LRR):	LRRC	Lat: 38° 01' 37.85" N	Long: 122° 16' 40.39" W	Datum:	WGS 84
Soil Map Unit Name:	Tierra Loam, 10-30% Slopes		NWI classification:	U	

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐		
Hydric Soil Present?	Yes ☐	No ☒	**Is the Sampling Area within a Wetland?**	**Yes ☐ No ☒**
Wetland Hydrology Present?	Yes ☐	No ☒		

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
41.			
42.			
43.			
44.			
		= Total Cover	
Sapling/Shrub Stratum			
51.			
52.			
53.			
54.			
55.			
		= Total Cover	
Herb Stratum			
81. **Leymus triticoides**	60	Yes	FAC
82. **Avena fatua**	7	No	NI
83. **Vicia villosa**	5	No	NI
84. **Geranium molle**	4	No	NI
85.			
86.			
87.			
88.			
	76	= Total Cover	
Woody Vine Stratum			
21.			
22.			
		= Total Cover	

% Bare Ground in Herb Stratum | % Cover of Biotic Crust

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	**1**	(A)
Total Number of Dominant Species Across All Strata:	**1**	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	**100**	(A/B)

Prevalence Index worksheet:

Total %Cover of :	Multiply by:
OBL species	x1 =
FACW species	x2 =
FAC species	x3 =
FACU species	x4 =
UPL species	x5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present?	**Yes**	☒	**No**	☐

Remarks: **25**

Project Site: City of Hercules Intermodal Transit Center

SOIL

Sampling Point: P11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10 YR 3/2	100					Clay loam	
4-7	2.5 Y 4/2	99	7.5 YR 4/6	1	C	PL	Clay loam	
7-14	10 YR 2/1	100					Clay loam	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) **(LRR C)**
- ☐ 1 cm Muck (A9) **(LRR D)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR C)**
- ☐ 2 cm Muck (A10) **(LRR B)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks: Dark soil color typical of soil series (Tierra Loam), indicating dark parent material, rather than depleted matrix

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) **(Nonriverine)**
- ☐ Sediment Deposits (B2) **(Nonriverine)**
- ☐ Drift Deposits (B3) **(Nonriverine)**
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) **(Riverine)**
- ☐ Sediment Deposits (B2) **(Riverine)**
- ☐ Drift Deposits (B3) **(Riverine)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):
Water Table Present?	Yes	☐	No	☒	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site:	Hercules Intermodal Transit Center	City/County:	Hercules, Contra Costa County	Sampling Date:	12/08/2009
Applicant/Owner:	City of Hercules		State: CA	Sampling Point:	P12
Investigator(s):	Sean Marquis, Mark Ashenfelter	Section, Township, Range:			
Landform (hillslope, terrace, etc.):	Hillslope	Local relief (concave, convex, none):	Convex	Slope (%):	<5%
Subregion (LRR):	LRRC	Lat: 38° 01' 37.89" N	Long: 122° 16' 40.93" W	Datum:	WGS 84
Soil Map Unit Name:	Tierra Loam, 10-30% Slopes		NWI classification:	U	

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒		
Hydric Soil Present?	Yes ☐	No ☒	**Is the Sampling Area within a Wetland?**	**Yes ☐ No ☒**
Wetland Hydrology Present?	Yes ☐	No ☒		

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
45.			
46.			
47.			
48.			
		= Total Cover	
Sapling/Shrub Stratum			
56.			
57.			
58.			
59.			
60.			
		= Total Cover	
Herb Stratum			
89. **Avena fatua**	40	Yes	NI
90. **Lolium multiflorum**	20	Yes	FAC
91. **Vicia villosa**	10	No	NI
92. **Geranium molle**	4	No	NI
93.			
94.			
95.			
96.			
	74	= Total Cover	
Woody Vine Stratum			
23.			
24.			
		= Total Cover	
% Bare Ground in Herb Stratum	**30**	% Cover of Biotic Crust	

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	**1**	(A)
Total Number of Dominant Species Across All Strata:	**2**	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	**50**	(A/B)

Prevalence Index worksheet:

Total %Cover of :		Multiply by:	
OBL species		x1 =	
FACW species		x2 =	
FAC species	**20**	x3 =	**60**
FACU species		x4 =	
UPL species	**54**	x5 =	**270**
Column Totals:	**74** (A)		**330** (B)

Prevalence Index = B/A = **4.5**

Hydrophytic Vegetation Indicators:

Dominance Test is >50%

Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present?	**Yes**	☐	**No**	☒

Remarks:

Project Site: City of Hercules Intermodal Transit Center

SOIL

Sampling Point: P12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10 YR 3/3	100					Loam	
5-13	10 YR 4/3	65					Silty sand	
5-13	10 YR 4/6	35					Silty sand	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) **(LRR C)**
- ☐ 1 cm Muck (A9) **(LRR D)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR C)**
- ☐ 2 cm Muck (A10) **(LRR B)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) **(Nonriverine)**
- ☐ Sediment Deposits (B2) **(Nonriverine)**
- ☐ Drift Deposits (B3) **(Nonriverine)**
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) **(Riverine)**
- ☐ Sediment Deposits (B2) **(Riverine)**
- ☐ Drift Deposits (B3) **(Riverine)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	☐	No	☐	Depth (inches):
Water Table Present?	Yes	☐	No	☐	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	☐	No	☐	Depth (inches):

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site:	Hercules Intermodal Transit Center	City/County:	Hercules, Contra Costa County	Sampling Date:	12/29/2009
Applicant/Owner:	City of Hercules		State: CA	Sampling Point:	P13
Investigator(s):	Sean Marquis, Stephen Stringer	Section, Township, Range:			
Landform (hillslope, terrace, etc.):	Floodplain	Local relief (concave, convex, none):	None	Slope (%):	<1%
Subregion (LRR):	LRRC	Lat: 38.01979° N	Long: 122.28392° W	Datum:	WGS 84
Soil Map Unit Name:	Clear Lake Clay		NWI classification:	U	

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐		
Hydric Soil Present?	Yes ☐	No ☒	**Is the Sampling Area within a Wetland?**	**Yes ☐ No ☒**
Wetland Hydrology Present?	Yes ☐	No ☒		

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
49.			
50.			
51.			
52.			
		= Total Cover	
Sapling/Shrub Stratum			
61.			
62.			
63.			
64.			
65.			
		= Total Cover	
Herb Stratum			
97. **Conium maculatum**	25	Yes	FACW
98. **Lepidium latifolium**	12	Yes	FACW
99. **Avena fatua**	3	No	NI
100. **Lolium multiflorum**	2	No	FAC
101. **Picris echioides**	1	No	FAC
102.			
103.			
104.			
	43	= Total Cover	
Woody Vine Stratum			
25.			
26.			
		= Total Cover	

% Bare Ground in Herb Stratum	**60**	% Cover of Biotic Crust	

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	**2**	(A)
Total Number of Dominant Species Across All Strata:	**2**	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	**100**	(A/B)

Prevalence Index worksheet:

Total %Cover of :	Multiply by:
OBL species	x1 =
FACW species	x2 =
FAC species	x3 =
FACU species	x4 =
UPL species	x5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present?	**Yes**	☒	**No**	☐

Remarks:

Project Site: City of Hercules Intermodal Transit Center

SOIL

Sampling Point: P13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
1-12	10 YR 4/2	73	7.5 YR 4/6	1	C	M	Loamy Clay	
	10 YR 2/1	20					Loamy Clay	
	2.5 Y 5/2	6					Loamy Clay	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) **(LRR C)**
- ☐ 1 cm Muck (A9) **(LRR D)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR C)**
- ☐ 2 cm Muck (A10) **(LRR B)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) **(Nonriverine)**
- ☐ Sediment Deposits (B2) **(Nonriverine)**
- ☐ Drift Deposits (B3) **(Nonriverine)**
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) **(Riverine)**
- ☐ Sediment Deposits (B2) **(Riverine)**
- ☐ Drift Deposits (B3) **(Riverine)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☒ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):
Water Table Present?	Yes	☐	No	☒	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site:	Hercules Intermodal Transit Center	City/County:	Hercules, Contra Costa County	Sampling Date:	12/29/2009
Applicant/Owner:	City of Hercules		State: CA	Sampling Point:	P14
Investigator(s):	Sean Marquis, Stephen Stringer	Section, Township, Range:			
Landform (hillslope, terrace, etc.):	Floodplain	Local relief (concave, convex, none):	flat	Slope (%):	<1%
Subregion (LRR):	LRRC	Lat: 38.01969° N	Long: 122.28323° W	Datum:	WGS 84
Soil Map Unit Name:	Clear Lake Clay		NWI classification:	U	

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐		
Hydric Soil Present?	Yes ☐	No ☒	**Is the Sampling Area within a Wetland?**	**Yes ☐ No ☒**
Wetland Hydrology Present?	Yes ☐	No ☒		

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
53.			
54.			
55.			
56.			
		= Total Cover	
Sapling/Shrub Stratum			
66.			
67.			
68.			
69.			
70.			
		= Total Cover	
Herb Stratum			
105. **Distichlis spicata**	70	Yes	FACW
106. **Leymus triticoides**	20	Yes	FAC
107. **Geranium molle**	7	No	NI
108. **Picris echioides**	2	No	FAC
109.			
110.			
111.			
112.			
	99	= Total Cover	
Woody Vine Stratum			
27.			
28.			
		= Total Cover	

% Bare Ground in Herb Stratum: **10** | % Cover of Biotic Crust:

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	**2**	(A)
Total Number of Dominant Species Across All Strata:	**2**	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	**100**	(A/B)

Prevalence Index worksheet:

Total %Cover of :	Multiply by:
OBL species	x1 =
FACW species	x2 =
FAC species	x3 =
FACU species	x4 =
UPL species	x5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes ☒ No ☐**

Remarks:

Project Site: City of Hercules Intermodal Transit Center

SOIL

Sampling Point: P14

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10 YR 3/2	94	2.5 Y 4/3	5	C	M	Clay loam	
			7.5 YR 5/8	1	C	M		
3-7	5 Y 8/1	98	5 Y 8/8	2	C	M	Sandy clay loam	Fill
7-11	2.5 Y 5/4	100					Sandy loam	Fill
11-14	10 YR 3/1	99	7.5 YR 4/6	1	C	M	Silty Clay	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) **(LRR C)**
- ☐ 1 cm Muck (A9) **(LRR D)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR C)**
- ☐ 2 cm Muck (A10) **(LRR B)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) **(Nonriverine)**
- ☐ Sediment Deposits (B2) **(Nonriverine)**
- ☐ Drift Deposits (B3) **(Nonriverine)**
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) **(Riverine)**
- ☐ Sediment Deposits (B2) **(Riverine)**
- ☐ Drift Deposits (B3) **(Riverine)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☒ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):
Water Table Present?	Yes	☐	No	☒	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site:	Hercules Intermodal Transit Center	City/County:	Hercules, Contra Costa County	Sampling Date:	12/29/2009
Applicant/Owner:	City of Hercules		State: CA	Sampling Point:	P15
Investigator(s):	Sean Marquis, Stephen Stringer	Section, Township, Range:			
Landform (hillslope, terrace, etc.):	Terrace	Local relief (concave, convex, none):	Concave	Slope (%):	<5%
Subregion (LRR):	LRRC	Lat: 38.02350° N	Long: 122.2808° W	Datum:	WGS 84
Soil Map Unit Name:	Tierra Loam, 15 to 30 Percent Slopes		NWI classification:	U	

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	☒	No	☐				
Hydric Soil Present?	Yes	☒	No	☐	**Is the Sampling Area within a Wetland?**	**Yes**	☒	**No** ☐
Wetland Hydrology Present?	Yes	☒	No	☐				

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)		Absolute % Cover	Dominant Species?	Indicator Status
57.				
58.				
59.				
60.				
			= Total Cover	
Sapling/Shrub Stratum				
71.				
72.				
73.				
74.				
75.				
			= Total Cover	
Herb Stratum				
113.	**Typha latifolia**	40	Yes	OBL
114.	**Lemna minor**	15	Yes	OBL
115.	**Rumex crispus**	1	No	FACW
116.				
117.				
118.				
119.				
120.				
		56	= Total Cover	
Woody Vine Stratum				
29.				
30.				
			= Total Cover	

% Bare Ground in Herb Stratum | **55** | % Cover of Biotic Crust

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	**2**	(A)
Total Number of Dominant Species Across All Strata:	**2**	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	**100**	(A/B)

Prevalence Index worksheet:

Total %Cover of :	Multiply by:
OBL species	x1 =
FACW species	x2 =
FAC species	x3 =
FACU species	x4 =
UPL species	x5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present?	**Yes**	☒	**No**	☐

Remarks:

Project Site: City of Hercules Intermodal Transit Center

SOIL

Sampling Point: P15

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (Moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) **(LRR C)**
- ☐ 1 cm Muck (A9) **(LRR D)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR C)**
- ☐ 2 cm Muck (A10) **(LRR B)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks: Based on similarity to P4, hydric soils are assumed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☒ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) **(Nonriverine)**
- ☐ Sediment Deposits (B2) **(Nonriverine)**
- ☐ Drift Deposits (B3) **(Nonriverine)**
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) **(Riverine)**
- ☐ Sediment Deposits (B2) **(Riverine)**
- ☐ Drift Deposits (B3) **(Riverine)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☒ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	☒	No	☐	Depth (inches):	<1
Water Table Present?	Yes	☐	No	☐	Depth (inches):	0
Saturation Present? (includes capillary fringe)	Yes	☒	No	☐	Depth (inches):	0

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site:	Hercules Intermodal Transit Center	City/County:	Hercules, Contra Costa County	Sampling Date:	3/31/2010
Applicant/Owner:	City of Hercules		State: CA	Sampling Point:	16
Investigator(s):	LaTisha Burnaugh, Stephen Stringer	Section, Township, Range:			

Landform (hillslope, terrace, etc.): Small mound Local relief (concave, convex, none): concave Slope (%): <5%

Subregion (LRR): LRRC Lat: 38° 01' 10.30" N Long: 122° 16' 56.21" W Datum: WGS 84

Soil Map Unit Name: Clear Lake Clay NWI classification: U

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☒, Or Hydrology ☒, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒		
Hydric Soil Present?	Yes ☒	No ☐	**Is the Sampling Area within a Wetland?**	**Yes ☐ No ☒**
Wetland Hydrology Present?	Yes ☒	No ☐		

Remarks: **Adjacent surcharge pile likely affecting hydrology due to wicking activity causing discharge of groundwater into the area. Soil was previously disturbed in this area during past site restoration/remediation activities.**

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
61. none			
62.			
63.			
64.			
		= Total Cover	
Sapling/Shrub Stratum			
76. **none**			
77.			
78.			
79.			
80.			
		= Total Cover	
Herb Stratum			
121. **Bromus diandrus**	30	Y	NI
122. **Avena fatua**	30	Y	NI
123. **Bromus hordeaceus**	30	Y	FACU
124. **Geranium dissectum**	5	N	NI
125.			
126.			
127.			
128.			
	95	= Total Cover	
Woody Vine Stratum			
31.			
32.			
		= Total Cover	

% Bare Ground in Herb Stratum: **5** % Cover of Biotic Crust: 0

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	**0**	(A)
Total Number of Dominant Species Across All Strata:	**3**	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	**0**	(A/B)

Prevalence Index worksheet:

Total %Cover of :	Multiply by:
OBL species	x1 =
FACW species	x2 =
FAC species	x3 =
FACU species	x4 =
UPL species	x5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

Dominance Test is >50%

Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes ☐ No ☒**

Remarks: **Area of high ground adjacent to the North Channel**

Project Site: City of Hercules Intermodal Transit Center

SOIL

Sampling Point:

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	7.5YR2.5/1	75	5YR5/6	5	C	M	Clay loam	
	7.5YR2.5/2	20					Clay loam	
7-16	7.5YR2.5/1	50					Clay loam	
	10YR6/2	45	5YR5/6	5	C	M	Clay loam	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☒ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) **(LRR C)**
- ☐ 1 cm Muck (A9) **(LRR D)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR C)**
- ☐ 2 cm Muck (A10) **(LRR B)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) **(Nonriverine)**
- ☐ Sediment Deposits (B2) **(Nonriverine)**
- ☐ Drift Deposits (B3) **(Nonriverine)**
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☒ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) **(Riverine)**
- ☐ Sediment Deposits (B2) **(Riverine)**
- ☐ Drift Deposits (B3) **(Riverine)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):
Water Table Present?	Yes	☐	No	☒	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site:	Hercules Intermodal Transit Center	City/County:	Hercules, Contra Costa County	Sampling Date:	03/31/2010
Applicant/Owner:	City of Hercules		State: CA	Sampling Point:	17
Investigator(s):	LaTisha Burnaugh, Stephen Stringer	Section, Township, Range:			
Landform (hillslope, terrace, etc.):		Local relief (concave, convex, none):	concave	Slope (%):	<5%
Subregion (LRR):	LRRC Lat:	Long:		Datum:	WGS 84
Soil Map Unit Name:	Clear Lake Clay			NWI classification:	U

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☒, Or Hydrology ☒, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	☒	No	☐			
Hydric Soil Present?	Yes	☒	No	☐	**Is the Sampling Area within a Wetland?**	**Yes** ☒	**No** ☐
Wetland Hydrology Present?	Yes	☒	No	☐			

Remarks: **Adjacent surcharge pile likely affecting hydrology due to wicking activity causing discharge of groundwater into the area. Soil was previously disturbed in this area during past site restoration/remediation activities.**

VEGETATION

Tree Stratum (Use scientific names.)		Absolute % Cover	Dominant Species?	Indicator Status
65.				
66.				
67.				
68.				
			= Total Cover	
Sapling/Shrub Stratum				
81.				
82.				
83.				
84.				
85.				
			= Total Cover	
Herb Stratum				
129.	**Distichlis spicata**	95	Y	FACW
130.	**Bromus diandrus**	2	N	NI
131.	**Geranium dissectum**	1	N	NI
132.				
133.				
134.				
135.				
136.				
		98	= Total Cover	
Woody Vine Stratum				
33.				
34.				
			= Total Cover	
% Bare Ground in Herb Stratum	**2**	% Cover of Biotic Crust		

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	**1**	(A)
Total Number of Dominant Species Across All Strata:	**1**	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	**100**	(A/B)

Prevalence Index worksheet:

Total %Cover of :	Multiply by:
OBL species	x1 =
FACW species	x2 =
FAC species	x3 =
FACU species	x4 =
UPL species	x5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

Dominance Test is >50%

Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present?	**Yes**	☒	**No**	☐

Remarks:

Project Site: City of Hercules Intermodal Transit Center

SOIL

Sampling Point: P17

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	7.5YR2.5/1	70	5YR5/6	10	C	M	Clay loam	
	10YR6/2	20					Clay loam	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☒ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) **(LRR C)**
- ☐ 1 cm Muck (A9) **(LRR D)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR C)**
- ☐ 2 cm Muck (A10) **(LRR B)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1) **(Nonriverine)**
- ☐ Sediment Deposits (B2) **(Nonriverine)**
- ☐ Drift Deposits (B3) **(Nonriverine)**
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☒ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) **(Riverine)**
- ☐ Sediment Deposits (B2) **(Riverine)**
- ☐ Drift Deposits (B3) **(Riverine)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	☐	No	☐	Depth (inches):	
Water Table Present?	Yes	☒	No	☐	Depth (inches):	14
Saturation Present? (includes capillary fringe)	Yes	☒	No	☐	Depth (inches):	12

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site:	Hercules Intermodal Transit Center	City/County:	Hercules, Contra Costa County	Sampling Date:	03/31/2010
Applicant/Owner:	City of Hercules		State: CA	Sampling Point:	18
Investigator(s):	LaTisha Burnaugh, Stephen Stringer	Section, Township, Range:	T2N, R4W, unsectionalized		
Landform (hillslope, terrace, etc.):	Small mound	Local relief (concave, convex, none):	Concave	Slope (%):	<5%
Subregion (LRR):	LRRC Lat:	Long:		Datum:	WGS 84
Soil Map Unit Name:	Clear Lake Clay			NWI classification:	U

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☒, Or Hydrology ☒, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒		
Hydric Soil Present?	Yes ☒	No ☐	**Is the Sampling Area within a Wetland?**	**Yes ☐ No ☒**
Wetland Hydrology Present?	Yes ☒	No ☐		

Remarks: **Adjacent surcharge pile likely affecting hydrology due to wicking activity causing discharge of groundwater into the area. Soil was previously disturbed in this area during past site restoration/remediation activities.**

VEGETATION

Tree Stratum (Use scientific names.)		Absolute % Cover	Dominant Species?	Indicator Status
69.				
70.				
71.				
72.				
			= Total Cover	
Sapling/Shrub Stratum				
86.				
87.				
88.				
89.				
90.				
			= Total Cover	
Herb Stratum				
137.	**Bromus hordeaceus**	80	Y	FACU
138.	**Geranium dissectum**	3	N	NI
139.	**Picris echioides**	3	N	FAC
140.	**Lepidium latifolium**	3	N	FACW
141.	**Frankenia salina**	3	N	FACW
142.				
143.				
144.				
		72	= Total Cover	
Woody Vine Stratum				
35.				
36.				
			= Total Cover	
% Bare Ground in Herb Stratum	**28**	% Cover of Biotic Crust		

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	**1**	(A)
Total Number of Dominant Species Across All Strata:	**1**	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	**0**	(A/B)

Prevalence Index worksheet:

Total %Cover of :	Multiply by:
OBL species	x1 =
FACW species	x2 =
FAC species	x3 =
FACU species	x4 =
UPL species	x5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

Dominance Test is >50%

Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present?	**Yes**	☐	**No**	☒

Remarks:

Project Site: City of Hercules Intermodal Transit Center

SOIL

Sampling Point: P18

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR2/1	40					Clay loam	
	7.5YR2.5/1	60					Clay loam	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☒ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) **(LRR C)**
- ☐ 1 cm Muck (A9) **(LRR D)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR C)**
- ☐ 2 cm Muck (A10) **(LRR B)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1) **(Nonriverine)**
- ☐ Sediment Deposits (B2) **(Nonriverine)**
- ☐ Drift Deposits (B3) **(Nonriverine)**
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☒ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) **(Riverine)**
- ☐ Sediment Deposits (B2) **(Riverine)**
- ☐ Drift Deposits (B3) **(Riverine)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	☐	No	☐	Depth (inches):	
Water Table Present?	Yes	☒	No	☐	Depth (inches):	6
Saturation Present? (includes capillary fringe)	Yes	☒	No	☐	Depth (inches):	5

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site:	Hercules Intermodal Transit Center	City/County:	Hercules, Contra Costa County	Sampling Date:	03/31/2010
Applicant/Owner:	City of Hercules		State: CA	Sampling Point:	19
Investigator(s):	LaTisha Burnaugh, Stephen Stringer	Section, Township, Range:	T2N, R4W, unsectionalized		
Landform (hillslope, terrace, etc.):		Local relief (concave, convex, none):		Slope (%):	<5%
Subregion (LRR):	LRRC Lat:	Long:		Datum:	WGS 84
Soil Map Unit Name:	Clear Lake Clay			NWI classification:	U

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☒, Or Hydrology ☒, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	☒	No	☐			
Hydric Soil Present?	Yes	☒	No	☐	**Is the Sampling Area within a Wetland?**	**Yes** ☒	**No** ☐
Wetland Hydrology Present?	Yes	☒	No	☐			

Remarks: **Adjacent surcharge pile likely affecting hydrology due to wicking activity causing discharge of groundwater into the area. Soil was previously disturbed in this area during past site restoration/remediation activities.**

VEGETATION

Tree Stratum (Use scientific names.)		Absolute % Cover	Dominant Species?	Indicator Status
73.				
74.				
75.				
76.				
			= Total Cover	
Sapling/Shrub Stratum				
91.				
92.				
93.				
94.				
95.				
			= Total Cover	
Herb Stratum				
145.	**Sarcocornia pacifica**	35	Y	OBL
146.	**Cotula coronopifolia**	15	Y	FACW
147.	**Frankenia salina**	5	N	FACW
148.	**Bromus diandrus**	5	N	FACU
149.	**Polypogon sp.**	5	N	NI
150.	**Lepidium latifolium**	5	N	FACW
151.				
152.				
		70	= Total Cover	
Woody Vine Stratum				
37.				
38.				
			= Total Cover	

% Bare Ground in Herb Stratum | **30** | % Cover of Biotic Crust

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	**2**	(A)
Total Number of Dominant Species Across All Strata:	**2**	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	**100**	(A/B)

Prevalence Index worksheet:

Total %Cover of :	Multiply by:
OBL species	x1 =
FACW species	x2 =
FAC species	x3 =
FACU species	x4 =
UPL species	x5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

Dominance Test is >50%

Prevalence Index is $\leq 3.0^1$

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present?	**Yes**	☒	**No**	☐

Remarks:

Project Site: City of Hercules Intermodal Transit Center

SOIL

Sampling Point: P19

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	7.5YR2.5/1	60	5YR4/6	5	C	M	Clay loam	
	10YR7/6	30					Clay loam	
	10YR2/1	10					Clay loam	
6-14	10YR2/1	80					Clay loam	
	7.5YR2.5/1	20					Clay loam	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☒ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) **(LRR C)**
- ☐ 1 cm Muck (A9) **(LRR D)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR C)**
- ☐ 2 cm Muck (A10) **(LRR B)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☒ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) **(Nonriverine)**
- ☐ Sediment Deposits (B2) **(Nonriverine)**
- ☐ Drift Deposits (B3) **(Nonriverine)**
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☒ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) **(Riverine)**
- ☐ Sediment Deposits (B2) **(Riverine)**
- ☐ Drift Deposits (B3) **(Riverine)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	☒	No	☐	Depth (inches): 2
Water Table Present?	Yes	☐	No	☐	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	☐	No	☐	Depth (inches):

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Appendix C

Delineation of Potential Jurisdictional Waters of the United States, June 2008. Hercules Intermodal Transit Facility by Vollmar Consulting

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

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NATURAL RESOURCE CONSULTANTS

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DELINEATION OF POTENTIAL JURISDICTIONAL WATERS OF THE UNITED STATES, JUNE 2008

HERCULES INTERMODAL TRANSIT FACILITY

Northwest Contra Costa County, California

Prepared For:
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June 2008

J-124

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1.0 INTRODUCTION

This report summarizes the methods and results of the delineation of potential jurisdictional waters of the United States on the proposed Hercules Intermodal Transit Facility project site in Hercules, Contra Costa County, California. The project includes the construction of a new ferry terminal and associated structures, as well as a railroad re-alignment and new rail station platform. The project also involves the re-alignment of Refugio Creek, which drains to San Pablo Bay.

The delineation was conducted to identify and delineate wetlands, navigable waters, and 'other waters' of the United States within the project site that are potentially under the jurisdiction of the U.S. Army Corps of Engineers (COE) through Section 404 of the Clean Water Act (CWA). The delineation was conducted following the 'Arid West Region' delineation methods published by the COE in December 2006. The results of this delineation are preliminary and must be reviewed and verified in writing by the COE to be considered an official delineation.

2.0 PROJECT BACKGROUND INFORMATION

2.1 Project Site Location

The Hercules Intermodal Transit Facility project site (project site) lies along the eastern boundary of San Pablo Bay, a major subembayment positioned between the heavily marine influenced San Francisco Bay and Suisun Bay (**Figure 1**). The project site is located in the City of Hercules, in western Contra Costa County, on the Mare Island USGS 7.5' quadrangle map. The center of the project site is approximately: 122˚ 17' 4" W, 38˚ 1' 17.5 N. Landward elevation on the site ranges from approximately sea level to 15 feet above sea level (**Figure 2**).

2.2 Description of Proposed Project

For the purposes of this report, the 'project site' is defined by the area including and surrounding the project footprint where construction or construction-related activities could occur as part of two currently proposed project alternatives. Both alternatives include the construction of a railroad station platform and the addition of a third track-line within the railroad right-of-way, dredging of a shipping channel through bay mud within shallow waters, and the realignment of the lower portion of Refugio Creek. Under Alternative 1, the ferry terminal would be located immediately to the east of Hercules Point and north of the proposed transit station, just west of the point where Refugio Creek enters San Pablo Bay. Under this alternative, the proposed transit terminal would be located on Bayfront Boulevard, west of Refugio Creek (**Figure 3**). Under Alternative 2, the ferry terminal would be located immediately to the east of Refugio Creek, near the north end of the proposed rail platform. Under this alternative, the transit terminal would be located east of Refugio Creek on the planned John Muir Parkway extension near its intersection with Bayfront Boulevard (**Figure 3**).

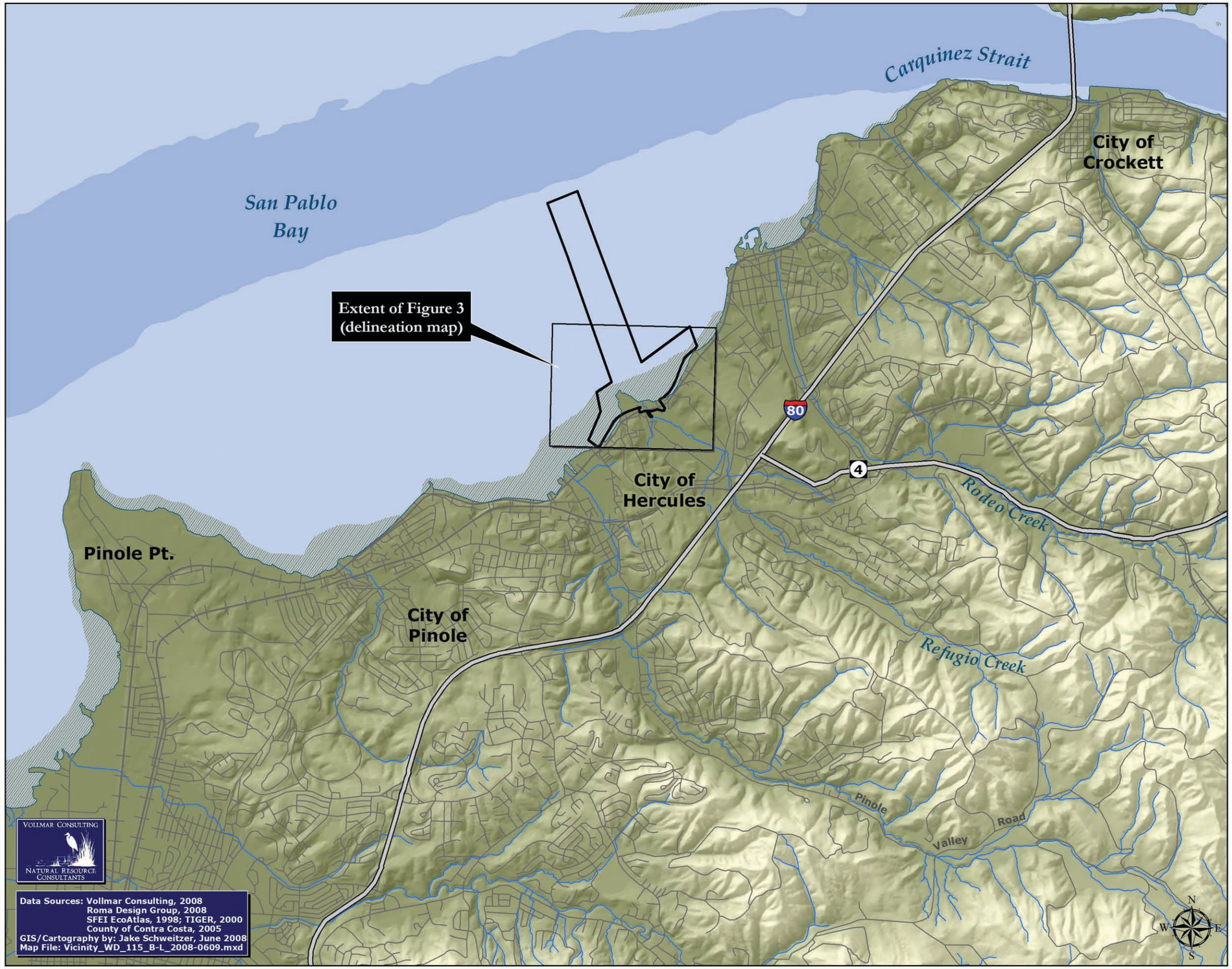
2.3 Extent and General Setting of Delineated Areas

The area delineated for this project includes approximately 31 acres of land above mean high water, as well as over 372 acres of tidal marsh and open navigable waters along Refugio Creek and within the San Pablo Bay (**Figure 3**). Most of the upland portions of project site have been altered by past industrial activities and are in a highly disturbed condition. The portion of

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

FIGURE 1
Regional Vicinity Map

Hercules Intermodal Transit Facility
Contra Costa County, California



Legend

- Project Area

Reference Features

- Highway
- Road
- Railroad
- Creek

Tidal Baylands (from EcoAtlas)

- Deep Bay
- Shallow Bay
- Fully Tidal Bayland

1:48,000 (at tabloid layout)

0 1 2 Kilometers

0 1 2 Miles

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

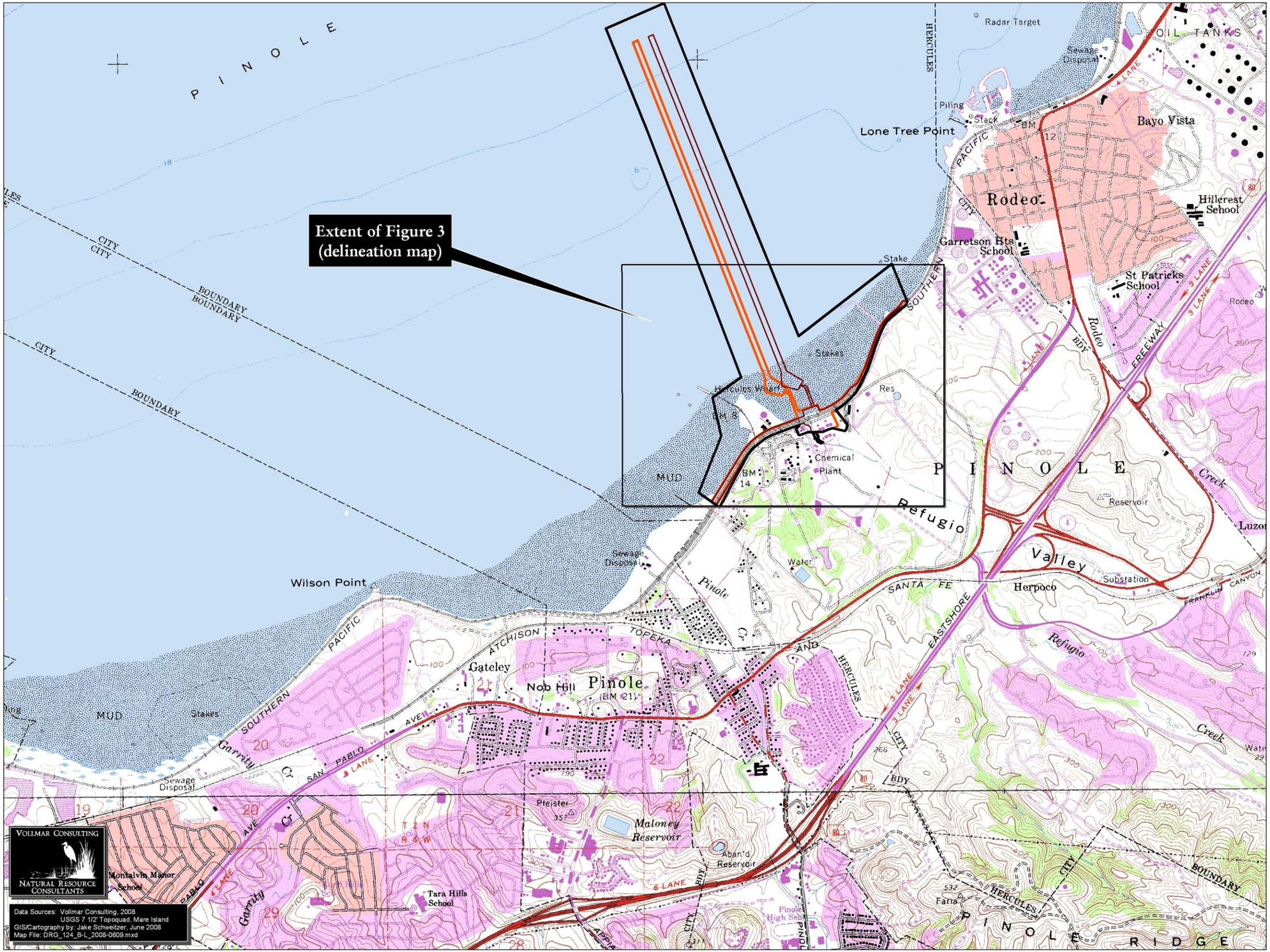


FIGURE 2
USGS Topographic Map

Hercules Intermodal Transit Facility
Contra Costa County, California

Legend

- Project Area
- Alternative 2 Project Impact Area
- Alternative 1 Project Impact Area

N W E S

1:24,000
(1-in = 2,000-ft at tabloid layout)

0 500 1,000 Meters

0 1,000 2,000 4,000 Feet

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

FIGURE 3
Jurisdictional
Waters of the U.S. 2007-2008
Hercules Intermodal Transit Facility
Contra Costa County, California
Legend
Wetland Delineation Point (with ID #)[1]
Mean High Water[2]
Project Area (402 acres as mapped)
California Cordgrass Tidal Marsh (4.152 ac.)
Pickleweed Tidal Marsh (5.230 ac.)
Freshwater Wetland (1.780 ac.)
Bay Open Waters (approx 263.216 ac.)
Other Waters (0.455 ac.)[3]
Refugio Creek Open Water (0.191 ac.)[4]
Intertidal Mudflats (EcoAtlas) (97.731 ac.)
Anthropogenic Rocky Shoreline
Alternative 1 Impact Area (approx. 42.5 acres)
Alternative 2 Impact Area (approx. 42.5 acres)
Note: All acreages represent areas within project area
1 Odd number = wetland point
2 Bay margin; does not include navigable waters of Refugio Creek.
3 Un-vegetated seasonal wetlands along RR track
4 Refugio Creek is subject to Section 10 as well as Section 404 jurisdiction
Total navigable waters (bayward of mean high water line plus open waters and tidal marsh of Refugio Creek): 371.915 ac.
Proposed Dredge Channel (approximate location) Continues ~1.1 Miles into Bay
San Pablo Bay Open Water
Proposed Dredged Turning Basin
Proposed Pier
Refugio Creek Outlet, Proposed
Refugio Creek Outlet
Proposed Railroad Realignment
Area Impacted by On-Going Construction (not part of project)
These two wetlands subjected to highest spring tides
Proposed Channel Realignment of Refugio Creek
Hercules Peninsula
Southern Pacific Railroad/Amtrak ROW
Bayfront Blvd
Riverside St
Refugio Creek
Proposed Transit Terminal and Parking Areas
City of Hercules
Railroad Ave
Riprap
P–01
P–02
P–03
P–04
P–05
P–06
P–07
P–08
P–09
P–10
P–11
P–12
P–13
P–14
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P–18
P–19
P–20
P–21
P–22
P–23
P–24
P–25
P–26
P–27
P–28
P–29
P–30
Marin County
Contra Costa County
Project Location
S.F. County
San Mateo County
Alameda County
N
S
E
W
1:3,000
(1-in = 250-ft at D-Size Layout)
0 125 250 Meters
0 250 500 1,000 Feet
Vollmar Consulting
Natural Resource Consultants
Data Source: National Geospatial Intelligence Agency, 02/27/04
Vollmar Consulting, 2006-2008 | Roma Designs, 2008
SFEI EcoAtlas, 1998
GIS/Cartography by: Jake Schweitzer, Nov. 2008
Map File: WD_124_D-L_2008-1110.mxd

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

the project site within the railroad right-of-way is characterized by compacted dirt and gravel and contains ruderal plant species along portions of its southern and eastern edge. The railroad right-of way is generally bordered to the north and west by a rocky (man-made) shoreline. Other upland portions of the project site have been graded or otherwise altered, but a limited extent of habitat in a more natural condition is also present. Wetland/aquatic habitats are present on the project site, including tidal wetlands, freshwater seasonal and perennial wetlands, and un-vegetated "other waters."

Six plant communities occur on the project site including ruderal, pickleweed tidal marsh, California cordgrass tidal marsh, seasonal and perennial freshwater marsh, and several small stands of mixed willow riparian forest. Additionally, one land use type (railroad right-of-way) occurs on the project site, as well as rocky shoreline and open waters of San Pablo Bay and Refugio Creek.

2.4 Project Personnel

All work for this wetland delineation was conducted by staff members from Vollmar Consulting. John Vollmar, senior wetland ecologist, served as the project manager, collecting delineation field data, conducting wetland mapping and reviewing the report. Jake Schweitzer, staff biologist and GIS specialist, collected delineation field data, conducted wetland mapping, loaded and processed all GPS field files, prepared all field and report maps, and prepared this report.

3.0 REGULATORY BACKGROUND

3.1 Definition of Waters of the United States

The federal government, through Section 404 of the Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act, has jurisdiction over all Waters of the United States. Waters of the United States are divided into three subsets – 'wetlands', 'navigable waters', and 'other waters' - and are defined as follows:

'Wetlands' are defined in the federal regulations as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" (Environmental Laboratory 1987). Wetlands are also considered to be "special aquatic sites" under 404(b)(1) Guidelines (40 CFR Part 230). In general, wetlands must exhibit positive indicators of wetland vegetation, wetland hydrology and hydric soils to be considered jurisdictional (Environmental Laboratory 1987).

'Navigable waters' of the United States are defined as "those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce" (33 CFR Part 329.4). According to the regulations, navigable waters include the open ocean, tidal bays, salt marshes and some large rivers and lakes. The jurisdictional limit over navigable waters extends laterally to the entire water surface and bed of the water body. For non-tidal rivers or lakes, which have been designated by the COE to be navigable waters, the limit of jurisdiction along the shoreline is defined by the ordinary high water mark (OHWM). The up-stream limit of a navigable river is the head of navigation (this limit is designated by the COE) (33 CFR Part 329.4). 'Other waters'

refers to waters of the United States other than navigable waters or wetlands. Generally, these are open watercourses or water bodies such as streams and ponds that are distinguished by the presence of an OHWM and/or an eroded bed and bank. 'Other waters' can be perennial or intermittent water bodies and waterways. The COE regulates 'other waters' to the outward limit of the OHWM (33 CFR Part 328.4[c][1]). The OHWM on a non-tidal water is the "line on shore established by the fluctuations of water and indicated by physical characteristics such as a clear natural line impressed on the bank; shelving; changes in the character of soil; destruction of terrestrial vegetation; the presence of litter and debris; or other appropriate means that consider the characteristics of the surrounding areas" (33 CFR Part 328.3[e]). Streams should exhibit a defined channel, bed, and banks to be delineated as 'other waters'.

3.2 Regulatory Authority

The Federal Clean Water Act (CWA) is the principal law providing regulation of all waters of the United States. The CWA (previously the Federal Water Pollution Control Act) was passed as a water pollution control statute that sought to "restore and maintain the chemical, physical, and biological integrity of the nation's waters". Initially, its scope was limited to only navigable waters. This scope has been expanded, primarily through judicial review, to encompass all waters of the United States including wetlands. A recent ruling by the U.S. Supreme Court (SWANCC Decision) eliminated federal jurisdiction over 'isolated waters' such as isolated ponds that have no hydrologic connection to tributary waters serving an interstate function. The ruling concluded that such waters are to be regulated by the individual state in which the isolated water occurs rather than the federal government.

Section 404 of the CWA regulates the discharge of dredged or fill material into waters of the United States. The CWA grants dual regulatory authority of Section 404 to the U.S. Environmental Protection Agency (EPA) and the COE. The COE is responsible for issuing and enforcing permits for activities in waters of the United States in conjunction with prior permitting authorities in navigable waters under the Rivers and Harbors Act of 1899. The EPA is responsible for providing oversight of the permit program. In this capacity, the EPA has developed guidelines for permit review (Section 404 [b][1] Guidelines) and has the authority to veto permits by designating certain sites as non-fill areas (Section 404[c] of the CWA). The EPA also has enforcement authority under Section 404.

Section 10 of the Rivers and Harbors Act of 1899 regulates any work in or over navigable waters of the U.S. It regulates all types of activities including excavations, depositions, constructions, or any obstruction or alteration in a navigable water. This law was initially intended to protect navigation and the navigable capacity of waters but in 1968 the policy for review of permits was revised to include a consideration of fish and wildlife values, conservation, pollution, aesthetics and other factors in the general public interest. This type of review is identified as a "Public Interest Review".

The COE generally extends its jurisdiction to all areas meeting the criteria for Waters of the United States. However, the COE jurisdiction over wetlands created by artificial means is decided on a case-by-case basis. The COE generally does not assume jurisdiction over areas that are (1) artificially irrigated and would revert to upland habitat if the irrigation ceased; or, (2) artificial lakes and ponds created by excavating and/or diking of dry land to collect and retain

water, used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing. Other areas that are not considered jurisdictional waters of the United States include waste treatment ponds, ponds formed by construction activities including borrow pits until abandoned, and ponds created for aesthetic reasons such as reflecting or ornamental ponds (33 CFR Part 328.3).

3.3 U.S. Army Corps of Engineers Permits

Projects which propose activities that fall under the jurisdiction of Section 404 of the CWA and/or Section 10 of the Rivers and Harbors Act must obtain approval from the COE through the individual or nationwide permit (NWP) process. Individual permits entail a full public interest review that includes consultation with other federal and state agencies. NWPs are designed to regulate certain activities deemed to have minimal impact and are issued in order to authorize these activities with little, if any delay or paperwork. A proposed activity may be authorized under a NWP only if it meets all the terms and conditions specified in the NWP program, found in the Section 404/Section 10 regulations (33 CFR Part 330). Some examples of commonly applied NWPs include No. 12 (utility line activities), No. 14 (linear transportation crossings), No. 27 (stream and wetland restoration activities), No. 39 (residential, commercial, and institutional developments), and No. 42 (recreational facilities). A Section 404 permit provides a federal nexus for consultation with the U.S. Fish and Wildlife Service regarding potential impacts to federally-listed species through Section 7 of the Federal Endangered Species Act.

4.0 METHODS

4.1 Preliminary Review

Prior to conducting the field delineation, Mr. Vollmar and Mr. Schweitzer reviewed site maps and aerial photographs of the work areas. This information was used to help characterize the site, identify any potential Waters of the United States on a preliminary basis, and help target the on-site survey. The site aerial photograph served as the base map for the delineation.

4.2 Field Surveys

Mr. Vollmar and Mr. Schweitzer conducted formal delineation of the potential jurisdictional waters on the project site in January and March of 2007. The project site area was expanded in 2008, so a third round of delineation field work was conducted in April of 2008. During the course of the surveys, the biologists walked the entire project site, noting habitat conditions, recording plant species observed, establishing delineation data points, and taking photographs of representative site features. At delineation data points, data were collected on plants, hydrology, and soils following the Routine Wetland Determination Method developed by the COE. Potential jurisdictional wetlands were identified and their boundaries delineated using the routine wetland determination method described in the 1987 COE Wetlands Delineation Manual (Environmental Laboratory 1987) and the Interim regional supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (USACE 2006). The specific methods for collecting data on vegetation, hydrology, and soils are described below.

4.2.1 Vegetation

At each delineation data point, all plant species within a five-foot radius of the sampling point were identified and a visual estimate of percent coverage for each species was recorded. The

indicator status of each species was checked in the *National List of Plant Species that Occur In Wetlands: California (Region 0)* (Reed 1996) and recorded. Indicator status categories are as follows:

OBL = obligate wetland; >99% probability of occurring in a wetland
FACW = facultative wetland; 67%-99% probability of occurring in a wetland
FAC = facultative; 33%-67% probability of occurring in a wetland
FACU = facultative upland; 1%-33% probability of occurring in a wetland
UPL = obligate upland; <1% probability of occurring in a wetland
NI = no indicator, insufficient information available to determine indicator status
NL = not listed (plants not listed in Reed (1988) are assumed to be upland (UPL)

The wetland vegetation criterion is met when the vegetation passes the dominance test: greater than 50 percent of the dominant plants have OBL, FACW, or FAC wetland indicators. The COE defines dominant plant species as those that, when included in descending order of their percent cover, together sum up to 50 percent of the total cover in their stratum (tree, sapling/shrub, herb, or woody vine). In addition, all species with at least 20 percent coverage of the total canopy within a stratum are always counted as dominants. All scientific and common plant names correspond to Hickman (1993) and/or Reed (1996).

If the dominance test is not passed, vegetation can be considered hydrophytic if it meets the requirements of the prevalence index, morphological adaptations, or problematic wetland situations (USACE 2006).

4.2.2 Hydrology

Indicators of wetland hydrology were noted such as the presence of surface water, occurrence of groundwater or soil saturation, springs, surface scour marks, vegetation and debris drift lines, sediment deposits, watermarks, water-stained leaves, surface soil cracks, oxidized rhizospheres along living roots, and drainage patterns (evidence of water flow across the ground surface). Additionally, some wetlands in the Arid West region periodically lack indicators of wetland hydrology. If the site is in a geomorphic position where a wetland could occur but the site visit was during the dry season, followed a period of 2-3 months of below-normal rainfall, or was during a year of an unusually low winter snowpack, indicators of wetland hydrology might not be present. According to the Arid West Supplement, “under these conditions, a site that contains hydric soils and hydrophytic vegetation and no evidence of hydrologic manipulation should be considered a wetland” (USACE 2006).

4.2.3 Soils

Soil profiles were taken at each data point using a tile spade shovel. Soil pit depths were at least 12 inches at all points. Soils were examined for positive hydric soil indicators such as low matrix chromas, high chroma mottles, gleys, and iron and manganese concretions. The color and texture of the soil layers encountered were recorded. Soil color was identified using a Munsell soil color chart (Kollmorgen 2000). All soil samples were moistened before determining the color. Soil map units at each sample point were identified from the Soil Survey of Contra Costa County (USDA 1977). Soil map units were cross-referenced with the California hydric soils list (SCS 1993) and the national hydric soils list (SCS 1991). Determinations of whether or not the hydric soil criterion was met were based upon the criteria specified by the National Technical

Committee for Hydric Soils (SCS 1991) and the Arid West Supplement (USACE 2006). In most cases, soils with a matrix chroma of 1, and mottled soils with a matrix chroma of 2 or less are considered to meet the hydric soil criteria. Soils that do not have low matrix chromas but are inundated or saturated within 12 inches of the surface are considered to be hydric when those conditions persist for at least 5 percent of the growing season (usually 7-14 consecutive days).

5.0 RESULTS

5.1 Overview

The delineation identified 11.162 acres of potential jurisdictional wetlands within the mapped project area consisting of 5.230 acres of pickleweed tidal marsh, 4.152 acres of California cordgrass tidal marsh, and 1.780 acres of freshwater seasonal wetlands (**Figure 3** and **Appendix C**). In addition, the delineation identified 0.455 acres of potential jurisdictional 'other waters'consisting of un-vegetated seasonal pools in low areas along the railroad tracks. The open water within Refugio Creek, as well as the entire portion of the project site below mean high water along the San Pablo Bay shoreline and extending into the open water of the Bay are considered jurisdictional 'navigable waters'. A total of 371.915 acres are mapped as navigable waters.

Table 1 provides a summary of the delineated waters. **Figure 3** is a tabloid-size map showing the extent of potential jurisdictional waters delineated within the project site. **Appendix C** is the same map in D-size. In addition to the delineated wetlands, the map shows locations of delineation data points. A total of 30 data points were established and are identified on the delineation map as P-01 through P-30. Copies of all delineation data forms are provided in **Appendix A**. Representative photographs of site features are provided in **Appendix B**. The vegetation, hydrology, and soils characteristic of the different types of wetlands delineated on the site are described in detail below.

Table 1. Summary of Potential Jurisdictional Waters Delineated on the Hercules Intermodal Transit Facility Project Site, Contra Costa County, California.

WATERS TYPE	ACREAGE	ASSOCIATED DATA POINTS
Wetlands		
Pickleweed Tidal Marsh	**5.230**	**P13-16, P19-24**
California Cordgrass Tidal Marsh	**4.152**	**No data points**
Freshwater Seasonal Wetlands	**1.780**	**P01-12, P17, P18, P25-26, P29-30**
Total Wetlands	***11.162***	
Other Waters		
Unvegetated Seasonal Pools	**0.455**	**P27-28**
Total Other Waters	***0.455***	
Navigable Waters		
Areas Bayward of Mean High Water	**371.333**	
Refugio Creek Open Water and Tidal Marsh	**0.582**	
Total Navigable Waters	***371.915***	

5.2 Potential Jurisdictional Wetlands

The delineation identified 11.162 acres of potential jurisdictional wetlands within the project area, consisting of 5.230 acres of pickleweed tidal marsh, 4.152 acres of California cordgrass tidal marsh and 1.780 acres of freshwater seasonal wetlands (**Figure 3** and **Appendix C**).

5.2.1 Pickleweed Tidal Marsh

The project site encompasses saline to brackish tidal marsh, best classified as pickleweed tidal marsh, along the margin of San Pablo Bay as well as the final stretch of Refugio Creek that bisects the project site and discharges into the bay. A man-made bend of almost 90 degrees in the creek just south of the railroad tracks reduces the speed of flow within the channel. The project includes a proposal to straighten the channel.

Delineation points P-13 and P-14 mark the boundary of wetland vegetation along the banks of Refugio Creek, and points P-15 and P-16 and P-19 through P-24 mark the boundary between upland and the marsh fringing San Pablo Bay.

Vegetation
The dominant plant species are all hydrophytic and include pickleweed (*Sarcocornia pacifica*) [OBL], saltgrass (*Distichlis spicata*) [FACW], and prairie bulrush (*Bolboschoenus maritimus*) [OBL]. Other common species along the marsh margins include plantain (*Plantago major*) [FACW] and wild celery (*Apium graveolens*) [FACW].

Hydrology
Wetland hydrology indicators include saturation, non-riverine drift deposits and water marks, oxidized rhizospheres along living roots, sediment deposits, and wetland drainage patterns.

Soils
Typical soils in the marsh are 5YR silty clays with chroma of 3/2 to a depth of 12 inches, and 3/1 at depths greater than 12 inches. Ten percent mottles of 5YR5/8 occur in both strata.

5.2.2 California Cordgrass Tidal Marsh

Bayward of the pickleweed-dominated marsh lies a moderately dense band of California cordgrass (*Spartina foliosa*)[OBL]. This plant community, which is de-watered only at low tide (and remains saturated), is comprised almost exclusively of its namesake plant species. No data points were taken since this wetland is assumed to have positive indicators of wetland plants, hydrology and soils.

5.2.3 Freshwater Seasonal Wetlands

The delineated freshwater seasonal wetlands support non-tidal freshwater seasonal and perennial wetland vegetation. These wetlands occur within shallow depressions throughout upland portions of the project site as well as within a shallow ditch located along the eastern edge of portions of the railroad right-of-way. Many of these depressions are the result of human activities in the area and support ruderal FAC and FACW wetland indicator plant species. Perennial wetland vegetation, including cattails (*Typha latifolia*) and willows (*Salix lasiolepis*) occurs in a few areas due to the presence of permanent sub-surface soil saturation.

Delineation data points P-01 through P-12, P-25 - P-26, and P-29 - P-30 delineate the boundaries of freshwater wetland features.

Vegetation
Dominant vegetation along southern portions of the drainage ditch includes bristly ox-tongue (*Picris echioides*) [FAC], Italian ryegrass (*Lolium multiflorum*) [FAC] and curly dock (*Rumex crispus*) [FACW], both of which are hydrophytic species. Some portions of the ditch to the north are saturated year-round, as evidenced by perennial wetland vegetation such as cattails (*Typha latifolia*) [OBL] and tall nutsedge (*Cyperus eragrostis*) [FACW].

Shallower depressions throughout other portions of the site are dominated by the marginal wetland plants Italian ryegrass [FAC] and Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*) [FAC], while deeper depressions—often bounded by soil deposit berms—support more hydrophytic species such as rabbitsfoot grass (*Polypogon monspeliensis*) [FACW+] and rough cocklebur (*Xanthium strumarium*) [FAC+].

Hydrology
Hydrologic indicators within the freshwater wetlands include saturation, inundation, oxidized rhizospheres along living roots, wetland drainage patterns, and non-riverine drift deposits and water marks. Wetlands within the drainage ditch often include water-stained leaves from the overhanging willow canopy.

Soils
Soils in the delineated seasonal freshwater wetlands are most commonly 2.5Y with hues/chromas of 4/2, or 3/2. Mottles (present in most seasonal wetland soils) are most commonly 7.5YR5/8 or 5YR5/8. Textures are typically silty clay. Soils within freshwater wetlands that remain inundated longer are typically 10YR with chromas of 3/2 or 3/1 and mottles of 10YR5/4. The textures are typically silt.

5.3 Potential Jurisdictional Other Waters

The delineated ‘other waters’ consist of 0.455 acres of unvegetated seasonal pools along the railroad track right of way.

5.3.1 Unvegetated Seasonal Pools

Forty five seasonal pools (or ‘puddles’) were mapped within the railroad right-of-way. These pools occur within depressions in compacted dirt and gravel areas and are generally devoid of vascular vegetation. These pools reach a maximum depth of six inches in the winter, with most pools not exceeding three inches in depth, and hold water for up to several consecutive weeks.

5.4 Potential Jurisdictional Navigable Waters

All waters within the project site subject to the ebb and flow of the tides are delineated as potential navigable waters. This includes portions of Refugio Creek within the project site, as well as those portions of the project site below mean high tide elevation, including the pickleweed tidal marsh, California cordgrass tidal marsh, intertidal mudflats, man-made shoreline, and San Pablo Bay open waters (**Figure 3** and **Appendix C**). There is a total of approximately 371.915 acres of potential navigable waters delineated within the project site.

6.0 CONCLUSIONS

All three subsets of "waters of the United States" were delineated on the Hercules Intermodal Transit Facility project site: wetlands, navigable waters, and other waters. Delineated wetlands meet the technical definition of wetlands by having positive indicators of wetland vegetation, hydrology, and soils. Areas bayward of the mean high water mark along the edge of San Pablo Bay and along with the lower reaches of Refugio Creek within the project site represent the delineated edge of navigable waters. Delineated 'other waters' occur within unvegetated seasonal pools along the railroad tracks.

The remainder of the project site consists of uplands which do not meet the technical criteria of jurisdictional wetlands, 'other water' or navigable waters.

The results of this delineation are preliminary and must be reviewed and verified in writing by the COE to be considered an official delineation.

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Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

APPENDIX A
WETLAND DELINEATION DATA FORMS

Data Forms Available Upon Request

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

APPENDIX B

REPRESENTATIVE PROJECT SITE PHOTOGRAPHS

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

APPENDIX B. Representative Photography of Hercules Intermodal Transit Facility Project Area Wetlands, 2006-2008. Contra Costa County, California.

Photo 1: Tidal Marsh Along East Side of Peninsula, Looking East. September, 2007.

Photo 2: Wetland Ditch at Northeastern Edge of Project Site. April, 2008.

APPENDIX B. Representative Photography of Hercules Intermodal Transit Facility Project Area Wetlands, 2006-2008. Contra Costa County, California.

Photo 3: Bend in Refugio Creek, Central Portion of Project Site. April, 2008.

Photo 4: Seasonal Wetland at Southwestern Edge of Project Site. April, 2008.

APPENDIX B. Representative Photography of Hercules Intermodal Transit Facility Project Area Wetlands, 2006-2008. Contra Costa County, California.

Photo 5: Un-vegetated "Other Waters" at NE Edge of Project Site. February, 2007.

Photo 6: Ruderal Upland and Wetland at Center of Project Area. April, 2007.

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

APPENDIX C

MAP OF JURISDICTIONAL WATERS OF THE U.S. (D-SIZE)

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

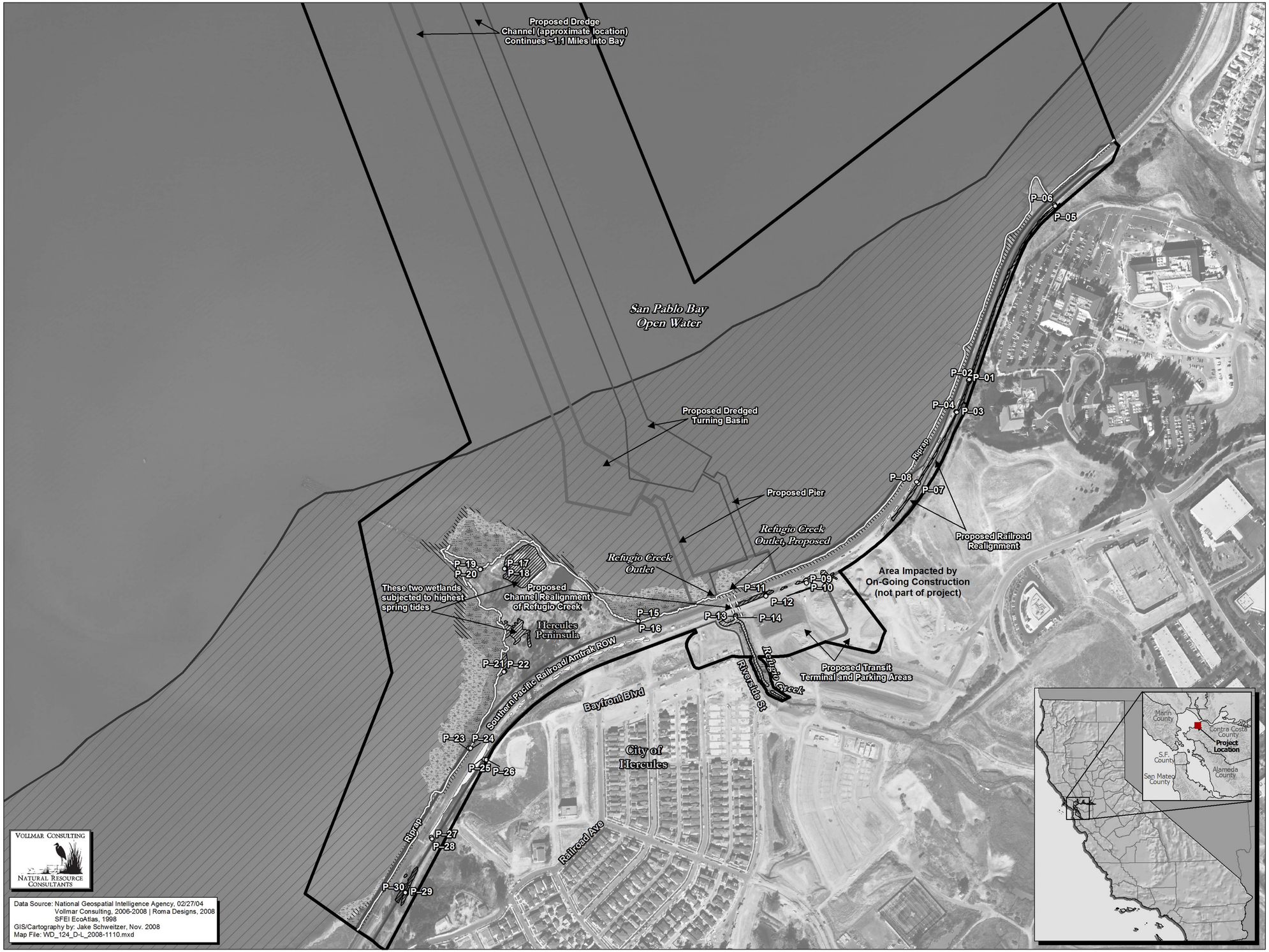

FIGURE 3
Jurisdictional Waters of the U.S. 2007-2008

Hercules Intermodal Transit Facility
Contra Costa County, California

Legend

- Wetland Delineation Point (with ID #)[1]
- Mean High Water[2]
- Project Area (402 acres as mapped)
- California Cordgrass Tidal Marsh (4.152 ac.)
- Pickleweed Tidal Marsh (5.230 ac.)
- Freshwater Wetland (1.780 ac.)
- Bay Open Waters (approx 263.216 ac.)
- Other Waters (0.455 ac.)[3]
- Refugio Creek Open Water (0.191 ac.)[4]
- Intertidal Mudflats (EcoAtlas) (97.731 ac.)
- Anthropogenic Rocky Shoreline
- Alternative 1 Impact Area (approx. 42.5 acres)
- Alternative 2 Impact Area (approx. 42.5 acres)

Note: All acreages represent areas within project area

1 Odd number = wetland point
2 Bay margin; does not include navigable waters of Refugio Creek.
3 Un-vegetated seasonal wetlands along RR track
4 Refugio Creek is subject to Section 10 as well as Section 404 jurisdiction

Total navigable waters (bayward of mean high water line plus open waters and tidal marsh of Refugio Creek): 371.915 ac.

N W E S

1:3,000
(1-in = 250-ft at D-Size Layout)

0 125 250 Meters
0 250 500 1,000 Feet

APPENDIX G-4

Eelgrass and Widgeongrass Survey
and
Bathymetric Survey Report

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

Hercules Multimodal Transit Facility Project

Eelgrass and Widgeongrass Presence/Absence Survey and Bathymetric Survey

Data Collection Report

April 2007

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Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

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This data report
Raw bathymetric survey data (text file and ESRI point shapefile)
Raster bathymetry DEM (ESRI grid)
1 ft contour lines (ESRI line shapefile)

Executive Summary

Wetlands and Water Resources, Inc. (WWR) was retained by Impact Sciences, Inc. to perform a survey for sensitive aquatic habitats, particularly eelgrass (*Zostera marina*) and widgeongrass (*Ruppia maritima*) beds, in the vicinity of the proposed Hercules Multimodal Transit Facility. On March 1, 2, 3 and 5, 2007, Environmental Data Solutions (EDS) and WWR performed a Side-Scan Sonar (SSS) survey for eelgrass beds within the project boundaries. This survey effort also included a Class 1 hydrographic survey (USACE 2002) of the San Pablo Bay seafloor to provide updated bathymetric data in the project area and to correlate to eelgrass observations.

The survey footprint covered approximately 650 acres between the shoreline and -6.6 ft (-2 m) Mean Lower Low Water (MLLW) in the area where the proposed navigation channels will be dredged and where ferry wake wash could be a factor. Prior research indicates that the lower limit of eelgrass in San Francisco Bay is approximately -6.6 ft MLLW and previous eelgrass studies conducted in the bay have utilized this lower depth limit (Zimmerman et al. 1991, Merkel and Associates 2004, NOAA 2003).

The hydrographic surveys utilized Class 1 methods and accuracies as outlined in the Army Corps of Engineers' January 2002 *Hydrographic Surveying Manual* (EM 1110-2-1003). The raw survey data were used to create a raster Digital Elevation Model (DEM) with a 1 m^2 cell size from which 1 ft contour lines were created using the Spatial Analyst extension in ArcGIS 9.2.

The eelgrass survey was conducted using a *Marine Sonics* side-scan sonar towfish operating at a 600 kHz frequency. Each SSS image was reviewed twice: first during the acquisition surveys, and second during image post-processing. During the surveys, seafloor types with different sonar return signatures were identified and re-visited to inspect in further detail using a ponar-type grab sampler. Following the review of the post-processed images, several locations were identified for further field investigation by SCUBA divers. The diver surveys were performed on April 6, 2007.

No eelgrass or widgeongrass beds or individual shoots were detected in the survey area. A total of six different seabed types were identified during the surveys: 1) mud, 2) mud with oyster and clam shells, 3) mud with oyster and clam shells colonized by tunicates (small, sessile marine invertebrates), 4) industrial debris piles, 5) cordgrass beds along the Bay margin, and 6) mud with standing pilings.

1 Introduction

Wetlands and Water Resources, Inc. (WWR) was retained by Impact Sciences, Inc. to perform a survey for sensitive aquatic habitats, particularly eelgrass (*Zostera marina*) and widgeongrass (*Ruppia maritima*) beds, in the vicinity of the proposed Hercules Multimodal Transit Facility. On March 1, 2, 3 and 5, 2007, Environmental Data Solutions (EDS) and WWR performed a Side-Scan Sonar (SSS) survey for eelgrass beds within the project boundaries. This survey effort also included a Class 1 hydrographic survey (USACE 2002) of the San Pablo Bay seafloor to provide current bathymetric data in the project area and to correlate to eelgrass observations. The 2-person field crew included Mr. James Kulpa (Hydrographer - EDS), and Mr. Darren Gewant (Oceanographer – WWR).

This report outlines survey methodologies and protocols utilized to determine the presence/absence of eelgrass and achieve a Class 1 bathymetric survey. It also presents the results of the survey efforts. In addition to this report, a companion electronic CD contains this data collection report, the raw bathymetric survey data (survey points), and processed bathymetric data (DEM and contour lines). The raw SSS data are not included with this report due to the large volume (over 22 gigabytes). The data are stored at the WWR office and can be viewed on site, or provided on DVD if desired.

2 Data Collection and Processing

2.1 Survey Area

The survey footprint covered approximately 650 acres between the shoreline and -6.6 ft (-2 m) Mean Lower Low Water (MLLW) in the area where the proposed navigation channels will be dredged and where ferry wake wash could be a factor. This survey extent was determined through conversations with staff from Coast and Harbor Engineering and related to their separate efforts to predict wake effects. Prior research indicates that the lower limit of eelgrass in San Francisco Bay is approximately -6.6 ft MLLW and previous eelgrass studies conducted in the bay have utilized this lower depth limit (Zimmerman et al. 1991, Merkel and Associates 2004, NOAA 2003). The survey area extends 1.25 miles west into San Pablo Bay and approximately 1.3 miles along the central Hercules shoreline (Figure 1). The survey footprint covers a range of bathymetry from +2.0 ft MLLW to subtidal areas approximately -7.0 ft MLLW.

A total of 120 shore-parallel transects, spaced at 60 ft intervals, were scanned for the presence of eelgrass, with approximately 90 of these transects also surveyed for bathymetry (Figure 2). Four shore-perpendicular transects were surveyed as a cross-reference to verify the accuracy of the shore-parallel bathymetric transects. The average length of each transect was 1.2 miles.

2.2 Bathymetric Survey

2.2.1 Data Collection

The survey crew utilized a 17' Boston Whaler survey vessel, compliant with all U.S. Coast Guard safety regulations, to perform the survey. A graph displaying the results from a squat correction test conducted for the vessel in March 2003 is aboard the vessel (per U.S. Army Corps of Engineers' specifications).

The hydrographic surveys utilized Class 1 methods and accuracies as outlined in the Army Corps of Engineers' January 2002 *Hydrographic Surveying Manual* (EM 1110-2-1003). Bathymetric data were collected using an *Odom Hydrotrac* survey-grade fathometer with a 3-degree 200-kHz transducer. Position data (geographic coordinates) were collected using a *Trimble Ag123* Differential GPS placed above the fathometer. Survey vessel motion (heave, pitch and roll) was measured by using a *TSS CMS-25* motion sensor (the motion sensor was also attached to the top of the fathometer). Vessel motion data were applied to the raw sounding data before being logged to the computer. The data stream was collected using a *Toshiba* laptop running *Hypack Max* (Version 6.2a) survey planning, data collection and reduction software.

Horizontal position control data were collected in geographic coordinates (latitude and longitude in decimal degrees) based on the North American Datum of 1983 (NAD83) via the *Trimble* system. *Corpscon* Version 6.0 was used to convert the geographic coordinates to California State Plane Zone 3 (NAD83, feet) coordinates.

In order to correct raw sounding data for changing water depths resulting from tidal cycles, a recording tide gage (*Instrumentation Northwest PS9800* vented pressure transducer) was installed on an offshore pile (Figure 3). The tide sensor was programmed to measure and record a water level at six minute intervals. The sensor was calibrated multiple times during the course of the deployment using project vertical control points which were tied into existing National Ocean Service (NOS) tidal and geodetic benchmarks. All calibrations were within ± 0.05 ft of the pressure transducer measurements. Water surface elevation time series are presented in Appendix C.

2.2.2 Tidal Datum to Geodetic Datum Conversion

Bathymetric data are referenced to the local tidal datum (ft MLLW). The survey temporary benchmarks, used for tide gage calibration, were tied into three NOS tidal benchmarks and one National Geodetic Survey (NGS) benchmark using Real Time Kinematic (RTK) GPS. Figure 3 shows the locations of these benchmarks and Appendix B contains metadata describing each tidal benchmark and associated survey data.

This survey also determined the vertical offset (in feet) between the tidal (ft MLLW) and geodetic-based (ft North American Vertical Datum of 1988 (NAVD88)) datums (Table 1). The survey crew's attempt to re-occupy historic tidal benchmarks located on the Hercules shoreline was unsuccessful as the benchmarks no longer exist. Therefore, the conversion between ft MLLW and ft NAVD88 drew upon prior reported and newly surveyed data from Point Pinole. The conversion was found to be: **ft NAVD88 = ft MLLW + 0.1ft**

Table 1 – Tidal Datum to Geodetic Datum Conversion Table

Note: RTK vertical error ± 0.10 ft

HERCULES

Tidal BM	Reported Elevation ft MLLW	Reported Elevation ft NAVD88	Surveyed Elevation ft NAVD88	Elevation Difference (ft)
tidal 2	10.49	10.70	destroyed	0.21
tidal 4	14.09	14.20	destroyed	0.11
tidal 5	11.61	11.70	destroyed	0.09
			Average	**0.14**

POINT PINOLE

Tidal BM	Reported Elevation ft MLLW	Reported Elevation ft NAVD88	Surveyed Elevation ft NAVD88	Elevation Difference (ft)
tidal 5056 C	34.75	n/a	34.86	0.11
tidal 5056 B	20.90	n/a	20.99	0.08
tidal 556 P	60.12	60.00	not surveyed	0.12
			Average	**0.10**

2.2.3 Data Processing

The raw bathymetric sounding data were converted into ft MLLW and filtered down to a 10 m horizontal point resolution. These data were used to create a Triangulated Irregular Network (TIN) using the 3D Analyst extension in ArcView 3.2. This TIN was then converted into a raster Digital Elevation Model (DEM) with a 1 m^2 cell size from which 1 ft contour lines were created using the Spatial Analyst extension in ArcGIS 9.2.

2.3 Eelgrass and Widgeongrass Survey

2.3.1 Data Collection

Side scan image data were collected using a *Marine Sonics* side scan sonar (SSS) towfish operating at a 600 kHz frequency (Figure 4). The SSS towfish was mounted and towed from the bow of the survey vessel using a Kevlar-sheathed data and control cable. Towfish operations were controlled using *Marine Sonics PC Acquisition* software running on an *Intel / Windows* PC, separate from the computer running the *Hypak Max* software.

The towfish makes a sonar scan of a swath of the seafloor and records the strength of the echoes from objects on the bottom. The towfish is towed just above the seafloor while continuously emitting focused beams of sound perpendicular to the path of motion. The control software records the strength of the echo signal and then draws the entire sonar record line on the screen. An image of the seafloor is formed, line by line, as the sonar record is returned and drawn on the screen.

The 600 kHz towfish has a maximum range of approximately 250 ft on both sides. For this survey, the operating range of the fish was programmed to 33 ft. The smaller range enables a finer resolution – which is needed to detect the sparse shoots of eelgrass that are characteristic to San Francisco Bay. As a result of the tighter range, survey transect spacing was set at 60 ft intervals. This spacing ensured that SSS survey data lines would overlap and provide maximum seafloor coverage.

The navigation system consisted of a *Trimble AG123* Differential GPS (DGPS) connected to a *Toshiba* laptop running *Hypack Max* bathymetric survey control and processing software (Version 6.2a). Survey coverage (bathymetric and SSS) was ensured by navigating along pre-determined survey lines which were programmed into *Hypack* (Figure 2). Vessel position relative to current survey line is displayed on a heads-up monitor. *Hypack* also provided a position data stream to the *Marin Sonics PC Acquisition* software. These data were corrected for the position of the SSS towfish relative to the DPGS antenna (known as layback) and then integrated into the side scan imagery data files. This navigation and image integration facilitated the georectification of the SSS data during post-processing.

Final SSS navigation data had a resolution of approximately ± 10.0 ft. This error is a combination of the DGPS error (± 3.3 ft) and potential SSS position error due inaccuracies in layback measurements and georectification post-processing.

2.3.2 Data Processing

Each SSS image was reviewed twice: once during the acquisition surveys, and second during image post-processing. During the surveys, seafloor types with different sonar return signatures were identified and re-visited to inspect in further detail using a ponar-type grab sampler. The field team collected over 30 grab samples.

Image post-processing consisted of loading the SSS data files into *Isis Seafloor Mapping and Analysis* Software (Version 6.0) and performing numerous signal processing algorithms in order to reveal further image detail. In addition, each image was corrected for slant and range of the acoustic swath in order to facilitate georectification.

Following the review of the post-processed images, several locations were identified for further field investigation by SCUBA divers (Figure 5). The diver survey was conducted on April 6, 2007.

3 Quality Assurance / Quality Control

3.1 Bathymetric Survey

In order to achieve Class 1 accuracy requirements, metadata describing various hydrographic survey variables were measured, recorded and utilized before, during and after each survey day. Quality assurance and quality control protocols and metadata are presented in this section.

3.1.1 Weather Conditions

Table 2 presents the environmental metadata.

Table 2 - Environmental Metadata

Date	1 - March - 07	2 - March - 07	3 - March - 07	5 - March - 07
Weather	Sunny, clear	Sunny, clear	Sunny, clear	Sunny, clear
Wind	0 – 5 knts	0 – 5 knts	0 knts	0 knts
Water Surface Conditions	Smooth	Smooth	Smooth	Smooth
Stage (ft MLLW)	6.1>6.6>-0.1	6.0>6.4>-0.2	4.0>6.1>5.0	1.7>5.4>1.7
Survey Time Period (pst)	10:00 – 17:00	10:13 – 18:00	9:45 – 14:00	9:10 – 18:10
Bottom Type	Hard Mud / Shell	Hard Mud / Shell	Hard Mud / Shell	Hard Mud / Shell

3.1.2 Fathometer Calibration

There are two standard procedures used to check the accuracy of the fathometer output: 1) water column speed of sound calculation and 2) fathometer barcheck calibration. Fathometers calculate water depth by using algorithms based on the speed of sound through water. Since the speed of sound is affected by water temperature and salinity, these values were recorded each day before the bathymetric surveys began utilizing an *Odom Digi-Bar Pro* speed of sound sensor. The average water column speed of sound was then programmed into the fathometer. The average water column temperature and salinity for all four survey days were 10.2° C and 9 ppt respectively, resulting in a speed of sound constant of 4783 ft/sec.

The second protocol is a barcheck calibration performed on the fathometer before and after each survey. This procedure consists of lowering a 36 inch diameter, weighted steel plate below the fathometer transducer and recording the actual depth of the disc (via markings on a cable) and the

fathometer output (output was corrected for the transducer depth offset). Appendix A contains the results of each barcheck calibration.

3.2 Side Scan Sonar

Quality assurance protocols related to SSS output consist mainly of adjusting certain gain and sensitivity values on the SSS output in order to produce a detailed image of the seafloor. Prior to the collection of SSS data along the survey transects, the survey crew performed numerous "calibration" exercises with the towfish to ensure image output was the sharpest possible.

Multiple buoy lines (anchors attached to buoys with line of varying diameters) were deployed within the survey area. The survey crew then steamed past each buoy line at varying distances and velocities while monitoring the SSS imagery. Controls affecting sonar backscatter return strength, sensitivity, contrast, beam width and other variables were adjusted until the returned images of the buoys lines were as clear and sharp as possible.

In addition to the buoy line calibration, the survey crew performed *in-situ* scans on known beds of sub-aquatic vegetation to understand their return signals. These scans included cordgrass (*Spartina foliosa*) beds found on-site.

4 Results

Figure 6 shows the survey vessel track lines throughout the survey footprint.

4.1 Bathymetry

Figure 7 shows the DEM and 1 ft contour lines of the project area.

4.2 Eelgrass and Widgeongrass Mapping

No eelgrass or widgeongrass beds or individual shoots were detected in the survey area. A total of six different seabed types were identified during the surveys: 1) mud, 2) mud with oyster and clam shells, 3) mud with oyster and clam shells colonized by tunicates (small, sessile marine invertebrates), 4) industrial debris piles, 5) cordgrass beds along the Bay margin, and 6) mud with standing pilings. Figure 8 shows detailed SSS images of each seafloor type along with photographs of field samples taken at the location of the sonar image. The geographic location of each of these samples in the study area is also shown.

5 References Cited

U.S. Army Corps of Engineers. 2002. Hydrographic Survey Manual, Engineering and Design Manual No. EM-1110-2-1003, Washington D.C.

Merkel and Associates, Inc. 2004. Eelgrass Habitat Surveys for the Emeryville Flats and Clipper Cover, Yerba Buena Island (October 1999 through October 2003). Prepared for Caltrans Disctict 4.

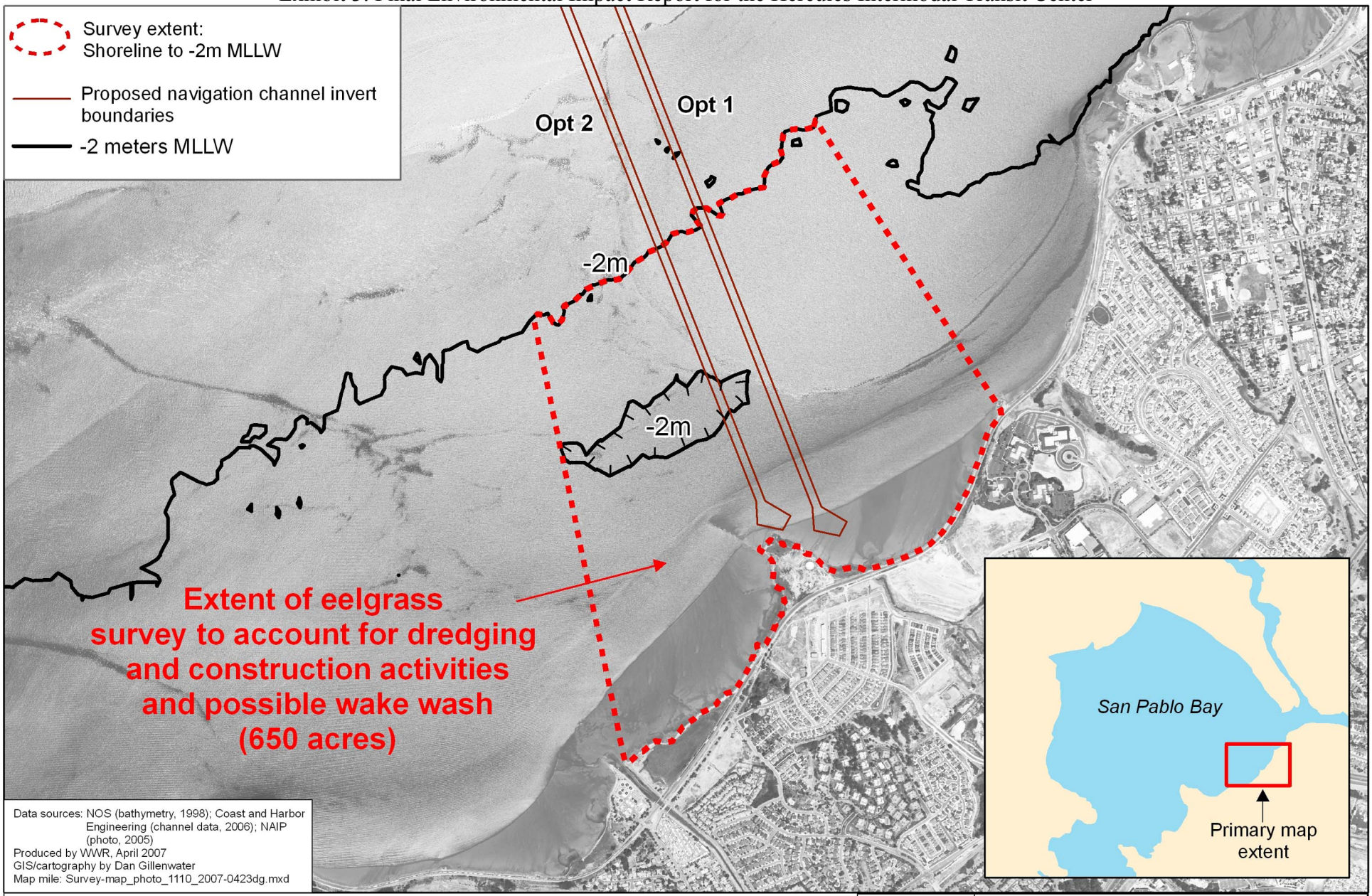
NOAA. 2003. San Francisco Bay Watershed Database and Mapping Project, Release 2.

Wyllie-Escheverria, S. and M. Fonseca. 2003. Eelgrass (*Zostera marina L.*) research in San Francisco bay, California from 1920 to the present. NOAA Literature Review, February 2003.

Zimmerman, R., J. Reguzzoni, S. Wyllie-Echeverria, M. Josselyn, and R. Alberte. 1991. Assessment of environmental suitability for growth of *Zostera marina L.* (eelgrass) in San Francisco Bay. Aquatic Botany, 39. 353-366.

Figures

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center



Data sources: NOS (bathymetry, 1998); Coast and Harbor Engineering (channel data, 2006); NAIP (photo, 2005)
Produced by WWR, April 2007
GIS/cartography by Dan Gillenwater
Map mile: Survey-map_photo_1110_2007-0423dg.mxd

Environmental Data Solutions

N W E S

1:21,600 (1" = 1,800' at letter layout)

0 1,800 3,600 Feet

0 550 1,100 Meters

WETLANDS AND WATER RESOURCES

PLANNED EELGRASS SURVEY EXTENT

Hercules Ferry Terminal
Water Transit Authority and City of Hercules
Hercules, California

April 2007	Project No. 1110	**Figure 1**

Environmental Data Solutions

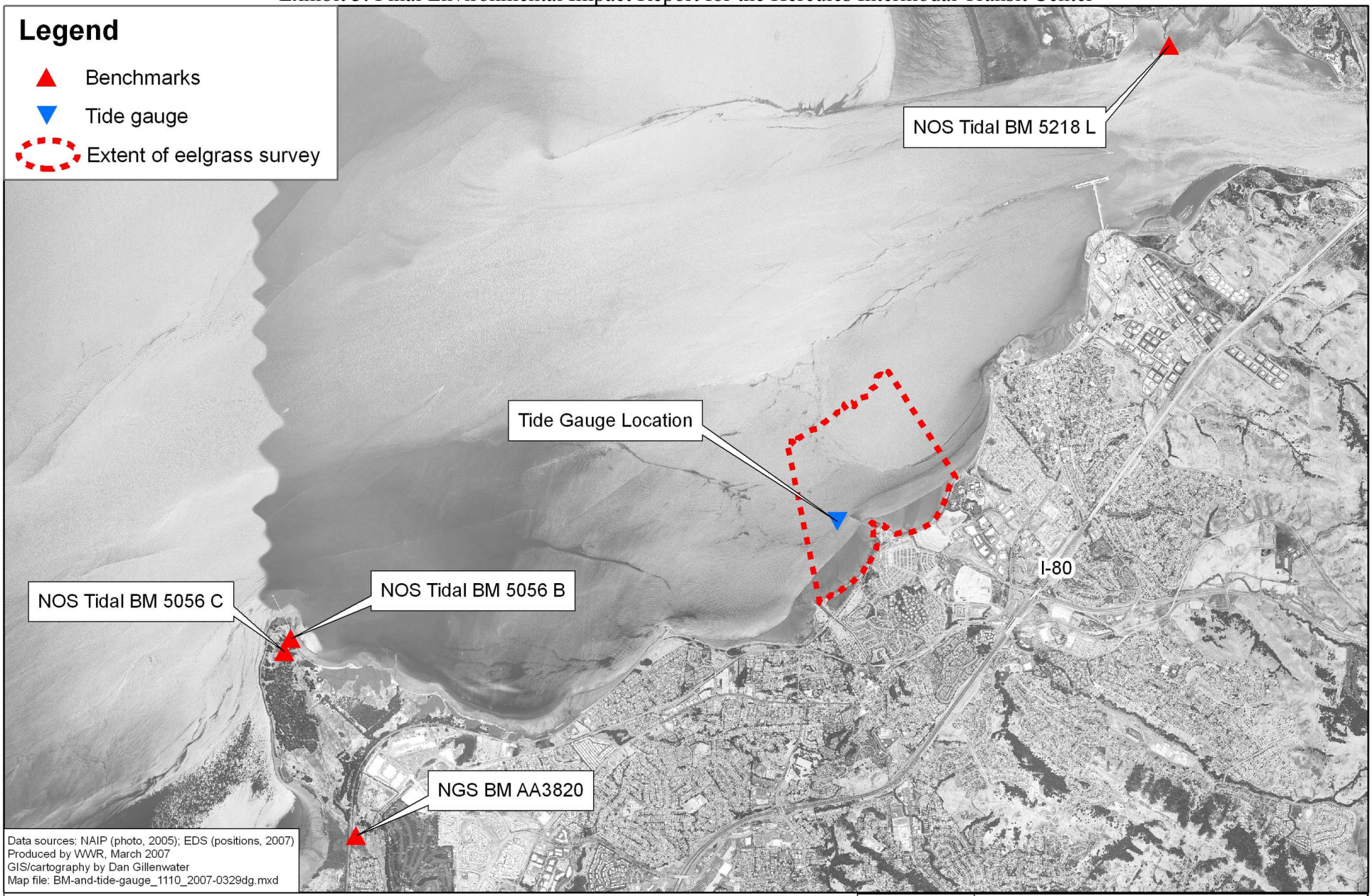
WETLANDS AND WATER RESOURCES

PLANNED EELGRASS SURVEY LINES

Hercules Ferry Terminal
Water Transit Authority and City of Hercules
Hercules, California

March 2007	Project No. 1110	Figure 2

survey-lines_1110_2007-0329dag.ai



Environmental Data Solutions

N W E S

1:60,000 (1" = 5,000' at letter layout)

0 5,000 10,000 Feet

0 1,500 3,000 Meters

WETLANDS AND WATER RESOURCES

TIDAL BENCHMARK AND TIDE GAUGE LOCATIONS

Hercules Ferry Terminal
Water Transit Authority and City of Hercules
Hercules, California

March 2007	Project No. 1110	**Figure 3**

Environmental Data Solutions

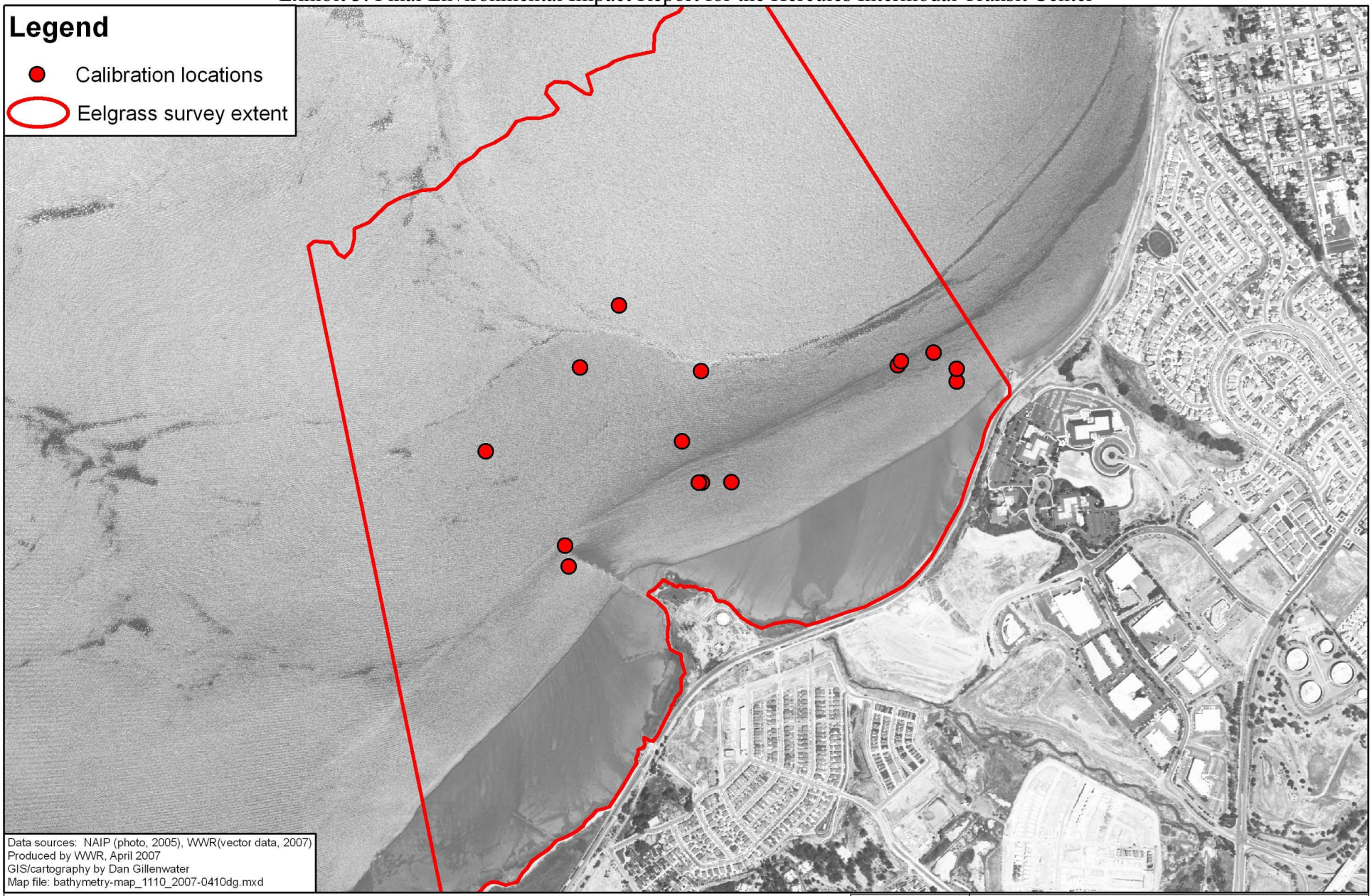
WETLANDS AND WATER RESOURCES

SIDE-SCAN SONAR TOWFISH

Hercules Ferry Terminal
Water Transit Authority and City of Hercules
Hercules, California

March 2007	Project No. 1110	Figure 4

towfish-picture_1110_2007-0329dag.ai



Environmental Data Solutions

N
W E
S

1:14,400 (1" = 1,200' at letter layout)

0 1,200 2,400 Feet

0 375 750 Meters

WETLANDS AND WATER RESOURCES

DIVER CALIBRATION SURVEY POINTS

Hercules Ferry Terminal
Water Transit Authority and City of Hercules
Hercules, California

April 2007	Project No. 1110	Figure 5

Environmental Data Solutions

WETLANDS AND WATER RESOURCES

SURVEY VESSEL TRACKLINES

Hercules Ferry Terminal
Water Transit Authority and City of Hercules
Hercules, California

March 2007	Project No. 1110	Figure 6

survey-tracklines_1110_2007-0329dag.ai

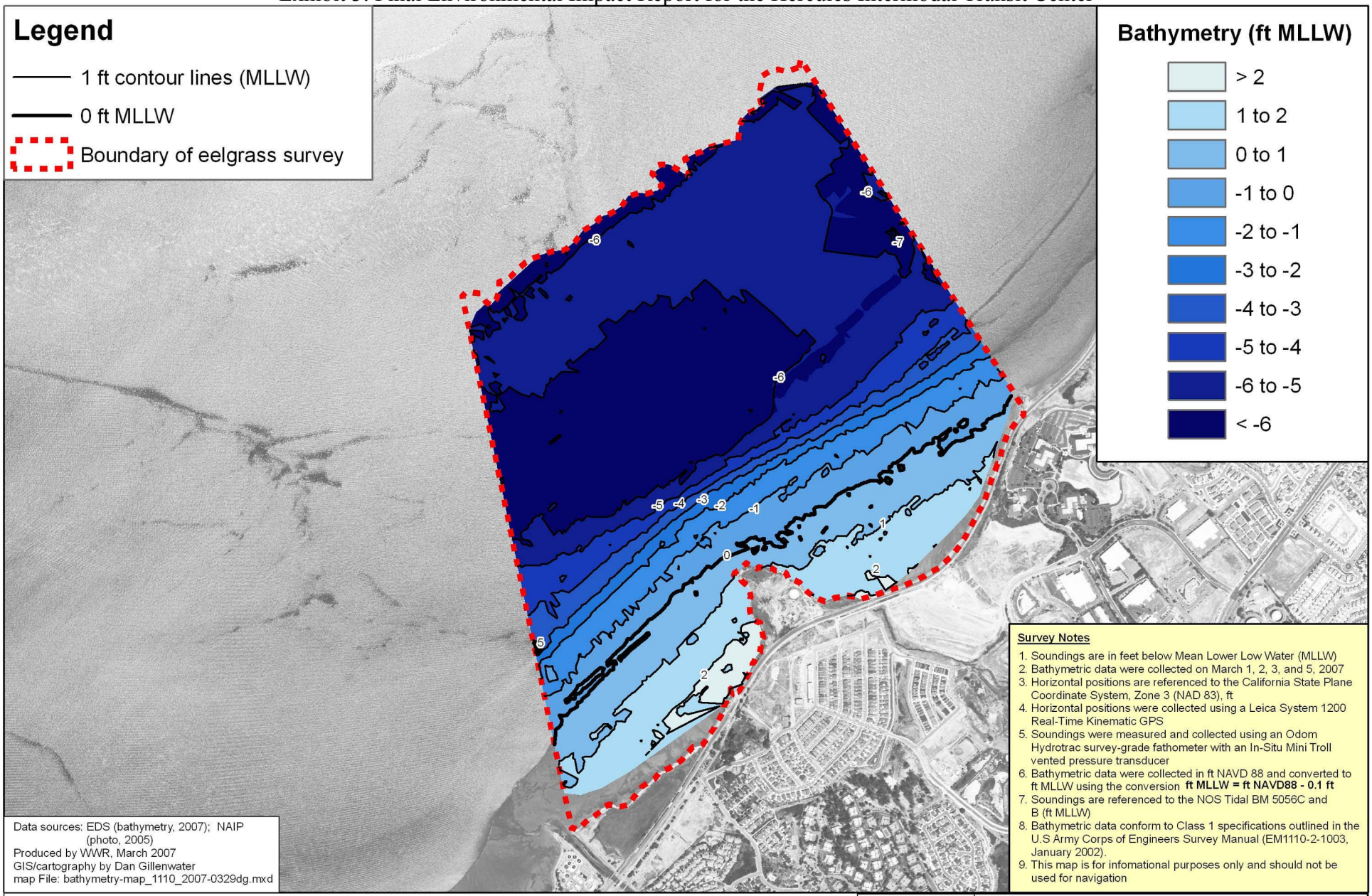
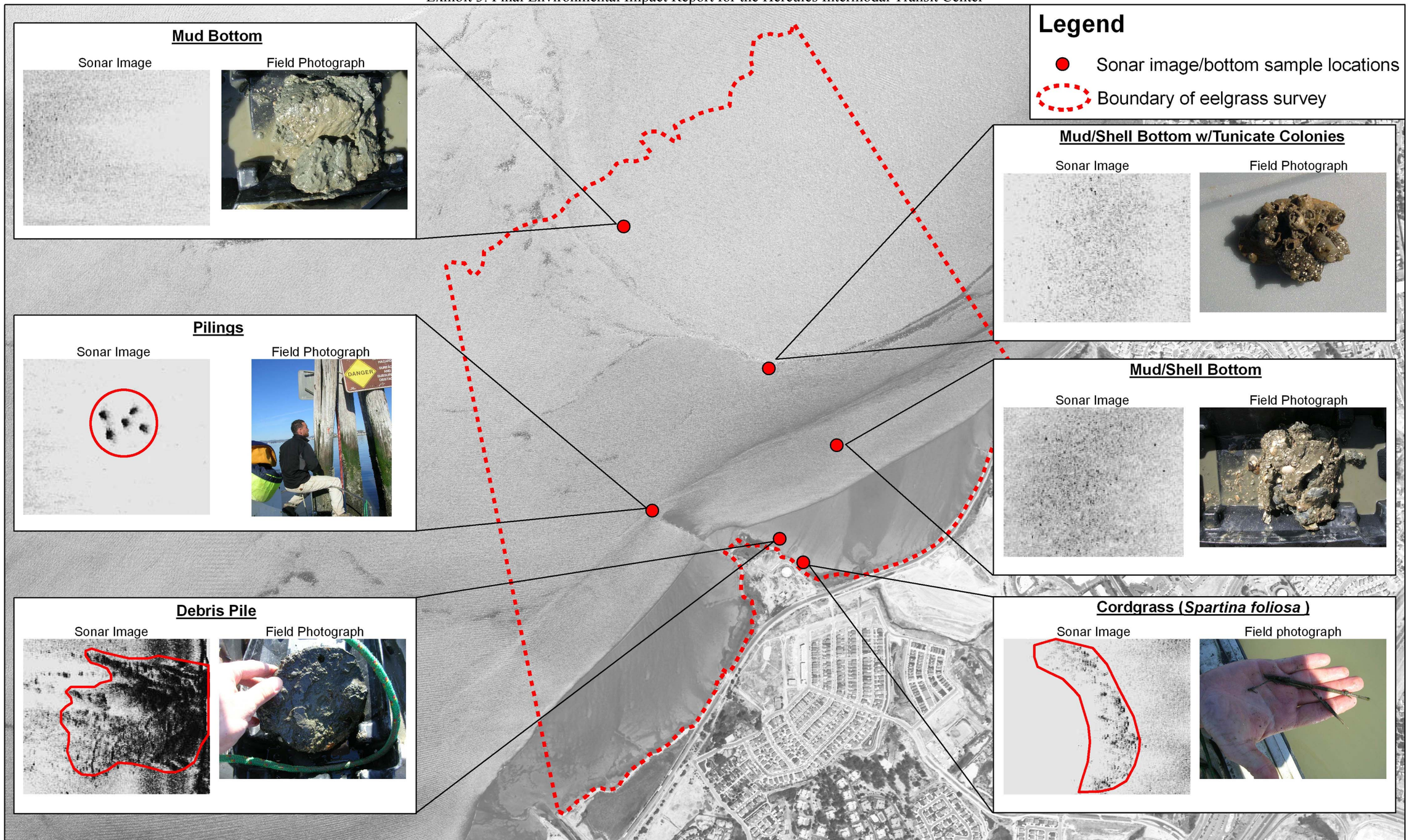

Legend
1 ft contour lines (MLLW)
0 ft MLLW
Boundary of eelgrass survey
Bathymetry (ft MLLW)
> 2
1 to 2
0 to 1
-1 to 0
-2 to -1
-3 to -2
-4 to -3
-5 to -4
-6 to -5
< -6
-6
-7
-5
-4
-3
-2
-1
0
1
2
5
Survey Notes
1. Soundings are in feet below Mean Lower Low Water (MLLW)
2. Bathymetric data were collected on March 1, 2, 3, and 5, 2007
3. Horizontal positions are referenced to the California State Plane Coordinate System, Zone 3 (NAD 83), ft
4. Horizontal positions were collected using a Leica System 1200 Real-Time Kinematic GPS
5. Soundings were measured and collected using an Odom Hydrotrac survey-grade fathometer with an In-Situ Mini Troll vented pressure transducer
6. Bathymetric data were collected in ft NAVD 88 and converted to ft MLLW using the conversion ft MLLW = ft NAVD88 - 0.1 ft
7. Soundings are referenced to the NOS Tidal BM 5056C and B (ft MLLW)
8. Bathymetric data conform to Class 1 specifications outlined in the U.S Army Corps of Engineers Survey Manual (EM1110-2-1003, January 2002).
9. This map is for infomational purposes only and should not be used for navigation
Data sources: EDS (bathymetry, 2007); NAIP (photo, 2005)
Produced by WWR, March 2007
GIS/cartography by Dan Gillenwater
map File: bathymetry-map_1110_2007-0329dg.mxd
Environmental Data Solutions
N
W
E
S
1:18,000 (1" = 1,500' at letter layout)
0
1,500
3,000
Feet
Meters
0
450
900
WETLANDS AND WATER RESOURCES
STUDY AREA BATHYMETRY
Hercules Ferry Terminal
Water Transit Authority and City of Hercules
Hercules, California
March 2007
Project No. 1110
Figure 7

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center



Data sources: NAIP (air photo, 2005); EDS (sonar imagery and photos, 2007)
Produced by WWR, April 2007
GIS/cartography by Dan Gillenwater
Map file: sonar-images_1110_2007-0417dg.mxd

N W E S

1:12,000 (1" = 1,000' at tabloid layout)

0 500 1,000 2,000 Feet

0 150 300 600 Meters

Environmental Data Solutions

WETLANDS AND WATER RESOURCES

SONAR IMAGES AND ASSOCIATED BOTTOM TYPES

Hercules Ferry Terminal
Water Transit Authority and City of Hercules
Hercules, California

April 2007	Project No. 1110	Figure 8

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

Appendix A
Fathometer Barcheck Results

Date	Barcheck Depth (ft)	Fathometer Output (ft)
1 March 07 (pre)	2.5	2.5
	3.0	3.0
	3.5	3.5
	6.0	6.0
1 March 07 (post)	2.5	2.5
	3.0	3.0
	3.5	3.5
	6.0	6.0
2 March 07 (pre)	2.0	2.0
	3.0	3.0
	3.5	3.5
	6.5	6.5
2 March 07 (post)	2.0	2.0
	3.0	3.0
	3.5	3.5
	6.5	6.5
3 March 07 (pre)	2.0	2.0
	3.0	3.0
	3.5	3.5
	6.5	6.5
3 March 07 (post)	2.0	2.0
	3.0	3.0
	3.5	3.5
	6.5	6.5
5 March 07 (pre)	2.0	2.0
	3.0	3.0
	3.5	3.5
	4.0	4.0
	5.0	5.0
5 March 07 (post)	3.0	3.0
	3.5	3.5
	4.0	4.0
	5.0	5.0

Appendix B
Tidal and Geodetic Benchmark Datasheets

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Service

Datums Page

Station ID: 9415074 **PUBLICATION DATE: 05/01/2003**
Name: HERCULES WHARF CALIFORNIA
NOAA Chart: 18654 **Latitude: 38° 1.4' N**
USGS Quad: MARE ISLAND **Longitude: 122° 17.5' W**

To reach the tidal bench marks from San Pablo Avenue in Pinole, proceed NE along San Pablo Avenue through the town to the first major intersection with a shopping center on the west side of the intersection, then turn left at the intersection and follow the road to Hercules, Inc. The bench marks are on the abandoned Hercules, Inc. property. The tide station was on the NE end of the Hercules, Inc. abandoned and burned pier.

T I D A L B E N C H M A R K S

PRIMARY BENCH MARK STAMPING: 2 1921
DESIGNATION: TIDAL 2

MONUMENTATION: Tidal Station disk VM#: 8530
AGENCY: US Coast and Geodetic Survey (USC&GS) PID#: JT0560
SETTING CLASSIFICATION: Drain tile

The primary bench mark is a disk set in the top of a drain tile filled with cement located near the burned and abandoned pier, 8 m (26 ft) south of fire alarm box #117, 2 m (6 ft) west of the first iron fire hydrant on the solid ground at the intersection of two roads SE of the pier, and 0.15 m (0.5 ft) above ground level.

BENCH MARK STAMPING: 4 1921
DESIGNATION: TIDAL 4

MONUMENTATION: Tidal Station disk VM#: 8531
AGENCY: US Coast and Geodetic Survey (USC&GS) PID#: JT0558
SETTING CLASSIFICATION: Concrete foundation

The bench mark is a disk set in the top of the concrete foundation at the NW corner of the abandoned power plant, the only large brick building north of the Southern Pacific railroad tracks, 0.76 m (2.5 ft) above ground level.

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National Oceanic and Atmospheric Administration
National Ocean Service

Station ID: 9415074 **PUBLICATION DATE: 05/01/2003**
Name: HERCULES WHARF CALIFORNIA
NOAA Chart: 18654 **Latitude: 38° 1.4' N**
USGS Quad: MARE ISLAND **Longitude: 122° 17.5' W**

T I D A L B E N C H M A R K S

BENCH MARK STAMPING: 5 1936
DESIGNATION: TIDAL 5

MONUMENTATION: Tidal Station disk VM#: 8532
AGENCY: US Coast and Geodetic Survey (USC&GS) PID#: JT0557
SETTING CLASSIFICATION: Concrete base

The bench mark is a disk set in the top of the east corner of the concrete base for double semaphore #234-235 on the SE side of the Southern Pacific railroad tracks, and 0.3 km (0.2 mi) SW of the Hercules railroad station, 5.67 m (18.6 ft) east of the east rail of the main track, and 0.15 m (0.5 ft) above the level of the tracks.

BENCH MARK STAMPING: 5074 F 1976
DESIGNATION: 941 5074 F

MONUMENTATION: Tidal Station disk VM#: 8533
AGENCY: National Ocean Survey (NOS) PID:
SETTING CLASSIFICATION: Copper-clad steel rod

The bench mark is a disk located near the Southern Pacific railroad tracks, 20 m (67 ft) WSW of brick building #8102, 19 m (62 ft) WNW of the westernmost of four rails, and 7.47 m (24.5 ft) SSW of three culverts at the outer fence of Hercules, Inc., property. The bench mark is set 0.12 m (0.4 ft) above grade, crimped to the top of a copper-clad steel rod driven 6.7 m (22 ft), and encased in a PVC pipe.

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National Oceanic and Atmospheric Administration
National Ocean Service

Station ID: 9415074 **PUBLICATION DATE: 05/01/2003**
Name: HERCULES WHARF CALIFORNIA
NOAA Chart: 18654 **Latitude: 38° 1.4' N**
USGS Quad: MARE ISLAND **Longitude: 122° 17.5' W**

T I D A L B E N C H M A R K S

BENCH MARK STAMPING: 5074 G 1976
DESIGNATION: 940 5074 G

MONUMENTATION: Tidal Station disk VM#: 8534
AGENCY: National Ocean Survey (NOS) PID:
SETTING CLASSIFICATION: Copper-clad steel rod

The bench mark is a disk located 122 m (400 ft) north of the centerline of the intersection of Railroad and Santa Fee Streets, 48 m (157 ft) SSW of the SW corner of Hercules, Inc. building #9, 45 m (149 ft) NNE of Southern Pacific railroad switch #2823, 13 m (42 ft) ESE of the easternmost rail, and 2 m (5 ft) WSW of building #10. The bench mark is set 0.15 m (0.5 ft) above grade, crimped to the top of a copper-clad steel rod driven 11.3 m (37 ft), and encased in a PVC pipe.

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National Oceanic and Atmospheric Administration
National Ocean Service

Station ID: 9415074 **PUBLICATION DATE: 05/01/2003**
Name: HERCULES WHARF CALIFORNIA
NOAA Chart: 18654 **Latitude: 38° 1.4' N**
USGS Quad: MARE ISLAND **Longitude: 122° 17.5' W**

T I D A L D A T U M S

Tidal datums at HERCULES WHARF based on:

LENGTH OF SERIES: 4 MONTHS
TIME PERIOD: October 1986 - January 1987
TIDAL EPOCH: 1983-2001
CONTROL TIDE STATION: 9414290 SAN FRANCISCO, SAN FRANCISCO BAY

Elevations of tidal datums referred to Mean Lower Low Water (MLLW), in METERS:

MEAN HIGHER HIGH WATER (MHHW)	=	1.854
MEAN HIGH WATER (MHW)	=	1.673
MEAN TIDE LEVEL (MTL)	=	0.984
MEAN SEA LEVEL (MSL)	=	0.981
MEAN LOW WATER (MLW)	=	0.295
MEAN LOWER LOW WATER (MLLW)	=	0.000

National Geodetic Vertical Datum (NGVD 29)

Bench Mark Elevation Information In METERS above:

Stamping or Designation	MLLW	MHW
2 1921	3.196	1.523
4 1921	4.294	2.621
5 1936	3.538	1.865
5074 F 1976	5.079	3.406
5074 G 1976	2.789	1.116

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National Oceanic and Atmospheric Administration
National Ocean Service

Station ID:	**9415074**	**PUBLICATION DATE:**	**05/01/2003**
Name:	**HERCULES WHARF CALIFORNIA**		
NOAA Chart:	**18654**	**Latitude:**	**38° 1.4' N**
USGS Quad:	**MARE ISLAND**	**Longitude:**	**122° 17.5' W**

D E F I N I T I O N S

Mean Sea Level (MSL) is a tidal datum determined over a 19-year National Tidal Datum Epoch. It pertains to local mean sea level and should not be confused with the fixed datums of North American Vertical Datum of 1988 (NAVD 88).

NGVD 29 is a fixed datum adopted as a national standard geodetic reference for heights but is now considered superseded. NGVD 29 is sometimes referred to as Sea Level Datum of 1929 or as Mean Sea Level on some early issues of Geological Survey Topographic Quads. NGVD 29 was originally derived from a general adjustment of the first-order leveling networks of the U.S. and Canada after holding mean sea level observed at 26 long term tide stations as fixed. Numerous local and wide-spread adjustments have been made since establishment in 1929. Bench mark elevations relative to NGVD 29 are available from the National Geodetic Survey (NGS) data base via the World Wide Web at National Geodetic Survey.

NAVD 88 is a fixed datum derived from a simultaneous, least squares, minimum constraint adjustment of Canadian/Mexican/United States leveling observations. Local mean sea level observed at Father Point/Rimouski, Canada was held fixed as the single initial constraint. NAVD 88 replaces NGVD 29 as the national standard geodetic reference for heights. Bench mark elevations relative to NAVD 88 are available from NGS through the World Wide Web at National Geodetic Survey.

NGVD 29 and NAVD 88 are fixed geodetic datums whose elevation relationships to local MSL and other tidal datums may not be consistent from one location to another.

The Vertical Mark Number (VM#) and PID# shown on the bench mark sheet are unique identifiers for bench marks in the tidal and geodetic databases, respectively. Each bench mark in either database has a single, unique VM# and/or PID# assigned. Where both VM# and PID# are indicated, both tidal and geodetic elevations are available for the bench mark listed.

The NAVD 88 elevation is shown on the Elevations of Tidal Datums Table Referred to MLLW only when two or more of the bench marks listed have NAVD 88 elevations. The NAVD 88 elevation relationship shown in the table is derived from an average of several bench mark elevations relative to tide station datum. As a result of this averaging, NAVD 88 bench mark elevations computed indirectly from the tidal datums elevation table may differ slightly from NAVD 88 elevations listed for each bench mark in the NGS database.

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Service

Datums Page

Station ID: 9415056 **PUBLICATION DATE: 02/26/2004**
Name: POINT PINOLE, SAN PABLO BAY CALIFORNIA
NOAA Chart: 18654 **Latitude: 38° 0.9' N**
USGS Quad: SAN QUENTIN **Longitude: 122° 21.8' W**

To reach the tidal bench marks from Berkeley, proceed north on Highway 80 to El Cerrito, then proceed west on Cutting Boulevard to 23rd Street, then turn right and proceed north on 23rd Street/San Pablo Avenue for 8.9 km (5.5 mi) to Richmond Parkway, then turn left and proceed west on Richmond Parkway for 400 m (1300 ft), then turn right and proceed NW on Atlas Road to the Point Pinole Regional Park, and continue to the paved road in the park to where there is a fishing pier and ruins of the Atlas Powder Company pier. The bench marks are located in the park, along the road leading to the pier. The tide gage and staff were located 137 m (450 ft) from the shore on a piling among the ruins of the powder company pier.

T I D A L B E N C H M A R K S

PRIMARY BENCH MARK STAMPING: 5056 A 1976
DESIGNATION: 941 5056 A TIDAL

MONUMENTATION: Tidal Station disk VM#: 8514
AGENCY: National Ocean Survey (NOS) PID:
SETTING CLASSIFICATION: Copper-clad steel rod

The primary bench mark is a disk located 183 m (600 ft) east of a magazine, 23 m (75 ft) SW of Sandy Beach, 21 m (69 ft) SE of the concrete at the south end of Point Pinole pier, 6 m (21 ft) NE of the top of an embankment overlooking the mark, and 1 m (4 ft) ENE of a witness post. The bench mark is set 0.21 m (0.7 ft) above the grade, crimped to the top of a copper-clad steel rod driven 12.2 m (40 ft) to substantial resistance and encased in a PVC pipe.

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Service

Station ID: 9415056 **PUBLICATION DATE: 02/26/2004**
Name: POINT PINOLE, SAN PABLO BAY CALIFORNIA
NOAA Chart: 18654 **Latitude: 38° 0.9' N**
USGS Quad: SAN QUENTIN **Longitude: 122° 21.8' W**

T I D A L B E N C H M A R K S

BENCH MARK STAMPING: 5056 B 1976
DESIGNATION: 941 5056 B TIDAL

MONUMENTATION: Tidal Station disk VM#: 8515
AGENCY: National Ocean Survey (NOS) PID:
SETTING CLASSIFICATION: Copper-clad steel rod

The bench mark is a disk located 123 m (405 ft) NNE of a square concrete slab, 122 m (400 ft) NE of a magazine, 77 m (253 ft) NE of chemical toilets on a concrete slab, 62 m (205 ft) SSE of bench mark 5056 A 1976, 20 m (66 ft) WSW of the inshore end of the beach, and 1.04 m (3.4 ft) WSW of a witness post. The bench mark is set 0.21 m (0.7 ft) above grade, crimped to the top of a copper-clad steel rod driven 7.3 m (24 ft) to substantial resistance and encased in a PVC pipe.

BENCH MARK STAMPING: 5056 C 1976
DESIGNATION: 941 5056 C TIDAL

MONUMENTATION: Tidal Station disk VM#: 8516
AGENCY: National Ocean Survey (NOS) PID:
SETTING CLASSIFICATION: Concrete foundation slab

The bench mark is a disk set horizontally in the NE corner of a square concrete foundation slab, 122 m (400 ft) SSW of bench mark 5056 B 1976, 46 m (150 ft) south of the chemical toilets, 26 m (84 ft) west from the centerline of the paved road leading from the pier to the pair gate, 19 m (61 ft) north from the gravel road in the direction of the magazine, and 0.52 m (1.7 ft) down from the top of the slab.

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Service

Station ID: 9415056 **PUBLICATION DATE: 02/26/2004**
Name: POINT PINOLE, SAN PABLO BAY CALIFORNIA
NOAA Chart: 18654 **Latitude: 38° 0.9' N**
USGS Quad: SAN QUENTIN **Longitude: 122° 21.8' W**

T I D A L B E N C H M A R K S

BENCH MARK STAMPING: 5056 D 1976
DESIGNATION: 941 5056 D TIDAL

MONUMENTATION: Tidal Station disk VM#: 8517
AGENCY: National Ocean Survey (NOS) PID:
SETTING CLASSIFICATION: Copper-clad steel rod

The bench mark is a disk located 229 m (750 ft) SE of a water tank on a knoll above a magazine, 137 m (450 ft) SSE of bench mark 5056 C 1976, 102 m (336 ft) WNW of yellow brick kilns in a brick wall, 45 m (148 ft) WSW of a paved road, 1.37 m (4.5 ft) SE of a witness post, and 0.24 m (0.8 ft) above the grade. The bench mark is crimped to the top of a copper-clad steel rod driven 7.6 m (25 ft) to substantial resistance and encased in a PVC pipe.

BENCH MARK STAMPING: 5056 E 1976
DESIGNATION: 941 5056 E TIDAL

MONUMENTATION: Tidal Station disk VM#: 8518
AGENCY: National Ocean Survey (NOS) PID:
SETTING CLASSIFICATION: Concrete wall

The bench mark is a disk set horizontally in concrete on a section of wall projecting 0.76 m (2.5 ft) WNW from a main concrete wall containing two yellow brick kilns running north-south, 122 m (400 ft) SSE of a rusted underground conveyor, 102 m (336 ft) ENE of bench mark 5056 D 1976, 61 m (200 ft) WSW of the dirt road at a culvert, 26 m (84 ft) north of the southern end of the wall, 23 m (76 ft) east from the centerline of a paved road, 6 m (19 ft) south of kilns, and 0.70 m (2.3 ft) above grade.

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Service

Station ID: 9415056 **PUBLICATION DATE: 02/26/2004**
Name: POINT PINOLE, SAN PABLO BAY CALIFORNIA
NOAA Chart: 18654 **Latitude: 38° 0.9' N**
USGS Quad: SAN QUENTIN **Longitude: 122° 21.8' W**

T I D A L B E N C H M A R K S

BENCH MARK STAMPING: P 556 1956
DESIGNATION: P 556

MONUMENTATION: Bench Mark disk VM#: 8519
AGENCY: US Coast and Geodetic Survey (USC&GS) PID#: HT0904
SETTING CLASSIFICATION: Concrete post

The bench mark is a disk 0.8 km (0.5 mi) north of the parking lot in Point Pinole Regional Park, 0.5 km (0.3 mi) NW along Sobrante Avenue from the intersection with Atlas Road, 40 m (131 ft) west of the junction of the paved and dirt road in the park, 12 m (41 ft) SW of the centerline of a paved road, 2.90 m (9.5 ft) NE of the first powerline pole NW of the park gate, 0.46 m (1.5 ft) SE of a wooden witness post, and 0.46 m (1.5 ft) above the road.

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Service

Station ID: 9415056 **PUBLICATION DATE: 02/26/2004**
Name: POINT PINOLE, SAN PABLO BAY CALIFORNIA
NOAA Chart: 18654 **Latitude: 38° 0.9' N**
USGS Quad: SAN QUENTIN **Longitude: 122° 21.8' W**

T I D A L D A T U M S

Tidal datums at POINT PINOLE, SAN PABLO BAY based on:

LENGTH OF SERIES: 5 MONTHS
TIME PERIOD: June 1977 - October 1977
TIDAL EPOCH: 1983-2001
CONTROL TIDE STATION: 9414290 SAN FRANCISCO, SAN FRANCISCO BAY

Elevations of tidal datums referred to Mean Lower Low Water (MLLW), in METERS:

MEAN HIGHER HIGH WATER (MHHW)	=	1.822
MEAN HIGH WATER (MHW)	=	1.636
MEAN TIDE LEVEL (MTL)	=	0.974
MEAN SEA LEVEL (MSL)	=	0.966
MEAN LOW WATER (MLW)	=	0.312
MEAN LOWER LOW WATER (MLLW)	=	0.000

National Geodetic Vertical Datum (NGVD 29)

Bench Mark Elevation Information In METERS above:

Stamping or Designation	MLLW	MHW
5056 A 1976	2.176	0.540
5056 B 1976	6.371	4.735
5056 C 1976	10.593	8.957
5056 D 1976	12.102	10.466
5056 E 1976	5.953	4.317
P 556 1956	18.324	16.688

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Service

Station ID:	**9415056**	**PUBLICATION DATE:**	**02/26/2004**
Name:	**POINT PINOLE, SAN PABLO BAY CALIFORNIA**		
NOAA Chart:	**18654**	**Latitude:**	**38° 0.9' N**
USGS Quad:	**SAN QUENTIN**	**Longitude:**	**122° 21.8' W**

D E F I N I T I O N S

Mean Sea Level (MSL) is a tidal datum determined over a 19-year National Tidal Datum Epoch. It pertains to local mean sea level and should not be confused with the fixed datums of North American Vertical Datum of 1988 (NAVD 88).

NGVD 29 is a fixed datum adopted as a national standard geodetic reference for heights but is now considered superseded. NGVD 29 is sometimes referred to as Sea Level Datum of 1929 or as Mean Sea Level on some early issues of Geological Survey Topographic Quads. NGVD 29 was originally derived from a general adjustment of the first-order leveling networks of the U.S. and Canada after holding mean sea level observed at 26 long term tide stations as fixed. Numerous local and wide-spread adjustments have been made since establishment in 1929. Bench mark elevations relative to NGVD 29 are available from the National Geodetic Survey (NGS) data base via the World Wide Web at National Geodetic Survey.

NAVD 88 is a fixed datum derived from a simultaneous, least squares, minimum constraint adjustment of Canadian/Mexican/United States leveling observations. Local mean sea level observed at Father Point/Rimouski, Canada was held fixed as the single initial constraint. NAVD 88 replaces NGVD 29 as the national standard geodetic reference for heights. Bench mark elevations relative to NAVD 88 are available from NGS through the World Wide Web at National Geodetic Survey.

NGVD 29 and NAVD 88 are fixed geodetic datums whose elevation relationships to local MSL and other tidal datums may not be consistent from one location to another.

The Vertical Mark Number (VM#) and PID# shown on the bench mark sheet are unique identifiers for bench marks in the tidal and geodetic databases, respectively. Each bench mark in either database has a single, unique VM# and/or PID# assigned. Where both VM# and PID# are indicated, both tidal and geodetic elevations are available for the bench mark listed.

The NAVD 88 elevation is shown on the Elevations of Tidal Datums Table Referred to MLLW only when two or more of the bench marks listed have NAVD 88 elevations. The NAVD 88 elevation relationship shown in the table is derived from an average of several bench mark elevations relative to tide station datum. As a result of this averaging, NAVD 88 bench mark elevations computed indirectly from the tidal datums elevation table may differ slightly from NAVD 88 elevations listed for each bench mark in the NGS database.

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

The NGS Data Sheet

```
DATABASE = Sybase ,PROGRAM = datasheet, VERSION = 7.42
1        National Geodetic Survey,   Retrieval Date = MARCH 26, 2007
 JT0557 ***********************************************************************
 JT0557  TIDAL BM    -  This is a Tidal Bench Mark.
 JT0557  DESIGNATION -  TIDAL 5 1936
 JT0557  PID         -  JT0557
 JT0557  STATE/COUNTY-  CA/CONTRA COSTA
 JT0557  USGS QUAD   -  MARE ISLAND (1980)
 JT0557
 JT0557                        *CURRENT SURVEY CONTROL
 JT0557  ___________________________________________________________________
 JT0557* NAD 83(1986)-  38 01 04.     (N)    122 17 24.     (W)     SCALED
 JT0557* NAVD 88     -         3.58   (+/-2cm)      11.7    (feet)  VERTCON
 JT0557  ___________________________________________________________________
 JT0557  GEOID HEIGHT-         -32.27  (meters)                    GEOID03
 JT0557
 JT0557  VERT ORDER  -  FIRST     CLASS II (See Below)
 JT0557
 JT0557.The horizontal coordinates were scaled from a topographic map and have
 JT0557.an estimated accuracy of +/- 6 seconds.
 JT0557
 JT0557.The NAVD 88 height was computed by applying the VERTCON shift value to
 JT0557.the NGVD 29 height (displayed under SUPERSEDED SURVEY CONTROL.)
 JT0557.The vertical order pertains to the NGVD 29 superseded value.
 JT0557
 JT0557.This Tidal Bench Mark is designated as VM 8532
 JT0557.by the Center for Operational Oceanographic Products and Services.
 JT0557
 JT0557.The geoid height was determined by GEOID03.
 JT0557
 JT0557;                    North         East    Units  Estimated Accuracy
 JT0557;SPC CA 3     -   669,950.    1,842,840.      MT  (+/- 180 meters Scaled)
 JT0557
 JT0557                          SUPERSEDED SURVEY CONTROL
 JT0557
 JT0557  NGVD 29 (??/??/92)    2.77   (m)            9.1    (f) COMPUTED    1 2
 JT0557
 JT0557.Superseded values are not recommended for survey control.
 JT0557.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 JT0557.See file dsdata.txt to determine how the superseded data were derived.
 JT0557
 JT0557_U.S. NATIONAL GRID SPATIAL ADDRESS: 10SEH623080(NAD 83)
 JT0557_MARKER: DJ = TIDAL STATION DISK
 JT0557_SETTING: 30 = SET IN A LIGHT STRUCTURE
 JT0557_SP_SET: SEMAPHORE BASE
 JT0557_STAMPING: 5 1936
 JT0557_STABILITY: D = MARK OF QUESTIONABLE OR UNKNOWN STABILITY
 JT0557
 JT0557  HISTORY     - Date     Condition        Report By
 JT0557  HISTORY     - 1936     MONUMENTED       CGS
 JT0557  HISTORY     - 1956     GOOD             NGS
 JT0557  HISTORY     - 1961     GOOD             NGS
 JT0557  HISTORY     - 1990     MARK NOT FOUND   USPSQD
 JT0557
 JT0557                          STATION DESCRIPTION
 JT0557
 JT0557'DESCRIBED BY NATIONAL GEODETIC SURVEY 1956
 JT0557'1 MI N FROM PINOLE.
 JT0557'0.5 MILE NORTHWEST ALONG TENNENT AVENUE FROM THE FIRST WESTERN
 JT0557'BANK AT PINOLE, THENCE 0.5 MILE NORTHEAST ALONG THE SOUTHERN
 JT0557'PACIFIC COMPANY RAILROAD, IN R4W T2N, IN THE TOP OF THE EAST
 JT0557'CORNER OF THE EAST CONCRETE BASE OF DOUBLE SEMAPHORE 234-235,
 JT0557'18.6 FEET EAST OF THE EAST RAIL OF THE EAST MAIN TRACK, AND ABOUT
 JT0557'1/2 FOOT HIGHER THAN THE TRACK.
```

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

```
JT0557
JT0557                          STATION RECOVERY (1961)
JT0557
JT0557'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1961
JT0557'RECOVERED IN GOOD CONDITION.
JT0557
JT0557                          STATION RECOVERY (1990)
JT0557
JT0557'RECOVERY NOTE BY US POWER SQUADRON 1990 (TM)
JT0557'MARK NOT FOUND.

*** retrieval complete.
Elapsed Time = 00:00:01
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Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

The NGS Data Sheet

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 JT0558  DESIGNATION -  TIDAL 4 1921
 JT0558  PID         -  JT0558
 JT0558  STATE/COUNTY-  CA/CONTRA COSTA
 JT0558  USGS QUAD   -  MARE ISLAND (1980)
 JT0558
 JT0558                        *CURRENT SURVEY CONTROL
 JT0558  ___________________________________________________________________
 JT0558* NAD 83(1986)-  38 01 14.     (N)    122 17 18.     (W)     SCALED
 JT0558* NAVD 88     -         4.33   (+/-2cm)      14.2    (feet)  VERTCON
 JT0558  ___________________________________________________________________
 JT0558  GEOID HEIGHT-         -32.26  (meters)                    GEOID03
 JT0558
 JT0558  VERT ORDER  -  FIRST     CLASS II (See Below)
 JT0558
 JT0558.The horizontal coordinates were scaled from a topographic map and have
 JT0558.an estimated accuracy of +/- 6 seconds.
 JT0558
 JT0558.The NAVD 88 height was computed by applying the VERTCON shift value to
 JT0558.the NGVD 29 height (displayed under SUPERSEDED SURVEY CONTROL.)
 JT0558.The vertical order pertains to the NGVD 29 superseded value.
 JT0558
 JT0558.This Tidal Bench Mark is designated as VM 8531
 JT0558.by the Center for Operational Oceanographic Products and Services.
 JT0558
 JT0558.The geoid height was determined by GEOID03.
 JT0558
 JT0558;                    North         East    Units  Estimated Accuracy
 JT0558;SPC CA 3     -   670,250.    1,842,990.      MT  (+/- 180 meters Scaled)
 JT0558
 JT0558                          SUPERSEDED SURVEY CONTROL
 JT0558
 JT0558  NGVD 29 (??/??/92)    3.53   (m)           11.6    (f) COMPUTED    1 2
 JT0558
 JT0558.Superseded values are not recommended for survey control.
 JT0558.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 JT0558.See file dsdata.txt to determine how the superseded data were derived.
 JT0558
 JT0558_U.S. NATIONAL GRID SPATIAL ADDRESS: 10SEH624083(NAD 83)
 JT0558_MARKER: DJ = TIDAL STATION DISK
 JT0558_SETTING: 30 = SET IN A LIGHT STRUCTURE
 JT0558_SP_SET: BUILDING FOUNDATION
 JT0558_STAMPING: 4 1921
 JT0558_STABILITY: D = MARK OF QUESTIONABLE OR UNKNOWN STABILITY
 JT0558
 JT0558  HISTORY     - Date     Condition        Report By
 JT0558  HISTORY     - 1921     MONUMENTED       CGS
 JT0558  HISTORY     - 1956     GOOD             NGS
 JT0558  HISTORY     - 1961     GOOD             NGS
 JT0558
 JT0558                          STATION DESCRIPTION
 JT0558
 JT0558'DESCRIBED BY NATIONAL GEODETIC SURVEY 1956
 JT0558'1.2 MI N FROM PINOLE.
 JT0558'0.5 MILE NORTHWEST ALONG TENNENT AVENUE FROM THE FIRST WESTERN
 JT0558'BANK AT PINOLE, THENCE 0.7 MILE NORTHEAST ALONG THE SOUTHERN
 JT0558'PACIFIC COMPANY RAILROAD, IN R4W T2N, AT THE HERCULES POWDER
 JT0558'COMPANY POWERHOUSE (BUILDING 101), IN THE TOP OF THE WEST
 JT0558'CORNER OF THE CONCRETE FOUNDATION, AND 2.7 FEET ABOVE THE GROUND.
 JT0558
 JT0558                          STATION RECOVERY (1961)
```

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

```
JT0558
JT0558'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1961
JT0558'RECOVERED IN GOOD CONDITION.

*** retrieval complete.
Elapsed Time = 00:00:01
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Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

The NGS Data Sheet

```
DATABASE = Sybase ,PROGRAM = datasheet, VERSION = 7.42
1        National Geodetic Survey,   Retrieval Date = MARCH 26, 2007
 JT0560 ***********************************************************************
 JT0560  TIDAL BM    -  This is a Tidal Bench Mark.
 JT0560  DESIGNATION -  TIDAL 2 1921
 JT0560  PID         -  JT0560
 JT0560  STATE/COUNTY-  CA/CONTRA COSTA
 JT0560  USGS QUAD   -  MARE ISLAND (1980)
 JT0560
 JT0560                        *CURRENT SURVEY CONTROL
 JT0560  ___________________________________________________________________
 JT0560* NAD 83(1986)-  38 01 16.     (N)    122 17 22.     (W)     SCALED
 JT0560* NAVD 88     -         3.25   (+/-2cm)      10.7    (feet)  VERTCON
 JT0560  ___________________________________________________________________
 JT0560  GEOID HEIGHT-         -32.26  (meters)                    GEOID03
 JT0560
 JT0560  VERT ORDER  -  FIRST     CLASS II (See Below)
 JT0560
 JT0560.The horizontal coordinates were scaled from a topographic map and have
 JT0560.an estimated accuracy of +/- 6 seconds.
 JT0560
 JT0560.The NAVD 88 height was computed by applying the VERTCON shift value to
 JT0560.the NGVD 29 height (displayed under SUPERSEDED SURVEY CONTROL.)
 JT0560.The vertical order pertains to the NGVD 29 superseded value.
 JT0560
 JT0560.This Tidal Bench Mark is designated as VM 8530
 JT0560.by the Center for Operational Oceanographic Products and Services.
 JT0560
 JT0560.The geoid height was determined by GEOID03.
 JT0560
 JT0560;                    North         East    Units  Estimated Accuracy
 JT0560;SPC CA 3     -   670,320.    1,842,890.      MT  (+/- 180 meters Scaled)
 JT0560
 JT0560                          SUPERSEDED SURVEY CONTROL
 JT0560
 JT0560  NGVD 29 (??/??/92)    2.45   (m)            8.0    (f) COMPUTED    1 2
 JT0560
 JT0560.Superseded values are not recommended for survey control.
 JT0560.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 JT0560.See file dsdata.txt to determine how the superseded data were derived.
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 JT0560_MARKER: DJ = TIDAL STATION DISK
 JT0560_SETTING: 30 = SET IN A LIGHT STRUCTURE
 JT0560_SP_SET: DRAIN TILE
 JT0560_STAMPING: 2 1921
 JT0560_STABILITY: D = MARK OF QUESTIONABLE OR UNKNOWN STABILITY
 JT0560
 JT0560  HISTORY     - Date     Condition        Report By
 JT0560  HISTORY     - 1921     MONUMENTED       CGS
 JT0560  HISTORY     - 1961     GOOD             NGS
 JT0560
 JT0560                          STATION DESCRIPTION
 JT0560
 JT0560'DESCRIBED BY NATIONAL GEODETIC SURVEY 1961
 JT0560'1.3 MI N FROM PINOLE.
 JT0560'0.5 MILE NORTHWEST ALONG TENNENT AVENUE FROM THE FIRST WESTERN
 JT0560'BANK AT PINOLE, THENCE 0.7 MILE NORTHEAST ALONG THE SOUTHERN
 JT0560'PACIFIC COMPANY RAILROAD TRACK, THENCE 0.1 MILE NORTHWEST ALONG A
 JT0560'GRAVELED ROAD, IN R4W T2N, AT THE HERCULES POWDER COMPANY, NEAR
 JT0560'THE SOUTHEAST END OF THE HERCULES WHARF, 6 FEET WEST OF THE FIRST
 JT0560'IRON FIRE HYDRANT ON SOLID GROUND, AND SET IN THE TOP OF AN 8-INCH
 JT0560'DRAIN TILE FILLED WITH CONCRETE PROJECTING 0.3 FOOT ABOVE THE
 JT0560'GROUND.
```

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

```
*** retrieval complete.
Elapsed Time = 00:00:00
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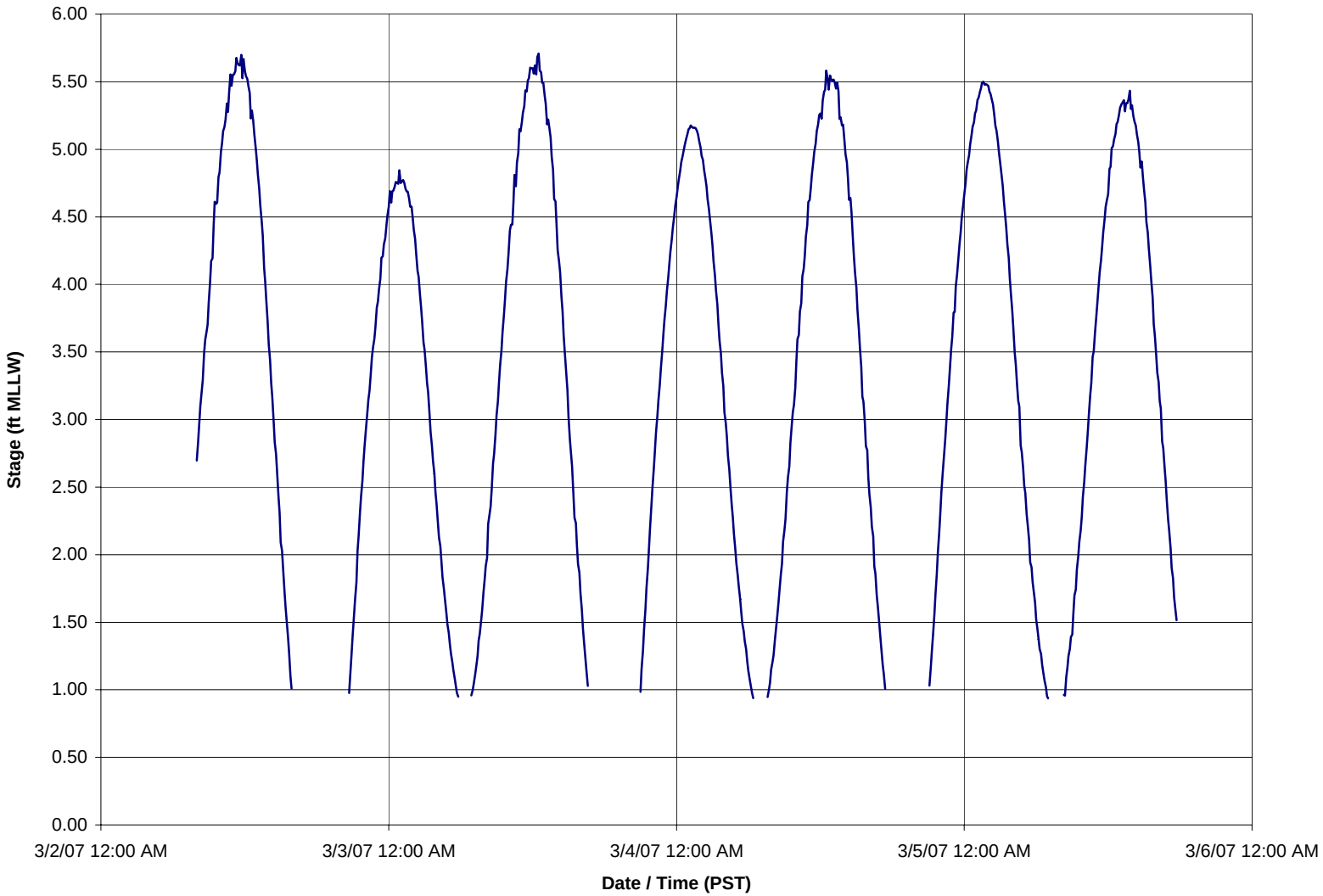
Appendix C
Water Surface Elevation Time Series
(bathymetric survey)

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center



Environmental Data Solutions

Hercules Multimodal Transit Facility Project

Water Surface Elevation Time Series

March 1 - March 5, 2007

1110_WSE_timeseries_bathy_survey_26march07

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

EELGRASS SURVEY SUMMARY- HERCULES INTERMODAL TRANSIT CENTER PROJECT

City of Hercules ***May 26, 2010***

Reviewed by: SERGE STANICH

Prepared by: STEPHEN STRINGER, M.S.

Introduction:

This technical memorandum summarizes the results of eelgrass (*Zostera marina*) surveys that have been conducted for the Hercules Intermodal Transit Center Project (ITC). The Project will include activities within an intertidal area of San Pablo Bay that could contain eelgrass beds. The purpose of the surveys was to determine if eelgrass is present in intertidal areas in San Pablo Bay within the Project area. An assessment of potential habitat for eelgrass in the project area was also conducted. Areas outside of the intertidal portions of San Pablo Bay that occur within the project site were not surveyed due to their lack of potential to support eelgrass.

The proposed project is in the City of Hercules (Hercules), Contra Costa County, California. The project is located on the "Mare Island, California" 7.5 minute U.S. Geological Survey quadrangle (USGS quad). The project site is on the southeastern shoreline of San Pablo Bay, a part of San Francisco Bay (Bay), approximately one mile northwest of Interstate 80 (I-80). The proposed project is within Hercules Waterfront District, which is planned for transit oriented development. A project location map is included as **Figure 1**.

Site History and Project Description:

Hercules originated in 1881 as a company town for the Hercules Powder Company, and was incorporated in 1900. The company produced dynamite at its plant on Hercules Point until the early 1960s, when it transitioned to fertilizer production. The project site is located on land that was formerly part of the manufacturing plant. The plant closed in 1977 and Hercules Properties, Ltd. purchased the land in 1979. The site has undergone extensive remediation with oversight from the California Department of Toxic Substances Control (DTSC).

The proposed ITC project involves the redevelopment of Brownfield Area and the construction of an ITC on the Hercules waterfront in Contra Costa County. The ITC would include a new

passenger railroad station including center platform on the existing Capitol Corridor line, a transit bus terminal, associated parking facilities, and will be designed to facilitate connection to future ferry service between Hercules and San Francisco.

Improvements will be made to the Union Pacific Railroad Company (UPRR) facilities to meet current safety standards, and will include separation of grade from the UPRR track to adjacent commercial and residential areas. Track realignment to increase allowable rail speeds will be implemented, and the trestle across Refugio Creek will be replaced to reduce flooding and improve the stream channel. To promote alternative transportation, the ITC project will also complete a portion of the San Francisco Bay Trail within Hercules to encourage bicycle use and provide connection to the ITC. Project related roadway improvements would include the extension of John Muir Parkway to the San Pablo Bay waterfront, the completion of Bayfront Boulevard, including a bridge across Refugio Creek, and the construction of Transit Loop Road across Refugio Creek.

Refugio Creek is a perennial stream that flows northwesterly through the project area and discharges into San Pablo Bay. It would also be realigned and enhanced as part of the ITC project. In its current configuration, the creek is largely man made, as the Hercules Powder Company property owners had the channel deepened and straightened in the early 20th century. Large areas of the creek banks have been stabilized with concrete bags and do not contain vegetation. Immediately before crossing under the UPRR tracks, the creek makes two ninety degree turns before discharging into the bay. The UPRR trestle across Refugio Creek limits channel capacity and constricts stormwater flows resulting in occasional flooding of low lying areas along the south side of the tracks. Realignment of the creek is necessary to improve hydraulic conveyance and improve flood protection. Additionally, restoration and enhancement of the floodway is also proposed. Portions of the straightened channel will be realigned with meanders to provide diversity in the channel geometry. The Refugio Creek corridor will be restored to support native vegetation communities including tidal and freshwater marsh. A map of the preliminary project design is included as **Figure 2**.

Eelgrass Background

Eelgrass is a marine vascular plant that grows in clear, well-lit, shallow coastal waters in soft bottom regions of bays and estuaries in the Northern Hemisphere. Eelgrass typically occurs on muddy or sandy bottoms in shallow, subtidal areas and can occur within inter-tidal areas (Wyllie-Echeverria and Fonseca, 2003). Eelgrass spreads by underground roots, referred to as rhizomes, with its active growth season during the spring and summer reaching a maximum growth in fall (March 1 to October 31). Eelgrass dies back to underground stems in late fall and is dormant until spring. Within the southern portion of its range (including San Francisco Bay),

eelgrass growth is generally limited at the shoreward edge by desiccation stress at low tides and along its deeper fringe by the limited availability of sunlight (Merkel and Associates, 2001).

In San Francisco Bay, eelgrass beds occur within shallow bay habitats (in a narrow depth range typically below 0.0 meter (0.0 foot) MLLW, and in the more saline brackish-water interfaces of the estuary (Merkel and Associates, 2001, 2009). The beds are considered to be a valuable shallow-water habitat, providing shelter, feeding, and breeding habitats for many species of invertebrates, fishes, and some waterfowl (NOAA 2003). Eelgrass beds supply organic material to nearshore environments, and their root systems stabilize area sediments. These plants grow in relatively few locations within the Bay and require special conditions to flourish (NOAA 2003). Threats to eelgrass beds include:

- Dredging is one of the greatest threats to eelgrass. Not only are the plants removed, but the entire physical, biological, and chemical structure of the ecosystem is changed. Plumes of silt bury plants, smother animals and reduce light penetration.
- Shoreline or over-water construction changes the shoreline in ways that can alter the absorption of wave energy, erode the bottom, or increase turbidity. Structures built over the water also prevent eelgrass from getting enough sunlight.
- Pollution causes increased nutrient-loading, which causes excessive epiphyte growth on eelgrass blades, blocking out light; herbicide run-off can kill or damage eelgrass plants.
- Oil spills cause eelgrass plants to lose their leaves.
- Species invasion by plants introduced from other areas by humans will crowd and displace native plants.
- Electricity plants and other power generators that use seawater as a coolant, pump warm water back into the sea where it can kill eelgrass.
- Land disturbance activities causing sedimentation and turbidity in estuaries far downstream.

A major focus of protection of eelgrass beds in the Bay is on light availability. Actions increasing turbidity, shading and deepening areas or that otherwise reduce light penetration are of primary concern to agencies regulating activities in the Bay.

Eelgrass is designated as Essential Fish Habitat under the Magnuson-Stevens Fishery Conservation and Management Act. The National Marine Fisheries Service (NMFS) considers eelgrass a significant habitat within San Francisco Bay and its protection and restoration is a primary goal of their San Francisco Bay Subtidal Habitat program discussed in the San Francisco Bay Watershed Database and Mapping Project (NMFS 2005). Eelgrass beds are considered a Special Aquatic Site by the US Army Corps of Engineers (USACE) and are regulated under Section 404 of the Clean Water Act. Eelgrass beds are also subject to the San Francisco Bay

Conservation and Development Commission (BCDC) jurisdiction under Section 66605 of the McAteer-Petris Act and are afforded special management considerations by the California Department of Fish and game (CDFG) and the US fish and Wildlife Service (USFWS).

Eelgrass Survey Methods

Surveys for eelgrass can be conducted by physical methods such as diving or beach walking, by off water remote sensing methods, or by on water remote sensing methods. Off water remote sensing methods include the interpretation of aerial photography or satellite imagery either by a human interpreter or by computer. On water remote sensing methods interpret geo referenced underwater videographic or hydroacustic methods (Whatcom 2004). Physical methods (diving or beachwalking) can be useful when precise mapping of a relatively small study area is needed (Whatcom 2004). In the San Francisco Bay estuary, a combination of physical (divers) and on water remote sensing (side scan and down looking sonar surveys) survey methods are often used (Merkel and Associates 2001; WWR 2007).

Methods:

Eelgrass beds in the San Francisco Bay typically occur below 0.0 meter (0.0 foot) MLLW (Merkel and Associates, 2001, 2009). Previous surveys for eelgrass beds in the San Francisco Bay focused on areas with depths from +0.5m MLLW to -3.0 MLLW (Merkel and Associates, 2001) to cover the range of potential habitat. Within the ITC project boundary, the intertidal mudflats occur at depths of +0.3m to > +0.6 m MLLW (WWR, 2007), which is above the typical upper limit of eelgrass occurrence in the San Francisco Bay estuary.

2007 Eelgrass Surveys of the Project Site

In 2007, Wetlands and Water Resources, Inc (WWR) conducted field surveys for sensitive aquatic habitats, particularly Eelgrass (*Zostera marina*) and widgeongrass (*Ruppia maritima*) beds, for the Hercules Multimodal Transit Facility Project (WWR 2007). The survey also included a Class 1 hydrographic survey of the San Pablo Bay seafloor to provide current bathymetric data for the project area and vicinity. The survey footprint covered the larger, project footprint that has sense been reduced and no longer includes construction of the ferry terminal and dredging operations to provide a channel for ferry access from San Pablo Bay. The survey footprint included all areas within the current project boundary and included approximately 650 acres between the shoreline and -6.6 ft (-2 m) Mean Lower Low Water (MLLW)[1] in the area where the proposed navigation channels were planned to be dredged and where ferry wake wash could be a factor. No eelgrass or widgeongrass beds or individual shoots were detected within the survey footprint.

[1] The average of the lowest tide recorded at a tide station each day during the recording period.

2010 Eelgrass Surveys of the Project Site

Eelgrass surveys were re-conducted in 2010 to determine whether eelgrass had expanded into the project area since the 2007 surveys. Due to the small area of intertidal mudflats in the current study area and the elevation of the intertidal mudflats (+0.3m to > +0.6 m MLLW), visual survey methods (pedestrian surveys) were utilized.

HDR biologists Stephen Stringer and Tish Burnaugh conducted a visual inspection survey for eelgrass in the mudflats adjacent to the mouth of Refugio Creek on April 23, 2010 during the active period of growth for eelgrass (March 1 to October 1). The visual inspection survey consisted of walking meandering transects of all areas of intertidal mudflats within the project boundary. The visual inspection included a search of the intertidal mudflats and adjacent shallow water areas for the presence/absence of eelgrass beds, patches, or individual shoots. The visual inspection was conducted from approximately 12:30pm to 1:30 pm, during a receding tide. Adjacent shallow water areas were searched using binoculars.

Results:

All areas of the intertidal mudflats within the project boundary were accessible by foot at the time of the survey due to low tide conditions. Intertidal mudflats above approximately +0.5m MLLW were completely exposed with no surface inundation. Intertidal mudflats in the lower elevation limits of the survey (+0.3m MLLW) were inundated to a depth of approximately 0.05 m (2 inches). In the vicinity of the Refugio Creek outfall channel, the substrate in the intertidal mudflats is composed primarily of sand and rocks presumably deposited from upstream portions of Refugio Creek and remaining from historic development and remediation activities at the site. Thus these areas are best referred to simply as “intertidal areas” rather than “intertidal mudflats.” Green algae were observed growing on the rocks in the intertidal areas. No eelgrass or any other vascular plants were observed growing on the intertidal areas adjacent to the Refugio Creek outfall channel or adjacent intertidal mudflats. Site photos are included as **Figure 3**.

Summary:

No eelgrass was observed in the Hercules Intermodal Transit Center Project site during the 2007 side scan sonar and diver surveys and during the 2010 visual inspection surveys in 2010. The habitat quality for eelgrass in the project site is low to non-existent because the intertidal mudflats and other intertidal areas in the project site occur at or above the upper elevational range of eelgrass in the San Francisco Bay estuary.

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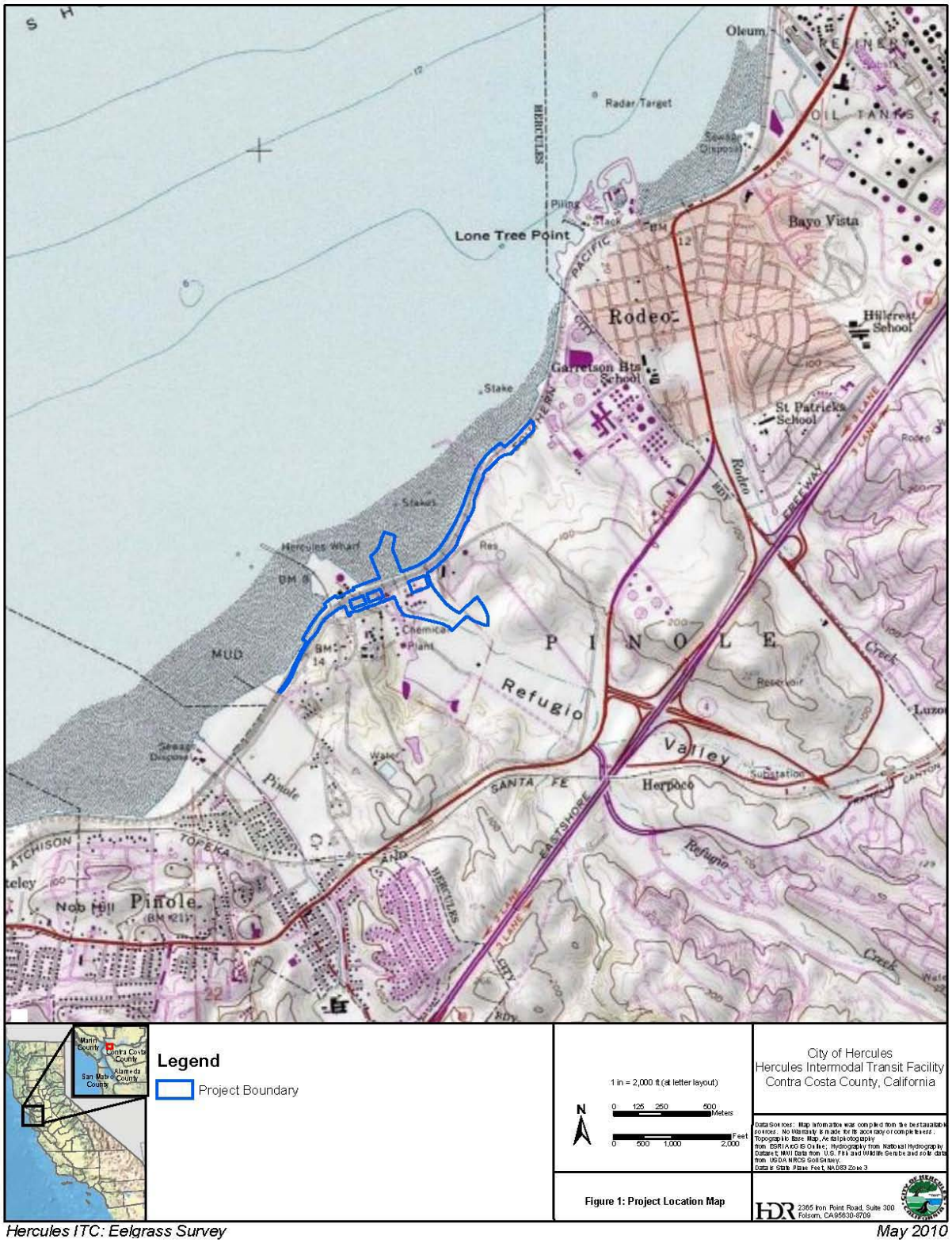
Oleum
Radar Target
Sewage Disposal
Lone Tree Point
Piling
Stack
Bayo Vista
Rodeo
Hillcrest School
Garretson Hts School
Stake
St Patricks School
Stakes
Hercules Wharf
Res
BM 8
Chemical Plant
BM 14
MUD
P I N O L E
Refugio
Valley
Reservoir
Luzon
Creek
Pinole
Water
Sewage Disposal
SANTA FE
Herpoco
Substation
ATCHISON
TOPEKA
Nob Hill
Pinole
(BM 21)
Refugio
Legend
Project Boundary
1 in = 2,000 ft (at letter layout)
N
0 125 250 500 Meters
0 500 1,000 2,000 Feet
City of Hercules
Hercules Intermodal Transit Facility
Contra Costa County, California
Data Sources: Map information was compiled from the best available sources. No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey.
Data is State Plane Feet, NAD83 Zone 3
Figure 1: Project Location Map
HDR 2365 Iron Point Road, Suite 300 Folsom, CA 95630-8709

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Hercules ITC: Eelgrass Survey *May 2010*

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Figure 3. Site Photographs

Looking northeast of the mudflats just beyond the existing Refugio Creek channel extending into San Pablo Bay in the project site.	Looking north of the mudflats just beyond the existing Refugio Creek channel extending into San Pablo Bay in the project site.
Looking southeast of the mudflats just beyond the existing Refugio Creek channel extending into San Pablo Bay in the project site.	View looking east toward the mouth of Refugio Creek showing the mudflats.

APPENDIX G-5

2007 and 2010 Wet Season Large Branchiopod Survey Reports

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

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90-DAY SURVEY REPORT

2007 WET SEASON LARGE BRANCHIOPOD SURVEYS

HERCULES FERRY INTERMODAL TERMINAL PROJECT

Prepared for:

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July 2007

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

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Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

1.0 INTRODUCTION

This is a '90-day'survey report presenting the methods and results of wet season large branchiopod surveys conducted by Vollmar Consulting during the 2006/2007 winter-spring season on the proposed Hercules Ferry Intermodal Terminal project site. The purpose of the surveys was to assist in determining the presence or presumed absence of federally-listed large branchiopods (fairy and tadpole shrimp) in seasonal water features occurring within and adjacent to the boundaries of the proposed project.

The U.S. Fish and Wildlife Service (USFWS) survey protocol requires either two years of wet season surveys or one year of wet season surveys and one dry season survey (soil analysis) to determine presence or presumed absence of federally-listed large branchiopods from a study site (USFWS 1996). The surveys summarized in this report represent one year of wet season surveys. Dry season sampling will be conducted this year by Vollmar Consulting.

2.0 BACKGROUND INFORMATION

2.1. Project Location and General Environmental Setting

The project site is located in the City of Hercules, in western Contra Costa County on the Mare Island USGS 7.5' quadrangle map (**Figure 1**). The project site is located adjacent to San Pablo Bay and includes associated tidal marsh wetlands along the bayward edges of the site. Much of the remainder of the site was historically industrial and now consists of rubble, concrete pads and other debris remaining from the demolished structures. Vegetated upland areas are dominated by invasive grasses and forbs. The site is bisected by the Southern Pacific railroad right-of-way which is generally devoid of vegetation and consists of compacted dirt and gravel. Elevations on the site range from approximately sea level to 10 feet above sea level. Representative photographs of the project site are included in **Appendix A**.

2.2. Description of Survey Area

The survey area included a total of 20 freshwater seasonal pools considered to provide potentially suitable habitat for fairy/tadpole shrimp. Specifically, the water features surveyed included 19 un-vegetated puddles within the compacted dirt of the railroad right-of-way and one large seasonal pool approximately 100 feet east of the right-of-way, along the edge of a construction zone. All of the pools are presumed to be of anthropogenic origin. The location of the water features surveyed is shown in **Figure 2**.

Seasonal wetlands occur within a drainage ditch adjacent to the railroad right-of-way. These areas were choked with bristly ox-tongue (*Picris echioides*) and poison hemlock (*Conium maculatum*) to the degree that sampling with a dip net was not feasible. Additional seasonal wetlands occurred along the edge of a constructed berm. All of these wetlands were flashy and contained standing water for no longer than several days following large storm events. Given the above, these seasonal wetlands did not provide suitable habitat for federally-listed branchiopods and were not included in the survey area.

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

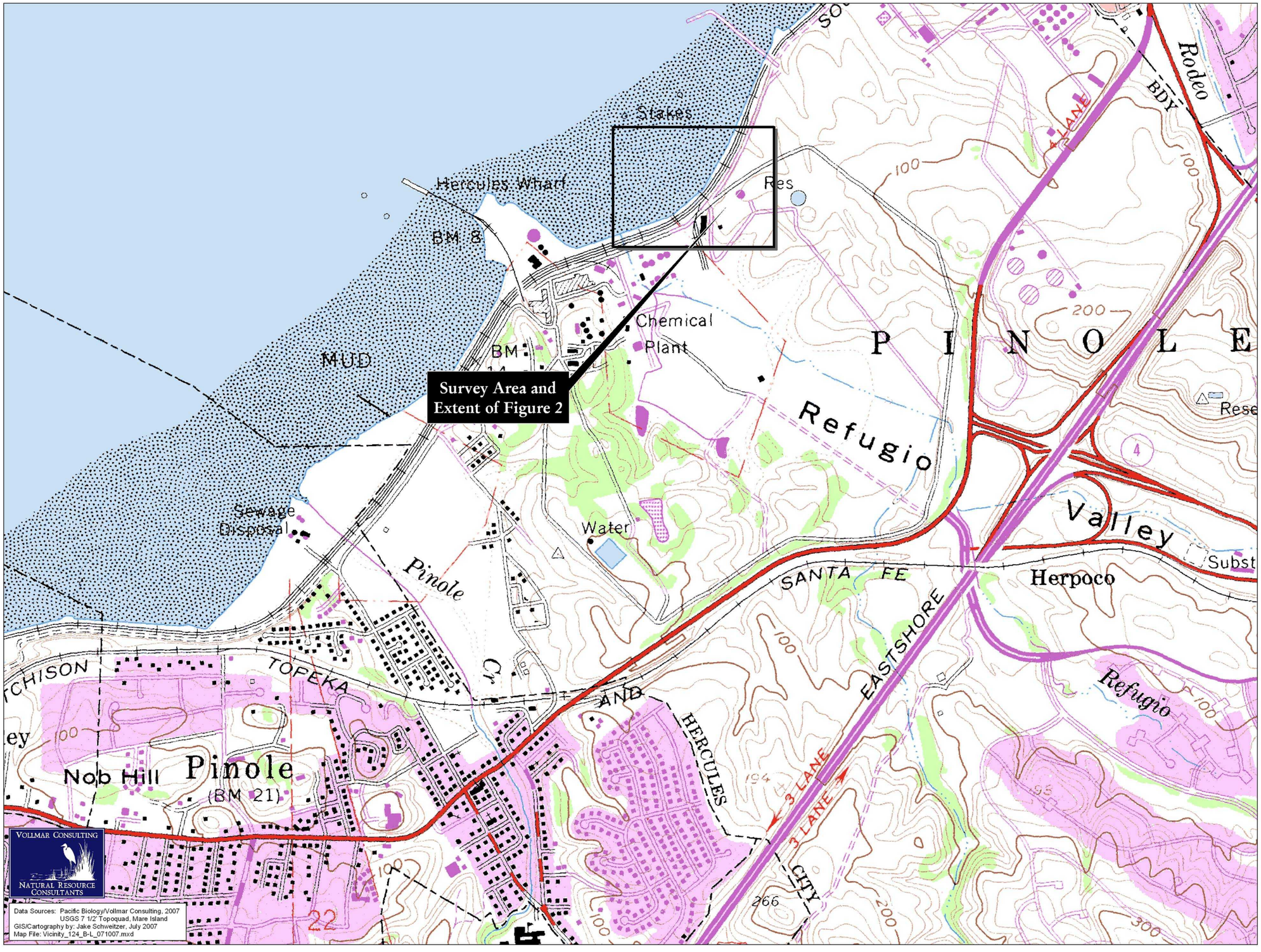

FIGURE 1
Regional Vicinity Map

Hercules Ferry Terminal
Contra Costa County, California

N
W E
S

1:12,000
(1-in = 1,000-ft at tabloid layout)

0 250 500 Meters

0 500 1,000 2,000 Feet

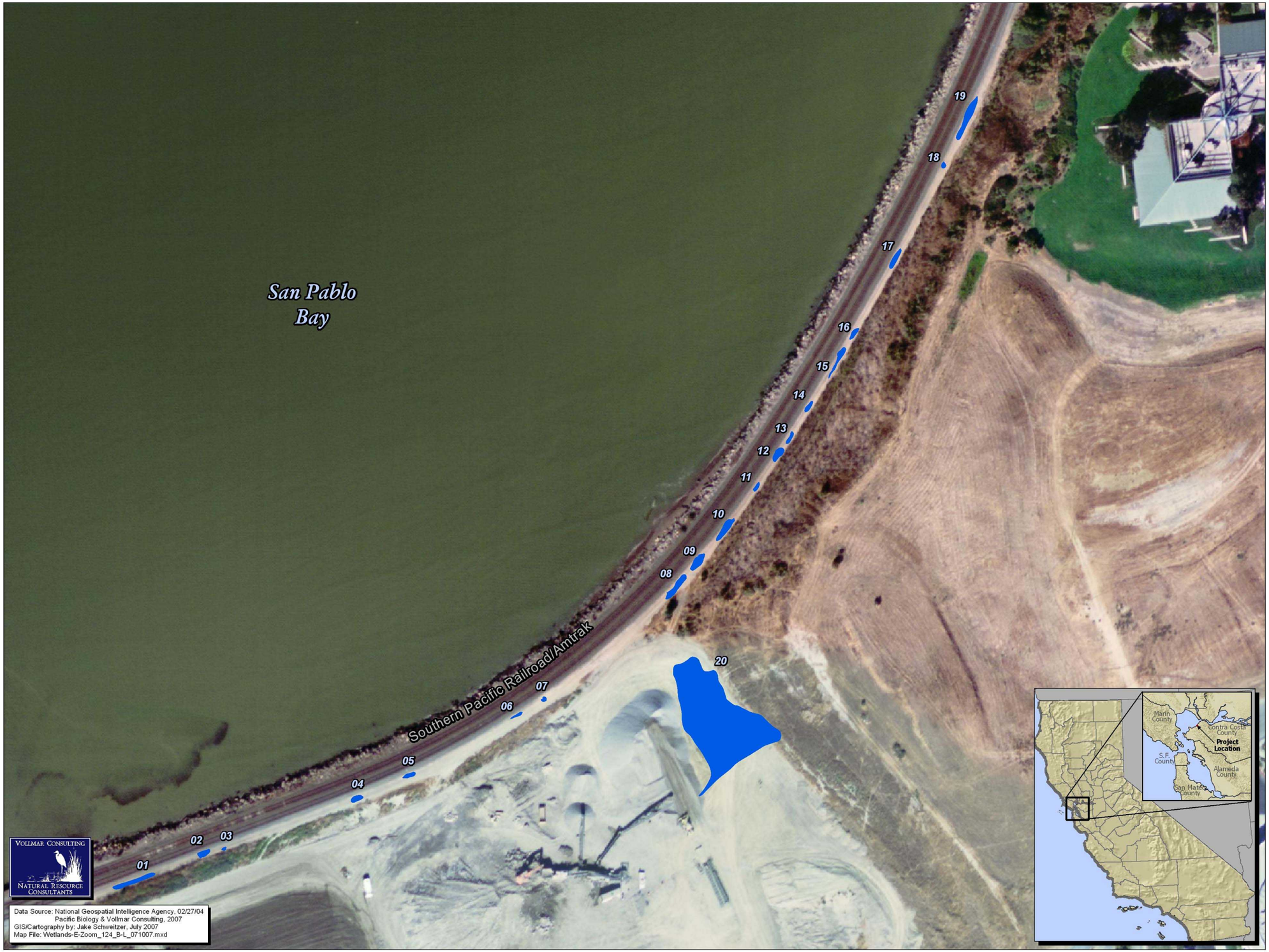

FIGURE 2
Surveyed Pools
Large Branchiopod Surveys
2006 - 2007 Wet Season

Hercules Ferry Terminal
Contra Costa County, California

Legend

Surveyed Seasonal Pool (0.335 ac.)

N
W E
S

1:1,560 (1-in = 130-ft at tabloid layout)

0 32.5 65 Meters

0 65 130 260 Ft

2.3. Other Branchiopod Surveys Conducted in Adjacent Areas

Wet season surveys for federally-listed large branchiopods were conducted in 2003-2004 immediately to the southwest of the current survey area by Condor Country Consulting. No federally-listed branchiopods were found during the surveys. The 90-Day Survey Report was submitted to the USFWS and is included as **Appendix C**.

2.4. Documented Occurrences of Federally-Listed Branchiopods in the Project Area

Federally-listed vernal pool branchiopods have not been documented in the project area. Based on a review of the California Natural Diversity Data Base (CNDDB), the closest occurrence of a federally-listed vernal pool branchiopod species (i.e., vernal pool fairy shrimp) is from approximately 12 miles north of the project site.

2.5. Project Personnel

Josh Phillips served as the senior biologist for the project, conducting background reviews and field surveys and preparing the survey report. Mr. Phillips holds a Section 10(a)(1)(A) recovery permit for conducting surveys of federally-listed large branchiopods (Permit Number TE-086595-0). Jake Schweitzer of Vollmar Consulting assisted with most field surveys, reviewed the report and managed all GIS data and map preparation. John Vollmar of Vollmar Consulting provided final review of the survey report.

3.0 METHODS

Mr. Phillips contacted the USFWS to request authorization to conduct protocol surveys for federally-listed large branchiopods. Mr. Mike Thomas of the USFWS provided authorization to conduct the surveys via email on November 28, 2006.

The project site was monitored to determine when the pools had filled. Surveys were initiated on December 19, 2006; this was approximately two weeks after the pools had filled to a depth greater than 3 cm. During the first survey, all pools identified as potential habitat for large branchiopods were assigned a number and the boundaries were mapped using a professional GPS unit with sub-meter accuracy (Trimble GeoXT). Surveys were conducted every two weeks thereafter until March 28, 2007 when all pools were dry. Intermediate surveys were conducted on January 2, 17, and 30, February 13 and 28, and March 14. Data from each survey were collected on data sheets which are included in **Appendix B**.

All surveys were conducted according to the Interim Survey Guidelines to Permittees for Recovery Permits under Section 10(a)(1)(A) of the Endangered Species Act for the Listed Vernal Pool Branchiopods (USFWS 1996). Individual pools were surveyed for large branchiopods by first visually inspecting the pool and then by dip netting. The dip nets had a 12-inch round diameter with a mesh size no greater than one-eighth inch. After the completion of each sample sweep, the contents of the net were examined for large branchiopods and macroscopic aquatic invertebrates. Temperature and depth data was recorded for each pool.

4.0 RESULTS

No federally-listed or rare branchiopods were found during the 2006/2007 wet season surveys. **Table 1** provides summary data on the 20 surveyed pools including feature number, habitat type, maximum ponding area, ponding duration, and associated macroinvertebrates. Of the 20 aquatic features surveyed, 19 are located within the railroad right-of-way. These pools occur within depressions in compacted dirt and gravel areas and are generally devoid of vascular vegetation. These pools reached a maximum depth of six inches, with most pools not exceeding three inches in depth. Standing water persisted for a relatively short duration and all of the pools dried at least once during the survey period (see **Appendix B**). The absence of aquatic invertebrates and amphibians from these pools is likely attributable to their shallow depth, short duration of ponding, and lack of vegetation.

Pool # 20 is located approximately 100 feet to the east of the right-of-way. This pool is relatively large (11,575 sq ft), deep (maximum depth of 11 inches), and holds water for a relatively long duration (standing water was present from December 19, 2006, through March 14, 2007). Cladocera (daphnia) and corixidae (backswimmers) were regularly observed in the pool.

One common species of fairy shrimp, the versatile fairy shrimp (*Branchinecta lindahli*), was observed during the surveys in low numbers within two pools (#1 and #12). Versatile fairy shrimp is found in a variety of seasonal aquatic habitats in elevations ranging from just above sea level to over 1,600 meters. The species is tolerant of varied water chemistry and its range extends throughout California from Lassen County to San Diego County (Eriksen & Belk 1999).

Table 1. Summary data for wet season vernal pool large branchiopod surveys conducted during the 2006/2007 field season on Hercules Ferry Intermodal Transit Project Site.

					Large Branchiopods						Copep			Coleop		Hemip		Diptera					
Pool Number	**Habitat Type[1]**	**Max Ponding Area (sq. ft.)**	**Max Ponding Depth (in.)**	**Ponding Duration[2]**	***Lepidurus packardi***	***Branchinecta lynchi***	***Branchinecta conservatio***	***Branchinecta lindhali***	***Linderiella occidentalis***	**Ostracods**	**Calanoida**	**Cyclopoda**	**Cladocera**	**Dytiscidae**	**Hydrophilidae**	**Notonectidae**	**Corixidae**	**Culicidae**	**Chironomidae**	**Lymnaeidae**	**Microturbularia**	**Trichoptera**	**Hyla regilla**
1	P	326.7	3	M				X															
2	P	125.7	1	S																			
3	P	25.2	2	S																			
4	P	115.6	4	S																			
5	P	90.9	4	S																			
6	P	55.8	2	S																			
7	P	41.1	3	S																			
8	P	302.0	2	S																			
9	P	242.7	5	S																			
10	P	279.5	2	S																			
11	P	59.4	2	S																			
12	P	177.1	4	S				X															
13	P	82.5	3	S																			
14	P	85.0	5	S																			
15	P	201.8	6	S																			
16	P	95.0	4	S																			
17	P	177.5	3	S																			
18	P	45.1	4	S																			
19	P	473.4	5	S																			
20	P	11,575.2	11	L									X				X						

Notes:
1. Habitat types: P = puddle
2. Ponding duration: S = short, M = moderate, L = long.

5.0 CONCLUSIONS

No federally-listed vernal pool branchiopods were observed during the 2006/2007 wet season surveys. Potentially suitable habitat on the site is limited to artificially created depressions within and adjacent to the railroad right-of-way. This habitat lacks many characteristics of natural vernal pools such as vernal pool-associated vegetation, aquatic vertebrates, and invertebrate diversity.

Versatile fairy shrimp, a common and widespread species tolerant of various habitat conditions, was observed in two puddles on the project site. The versatile fairy shrimp is well adapted to the relatively short-lived shallow pools on the project site because it develops quickly and can cycle through several generations in one wet season. This species was also observed during the surveys conducted in 2003/2004 adjacent to the southwest of the project site. Versatile fairy shrimp is not state- or federally-listed as Threatened or Endangered or otherwise considered to be rare.

The 2006-2007 surveys were conducted during a period of below average rainfall. Nonetheless, it is considered unlikely that more abundant rainfall would have altered the survey findings for the following reasons: (1) available habitat for federally-listed vernal pool branchiopods is marginal given that the pools lack characteristics of natural vernal pools; (2) the closest known occurrence of a federally-listed vernal pool branchiopod is located approximately 12 miles north of the project site; (3) the survey findings are consistent with the findings of the surveys conducted adjacent to the site in 2003-2004 (which were conducted during an average rainfall year); (4) there was sufficient rain in the project region such that most sampled pools remained continuously ponded for at least three weeks during the sampling period; and (5) versatile fairy shrimp are tolerant of varied water chemistry and ponding duration and often occur in areas not suitable for other fairy or tadpole shrimp species.

5.0 REFERENCES

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Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

APPENDIX A – REPRESENTATIVE SITE PHOTOS

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

(Photo 1: south facing, after heavy rains)

(Photo 2: south facing)

(Photo 3: north facing)

(Photo 4: Pool 20, south facing)

APPENDIX B – DATA SHEET

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

Hercules Ferry Intermodal Terminal Project: Suvery #1

													Large Branchiopods[3]								Copep			Coleop		Hemip		Diptera						Amph[4]	
Pool No.	Date: 12/19/06	Surveyors[1] JP/JS	Temp C	SpC (mS/cm)	DO (mg/L)	pH (units)	Salinity (ppt)	DO% Saturation (%)	Turbidity (NTU)	Max Depth (in)		B. lindahli	*LEPA*	*BRLY*	*BRCO*	*BRMA*	*LIOC*	*CYCA*	*BRSP*	Ostracods	Calanoida	Cyclopoda	Cladocera	Dytiscidae	Hydrophilidae	Notonectidae	Corixidae	Culicidae	Chironomidae	Lymnaeidae	Microturbellaria			PSRE	
1			17							2		nc																							
2			20							1																									
3			22							2																									
4			21							3																									
5			21							2																									
6			21							3																									
7			21							2																									
8			20							4																									
9			21							3																									
10			21							2																									
11			20							3																									
12			20							3		nc																							
13			20							4																									
14			20							5																									
15			20							2																									
16			20							2																									
17			20							3																									
18			20							4																									
19			20							3																									
20			17							10																									

1. Surveyors:
JP Josh Phillips
JS Jake Schweitzer
CP Cassie Pinnel

2. Habitat Type/Modifiers:
P = Puddle
SW = Seasonal Wetland

3. Large Branch/Amphib Acronyms:
LEPA = *Lepidurus packard* i
BRLY = *Branchinecta lynchi*
BRCO = *Branchinecta conservatio*
BRMA = *Branchinecta mackini*
LIOC = *Linderiella occidentalis*
CYCA = *Cyzicus californicus*
BRSP = *Branchinecta* sp.
PSRE = Pseudacris *regilla*

Abundance Ratings:
R = Rare (≤ 2 Individuals)
NC = Not Common (3-10 Individuals)
C = Common (11-50 Individuals)
VC = Very Common (50 - 100 Individuals)
A = Abundant (> 100 Individuals)
X = Present but not observed in 1 meter sample.
CA = Carapace only for LEPA
P = Present; observed during non-quantitative sampling

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

Hercules Ferry Intermodal Terminal Project: Suvery #2

													Large Branchiopods[3]								Copep			Coleop		Hemip		Diptera						Amph[4]	
Pool No.	Date: 1/02/07	Surveyors[1] JP/JS	Temp C	SpC (mS/cm)	DO (mg/L)	pH (units)	Salinity (ppt)	DO% Saturation (%)	Turbidity (NTU)	Max Depth (in)		B. lindahli	*LEPA*	*BRLY*	*BRCO*	*BRMA*	*LIOC*	*CYCA*	*BRSP*	Ostracods	Calanoida	Cyclopoda	Cladocera	Dytiscidae	Hydrophilidae	Notonectidae	Corixidae	Culicidae	Chironomidae	Lymnaeidae	Microturbellaria			PSRE	
1										2		nc																							
2										0																									
3										4																									
4										1																									
5										1																									
6										0																									
7										2																									
8										2																									
9										3																									
10										1																									
11										3																									
12										2		nc																							
13										2																									
14										3																									
15										4																									
16										1																									
17										1																									
18										2																									
19										2																									
20										10													nc				nc								

1. Surveyors:
JP Josh Phillips
JS Jake Schweitzer
CP Cassie Pinnel

2. Habitat Type/Modifiers:
P = Puddle
SW = Seasonal Wetland

3. Large Branch/Amphib Acronyms:
LEPA = *Lepidurus packard* i
BRLY = *Branchinecta lynchi*
BRCO = *Branchinecta conservatio*
BRMA = *Branchinecta mackini*
LIOC = *Linderiella occidentalis*
CYCA = *Cyzicus californicus*
BRSP = *Branchinecta* sp.
PSRE = Pseudacris *regilla*

Abundance Ratings:
R = Rare (≤ 2 Individuals)
NC = Not Common (3-10 Individuals)
C = Common (11-50 Individuals)
VC = Very Common (50 - 100 Individuals)
A = Abundant (> 100 Individuals)
X = Present but not observed in 1 meter sample.
CA = Carapace only for LEPA
P = Present; observed during non-quantitative sampling

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

Hercules Ferry Intermodal Terminal Project: Suvery #3

													Large Branchiopods[3]								Copep			Coleop		Hemip		Diptera						Amph[4]	
Pool No.	Date: 1/17/07	Surveyors[1] JP/JS	Temp C	SpC (mS/cm)	DO (mg/L)	pH (units)	Salinity (ppt)	DO% Saturation (%)	Turbidity (NTU)	Max Depth (in)		B. lindahli	*LEPA*	*BRLY*	*BRCO*	*BRMA*	*LIOC*	*CYCA*	*BRSP*	Ostracods	Calanoida	Cyclopoda	Cladocera	Dytiscidae	Hydrophilidae	Notonectidae	Corixidae	Culicidae	Chironomidae	Lymnaeidae	Microturbellaria			PSRE	
1			8							2																									
2										0																									
3			8							1																									
4										0																									
5			17							2																									
6										1																									
7										0																									
8										0																									
9			16							2																									
10										0																									
11										0																									
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16										0																									
17										0																									
18										0																									
19										0																									
20			15							8													c				c								

1. Surveyors:
JP Josh Phillips
JS Jake Schweitzer
CP Cassie Pinnel

2. Habitat Type/Modifiers:
P = Puddle
SW = Seasonal Wetland

3. Large Branch/Amphib Acronyms:
LEPA = *Lepidurus packard* i
BRLY = *Branchinecta lynchi*
BRCO = *Branchinecta conservatio*
BRMA = *Branchinecta mackini*
LIOC = *Linderiella occidentalis*
CYCA = *Cyzicus californicus*
BRSP = *Branchinecta* sp.
PSRE = Pseudacris *regilla*

Abundance Ratings:
R = Rare (≤ 2 Individuals)
NC = Not Common (3-10 Individuals)
C = Common (11-50 Individuals)
VC = Very Common (50 - 100 Individuals)
A = Abundant (> 100 Individuals)
X = Present but not observed in 1 meter sample.
CA = Carapace only for LEPA
P = Present; observed during non-quantitative sampling

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

Hercules Ferry Intermodal Terminal Project: Suvery #4

													Large Branchiopods[3]								Copep			Coleop		Hemip		Diptera						Amph[4]	
Pool No.	Date: 1/30/07	Surveyors[1] JP/JS	Temp C	SpC (mS/cm)	DO (mg/L)	pH (units)	Salinity (ppt)	DO% Saturation (%)	Turbidity (NTU)	Max Depth (in)		B. lindahli	*LEPA*	*BRLY*	*BRCO*	*BRMA*	*LIOC*	*CYCA*	*BRSP*	Ostracods	Calanoida	Cyclopoda	Cladocera	Dytiscidae	Hydrophilidae	Notonectidae	Corixidae	Culicidae	Chironomidae	Lymnaeidae	Microturbellaria			PSRE	
1			10							2																									
2										0																									
3			16							2																									
4			16							2																									
5			16							1																									
6			15							2																									
7			11							2																									
8			15							2																									
9			14							1																									
10			15							1																									
11			14							1																									
12			15							1																									
13										0																									
14			16							2																									
15										0																									
16			15							1																									
17										0																									
18										0																									
19			15							2																									
20			15							8													c				c								

1. Surveyors:
JP Josh Phillips
JS Jake Schweitzer
CP Cassie Pinnel

2. Habitat Type/Modifiers:
P = Puddle
SW = Seasonal Wetland

3. Large Branch/Amphib Acronyms:
LEPA = *Lepidurus packard* i
BRLY = *Branchinecta lynchi*
BRCO = *Branchinecta conservatio*
BRMA = *Branchinecta mackini*
LIOC = *Linderiella occidentalis*
CYCA = *Cyzicus californicus*
BRSP = *Branchinecta* sp.
PSRE = Pseudacris *regilla*

Abundance Ratings:
R = Rare (≤ 2 Individuals)
NC = Not Common (3-10 Individuals)
C = Common (11-50 Individuals)
VC = Very Common (50 - 100 Individuals)
A = Abundant (> 100 Individuals)
X = Present but not observed in 1 meter sample.
CA = Carapace only for LEPA
P = Present; observed during non-quantitative sampling

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

Hercules Ferry Intermodal Terminal Project: Suvery #5

													Large Branchiopods[3]								Copep			Coleop		Hemip		Diptera						Amph[4]	
Pool No.	Date: 2/14/07	Surveyors[1] JP/JS	Temp C	SpC (mS/cm)	DO (mg/L)	pH (units)	Salinity (ppt)	DO% Saturation (%)	Turbidity (NTU)	Max Depth (in)		B. lindahli	*LEPA*	*BRLY*	*BRCO*	*BRMA*	*LIOC*	*CYCA*	*BRSP*	Ostracods	Calanoida	Cyclopoda	Cladocera	Dytiscidae	Hydrophilidae	Notonectidae	Corixidae	Culicidae	Chironomidae	Lymnaeidae	Microturbellaria			PSRE	
1			17							3		nc																							
2			18							1																									
3			20							1																									
4			22							2																									
5			21							4																									
6			21							2																									
7			21							3																									
8			21							2																									
9			20							5																									
10			21							4																									
11			21							2																									
12			20							4																									
13			20							3																									
14			20							5																									
15			20							6																									
16			20							3																									
17			20							3																									
18			20							4																									
19			20							5																									
20			17							11													c				c								

1. Surveyors:
JP Josh Phillips
JS Jake Schweitzer
CP Cassie Pinnel

2. Habitat Type/Modifiers:
P = Puddle
SW = Seasonal Wetland

3. Large Branch/Amphib Acronyms:
LEPA = *Lepidurus packard* i
BRLY = *Branchinecta lynchi*
BRCO = *Branchinecta conservatio*
BRMA = *Branchinecta mackini*
LIOC = *Linderiella occidentalis*
CYCA = *Cyzicus californicus*
BRSP = *Branchinecta* sp.
PSRE = Pseudacris *regilla*

Abundance Ratings:
R = Rare (≤ 2 Individuals)
NC = Not Common (3-10 Individuals)
C = Common (11-50 Individuals)
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A = Abundant (> 100 Individuals)
X = Present but not observed in 1 meter sample.
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Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

Hercules Ferry Intermodal Terminal Project: Suvery #6

													Large Branchiopods[3]								Copep			Coleop		Hemip		Diptera						Amph[4]	
Pool No.	Date: 2/28/07	Surveyors[1] JP/JS	Temp C	SpC (mS/cm)	DO (mg/L)	pH (units)	Salinity (ppt)	DO% Saturation (%)	Turbidity (NTU)	Max Depth (in)		B. lindahli	*LEPA*	*BRLY*	*BRCO*	*BRMA*	*LIOC*	*CYCA*	*BRSP*	Ostracods	Calanoida	Cyclopoda	Cladocera	Dytiscidae	Hydrophilidae	Notonectidae	Corixidae	Culicidae	Chironomidae	Lymnaeidae	Microturbellaria			PSRE	
1			14							1		nc																							
2										0																									
3			20							1																									
4			20							1																									
5			18							4																									
6			17							2																									
7			20							3																									
8			18							2																									
9			19							5																									
10			17							4																									
11			17							2																									
12			20							3																									
13			18							2																									
14			18							4																									
15			17							5																									
16			17							3																									
17			18							3																									
18			17							3																									
19			18							4																									
20			16							11													c				c								

1. Surveyors:
JP Josh Phillips
JS Jake Schweitzer
CP Cassie Pinnel

2. Habitat Type/Modifiers:
P = Puddle
SW = Seasonal Wetland

3. Large Branch/Amphib Acronyms:
LEPA = *Lepidurus packard* i
BRLY = *Branchinecta lynchi*
BRCO = *Branchinecta conservatio*
BRMA = *Branchinecta mackini*
LIOC = *Linderiella occidentalis*
CYCA = *Cyzicus californicus*
BRSP = *Branchinecta* sp.
PSRE = Pseudacris *regilla*

Abundance Ratings:
R = Rare (≤ 2 Individuals)
NC = Not Common (3-10 Individuals)
C = Common (11-50 Individuals)
VC = Very Common (50 - 100 Individuals)
A = Abundant (> 100 Individuals)
X = Present but not observed in 1 meter sample.
CA = Carapace only for LEPA
P = Present; observed during non-quantitative sampling

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

Hercules Ferry Intermodal Terminal Project: Suvery #7

													Large Branchiopods[3]								Copep			Coleop		Hemip		Diptera						Amph[4]	
Pool No.	Date: 3/14/07	Surveyors[1] JP/JS	Temp C	SpC (mS/cm)	DO (mg/L)	pH (units)	Salinity (ppt)	DO% Saturation (%)	Turbidity (NTU)	Max Depth (in)		B. lindahli	*LEPA*	*BRLY*	*BRCO*	*BRMA*	*LIOC*	*CYCA*	*BRSP*	Ostracods	Calanoida	Cyclopoda	Cladocera	Dytiscidae	Hydrophilidae	Notonectidae	Corixidae	Culicidae	Chironomidae	Lymnaeidae	Microturbellaria			PSRE	
1										0																									
2										0																									
3										0																									
4										0																									
5										0																									
6										0																									
7			16							2																									
8										0																									
9										0																									
10										0																									
11			17							1																									
12										0																									
13										0																									
14										0																									
15										0																									
16										0																									
17										0																									
18										0																									
19										0																									
20			15							8													c				c								

1. Surveyors:
JP Josh Phillips
JS Jake Schweitzer
CP Cassie Pinnel

2. Habitat Type/Modifiers:
P = Puddle
SW = Seasonal Wetland

3. Large Branch/Amphib Acronyms:
LEPA = *Lepidurus packard* i
BRLY = *Branchinecta lynchi*
BRCO = *Branchinecta conservatio*
BRMA = *Branchinecta mackini*
LIOC = *Linderiella occidentalis*
CYCA = *Cyzicus californicus*
BRSP = *Branchinecta* sp.
PSRE = Pseudacris *regilla*

Abundance Ratings:
R = Rare (≤ 2 Individuals)
NC = Not Common (3-10 Individuals)
C = Common (11-50 Individuals)
VC = Very Common (50 - 100 Individuals)
A = Abundant (> 100 Individuals)
X = Present but not observed in 1 meter sample.
CA = Carapace only for LEPA
P = Present; observed during non-quantitative sampling

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

Hercules Ferry Intermodal Terminal Project: Suvery #8

													Large Branchiopods[3]								Copep			Coleop		Hemip		Diptera						Amph[4]	
Pool No.	Date: 3/28/07	Surveyors[1] JP	Temp C	SpC (mS/cm)	DO (mg/L)	pH (units)	Salinity (ppt)	DO% Saturation (%)	Turbidity (NTU)	Max Depth (in)		B. lindahli	*LEPA*	*BRLY*	*BRCO*	*BRMA*	*LIOC*	*CYCA*	*BRSP*	Ostracods	Calanoida	Cyclopoda	Cladocera	Dytiscidae	Hydrophilidae	Notonectidae	Corixidae	Culicidae	Chironomidae	Lymnaeidae	Microturbellaria			PSRE	
1										0																									
2										0																									
3										0																									
4										0																									
5										0																									
6										0																									
7										0																									
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15										0																									
16										0																									
17										0																									
18										0																									
19										0																									
20										0																									

1. Surveyors:
JP Josh Phillips
JS Jake Schweitzer
CP Cassie Pinnel

2. Habitat Type/Modifiers:
P = Puddle
SW = Seasonal Wetland

3. Large Branch/Amphib Acronyms:
LEPA = *Lepidurus packard* i
BRLY = *Branchinecta lynchi*
BRCO = *Branchinecta conservatio*
BRMA = *Branchinecta mackini*
LIOC = *Linderiella occidentalis*
CYCA = *Cyzicus californicus*
BRSP = *Branchinecta* sp.
PSRE = Pseudacris *regilla*

Abundance Ratings:
R = Rare (≤ 2 Individuals)
NC = Not Common (3-10 Individuals)
C = Common (11-50 Individuals)
VC = Very Common (50 - 100 Individuals)
A = Abundant (> 100 Individuals)
X = Present but not observed in 1 meter sample.
CA = Carapace only for LEPA
P = Present; observed during non-quantitative sampling

APPENDIX C – 2003/2004 Wet Season Survey Report of Adjacent Area

Ninety-Day Findings Report
USFWS Permit # TE-016591-3

2003-2004 Wet Season Branchiopod Survey Report

Hercules Train Station
Contra Costa County, California

October 15, 2004

Prepared for:
Impact Sciences Inc.
2101 Webster Street, Suite 1825
Oakland, CA 94612

Prepared by:
Wendy Weber, Principal

Condor Country Consulting
808 Arlington Way
Martinez, CA 94553

INTRODUCTION

The Hercules Train Station project, located in western Contra Costa County on the Mare Island USGS 7.5' topographic quadrangle map, proposes to build a new Amtrak commuter train station adjacent to the existing Union Pacific rail line. Impact Sciences Inc., environmental consultants for the City of Hercules, requested that Condor Country Consulting perform a wet season survey for federally listed vernal pool branchiopods after branchinectid fairy shrimp were observed at the site during a habitat assessment. Determining the presence or absence of listed branchiopods is necessary to meet the requirements of CEQA.

Wendy Weber of Condor Country Consulting conducted surveys to determine the species and distribution of vernal pool branchiopods within the proposed project boundaries. Josh Philips of Impact Sciences, working under my direct supervision, and Jeff Alvarez of The Wildlife Project, working independently under his own permit, assisted with the survey effort.

Verbal approval to conduct the surveys was received from the U.S. Fish and Wildlife Service on December 17, 2003. Written authorization was received via email on July 9, 2004 (Appendix A).

The following wet season report is submitted in accordance with the conditions of U.S. Fish and Wildlife Service Permit TE-016591-3 (Appendix A). The format of the report follows the format outlined in the "Interim Survey Guidelines to Permittees for Recovery Permits under Section 10(a)(1)(A) of the Endangered Species Act for the Listed Vernal Pool Branchiopods"(Guidelines) (USFWS 1996).

METHODOLOGY

Prior to commencing surveys, a habitat assessment was performed. Suitable habitat was identified during the prior wet season. Any additional ponds observed during the 2003-2004 wet season were included in the survey. A total of 27 pools were identified and surveyed in the 2003-2004 wet season (Figure 1).

Populations of listed vernal pool branchiopods are not known from the area. The nearest population of a listed branchiopod, vernal pool fairy shrimp (*Branchinecta lynchi*), is 13 miles north of the site, across San Pablo Bay (CNDDB 2004).

Surveys were conducted according to the methods described in the Guidelines (USFWS 1996). Surveys were initiated on December 18 and 19, 2003; approximately two weeks after some pools on the site had filled to a depth greater than 3 cm. Surveys were conducted every two weeks thereafter until March 31, 2004 when all pools were either dry or had been inundated for at least 120 consecutive days. Intermediate surveys were

conducted on January 7 and 21, February 4 and 20, and March 3 and 17. Each day's survey data were collected on data sheets (Appendix B).

Figure 1. Pool Locations and Project Vicinity

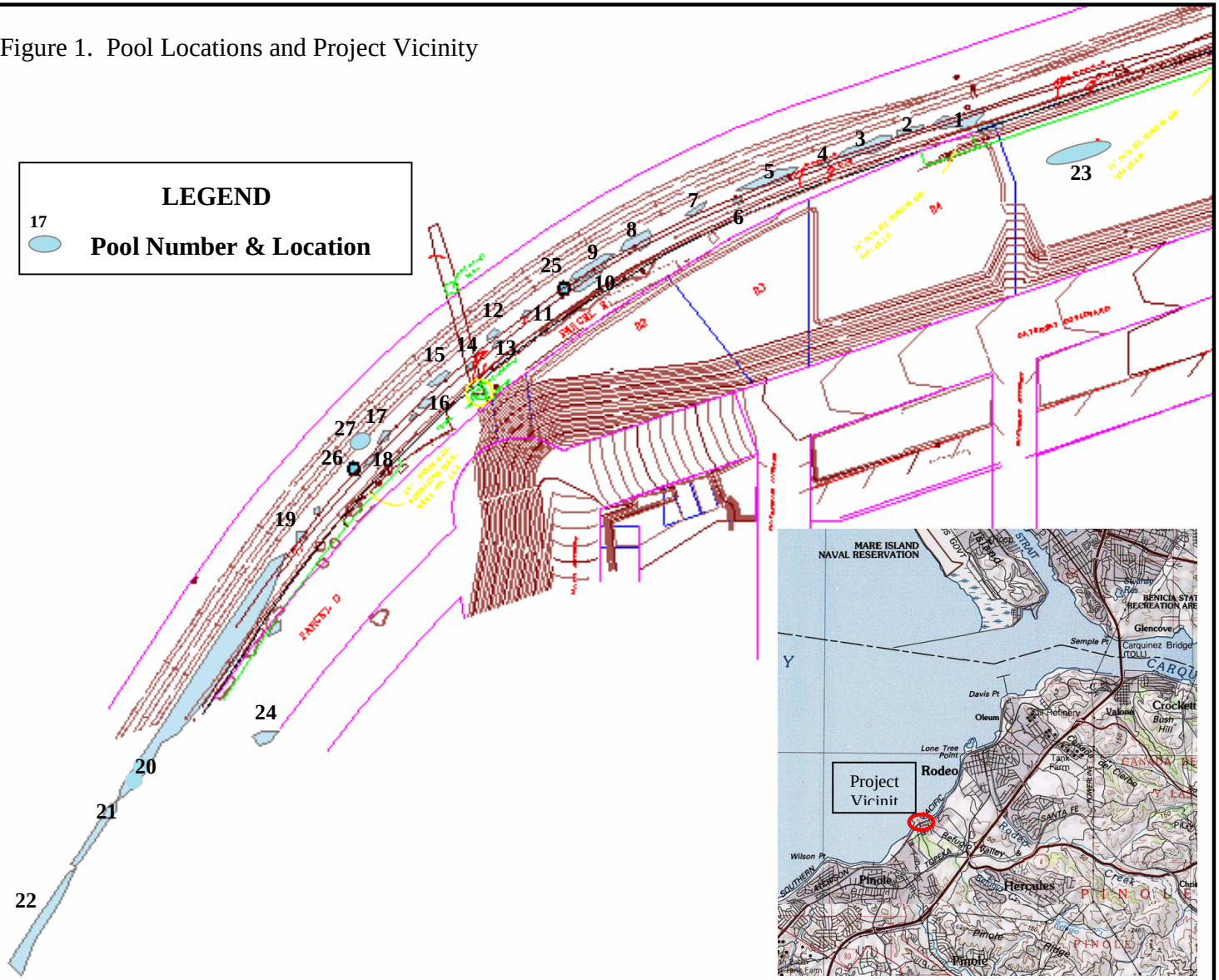

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

SURVEY RESULTS

No listed vernal pool branchiopods were detected during the 2003-2004 wet season survey effort. The distribution of all invertebrates identified during these surveys is described in this section. A habitat description of the site is also included. Data collected during each field visit, including air temperature, water temperature, and pool dimensions are included on the data sheets in Appendix B.

The locations of the sampled pools are shown in Figure 1. Each pool's dimensions, depth, habitat type, location, and faunal composition identified during surveys are shown in Table 1. Twenty-five of the twenty-seven pools are puddles formed in the rail access road roadbed, a road that is somewhat heavily traveled by autos, dirt bikes, and pedestrians. The remaining two puddles are to the east and uphill of the rail access road in areas were previous construction activities have compacted the soil and created depressions.

Because the project area is limited to the railroad right-of-way, there is little upland vegetation on the site. The right-of-way is primarily comprised of ballast rock and barren soil. Adjacent properties to the south-east are predominantly non-native annual grassland and eucalyptus forest. To the north-west is the San Pablo Bay, less than 100 meters from the train tracks. This area contained no upland habitat, but abundant estuarian vegetation in sheltered areas with mud flats. Within the right-of-way aquatic vegetation, other than algae, was absent in all twenty-five of the pools in the road. Pools 23 and 24 also contained curly dock (*Rumex* sp.) and upland grass species (e.g. *Avena* sp.) that eventually perished from continuous inundation.

The one species of vernal pool branchiopod occurring on the site is described in detail below and the aquatic and semi-aquatic invertebrates that were identified during sampling are listed. The distribution of these species among the pools sampled is shown in Table 1 and on the data sheets in Appendix B. No listed fairy shrimp (Anostraca) or tadpole shrimp (Notostraca) were observed on the site.

Versatile Fairy Shrimp

As alluded to by its name, versatile fairy shrimp (*Branchinecta lindahli*), is found in a variety of vernal habitats with elevations ranging from just above sea level to over 1,600 meters, and ranging widely throughout California from Lassen to San Diego Counties (Eriksen & Belk 1999). Even versatile in its tolerance for varied water chemistry, its only observed preference is for pools in arid environments. Within the study area this species has been identified from all but four of the pools. Individuals were observed to be in a reproductive state as early as the first field visit. Numbers of individuals per pool for this species ranged from less than ten to several hundred, but generally numbered in the hundreds in most pools.

Table 1. Hercules Train Station Pool Attributes

Pool #	Dimensions (meters)*	Depth (cm)*	Habitat Type	***B. lindahli***	Immature F.S.	Chironomidae	Cladocera	Copepoda	Corixidae	Culicidae	Dytiscidae	Ostracoda
1	3X10	9	Puddle	X		X	X	X				X
2	1X5	9	Puddle	X		X		X	X	X		X
3	7X20	15	Puddle	X		X	X		X			X
4	2X10	3	Puddle	X			X	X		X		X
5	3X15	11	Puddle	X					X	X		X
6	1X2	8	Puddle	X		X				X		X
7	1X4	4	Puddle		X		X					
8	4X10	10	Puddle	X		X	X		X	X		X
9	3X15	8	Puddle	X		X	X					X
10	4X15	7	Puddle	X			X				X	X
11	1.5X2	11	Puddle	X		X	X			X	X	
12	1X8	2	Puddle	X		X						
13	0.5X3	5	Puddle	X		X						
14	2X4	13	Puddle	X		X						X
15	2X8	3	Puddle	X		X	X					
16	4X9	9	Puddle	X		X		X				X
17	4X6	6	Puddle	X			X					
18	1X6	5	Puddle	X								
19	3X3	5	Puddle	X		X	X	X				X
20	8X150	20	Puddle	X		X	X	X	X	X	X	X
21	2X23	12	Puddle	X		X	X	X		X		X
22	2X14	15	Puddle	X			X	X	X		X	X
23	10X15	20	Puddle			X	X	X	X	X	X	
24	3X8	12	Puddle					X				X
25	1X1.5	4	Puddle	X		X	X	X				X
26	0.5X1	5	Puddle									
27	2X6	4	Puddle									

*Maximum measured during entire survey period.

No vertebrates were identified using the pools within the project area although Pacific treefrogs (*Hyla regilla*) were heard in close proximity to the pools at the south end of the site. Many invertebrates were identified during sampling, including Copepods, Corixids (water boatmen), Dyticids (diving beetle larvae), Cladocerans (water fleas or daphnia), Culicids (mosquito larvae), Ostracods (seed shrimp), and Chironomids (midge larvae). All of these invertebrates are typical of the fauna associated with astatic aquatic habitats.

Pools 1 thru 25 filled within the first two survey rounds. Of these, all but seven pools held water through the first six rounds of surveys. Pools 26 and 27 only filled on fourth round of surveys and only held water for one and two more surveys, respectively. All pools that were not filled for 120 consecutive days were dry within the week following the last survey and remained so through the remainder of the season.

CONCLUSIONS

Listed species of branchiopods are not known from the area. Habitat on the site is poor, artificially created by soil compaction due to previous construction activities and/or heavy vehicle use along the dirt right-of-way. As a result the habitat lacks many characteristics of natural vernal pools such as diverse and highly specialize vernal pool vegetation, aquatic vertebrates, and some of the diversity of invertebrates typical of vernal pools. However, railroad rights-of-way in California often provide habitat for branchiopods, especially *B. lynchi*, and this right-of-way is no exception.

Although no evidence of listed branchiopods was found during the wet season survey, another branchinectid, *B. lindahli* was abundant on the site. Characteristic of this quickly developing shrimp that can cycle through several generations in one wet season, it took advantage of the shallow pools that dried and refilled several times throughout the wet season, as well as those that remained inundated. As such, it is well suited to the habitat present along the railroad right-of-way in Hercules.

Ultimately, because no listed branchiopods were observed during this wet season survey, a dry season survey will be performed this year to complete the requirements of the Guidelines and to assist in determining whether listed branchiopods are present on the proposed Hercules Train Station site.

REFERENCES

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Smith, D. G. 2001. Pennak's freshwater invertebrates of the United States (4th ed.). John Wiley & Son, Inc., New York, NY. 638p.

U.S. Fish and Wildlife Service (USFWS). 1996. Interim survey guidelines to permittees for recovery permits under Section 10(a)(1)(A) of the Endangered Species Act for the listed vernal pool branchiopods. USFWS Sacramento Field Office, Sacramento, CA.

July 30, 2010

David Kelly
Recovery Branch
U.S. Fish and Wildlife Service
2800 Cottage Way, Room W-2605
Sacramento, CA 95825

Subject: Report of Findings from Wet Season Surveys for Federally-Listed Vernal Pool Branchiopods for the Hercules Intermodal Transit Project

INTRODUCTION

On behalf of the City of Hercules, HDR Engineering, Inc. (HDR) has conducted wet season vernal pool branchiopod surveys for the Hercules Intermodal Transit Project site (proposed project/project site) located in Contra Costa County, CA. The purpose of the survey was to determine presence/absence of Federally-listed vernal pool branchiopods on the project site. The surveys were conducted by Section 10(a) permitted biologists LaTisha Burnaugh, M.S. and Stephen Stringer, M.S., with assistance from Sean Marquis and Cristina Ramirez, under the authority of Federal Fish and Wildlife Permit No. TE-198922-0 held by Ms. Burnaugh and Federal Fish and Wildlife Permit No. TE-141359-0 held by Mr. Stringer.

The surveys were conducted according to protocols outlined in the "*Interim Survey Guidelines to Permittees for Recovery Permits under Section 10(a)(1)(A) of the Endangered Species Act for the Listed Vernal Pool Branchiopods* (Guidelines)." Due to site access restrictions, modifications to the timing of the surveys were made in consultation with USFWS. These modifications are discussed below. This document is the 90-Day Report of Findings required by Item VII of the Guidelines, which summarizes the results of the surveys. Ryan Olah, USFWS Coast Branch Chief, authorized wet season surveys for the project site via email on November 18, 2009.

The project site is located in the City of Hercules, in western Contra Costa County within Township 2 North, Range 4 West, in an unsectioned portion of the Mare Island USGS 7.5' quadrangle (**Attachment 1; Figures 1 and 2**). The project site is located adjacent to San Pablo Bay and is bisected by the Southern Pacific railroad right-of-way. Elevations on the site range from approximately sea level to 10 feet above sea level. Vegetation communities within the site are classified as California cordgrass tidal marsh, pickleweed tidal marsh, intertidal mudflat, brackish stream, pickleweed brackish marsh, willow riparian forest, freshwater wetland swale, cattail marsh, seasonal wetland, freshwater intermittent drainage, and unvegetated ponded depressions.

METHODOLOGY

Due to site access restrictions, wet season surveys could not be initiated within two weeks of the first inundating rainfall event. HDR contacted USFWS to discuss beginning the surveys as soon as possible once access permission was granted. On December 7, 2009, HDR was given verbal authorization from USFWS to commence the surveys once access permission was granted (phone conversation between Serge Stanich (HDR) and Ben Solvesky (USFWS)). HDR was granted access permission on February 11, 2010 to survey portions of the project site outside of the railroad right-of-way (ROW) and commenced surveys in those areas of the project site on February 16, 2010. HDR was granted access permission to the railroad ROW February 23, 2010 and commenced surveys of the entire project site on March 2 and 3, 2010. Surveys were discontinued after May 6, 2010 as HDR received correspondence from Stephanie Jentsch, USFWS biologist, on May 14, 2010 allowing discontinuation of the surveys.

A total of seven surveys were conducted on the following dates: February 16, March 2 and 3, March 16 and 17, March 31 and April 1, April 12 and 14, April 23, and May 6. Survey methodology followed "wet season sampling" protocols outlined in the Guidelines. All potential vernal pools within the survey area boundaries were visited during each of the survey events, except for the February 16 survey. As discussed above, only the pools outside of the railroad ROW were surveyed during the February 16 survey due to restricted access on that date. A total of 54 pools were surveyed within the site (Attachment 1; **Figure 3).** The feature marked as 33 on **Figure 3** was removed from the surveys as it did not display inundation during any of the surveys. All of the pools were visually inspected during each survey event and all inundated wetlands were dip netted. Each pool was flagged with its corresponding number for identification. Required data were collected and documented on the attached U.S. Fish and Wildlife Service Vernal Pool Data Sheets for Wet Season Surveys (**Attachment 2**). Photos of representative vernal pools on the site were taken and are included as **Figures 4a** and **b**. As required by the special terms and conditions of the Permit, a signed statement certifying the accuracy of this report is included.

DESCRIPTION OF VERNAL POOLS SAMPLED

Forty-seven unvegetated ponded depressions, or "puddles", occur within the railroad ROW. The puddles occur within depressions in compacted dirt and gravel. They are generally devoid of vascular vegetation. The puddles reach a maximum depth of six inches in the winter, with most pools not exceeding three inches in depth. Seven pools (pools 4,5,6,7,8,10,15, 39, and 42) occur outside of the railroad ROW in disturbed upland areas. The seven pools outside of the railroad ROW had limited hydrophytic vegetation.

RESULTS

No federally-listed vernal pool branchiopods were observed within the site. Although not all of the vernal pools in the site were inundated continuously for 120 days, many were inundated for a sufficient length of time for vernal pool branchiopods to hatch and complete a life cycle if they were present. This is evidenced by the fact that the wetland features onsite contained a high diversity of aquatic invertebrates, including versatile fairy shrimp (*Branchinecta lindahli*). Other invertebrates observed within the pools included: Corixidae (water boatmen), Cladocerans (water fleas), Ostracods (seed shrimp), Dytiscidae (predaceous diving beetle), flat worms, fly larvae, mosquito larvae, and caddisfly larvae. These species were observed in orders of magnitude ranging from the 10's to the 10,000's. Pacific chorus frog tadpoles and mallard ducks were also observed in some of the pools.

SUMMARY

This report documents completion of a "wet season" survey for federally-listed vernal pool branchiopods for the Hercules Intermodal Transit site. No federally-listed vernal pool branchiopods were found on the project site. This report also fulfills the 90-day reporting requirements stated in Item VII of the Guidelines for Federal Fish and Wildlife Permit No. TE-198922-0 held by LaTisha Burnaugh and Permit No. TE-141359-0 held by Stephen Stringer.

Sincerely,

LaTisha Burnaugh

Attachments:

Attachment 1: Project Figures

Attachment 2: Wet Season Survey Datasheets

Copy:
Ryan Olah, Coast Branch Chief, U.S. Fish and Wildlife Service

Signature Page

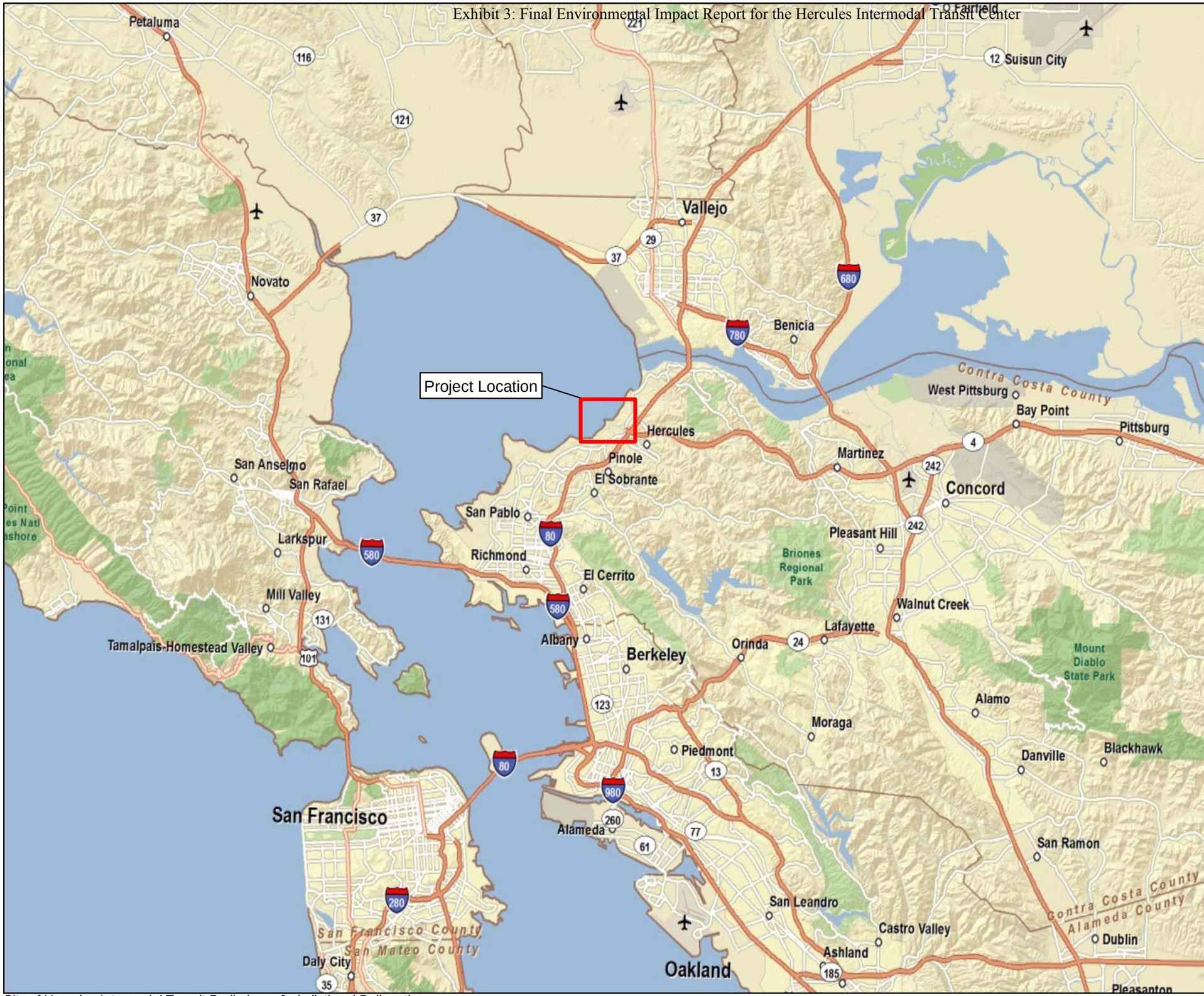
"I certify that the information in this survey report and attached exhibits fully and accurately represents my work."

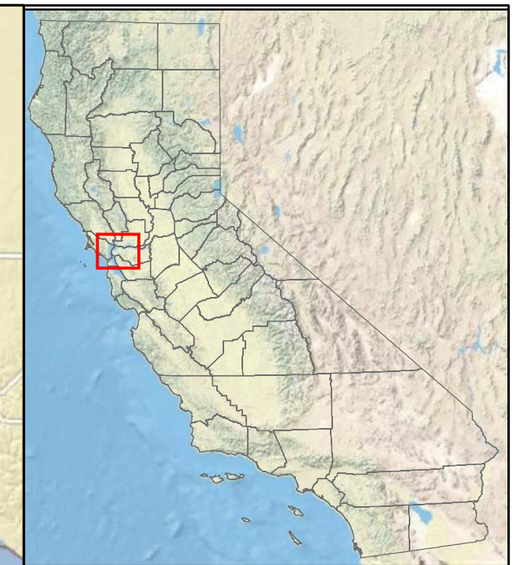
_____ Stephen Stringer (Permit No. TE-141359-0)

_____ LaTisha Burnaugh (Permit No. TE-198922-0)

APPENDIX A
Figures

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center





Preliminary
Subject to Change

1 in = 500 ft (at tabloid layout)

0 62.5 125 250 Meters

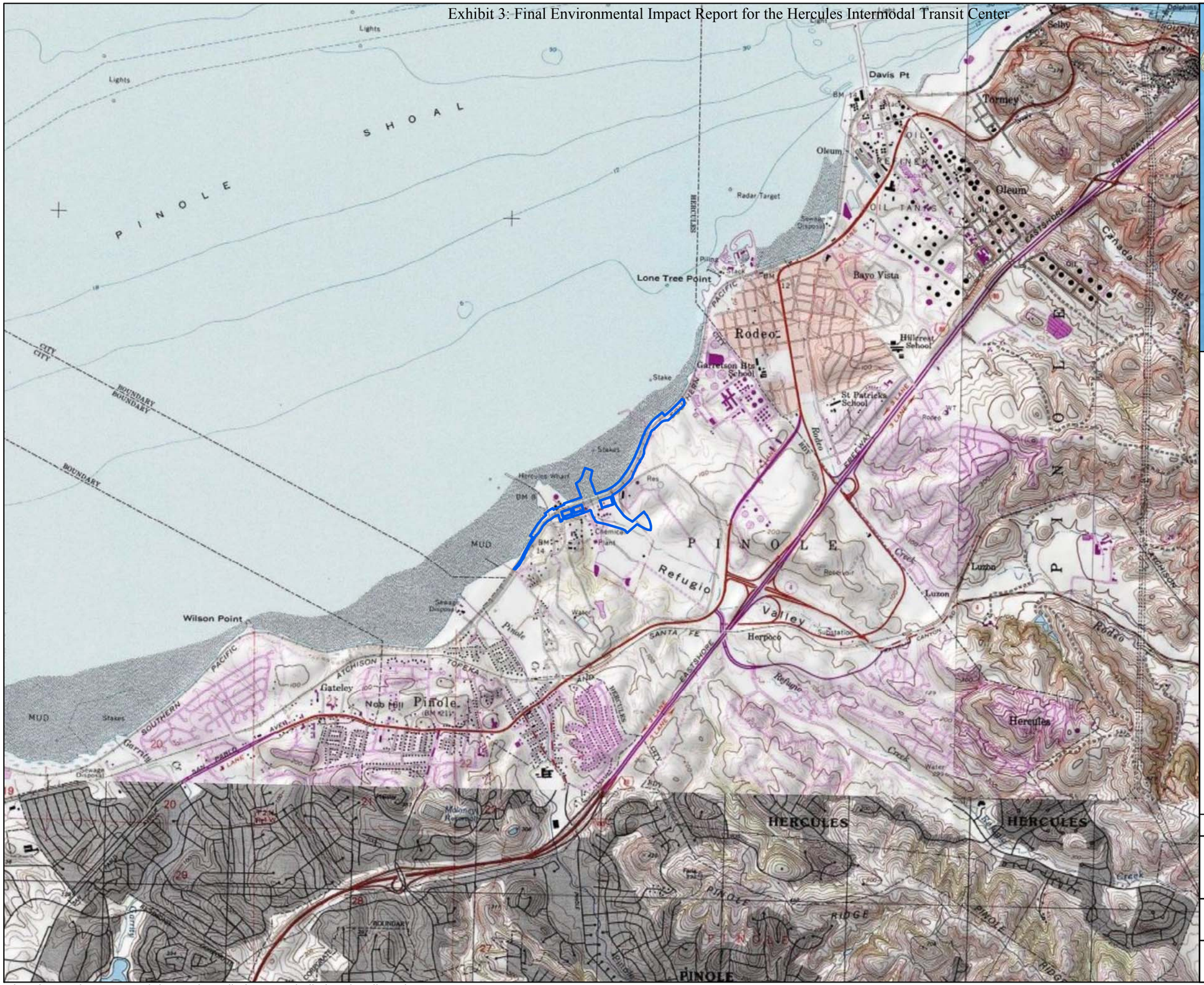
0 250 500 1,000 Feet

Figure 1: Regional Vicinity Map

City of Hercules
Hercules Intermodal Transit Center
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources.
No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey.
Data is State Plane Feet, NAD83 Zone 3

HDR 2365 Iron Point Road, Suite 300
Folsom, CA 95630-8709



Legend

EIR/EIS Boundary

Preliminary
Subject to Change

1 in = 2,500 ft (at tabloid layout)

N

0 375 750 1,500 Meters

0 1,250 2,500 5,000 Feet

Figure 2: Site and Vicinity Map

City of Hercules
Hercules Intermodal Transit Center
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources.
No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey.
Data is State Plane Feet, NAD83 Zone 3

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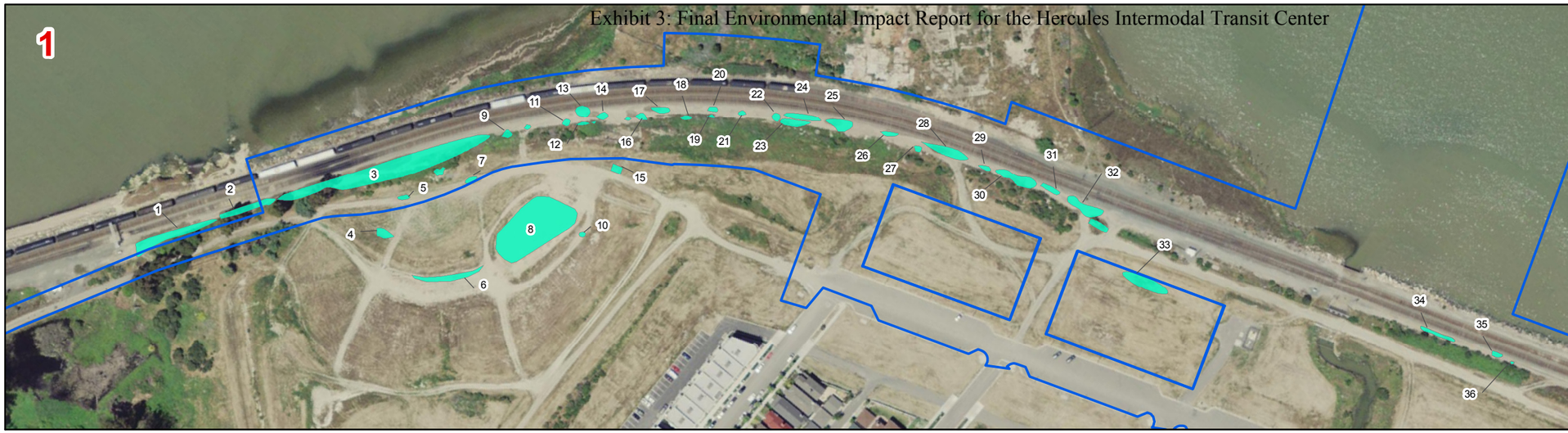

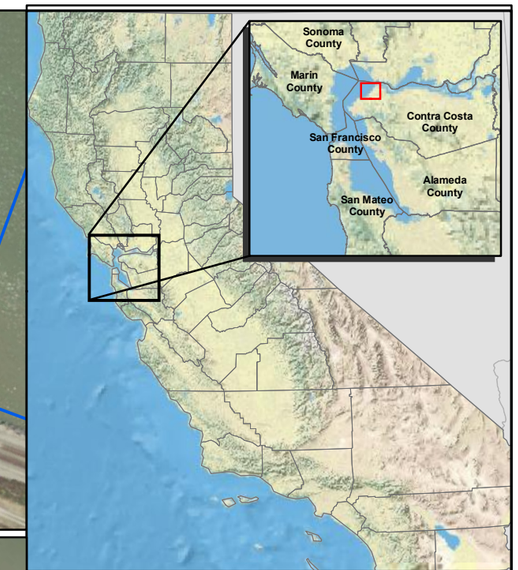

Legend

- Project Boundary
- Fairy Shrimp Habitat Delineation

Preliminary
Subject to Change

1 in = 200 ft (at tabloid layout)

0 25 50 100 Meters

0 100 200 400 Feet

N

Figure 3: Fairy Shrimp Habitat Map

City of Hercules
Hercules Intermodal Transit Facility
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources.
No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey.
Data is State Plane Feet, NAD83 Zone 3

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FIGURE 4A: SITE PHOTOGRAPHS

Photo 1. Pool 8, taken looking east.

Photo 2. Pool 23, representative photo of a dry vernal pool within the railroad right-of-way (ROW).

Photo 3. Pool 42, taken looking west.

Photo 4. Pool 43, taken looking west. Representative photo of an inundated vernal pool in the ROW.

Photo 5. Pool 15, taken looking east.

Photo 6. Pool 5, taken looking south.

FIGURE 4B: SITE PHOTOGRAPHS

Photo 7. Pool 4, taken looking east.

Photo 8. Pool 6, taken looking east.

Photo 9. Pools 17 and 18, taken looking north. Representative photo of dry vernal pools in the ROW.

Photo 10. Pool 3, taken looking south. Representative photo of a dry vernal pool in the ROW.

Photo 11. Pool 13 and 14, taken looking northwest. Representative photo of dry vernal pools in the ROW.

Photo 12. Pool 1, taken looking southwest. Representative photo of dry vernal pool in the ROW.

APPENDIX B
Wet Season Data Sheets

Data Sheets are Available upon Request

APPENDIX G-6

Bird Survey Report

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

Bird surveys for the

Hercules Ferry Terminal Project

2007

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July 11, 2007

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

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1.0 INTRODUCTION

This report summarizes the results of bird surveys conducted at the Hercules Ferry Terminal project site during the spring and early summer of 2007 by the author Hildie Spautz with the assistance of leading regional rail expert Jules Evens. These surveys concentrated on existing tidal marsh habitat due to the possible presence of special status species including the California clapper rail (*Rallus longirostris obsoletus*), a federal and state of California endangered species; the California black rail (*Laterallus jamaicensis coturniculus*), a state of California threatened species; and the San Pablo song sparrow (*Melospiza melodia samuelis*), a state of California species of special concern. There are no previous records of bird surveys in this area, so its value to special status birds was entirely unknown. Short-term project construction activities and long-term ferry terminal operations have the potential to cause disturbance to the tidal marsh habitat, and information about the presence of these species will allow project planners to minimize any potential impacts.

2.0 STUDY AREA

The project area is within the City of Hercules and encompasses the area under consideration for a ferry terminal and associated structures. A Union Pacific rail line runs along the southern edge of the site, and separates it from a new residential development to the south. There was an explosives plant in the center of the site, and only the concrete foundations remain. Three separate tidal marsh areas remain on the bayfront edge of the property: a 2.1 ha linear marsh along the southwestern edge (marsh area 1), a 0.8 ha square marsh area on the northwestern point (marsh area 2), and a 0.8 ha linear marsh on the eastern side (marsh area 3; Figure 1). These marshes are relatively young (< 100 years old), having formed on the outboard side of rip-rapped shoreline (SFEI 1998). Bird surveys were focused on these marsh areas but also included all habitats adjacent to the survey stations.

3.0 METHODS

3.1 FIELD SURVEY METHODS

Several types of bird surveys were conducted at the project site, focusing on the tidal marsh area but including all birds detected in adjacent habitat. Stations for rail surveys and point counts were established 100 - 200 meters (m) apart, where appropriate, so that the likelihood of detecting special status species in the tidal marsh was maximized (Figure 1). Additional stations for black rail surveys were added in the northeastern marsh (marsh area 3), to maximize detection probabilities, because it is closest to the ferry pier as currently planned and is likely to be the most strongly effected by construction activities. All birds were recorded with reference to the survey station from which they were detected (if recorded during a timed survey) and with reference to designated habitat areas: tidal marsh areas 1, 2 and 3; mudflat adjacent to these marsh

areas (areas included either or both exposed mudflat or bay water, depending on the tide); and adjacent uplands. Upland areas in the central portion of the site were divided into smaller segments to aid in mapping (areas A – J; Figure 1).

The geographic coordinates of survey stations are included in Appendix 5.

3.1.1 California Clapper Rail Breeding Season Call Count Surveys

We used the standard ”walking transect” survey protocol written by United States Fish and Wildlife Service (USFWS) biologists and used by researchers throughout the San Francisco Estuary to document California clapper rail presence during the breeding season and to calculate rail relative abundance and/or density (Appendix 1). The site is visited four times during the season with at least seven days between visits. During the first three rounds the observer stands at each point silently for 10 minutes (referred to as a “passive” survey), recording all rails detected visually or aurally. Pre-recorded clapper rail vocalizations are used on the final, fourth visit to elicit a response from rails if no rails were detected during the three previous passive surveys within 200 m of the survey station; this is referred to as an “active” survey. For each bird or pair of birds detected, the observer records the number of birds, call type, distance and angle on a pre-printed datasheet and plots the approximate location on an aerial photo.

Clapper rail surveys were conducted from survey stations 1 through 5 (Figure 1). The full protocol is included in Appendix 1. An example of a survey datasheets is included in Appendix 2.

3.1.2. California Black Rail Breeding Season Call Count Surveys

We used the widely-accepted protocol for California black rail surveys developed and used by regional researchers (Evens *et al* 1991; Nur *et al* 1997; Spautz *et al* 2006) to document black rail presence during the breeding season and to calculate relative abundance and/or density. The site is visited three times during the season with at least seven days between visits. Prerecorded black rail vocalizations are played at each station to elicit responses from rails in the marsh; typically rails within 30 - 50 m of the station will respond but often rails farther away will hear the vocalizations and respond. For each bird or pair of birds detected, the observer records the number of birds, call type, distance and angle on a pre-printed datasheet and plots the approximate location of the bird on an aerial photo.

Black rail surveys were conducted from survey stations 1 through 7 (Figure 1). The full protocol is included in Appendix 3.

3.1.3. Variable circular plot point count surveys for all bird species

Standardized point count surveys were conducted for all species simultaneously with the rail surveys during 5 of the 6 visits (Table 1). At each station, the observer records the following on a preprinted datasheet for each bird detected: the species, number of birds, distance (to the nearest 10 m), observation type (call type or visual), habitat type (marsh, mudflat, upland or pond), and habitat area (marsh or mudflat 1 – 3, upland A – J; Figure 1; Nur *et al* 1997). Birds flying over were also recorded. Each bird was recorded only

once, and birds detected from more than one station were included only in one station's data. Birds beyond 200 m on the mudflats or open water or beyond 200 m in the upland area outside the project site were not recorded. The survey timing included the entire 6 to 10 minute survey period associated with the rail survey being conducted (6 minutes for black rails, 10 minutes for clapper rails). The first 3 surveys included 10 minutes of observations at each station and the final 3 surveys included 6 minutes at each station. Thus the variability in bird detection rates may vary among surveys due to the survey length. Please see Appendix 4 for a more detailed description of the point count survey protocol.

Birds detected outside the designated survey time, or when walking between stations, were also recorded on the survey datasheets but were coded as non-survey detections in the database so they could be excluded during analysis, if necessary.

Point counts were conducted from survey stations 1 through 7 (Figure 1). The complete protocol is included in Appendix 4.

3.1.4. Territory-mapping San Pablo song sparrows

Locations of breeding San Pablo song sparrows were mapped on aerial photos during 5 of the 6 visits. We watched singing males and their mates and observed their movements across the marsh, also watching for indications of breeding behavior such as carrying nesting material or food for young. We observed interactions within and among neighboring pairs to determine how many pairs were in each marsh segment, and where the approximate territory boundaries lay. These approximate territory boundaries were digitized in ArcView 3.2.

3.2 DATA COLLECTION AND MANAGEMENT

Station locations were established in the field and recorded with a Garmin 76 hand-held GPS unit with WAAS satellite reception enabled and an accuracy of $\leq$ 10 m. These coordinates were converted to a GIS shapefile in ArcView GIS 3.2. All points were navigated to during surveys using the Garmin GPS 76 unit.

All survey data were entered in the field on pre-printed datasheets. Maps were created using imagery provided by Pacific Biology and Vollmar Consulting. Locations of song sparrows and other special-status birds were recorded on these maps in the field.

We entered survey detection data and associated habitat and location data into an Access database, portions of which had been previously developed by the author and colleagues for similar surveys by PRBO Conservation Science and the Invasive *Spartina* Project.

Data were entered and proofed against original datasheets for accuracy. We examined all fields for obvious outliers and checked these against the original data.

To create tables for this report, data were summarized in Access by species, survey date and by habitat type.

4.0 RESULTS

Bird surveys were conducted on March 8, March 30, April 6, April 16, June 2, and June 10, 2007. Clapper rail surveys were conducted on the first four dates, black rail surveys were conducted on the final three dates. Point counts and territory mapping were conducted during each visit except April 14 (Table 1).

4.1 CALIFORNIA CLAPPER RAIL CALL COUNT SURVEY RESULTS

No California clapper rails were detected at the project site during formal clapper rail surveys or during other site visits for bird surveys (Table 2, Table 3).

4.2 CALIFORNIA BLACK RAIL CALL COUNT SURVEY RESULTS

No California black rails were detected at the project site during formal black rail surveys or during other site visits for bird surveys (Table 2, Table 3).

4.3. SAN PABLO SONG SPARROW SURVEY RESULTS

Ten to fourteen San Pablo song sparrows were detected during each point count survey, averaging 12 birds (Table 2). All of these birds appeared to be on breeding territories, and females in most territories were behaving as though they had active nests or young throughout the season. Based on territory maps created on June 2 and June 10 site visits, there were 7 to 9 territories mapped: thus there were probably 14 to 18 birds (Figure 2). Most of these birds were detected in the tidal marsh habitat, but at least one pair appeared to have a territory that primarily encompassed upland habitat. Two pairs used the northeaster marsh area 3, near the probable ferry pier.

Song sparrows were detected with nesting material in marsh area 1 on June 10 (in a small tule patch) and with food for nestlings or young on April 6 in marsh areas 1 and 3. At least one fledged young was detected in marsh area 1 on June 2.

Song sparrows at this site were associated with stands of gumplant (*Grindelia stricta*), alkali bulrush (*Bolboschoenus maritimus*), tule (*Schoenoplectus californica*), pepperweed, *(Lepidium latifolium*) and pickleweed (*Sarcocornia pacifica*). As found in published studies (Spautz *et al* 2006; Spautz & Nur in press), song sparrows tend to be associated with higher elevation portions of the marsh, taller marsh vegetation including shrubs, and upland edges.

4.4. OTHER BIRD SPECIES

We detected a total of 38 species during surveys in spring 2007 (Table 1, Table 3). Of these, 13 were detected in tidal marsh habitat, in the vegetation, on pilings or flying over the habitat (Table 2). Of these, the birds likely breeding in the marsh or immediately adjacent to it were San Pablo song sparrow, killdeer (likely nesting on open ground or gravel near the marsh), and mallard (possibly breeding in dense vegetation in the upper marsh or on the marsh edge). Birds roosting or foraging in *Spartina foliosa* in the low marsh included black-bellied plover, mallard, marbled godwit, willet, and snowy egret (Table 2). None of these species was likely to be breeding on the site. Species detected

using the mudflats and open water adjacent to the site included black-bellied plover, California gull, Canada goose, double-crested cormorant, Forster's tern, Caspian tern, greater scaup, mallard, marbled godwit, short-billed dowitcher, snowy egret, surf scoter and willet (Table 1, Table 3). Of these, the species likely to be breeding in the general area but not in the project site included: California gull, Canada goose, double-crested cormorant, Forster's tern, Caspian tern, and snowy egret. Birds using the mudflats in the vicinity are most likely to be impacted by ferry activity, including direct loss of mudflat and increased wave action.

Special status species we identified were San Pablo song sparrow and white-tailed kite. One white-tailed kite was observed at the site during the March 8 survey. This bird did not appear to be breeding on the site.

5.0 DISCUSSION & RECOMMENDATIONS

During a preliminary site visit, we documented that the marshes at Hercules had many habitat elements required by tidal marsh-obligate breeding birds in the region, indicating the potential for their occurrence at the site. These initial observations were as follows:

A. The marshes are dominated by pickleweed (*Sarcicornia pacifica*), which is typical for marshes in southern San Pablo Bay. Pickleweed is a critical habitat component for most tidal marsh species typically found in San Pablo Bay (Trulio & Evens 2000; Spautz *et al* 2006).

B. Each of the marshes has an internal high marsh zone, which in a typical marsh is associated with tidal channels and the marsh/upland ecotone. Here there are apparently few tidal channels, which is a potential constraint to the habitat value. The internal berms, which were the result of human activities and likely associated with docks or boardwalks, support healthy stands of gumplant (*Grindelia stricta*) and other high marsh plant species including *Lepidium latifolium*. These internal high elevation areas support the plant species and associated vegetation structure required for nesting birds and salt marsh harvest mice (Trulio & Evens 2000; Spautz & Nur 2004; Spautz *et al* 2006).

C. Each of the marshes has a zone of brackish influence which supports apparently healthy stands of alkali bulrush (*Bolboschoenus maritimus*). This species also provides good bird nesting habitat (Spautz *et al* 2006).

D. The upper marsh/upland ecotone is vegetated over much of its length, and in some places dense pickleweed merges into coyote brush (*Baccharis pilularis*). The marsh/ upland ecotone is extremely important to virtually all tidal marsh animals, particularly during high tide when they are vulnerable to predation. Marshes with poorly vegetated upper edges are considered of lesser value than those with a wider zone (Trulio & Evens 2000; Spautz *et al* 2006).

Initially, we made recommendations that the habitat be evaluated for following special status birds and mammals, all of which could potentially occur on the site based on existing habitat. Here we provide an updated assessment of their presence or potential presence, and make recommendations for additional surveys prior to project construction, where applicable.

1) **California clapper rail (*Rallus longirostris obsoletus*)**, an endangered species at the federal and state level (USFWS 1984), requires the following habitat elements in tidal marshes to establish a breeding territory: a well-developed tidal channel system with full tidal influence, cordgrass (*Spartina* spp.), and a vegetated upper marsh/upland ecotone (Albertson & Evens 2000; Spautz & McBroom 2006). The latter two elements are present at the site, but a well-developed channel system is lacking. The minimum marsh patch size likely to be used by breeding clapper rails is estimated to be approximately 1 ha (2.47 acres; Albertson & Evens 2000; J. Evens *pers. comm.*), although smaller areas with high *Spartina alterniflora* x *foliosa* hybrid cover support rails (Spautz & McBroom 2006); however, there does not appear to be any invasive *Spartina* at the site. The site is large enough to support only one pair of rails at the most. There are no records in the California Natural Diversity database for the project area and I am not aware of any surveys that have been previously done. The closest marsh where rails have been documented is Whittel marsh north of Pt Pinole, 5 km to the south (Evens *et al* 1992) but no rails were present there in 2006 (PRBO unpublished data). The maximum dispersal distance recorded in radio telemetry studies was 3 km (Albertson & Evens 2000), however a bird was recently documented to have flown from San Mateo to San Rafael, a distance of more than 30 miles (J. McBroom, pers. comm.). Because the site is so isolated from other marshes with established rail populations, it is not likely to be colonized except after years of exceptionally high recruitment when other higher quality marshes are at carrying capacity. The probability of clapper rails using the site is low (J. Evens pers. comm.; pers obs.). I recommended doing protocol-level surveys for clapper rails during the breeding season (January 15 to April 15). We detected no clapper rails during the 2007 surveys described in this report. However, because there is some potential for the site to be occupied in some years, we recommend that surveys be conducted again prior to project construction, particularly if construction will be carried out during the breeding season, February 1 to August 31.

2) **California black rail (*Laterallus jamaicensis coturniculus*)** is a state of California threatened species found in saline to brackish marshes with

muted to full tidal action. The species is associated with high overall vegetation cover, high cover of small tidal channels, and low cover of saltgrass (*Distichlis spicata)* and *Schoenoplectus* spp. (*S. acutus* and *S. californicus*); they are more likely to be present in larger marshes with higher proportions of adjacent natural upland or agriculture, and are less likely in more isolated marshes (Spautz *et al* 2006). Particularly where the marsh vegetation is low, the black rails require access to vegetated upper marsh as refuge from predation during high tides (Evens *et al* 1991). Black rails nest commonly in pickleweed and alkali bulrush, both found at the site (Spautz *et al* 2005). Although marsh within the project area is of a relatively small acreage and isolated, other habitat elements are present, and black rails are moderately likely (J. Evens pers. comm.). Black rails have been documented less than 1 km south of the project site (CNDDB) and at Pt Pinole (CNNDB and personal observation). We detected no black rails during the 2007 surveys described in this report. However, because there is some potential for the site to be occupied in some years, we recommend that surveys be conducted again prior to project construction, particularly if construction will be carried out during the breeding season, February 1 to August 31.

3) **San Pablo (Samuel's) song sparrow (*Melospiza melodia samuelis*)** is a state of California bird species of special concern (Spautz & Nur in press). Song sparrows were documented breeding at the site during surveys described in this report (Table 2 – 4). Between 7 and 9 pairs were mapped (Figure 2). Tidal marsh song sparrows are found in a range of tidal marshes throughout the estuary and are typically absent only where there is 100% *Spartina alterniflora* hybrid cover or the site is exceptionally disturbed or small (personal observations). Song sparrows tend to be associated with higher gumplant and coyote brush cover, lower *Spartina* cover, larger marsh area, and marshes with higher proportion of natural uplands, and lower proportion of ponds or panes (Spautz *et al* 2006). The species tends to be associated with upper marsh rather than lower marsh and territories are typically arranged along tidal channels. Nests are built most commonly in pickleweed, gumplant and alkali bulrush. All these habitat components are present, except large area. Because song sparrows

have now been documented at the site, even if rails or salt marsh harvest mice are not found, I would recommend that project construction over or adjacent to the marsh be confined to the non-breeding season. If construction is undertaken during the breeding season, I would recommend that we map territory locations and monitor nesting locations, so that an appropriate construction buffer can be maintained.

4) **Salt marsh common yellowthroat (*Geothlypis trichas sinuosa*)** is a state of California bird species of special concern. This species is more commonly associated with fresh and brackish marshes than with saline marshes, except in winter. It is more often found in tidal marshes with cattails (*Typha)* and alkali bulrush, and overall taller vegetation (Spautz *et al* 2006). Because alkali bulrush is present, there is a moderate chance of finding yellowthroats. None were detected during 2007 surveys detailed in this report, but it's possible that they may colonize the site some years. I recommend that additional surveys be conducted prior to construction. If yellowthroats are breeding at the site and if construction is undertaken during the breeding season, I would recommend that we map territory locations and monitor nesting locations, so that an appropriate construction buffer can be established.

5) **Northern harrier (*Circus cyaneus*)** is state of California species of special concern. This species uses open marsh and grassland areas and the nest is built on the ground, preferably near water or in wet areas. Nests have been documented in tidal marshes in San Pablo Bay. The site is not likely to support nesting harriers, but is likely to be used for foraging. No harriers were documented during the 2007 surveys described here. However, prior to construction the area should be surveyed for nesting harriers so that an appropriate buffer can be maintained during construction.

6) **White-tailed kite (*Elanus leucurus*)** is a state of California species of special concern. Kites nest in shrubs and trees, and suitable habitat is available within and adjacent to the project site. We observed a pair of kites foraging over marshes 1 and 2 at the project site during several site visits, but they did not appear to be nesting within the project area. Prior to

construction, the area should be again surveyed for nesting kites so that an appropriate buffer can be maintained during construction.

7) **Osprey (*Pandion haliaetus*)** is a state of California species of special concern. The species forages for fish over open water and nests on trees or platforms. It was observed during the initial site visit in early fall 2006, but not during spring 2007surveys. It's possible they use the site during the non-breeding season or only some years. Although the area is not likely to be used by breeding osprey, prior to construction, the area should be surveyed for ospreys and their nests so that an appropriate buffer can be maintained during construction.

8) **Short-eared owl (*Asio flammeus*)** is a state of California species of special concern. This species does not commonly nest in the region, but is found in San Pablo Bay during the winter. We did not document any owls during spring 2007 surveys.

9) **Western burrowing owl (*Athene cunicularia*)** is a state of California species of special concern. The species is not a common breeder in the project area, but was found during the winter. Surveys for burrowing owls are described elsewhere.

10) **Tricolored blackbird (*Agelaius tricolor*)** is a state of California species of special concern. The species is a colonial nester and requires large areas of cattails for nesting. There is no suitable habitat for this species on the project site. None were detected on the site during spring 2007 surveys.

Although not previously identified as an issue, I would like to recommend additional consideration of potential impacts to the mudflats within and adjacent to the project site due to construction activities and regular ferry operations. As mentioned above, birds using the mudflats may be impacted if mudflat area is reduced due to ferry construction and increased wave action. The relative value of these mudflats to resident, migrating, and wintering shorebirds and waterbirds is not currently known. I recommend that surveys of birds using the mudflats be conducted this fall and winter to determine spatial and temporal patterns of use for foraging and roosting.

6.0 ACKNOWLEDGEMENTS

Jules Evens conducted clapper rail and black rail surveys on April 16. Josh Phillips provided technical support.

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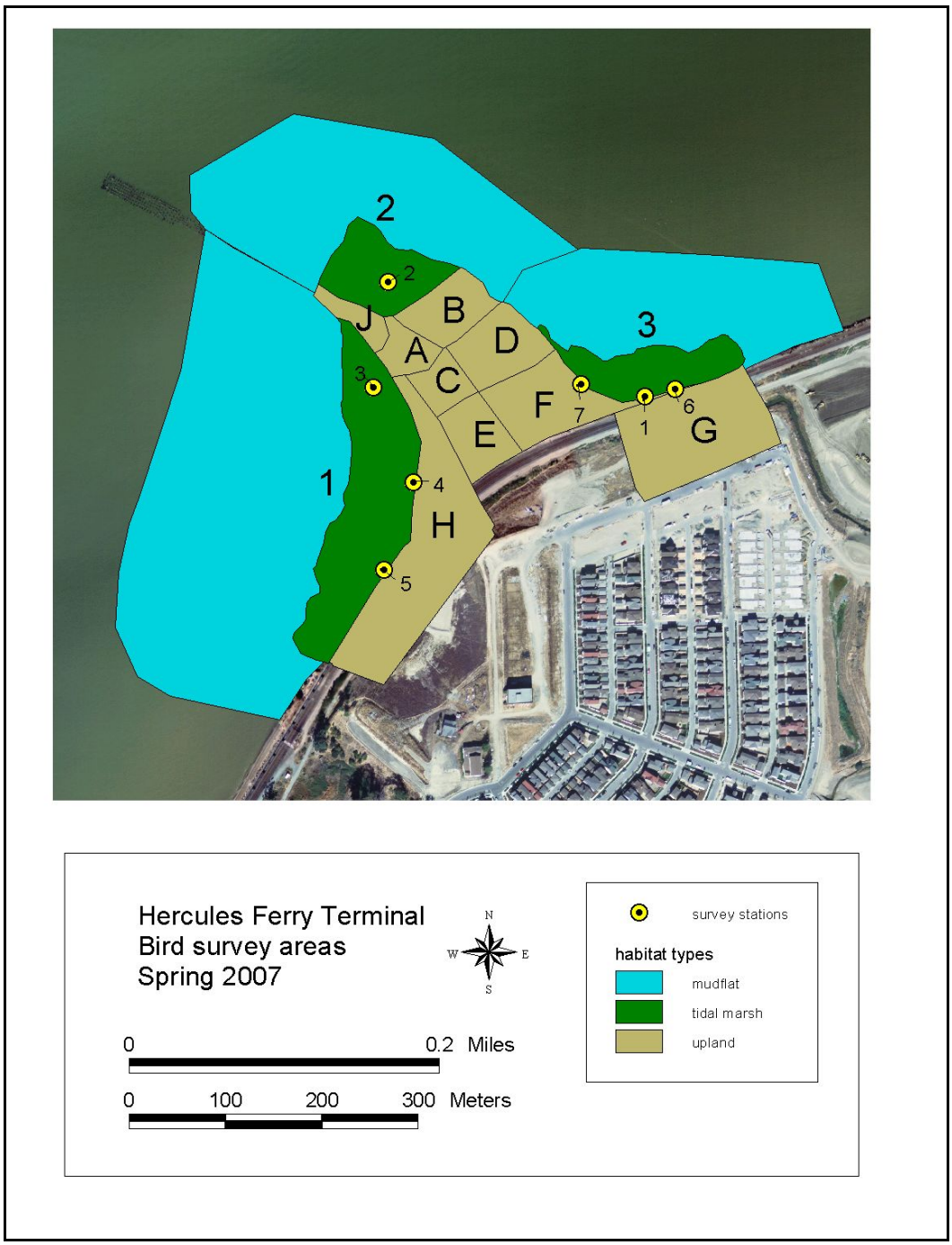

Figure 1. Map of the Hercules ferry terminal study area indicating the location of survey stations and habitat areas surveyed.

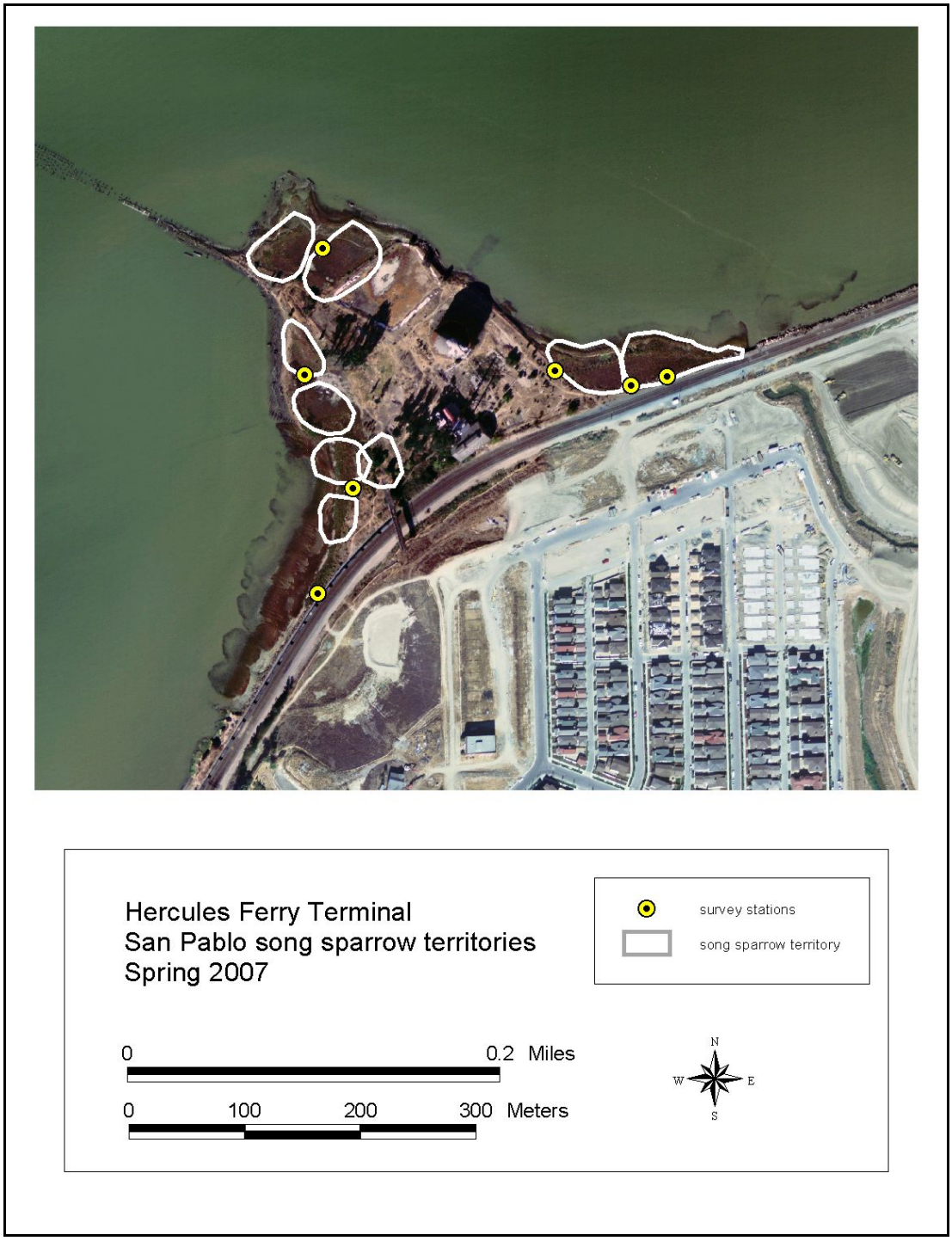

Figure 2. San Pablo song sparrow breeding territory locations, spring 2007.

Figure 3. Overlooking marsh area 3; stations 1, 6 and 7

Figure 4. View of marsh area 2 from station 2, facing west.

A small marsh pond is at the western end of marsh.

Figure 5. View of marsh area 3 from station 3, facing south

Figure 6. View of marsh area 3 from station 4, facing west

Figure 7. View of marsh area 3 overlooking stations 3 and 4, facing west

Figure 8. View of marsh area 3 from station 5, facing southwest.

Figure 9. View of marsh area 3 overlooking station 5, facing southwest.

Figure 10. View of central area from the southeast corner of the site, facing north.

Table 1. Bird survey dates.

Active surveys involved playing prerecorded vocalizations to elicit responses. Passive surveys included no vocalizations.

Date	Clapper rail survey	Black Rail survey	Point count survey
3/8/2007	Passive	-	passive
3/30/2007	Passive	-	passive
4/6/2007	Passive	-	passive
4/16/2007	Active	Active	informal species list only
6/2/2007	-	Active	passive
6/10/2007	-	Active	passive

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Table 2. Point count results, all habitats: counts of bird species by date and the average of these counts.

This table includes birds in all habitat types and birds flying over. See Table 3 for birds detected in tidal marsh only.

Common name	Scientific name	3/8/2007	3/30/2007	4/6/2007	6/2/2007	6/10/2007	Average count
American crow	*Corvus brachyrynchos*	2	0	0	0	1	0.6
American goldfinch	*Carduelis tristis*	0	0	0	0	1	0.2
Anna's hummingbird	*Calypte anna*	1	0	0	0	0	0.2
band-tailed pigeon	*Columba fasciata*	0	0	0	2	0	0.4
barn swallow	*Hirundo rustica*	0	0	0	0	14	2.8
belted kingfisher	*Ceryle alcyon*	0	1	0	0	0	0.2
black phoebe	*Sayornis nigricans*	1	0	0	1	1	0.6
black-bellied plover	*Pluvialis squatarola*	1	1	0	2	0	0.8
brown-headed cowbird	*Molothrus ater*	0	1	0	0	1	0.4
bushtit	*Psaltriparus minimus*	0	2	2	2	0	1.2
California black rail	*Laterallus jamaicensis coturniculus*	0	0	0	0	0	0
California clapper rail	*Rallus longirostris obsoletus*	0	0	0	0	0	0
California gull	*Larus californicus*	0	1	0	0	8	1.8

Common name	Scientific name	3/8/2007	3/30/2007	4/6/2007	6/2/2007	6/10/2007	Average count
California towhee	*Pipilo fuscus*	0	2	0	0	1	0.6
Canada goose	*Branta canadensis*	0	2	2	0	0	0.8
Caspian tern	*Sterna caspia*	0	0	0	1	0	0.2
double-crested cormorant	*Phalacrocorax auritus*	0	0	0	1	0	0.2
Forster's tern	*Sterna forsteri*	0	0	0	20	100	24
golden-crowned sparrow	*Zonotrichia atricapilla*	0	1	0	0	0	0.2
great egret	*Casmerodius albus*	0	0	0	0	1	0.2
greater scaup	*Aythya marila*	5	0	0	0	0	1
house finch	*Carpodacus mexicanus*	1	4	0	3	4	2.4
killdeer	*Charadrius vociferus*	0	1	0	3	0	0.8
mallard	*Anas platyrynchos*	0	2	2	5	12	4.2
marbled godwit	*Limosa fedoa*	1	2	0	0	0	0.6
mourning dove	*Zenaida macroura*	0	0	0	5	2	1.4
northern mockingbird	*Mimus polyglottos*	0	2	0	0	2	0.8
red-shouldered hawk	*Buteo lineatus*	0	0	0	0	1	0.2

Common name	**Scientific name**	**3/8/2007**	**3/30/2007**	**4/6/2007**	**6/2/2007**	**6/10/2007**	**Average count**
red-winged blackbird	*Aegelaius phoeniceus*	1	13	0	0	1	3
rock dove	*Columba livia*	0	0	0	4	0	0.8
San Pablo song sparrow	*Melospiza melodia samuelis*	11	14	10	12	13	12
savannah sparrow	*Passerculus sandwichensis*	0	1	0	0	0	0.2
short-billed dowitcher	*Limnodromus griseus*	0	0	30	0	0	6
snowy egret	*Egretta thula*	1	0	0	0	1	0.4
surf scoter	*Melanitta perspicillata*	0	0	0	0	1	0.2
Unknown gull species	*Larus sp.*	6	0	0	12	0	3.6
white-crowned sparrow	*Zonotrichia leucophrys*	1	4	0	0	1	1.2
white-tailed kite	*Elanus caeruleus*	1	0	0	0	0	0.2
Willet	*Catoptroforus semipalmatus*	651	2	91	0	0	148.8

Table 3. Point count survey results, marsh area: counts of bird species by date and the average of these counts.

This table includes birds detected in tidal marsh only.

Common name	Scientific name	3/8/2007	3/30/2007	4/6/2007	6/2/2007	6/10/2007	Average count
band-tailed pigeon [1]	*Columba fasciata*	0	0	0	2	0	0.4
barn swallow [2]	*Hirundo rustica*	0	0	0	0	10	2
black phoebe	*Sayornis nigricans*	1	0	0	1	1	0.6
black-bellied plover	*Pluvialis squatarola*	1	0	0	0	0	0.2
brown-headed cowbird	*Molothrus ater*	0	0	0	0	1	0.2
California black rail [3]	*Laterallus jamaicensis coturniculus*	0	0	0	0	0	0
California clapper rail [3]	*Rallus longirostris obsoletus*	0	0	0	0	0	0
Caspian tern [2]	*Sterna caspia*	0	0	0	1	0	0.2
killdeer	*Charadrius vociferus*	0	1	0	2	0	0.6
mallard [3]	*Anas platyrynchos*	0	0	0	1	0	0.2
Marbled godwit	*Limosa fedoa*	1	0	0	0	0	0.2
San Pablo song sparrow [3]	*Melospiza melodia samuelis*	11	13	10	12	13	11.8
snowy egret	*Egretta thula*	1	0	0	0	0	0.2
white-crowned sparrow	*Zonotrichia leucophrys*	0	0	0	0	1	0.2

Common name	Scientific name	3/8/2007	3/30/2007	4/6/2007	6/2/2007	6/10/2007	Average count
willet	*Catoptroforus semipalmatus*	651	0	71	0	0	144.4

1 Two band-tailed pigeons were resting on tall wooden pilings in the marsh. They were unlikely to be breeding in the marsh.

2 Barn swallows and Caspian terns were detected flying over the marsh, but they were not resting in the vegetation, nor are they likely to use the marsh for breeding.

3 These are the only species likely to be breeding in vegetated tidal marsh habitat, and of these only song sparrows and mallard were detected. Song sparrows were documented breeding on the site.

Table 4. Bird species average counts by habitat type.

Average values based on five point count surveys

common name	scientific name	Marsh	Mudflat	Pond 1	Upland
American crow	*Corvus brachyrynchos*	0	0	0	0.6
American goldfinch	*Carduelis tristis*	0	0	0	0.2
Anna's hummingbird	*Calypte anna*	0	0	0	0.2
band-tailed pigeon	*Columba fasciata*	0.4	0	0	0
barn swallow	*Hirundo rustica*	2	0	0	0.8
belted kingfisher	*Ceryle alcyon*	0	0	0	0.2
black phoebe	*Sayornis nigricans*	0.6	0	0	0
black-bellied plover	*Pluvialis squatarola*	0.2	0.6	0	0
brown-headed cowbird	*Molothrus ater*	0.2	0	0	0.2
bushtit	*Psaltriparus minimus*	0	0	0	1.2
California black rail	*Laterallus jamaicensis coturniculus*	0	0	0	0
California clapper rail	*Rallus longirostris obsoletus*	0	0	0	0
California gull	*Larus californicus*	0	1.8	0	0
California towhee	*Pipilo fuscus*	0	0	0	0.6
Canada goose	*Branta canadensis*	0	0.4	0.4	0
Caspian tern	*Sterna caspia*	0.2	0	0	0

common name	scientific name	Marsh	Mudflat	Pond 1	Upland
double-crested cormorant	*Phalacrocorax auritus*	0	0.2	0	0
Forster's tern	*Sterna forsteri*	0	24	0	0
golden-crowned sparrow	*Zonotrichia atricapilla*	0	0	0	0.2
great egret	*Casmerodius albus*	0	0	0	0.2
greater scaup	*Aythya marila*	0	1	0	0
house finch	*Carpodacus mexicanus*	0	0	0	2.4
killdeer	*Charadrius vociferus*	0.6	0	0	0.2
mallard	*Anas platyrynchos*	0.2	3.2	0.4	0.4
marbled godwit	*Limosa fedoa*	0.2	0.4	0	0
mourning dove	*Zenaida macroura*	0	0	0	1.4
northern mockingbird	*Mimus polyglottos*	0	0	0	0.8
red-shouldered hawk	*Buteo lineatus*	0	0	0	0.2
red-winged blackbird	*Aegelaius phoeniceus*	0	0	0	3
rock dove	*Columa livia*	0	0	0	0.8
San Pablo song sparrow	*Melospiza melodia samuelis*	11.8	0	0	0.2
savannah sparrow	*Passerculus sandwichensis*	0	0	0	0.2
short-billed dowitcher	*Limnodromus griseus*	0	6	0	0

common name	**scientific name**	**Marsh**	**Mudflat**	**Pond** [1]	**Upland**
snowy egret	*Egretta thula*	0	0	0	0
surf scoter	*Melanitta perspicillata*	0.2	0.2	0	0
unknown gull species	*Larus* sp.	0	0.2	0	0
white-crowned sparrow	*Zonotrichia leucophrys*	1	2.6	0	0
white-tailed kite	*Elanus caeruleus*	0.2	0	0	1
willet	*Catoptroforus semipalmatus*	0	0	0	0.2

1 Pond: this was a shallow area of ponded water within the upland area B, south of station 2 (Figure 1). The water had evaporated by June.

Table 5. Additional bird species detected at project site.

These species were detected on April 16, 2007 but were not documented on other dates during point count surveys, and thus are not listed or quantified in other tables.

common name	scientific name
American coot	*Fulica americana*
cliff swallow	*Hirundo pyrrhonota*
dunlin	*Calidris alpina*
least sandpiper	*Calidris minutilla*
ring-billed gull	*Larus delawarensis*
sanderling	*Calidris alba*
Say's phoebe	*Sayornis saya*
turkey vulture	*Cathartes aura*
western meadowlark	*Sturnella neglecta*
western gull	*Larus occidentalis*
western sandpiper	*Calidris mauri*

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APPENDIX 1. CALIFORNIA CLAPPER RAIL OFFICIAL USFWS DRAFT PROTOCOL, 2000: SURVEY PROTOCOL A.

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

USFWS 2000

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846

DRAFT SURVEY PROTOCOL

California Clapper Rail (*Rallus longistrostris obsoletus*)

January 21, 2000

Below is a description of the standard methodology used to detect presence or absence of clapp rail breeding activity. Surveys should be conducted once a week for a minimum of four weeks. The optimal time to conduct call count surveys is mid-January through March. Once a survey protocol has been developed, it should be sent to the Service for final approval prior to implementation. After the results are compiled and submitted to us, we will make a final decision on the possibility of doing any work as described.

Methodology

1. Surveys should be conducted from January through mid-April, which encompasses the optimum time period of mid-January through March when the frequency of calls is typically highest. Surveys should not be conducted when tides greater than 4.5 feet NGVD as predicted at the Golden Gate occur at the marsh during the survey period or during full moon periods.

2. Listening stations should be established no more than 150 meters apart along transects ir or adjacent to marsh areas. Stations should be established so that the entire marsh is covered by 75 to 100-meter radius circular plots. Listening stations should be placed near marsh features, such as sloughs, but not along slough edges to minimize disturbanc to rails. Surveys should be conducted from levee crowns or boardwalks to minimize disturbances to marsh areas where possible. A detailed map depicting sloughs and other marsh landmarks or features should be developed.

3. Surveys should be conducted at sunset or sunrise. Surveys conducted at sunrise should begin 45 minutes before sunrise and continuing until 1 1/4 hours after sunrise. Surveys conducted at sunset should begin 1 1/4 hours before sunset and continue until 45 minute after sunset.

4. An observer should be assigned to each listening station for the duration of each survey. Observers should locate key marsh landmarks or features on a map in relation to each listening station location.

5. All rail vocalizations should be recorded, noting the call type, location, and time on a detailed map of the marsh. The call types are coded as C = clapper, D = duet, K = kek,

USFWS 2000

B=kek-burr with a V representing a visual sighting. Other unusual calls also should be noted. The calls of one bird or pair should be marked by circling the calls together. If a rail is moving during the survey, several locations may be noted for the same bird(s). Attention should be focused on accurately mapping the birds that are nearby, especially between observers or towards the edge of the marsh if the station is positioned at the marsh's edge.

6. At the end of each survey, observers should compare maps to determine overlap in detections and to create a master map showing all pairs and individuals located during the survey. Another master map should be developed once all surveys are completed, showing the dates and locations of detections.

7. Weather information, including wind velocities and direction, should be recorded. Call count surveys should not be conducted when wind velocities exceed 10 mph or wind gusts exceed 12 mph, or during moderate to heavy rains. Information on disturbances (e.g., dogs or cats in marsh and aircraft flyovers) occurring during the surveys should be recorded.

8. If a survey of a marsh is conducted over more than one night, observers should be assigned to stations adjacent to their previous night's station if at all possible.

9. New observers should be trained by an experienced observer. Trainees should familiarize themselves with various calls and with estimating distances to calls before training in the field. In-field training should include ways to minimize disturbance to rails and marsh vegetation. Trainees should be stationed with an experienced observer during a call count for a minimum of 2 nights to assess the trainee's ability to accurately detect and map calls in the field. The Palo Alto Baylands is a marsh with many rails typically calling in the evening and easy access via a boardwalk, thus providing an excellent training opportunity for new observers and their instructors. A recording of clapper rail calls is available for training purposes at the U.S. Fish and Wildlife Service, Sacramento Fish and Wildlife Office, 2800 Cottage Way, Suite W2605, Sacramento, California 95825.

APPENDIX 2. CALIFORNIA CLAPPER RAIL CALL COUNT SURVEY DATASHEET.

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Clapper Rail Survey Form 2007

Location_____**Date** (mm/dd/yy)_____

Observer_____ **Time** (start)_____(end)_____

Weather: Temp_____Sky_____Wind speed_____

Station #	Tape Y/N	Time	Dist (m)	Dir. (º)	Call code*	# birds	Notes	Map ref

Notes:_____

_____

_____

_____

*Call types: Clatter (C); duet (D); kek (K); agitated kek (AK); kik-kik-burr (kkb); squawk (SK); screech (SC); churr (CH); purr (P); visual (V)

APPENDIX 3. CALIFORNIA BLACK RAIL SURVEY PROTOCOL.

Avocet Research Associates

Black Rail census protocol

(after Evens *et al*. 1991, and Nur *et al*. 1997).

Listening stations (aural sampling stations) are located along transects selected to sample elevational change within each marsh and are distributed throughout the length and breadth of the marsh at or above Mean High Water. Census stations are distributed at 100 meter intervals through each marsh parcel and, where possible, each station is located a minimum of 50 m from upland habitat. In smaller wetland parcels, the listening station is placed immediately adjacent to the wetland habitat.

Each listening station should be occupied for six minutes. All censuses are conducted within 2 hours of sunrise or 2 hours before sunset. Census efforts are canceled when wind exceeds approximately 10 knots or when the observer determines that background noise is interfering with his/her ability to detect rail vocalizations. After arriving at listening station the observer waits silently for one minute then broadcasts a tape recording of California Black Rail vocalizations at moderate volume (70 to 90 dB at 1 meter) in each ordinal direction for a total of 1.5 minutes. The tape recording consisted of a repetitive series of "grr" calls followed by 0.5 min of "ki-ki-kerr" calls (Repking & Ohmart 1977). Maximum sound pressure 1-m from the source should not exceed 90 dB.

For each rail response heard within 5 minutes of initiating the broadcast, the observer records the time, call type, and estimated distance and direction of the response from the observer (center of the station). An effective 30-m census radius is used, because field testing has found that the observer's ability to estimate distance accurately, or hear low range vocalizations consistently, declines precipitously beyond that distance. All calls coming from one compass direction during the six minute listening period are considered to represent only one rail unless two calls are heard simultaneously. Calls from different (>30˚) directions are considered to represent different rails, however some discretion by the observer is required to distinguish between different birds. In an earlier study it was estimated that Black Rails move toward the source of a broadcast tape an average of 6.2 m (Evens & Page 1985); subsequent studies have increased that estimate to 7.2 m (Legare *et al*.1999). Therefore, although we counted birds only within 30 m of the observer, we calculated densities using sampling stations with a radius of 36.2 m, covering an area of .4115 ha. Given the lack of precision in estimating position and movement of birds, it is advisable to pool the detections into 5-m bands to calculate densities.

Because the California Black Rail is a threatened taxon (USFWS 1991, CNDDB 2004), and because estimates rely on extrapolated data, the calculated values should be interpreted as density indices rather than absolute densities. Estimates derived from these data should be considered minimum population values.

Abundance rankings are assigned to each site based on the density index calculated from the 36.2 m radius circular plot as follows: <0.6 rail/ha (low); 0.6-2.1 rails/ha (moderate); >2.1 rails/ha (high). This scale conforms to earlier analyses (Evens *et al*. 1989).

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APPENDIX 4. POINT COUNT SURVEY PROTOCOL.

Wetlands Wildlife Associates Point Count Protocol for tidal marshes and associated baylands

Variable Circular Plot/Point Transect method

Adapted from: PRBO Conservation Science Tidal Marsh Project, unpublished point count protocol 2004.

Point placement:

Points are placed 200 meters apart (to avoid counting the same birds from adjacent points) and at least 50 m from the edge of the marsh where possible. In denser habitat where visibility is limited, points can be placed closer together (150 m apart). In the south SF Bay, where access to the habitat is limited, points are all set up along levees. Sites set up in early years of the study may have points 150 meters apart. Points should be flagged conspicuously, where possible, in order to facilitate finding exact spot for subsequent surveys and vegetation measurements, unless you are using a GPS unit. Where possible, points should be placed randomly, rather than along a habitat feature such as a tidal channel, to avoid bias in sampling.

Timing and structure of surveys:

Surveys begin within 15 minutes of sunrise and should be completed within approximately 4 hours (time of maximum bird activity)

Each point is surveyed for 5 minutes.

Seasonality:

Breeding season surveys are conducted between March 20 and May 30. Examination of previous years' data showed a 60-100% increase in SOSP numbers from the first to second round. We assume this increase is due to hatching year birds. Please also try to take careful note of any juveniles! If you have multiple birds in one spot later in the year, please check to see if there are juveniles among them (i.e., it may be a flock of juveniles).

Round 1- March 26 to April 26

Round 2- April 27 to May 30 (the peak of spring migration for Waterbirds is usually mid-April)

Fall surveys are conducted between September 1 and October 30.

Winter surveys are conducted between December 1 and January 31.

Data collection:

Detections of every individual of every bird species are recorded by distance from observer at 10 meter increments up to 100 meters for 5-minutes at each point. We also have added an additional column for detections beyond 100m. This is especially important for species not otherwise counted in the point count. DISTANCE analyses will generally include data only up to 50 or 70 m. Beyond that distance, the estimated distances are unreliable. Record the bird in the distance band in which it was originally detected, even if detection type changes.

For each point, record all individuals of any one species on the same line. Use the AOU 4-letter species code.

Priority is given to target tidal marsh species (SOSP, COYE, MAWR, CLRA and BLRA) and other tidal marsh or wetland species. Birds detected outside the marsh (e.g. in adjacent upland habitat, in the adjacent neighborhood) are marked with the type of non-marsh habitat they are found in (default is T= fully tidal marsh, U = upland non-marsh habitat, R = restoration, S = salt pond, P= other non-marsh pond, M = muted marsh, L= Levee). {added note 5/31/01- If you need to distinguish between 2 different marsh areas of a single type, designate them as 1 and 2 (e.g. M1, M2). Be sure to note what you are referring to. } Use a separate line for different individuals of a species detected within and outside the marsh at a single point. If a bird uses both marsh and non-marsh habitat at that point, record it as within the marsh only, e.g. a SOSP sings at the edge of the marsh, flying between upland and marsh vegetation. This bird is included in the focal marsh detections.

One of the symbols below is used to indicate how the individual bird was detected. Every effort is made to record each individual once only. Flyovers are recorded in the last column, also using the symbol for detection type (usually V). Birds flying around the site foraging, such as raptors and swallows, are not considered flyovers, and are recorded in the distance band first seen. Again, do not count these individuals at more than one point.

If an adult bird is detected, the detection type is recorded in order of priority: Song > Visual > Call (see table below). Thus a bird both heard calling, singing and detected visually is recorded as a circled "S". We will be attempting to calculate bird densities using separate detection functions for visual and auditory detections, so we have added several new detection codes to allow for multiple detection types.

If a juvenile is detected, it is recorded as "J". All other detections are assumed to be adults.

Symbol	Detection type
S	Song: bird heard singing but not detected visually (may have also heard bird calling)
S (circled)	Song and visual: bird both heard singing and detected visually (may have also heard bird calling)
V	Visual: adult bird detected visually but not heard either calling or singing.
C	Call: adult bird call only, not singing and not detected visually (i.e. vocalization other than male territorial song)
C (circled)	Call and visual both, not singing.
J	Juvenile: juvenile bird detected either visually or heard calling (usually begging)

If a detection type changes, (e.g. initially heard calling and later heard singing), cross out the original and write in the new code. If a bird moves during the 5 minute period from one distance band to another, keep the detection in the initial band, even if the detection type changes.

Species not detected during the 5-minute point counts (not individuals of species detected during the survey) should be recorded on the back of the form, especially those of the target tidal marsh species (especially COYE, BLRA & CLRA), predators and rare or endangered species.

Weather conditions:

Record conditions on the bottom of the form at the beginning and end of survey (wind, temperature and precipitation). Surveys should not be conducted when conditions prevent normal bird activity or detectability, such as rain or strong winds. If industrial or traffic noise adjacent to the marsh significantly reduce observer's ability to detect birds, the survey should be conducted on the weekend.

APPENDIX 5. BIRD SURVEY STATION COORDINATES.

Coordinate system: UTM NAD83 Zone 10.

Station ID	Easting – X Coordinate	Northing – Y Coordinate
1	562626	4208380
2	562359	4208499
3	562344	4208390
4	562386	4208291
5	562355	4208200
6	562657	4208388
7	562560	4208393

APPENDIX G-7

Listed, Proposed Species, and Critical Habitat Potentially Occurring or Known to Occur in the Project Region

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

Listed, Proposed Species, and Critical Habitat Potentially Occurring or Known to Occur in the Project Region.

Scientific Name/ Common Name	Federal/State/ CNPS/other Status	General Habitat Description	Habitat Present/ Absent	Rationale
Invertebrates				
Adela oplerella Opler's longhorn moth	--/--/G2G3, S2S3	Opler's longhorn moth is recorded from 18 sites extending along the west side of the San Francisco Bay from 5 miles southeast of Nicasio in Marin County south to the Gilroy area of Santa Clara County and from the Oakland area on the inner Coast Ranges. Habitat for Opler's longhorn moth consists of serpentine grassland (Federal Register 50CFR17).	A	Suitable habitat for this species is not present within the project site.
Andrena blennospermatis Blennosperma vernal pool andrenid bee	--/--/G2, S2	Known occurrences in Contra Costa, Lake, Sonoma, Solano, Yolo, Tehamea, Sacramento, San Joaquin, El Dorado, and Placer Counties. Habitat consists of upland areas near vernal pools containing yellow carpet (*Blennosperma sp*.). Forages exclusively on flowering yellow carpet. This species excavates nests in soil in adjacent upland areas (Thorp 2008).	A	Yellow carpet is absent from the project site. Upland habitat adjacent to vernal pools in the area is composed of substrate, such as gravel, compacted soil, or heavily disturbed soil, which does not provide suitable nesting habitat for this species.
Branchinecta conservatio conservancy fairy shrimp	FE/--/--	Conservancy fairy shrimp inhabit rather large, cool-water vernal pools with moderately turbid water. It is likely the Conservancy fairy shrimp once occupied suitable vernal pool habitats throughout a large portion of the Central Valley and southern coastal regions of California. It may still exist in unsurveyed pools within this region. The species is currently known from several disjunct populations: the Vina Plains in Tehama County, south of Chico in Butte County, the Jepson Prairie Preserve and surrounding area in Solano County, Sacramento National Wildlife Refuge in Glenn County, Mapes Ranch west of Modesto, San Luis National Wildlife Refuge and the Haystack Mountain/Yosemite Lake area in Merced County, and two locations on the Los Padres National Forest in Ventura County (USFWS 2005a).	A	Suitable habitat for this species does not occur on site. The project site is outside of the currently known range of this species.
Branchinecta lynchi vernal pool fairy shrimp	FT/--/--	The vernal pool fairy shrimp occupies a variety of different vernal pool habitats, from small, clear, sandstone rock pools to large, turbid, alkaline, grassland valley floor pools. Although the species	HP	Freshwater wetland features within the project site may provide potential habitat for this species.

Scientific Name/ Common Name	Federal/State/ CNPS/other Status	General Habitat Description	Habitat Present/ Absent	Rationale
		has been collected from large vernal pools, including one exceeding 25 acres, it tends to occur in smaller pools. It is most frequently found in pools measuring less than 0.05 acre. These are most commonly in grass or mud bottomed swales, or basalt flow depression pools in unplowed grasslands. Vernal pool fairy shrimp is currently known to occur in a wide range of vernal pool habitats in the southern and Central Valley areas of California (USFWS 2005a).		
Danaus plexippus monarch butterfly	--/--/G5, S3	Monarch butterflies winter in central Mexico in coastal Monterey pine, Monterey cypress, eucalyptus, and fir forest. This species migrates to the United States and Canada during spring/summer. Caterpillars feed almost exclusively on milkweed (*Asclepias* sp.; Kane 1999).	A	While this species may use the project site for dispersal and collection of nectar, the host plant for this species was not detected within the project site during field surveys. Suitable reproductive habitat does not occur within the site.
Helminthoglypta nickliniana bridgesi Bridges' coast range shoulderband	--/--/G2T1, S1	Inhabits open hillsides of Alameda and Contra Costa counties. Habitat consists of rock piles and under grass in grass areas (NatureServe 2009) and under tall weeds.	A	Suitable habitat for this species does not occur within the project site.
Speyeria callippe callippe callippe silverspot butterfly	FE/--/--	Restricted to the northern coastal scrub of the San Francisco peninsula. Host plant for this species is *Viola pedunculata*. Most adults found on east facing slopes. Males congregate on hilltops in search of females (USFWS 2007a).	A	The project site is outside the known range for this species. The host plant for this species was not detected during focused plant surveys. Habitat for this species is not present on site.
Speyeria zerene myrtleae Myrtle's silverspot butterfly	FE/--/--	Occurs from Sonoma County south to San Francisco County. Occurs in coastal terrace prairie, coastal bluff scrub, and adjacent grassland habitats within three miles of the coast; elevation 0 to 250 meters (USFWS 2007b).	A	Suitable habitat for this species is not present within the project site.
Syncaris pacifica California freshwater shrimp	FE/SE/--	Occurs in coastal streams up to 380 feet above sea level in Napa, Marin, and Sonoma counties. Found in low gradient, perennial coastal streams. Streams typically 1-3 feet deep, with exposed live roots along undercut banks. Streams also contain overhanging debris or stream vegetation (2007c).	A	The project site is not within the known range of this species, nor is Refugio Creek connected to a watershed with a know California freshwater shrimp population.
Tryonia imitator Mimic tryonia (California brackishwater snail)	--/--/G2G3, S2S3	This species is found only in permanently submerged areas in a variety of sediment types and is able to withstand a wide range of salinities	HP	Salt marsh habitat within the project site could provide potential habitat for this species.

Scientific Name/ Common Name	Federal/State/ CNPS/other Status	General Habitat Description	Habitat Present/ Absent	Rationale
		(CNDDB 2009). Known occurrences in Alameda, Los Angeles, Marin, Monterey, Orange, San Diego, San Luis Obispo, San Mateo, Santa Barbara, Santa Clara, Santa Cruz, Sonoma, and Ventura counties.		
Fish				
Acipenser medirostris green sturgeon	FT/--/--	Green sturgeon are anadromous and spawn in the Sacramento River. Adults and juveniles occur in San Pablo and San Francisco Bays (Moyle et al. 1995). The San Francisco and San Pablo Bays serve as migration corridors for anadromous fish species as they migrate to and from the ocean and upstream spawning grounds in rivers and streams.	HP	This species may occur within San Pablo Bay. Refugio Creek does not represent suitable habitat for this species.
Archoplites interruptus Sacramento perch	--/SSC/--	Freshwater systems of the San Francisco Bay. Require densely vegetated, shallow habitats to aggregate before spawning in mud and gravel pits (California State Coastal Conservancy and USFWS 2003).	A	Suitable habitat for this species does not occur within the project site.
Eucyclogobius newberryi tidewater goby	FE/--/--	Habitat consist of semi-closed estuaries or lagoons of small coastal streams that are low in salinity; ranges from San Diego to Humboldt County. Tidewater gobies are rare in San Francisco Bay, but nearby populations are located in coastal Gregorio Creek and Pescadero Creek in San Mateo County. In 1980, tidewater goby were found at the mouth of Novato Creek of San Pablo Bay (Wetlands and water resources, Inc 2007).	A	While this species may have historically occurred within the project vicinity, it has not been detected since the 1950's and is not expected to occur within the project site.
Hypomesus transpacificus Delta smelt	FT/--/--	Delta smelt are tolerant of a wide salinity range. They have been collected from estuarine waters up to 14 ppt (parts per thousand) salinity. For a large part of their one-year life span, delta smelt live along the freshwater edge of the mixing zone (saltwater-freshwater interface), where the salinity is approximately 2 ppt. Shortly before spawning, adults migrate upstream from the brackish-water habitat associated with the mixing zone and disperse into river channels and tidally-influenced backwater sloughs. They spawn in shallow, fresh or slightly brackish water upstream of the mixing zone. Most spawning happens in tidally-influenced backwater sloughs and channel edgewaters.	HP	This species may occur within San Pablo Bay. Refugio Creek does not represent suitable habitat for this species. Delta smelt generally occur in open surface waters and shoal areas (USFWS 1996c) and do not associate strongly with structure (USFWS 2008). The majority of their one-year life span, delta smelt inhabit areas within the western Delta and Suisun Bay characterized by salinities of approximately 2 ppt. During periods of high river flow into the estuary, delta smelt distribution

Scientific Name/ Common Name	Federal/State/ CNPS/other Status	General Habitat Description	Habitat Present/ Absent	Rationale
		Although spawning has not been observed in the wild, the eggs are thought to attach to substrates such as cattails, tules, tree roots and submerged branches. Delta smelt are found only from the Suisun Bay upstream through the Delta in Contra Costa, Sacramento, San Joaquin, Solano and Yolo counties (USFWS 1995).		can transiently extend as far west as the Napa River and San Pablo Bay (USFWS 2008). However, because free-swimming life stages of delta smelt mainly occupy offshore waters (USFWS 2008), delta smelt are unlikely to occur in the Action Area
Lampetra ayresi River lamprey	--/SSC/--	Occurs in coastal streams from San Francisco Bay to Alaska (Moyle 2002). Adults migrate back into freshwater through San Pablo Bay during the fall and spawn from April to June in small tributary streams (Wang 1986, CDM and the Bay Institute of San Francisco 2000).	HP	This species may occur within San Pablo Bay. Refugio Creek does not represent suitable habitat for this species.
Oncorhynchus kisutch Central California coast coho salmon	FE/SE/-- CH	Anadromous; migrates through and spawns in coastal rivers and streams from Santa Cruz to Mendocino County (NOAA Fisheries 2005). The San Francisco and San Pablo Bays serve as migration corridors for anadromous fish species as they migrate to and from the ocean and upstream spawning grounds in rivers and streams.	HP	This species may occur within San Pablo Bay. San Pablo Bay represents critical habitat for this species. Refugio Creek does not represent suitable habitat for this species.
Oncorhynchus mykiss central California coastal steelhead	FT/--/-- CH	Anadromous; occur in coastal rivers, streams and creeks from Santa Cruz County north to Russian River basin including tributaries to San Francisco Bay (NOAA Fisheries 2006). The San Francisco and San Pablo Bays serve as migration corridors for anadromous fish species as they migrate to and from the ocean and upstream spawning grounds in rivers and streams.	HP	This species may occur within San Pablo Bay. San Pablo Bay represents critical habitat for this species. Refugio Creek does not represent suitable habitat for this species.
Oncorhynchus mykiss Central Valley steelhead	FT/--/-- CH	Steelhead spawn in rivers and streams with cool, clear, water and suitable substrate. The Central Valley Steelhead distinct population segment includes all naturally spawned anadromous *O. mykiss* (steelhead) populations below natural and manmade impassable barriers in the Sacramento and San Joaquin Rivers and their tributaries, excluding steelhead from San Francisco and San Pablo Bays and their tributaries, as well as two artificial propagation programs: the Coleman NFH, and Feather River Hatchery steelhead hatchery programs (NOAA Fisheries 2006). The San	HP	This species may occur within San Pablo Bay. San Pablo Bay represents critical habitat for this species. Refugio Creek does not represent suitable habitat for this species.

Scientific Name/ Common Name	Federal/State/ CNPS/other Status	General Habitat Description	Habitat Present/ Absent	Rationale
		Francisco and San Pablo Bays serve as migration corridors for anadromous fish species as they migrate to and from the ocean and upstream spawning grounds in rivers and streams.		
Oncorhynchus tshawytscha Central Valley fall-/late fall-run Chinook salmon	--/SSC/--	Chinook salmon spawn in rivers and streams with cool, clear, water and suitable substrate. The Central Valley fall- and late fall-run Chinook salmon ESU includes all naturally spawned populations of fall- and late fall-run Chinook salmon in the Sacramento and San Joaquin River Basins and their tributaries, east of Carquinez Strait, in California (NOAA Fisheries Website 2009). The San Francisco and San Pablo Bays serve as migration corridors for anadromous fish species as they migrate to and from the ocean and upstream spawning grounds in rivers and streams.	HP	This species may occur within San Pablo Bay. Refugio Creek does not represent suitable habitat for this species.
Oncorhynchus tshawytscha Central Valley spring-run Chinook salmon	FT/--/--	Chinook salmon spawn in rivers and streams with cool, clear, water and suitable substrate. The Central Valley spring-run Chinook ESU includes all naturally spawned populations of spring-run Chinook salmon in the Sacramento River and its tributaries in California, including the Feather River (64 FR 50394; September 16, 1999). One artificial propagation program is considered part of the ESU: The Feather River Hatchery spring run Chinook program (NOAA Fisheries 2005). The San Francisco and San Pablo Bays serve as migration corridors for anadromous fish species as they migrate to and from the ocean and upstream spawning grounds in rivers and streams.	HP	This species may occur within San Pablo Bay. Refugio Creek does not represent suitable habitat for this species.
Oncorhynchus tshawytscha Winter-run Chinook salmon	FE/--/--	Chinook salmon spawn in rivers and streams with cool, clear, water and suitable substrate. The Sacramento winter-run Chinook ESU includes all naturally spawned populations of winter-run Chinook salmon in the Sacramento River and its tributaries in California (59 FR 440; January 1, 1994), as well as two artificial propagation programs: Winter-run Chinook from the Livingston Stone National Fish Hatchery (NFH), and winter run Chinook in a captive broodstock program	HP	This species may occur within San Pablo Bay. Refugio Creek does not represent suitable habitat for this species.

Scientific Name/ Common Name	Federal/State/ CNPS/other Status	General Habitat Description	Habitat Present/ Absent	Rationale
		maintained at Livingston Stone NFH and the University of California Bodega Marine Laboratory (NOAA Fisheries 2005). The San Francisco and San Pablo Bays serve as migration corridors for anadromous fish species as they migrate to and from the ocean and upstream spawning grounds in rivers and streams.		
Pogonichthys macrolepidotus Sacramento splittail	--/SSC/--	Slow-moving sections of rivers and sloughs, flooded vegetation. This species inhabits the Sacramento-San Joaquin river system and the Delta, including the brackish northern reaches of the San Francisco Estuary (California State Coastal Conservancy and USFWS 2003).	HP	This species may occur within San Pablo Bay. Refugio Creek does not represent suitable habitat for this species.
Spirinchus thaleichthys Longfin smelt	--/ST/--	This species occupies waters ranging from almost pure seawater to areas of pure freshwater. They tend to inhabit the middle to lower portion of the water column. They spawn in freshwater in the upper part of Suisun Bay and the lower and middle Delta. Except when spawning, longfin smelt are most abundant in Suisun and San Pablo bays (Moyle 2002).	HP	This species may occur within San Pablo Bay. Refugio Creek does not represent suitable habitat for this species.
Amphibians				
Ambystoma californiense California tiger salamander, central population	FT/SSC/--	California tiger salamanders are generally restricted to vernal pools and seasonal ponds, including many constructed stockponds, in grassland and oak savannah plant communities from sea level to about 1,500 feet in central California. In the Coastal region, populations are scattered from Sonoma County in the northern San Francisco Bay Area to Santa Barbara County, and in the Central Valley and Sierra Nevada foothills from Yolo to Kern counties (USFWS 2009a).	A	There are no records of this species within the Mare Island quad or adjacent eight quads. Pools and ponds within the project site do not contain sufficient vegetation to support egg laying for this species. Upland habitat in the vicinity of pool and pond features on site are disturbed and do not provide aestivation habitat. Suitable habitat for this species is not present on site.
Rana aurora draytonii California red-legged frog	FT/SSC/--	The California red-legged frog occupies a fairly distinct habitat, combining both specific aquatic and riparian components. The adults require dense, shrubby or emergent riparian vegetation closely associated with deep (greater than 2 1/3-foot deep) still or slow moving water. The largest densities of California red-legged frogs are associated with deep-water pools with dense stands of overhanging	HP	Occurrences of CRLF have been recorded approximately one mile upstream of the project site on Refugio Creek. Refugio Creek within the project site is likely too saline to support CRLF and there are no suitable ponds along Refugio Creek to support a breeding population.

Scientific Name/ Common Name	Federal/State/ CNPS/other Status	General Habitat Description	Habitat Present/ Absent	Rationale
		willows (*Salix* spp.) and an intermixed fringe of cattails (*Typha latifolia*). Well-vegetated terrestrial areas within the riparian corridor may provide important sheltering habitat during winter. California red-legged frogs aestivate (enter a dormant state during summer or dry weather) in small mammal burrows and moist leaf litter. They have been found up to 100 feet from water in adjacent dense riparian vegetation. Studies have indicated that this species can not inhabit water bodies that exceed 70° F, especially if there are no cool, deep portions (USFWS 2002).		One pond occurs on site, however this pond lacks vegetation and is isolated from other aquatic features by areas of severe disturbance. While no suitable habitat occurs within the project area, individual CRLF may have the potential to disperse onto the site.
Reptiles				
Actinemys marmorata western pond turtle	--/SSC/--	Western pond turtle occurs from the west coast of North America from southern Washington, USA to northern Baja California, Mexico. Many populations have been extirpated and others continue to decline throughout the range, especially in southern California. This species requires aquatic habitats with suitable basking sites. Nest sites most often characterized as having gentle slopes (<15 percent) with little vegetation or sandy banks (CDFG 1994).	A	Refugio Creek represents poor quality habitat for this species and upland areas are heavily disturbed, not allowing for basking sites.
Masticophis lateralis euryxanthus Alameda whipsnake	FT/ST/--	Occurs within the inner Coast Range in western and central Contra Costa and Alameda counties. Habitats include herbaceous grassland, chaparral/shrubland, and rocky canyons with watercourses (USFWS 2005b).	A	Suitable habitat for this species is not present within the project site.
Thamnophis gigas giant garter snake	FT/ST/--	The giant garter snake is endemic to the San Joaquin and Sacramento Valley floors. Counties include Butte, Colusa, Contra Costa, Fresno, Glenn, Kern, Madera, Merced, Sacramento, San Joaquin, Solano, Sutter, Yolo, and Yuba. Inhabits agricultural wetlands and other waterways such as irrigation and drainage canals, sloughs, ponds, small lakes, low gradient streams, and adjacent uplands. Requires adequate water during its active season (early spring through mid-fall) to provide food and cover, emergent, herbaceous wetland vegetation for foraging and cover, grassy banks	A	Suitable habitat for this species is not present within the project site, as water within the site has a high salinity and there are not sufficient aestivation sites along Refugio Creek. Occurrences of GGS have not been reported within the Mare Island quad or the surrounding eight quads.

Scientific Name/ Common Name	Federal/State/ CNPS/other Status	General Habitat Description	Habitat Present/ Absent	Rationale
		and openings in waterside vegetation for basking, and higher elevation uplands for cover and refuge from flood waters during its dormant season (winter). Inhabits small mammal burrows and other soil crevices with sunny exposure along south and west facing slopes, above prevailing flood elevations when dormant. Primarily found in marshes and sloughs. May be found in slow-moving creeks but are absent from large rivers. They are generally aquatic but often bask on emergent vegetation such as cattails and tulles (2009b).		
Mammals				
Antrozous pallidus Pallid bat	--/SSC/--	Found in deserts, grasslands, shrublands, woodlands, and forests. It is most common in open dry habitats with rocky areas for roosting. Feeds mainly in open areas on beetles and other large insects, often landing on ground to catch prey. Roosts in caves, rock crevices, and buildings. Roosts must be sufficient to protect this species from high temperatures. Pallid bat is extremely sensitive to disturbance of roosting sites (CDFG 1998).	HP	Large culverts that pass under the railroad provide potential habitat for this species.
Dipodomys heermanni berkeleyensis Berkeley kangaroo rat	--/--/G3G4T1, S1	Prefers arid or semi-arid habitats with short grasses and open patches of bare ground. Highly adapted to arid conditions and rarely needs to drink water (NatureServe 2009).	A	Habitat for this species is not present within the project site.
Lasiurus cinereus hoary bat	--/--/G5, S4	Prefers open habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for feeding. Roosts in dense foliage of medium to large trees. Preferred sites are hidden from above, with few branches below, and have ground cover of low reflectivity. Females and young tend to roost at higher sites in trees. Feeds primarily on moths and requires water (NatureServe 2009).	HP	While unlikely, large trees within the willow riparian habitat type on site may provide potential habitat for this species.
Microtus californicus sanpabloensis San Pablo vole	--/SSC/--	All known occurrences are in Contra Costa County, in the salt marshes of San Pablo creek, on the south shore of San Pablo Bay. Habitat consists of grassy habitats associated with salt marshes (CDFG 1998).	**HP**	Limited habitat for this species occurs within the coastal tidal marsh habitat within the project site.

Scientific Name/ Common Name	Federal/State/ CNPS/other Status	General Habitat Description	Habitat Present/ Absent	Rationale
Nyctinomops macrotis big free-tailed bat	--/SSC/--	This species is rare in California and probably does not breed in California. Prefers rugged, rocky terrain. Found up to 2500 meters in New Mexico, southern Arizona, and Texas. Roosts in buildings, caves, and occasionally in holes in trees. Also roosts in crevices in high cliffs or rock outcrop (CDFG 1998).	**A**	Suitable habitat for this species is not present within the project site.
Reithrodontomys raviventris salt-marsh harvest mouse	FE/SE,FP/--	Only found in the saline emergent wetlands of San Francisco Bay and its tributaries. Critically dependent on dense cover and their preferred habitat is pickleweed (*Salicornia virginica*). Seldom found in cordgrass or alkali bulrush. Occur in marshes with an upper zone of peripheral halophytes (salt-tolerant plants), vegetation to escape the higher tides, and may even spend a considerable portion of their lives there. Mice also move into the adjoining grasslands during the highest winter tides (USFWS 2008b).	**HP**	Marginal habitat for this species occurs within the coastal tidal marsh habitat within the project site. However the tidal marsh habitat on site is too small and isolated to support a viable population.
Sorex ornatus sinuosus Suisun shrew	--/SSC/--	Occurs in tidal marshes of the northern shores of San Pablo and Suisun bays. Occurs in herbaceous wetlands and tidal marshes in dense, low-lying cover of salicornia (CDFG 1998).	**A**	The project site is not within the range of this species. The Carquinez Strait serves as a dispersal barrier from known records of this species.
Sorex vagrans halicoetes salt-marsh wandering shrew	--/SSC/--	Occurs in salt marshes of the south arm of San Francisco bay. Prefers a low, dense cover of salicornia (CDFG 1998).	**HP**	Marginal habitat for this species occurs within the tidal marsh habitat within the project site.
Taxidea taxus American badger	--/SSC/--	Suitable habitat for this species occurs in the drier open stages of most shrub, forest, and herbaceous habitats with friable soils. Badgers are generally associated with treeless regions, prairies, park lands, and cold desert areas (CDFG 1998).	**A**	Suitable habitat for this species does not occur within the project site.
Birds				
Accipiter cooperi Cooper's hawk (nesting)	--/--/G5, S3	Known to occur from Siskiyou County south to San Diego County. Also scattered nesting in interior valleys and woodlands of Coast Range from Humboldt County south, and in the western foothills of the Sierra Nevada. Habitat consists of deciduous, mixed, and evergreen forests, and deciduous stands of riparian habitat. Habitat ranges from sea level to above 2,700 meters (NatureServe 2009).	HP	Suitable nesting habitat occurs within the willow riparian habitat within the project site.Trees on and bordering the Chelsea Mitigation area provide suitable nesting.

Scientific Name/ Common Name	Federal/State/ CNPS/other Status	General Habitat Description	Habitat Present/ Absent	Rationale
Agelaius tricolor Tricolored blackbird	--/SSC/--	Common locally throughout central California. Nests and seeks cover in emergent wetland vegetation, specifically cattails and tules. Nesting area must be large enough to support a minimum colony of 50 pairs as they are a highly colonial species. Forages on ground in croplands, grassy fields, flooded land, and edges of ponds (CDFG 2008).	HP	Suitable nesting habitat occurs within the cattail, tule habitat within Refugio Creek, adjacent to the project site and in the Chelsea Mitigation area.
Aquila chrysaetos golden eagle	--/--/G5, S3	Breeds throughout California, except along coast, flat portions of Central Valley, and southeastern desert. Inhabits open country from barren areas to open coniferous forests. They are primarily in hilly and mountainous regions in habitats such as grasslands and oak savannah, but also in rugged deserts, on the plains, and in tundra. Prefers cliffs and large trees with large horizontal branches and for roosting, nesting, and perching (NatureServe 2009).	A	Suitable habitat for this species does not occur within the project site.
Ardea alba great egret (nesting)	--/--/G5, S4	Feeds and rests in fresh, and saline emergent wetlands, along the margins of estuaries, lakes, and slow-moving streams, on mudflats and salt ponds, and in irrigated croplands and pastures. Nests and roosts in large trees (NatureServe 2009).	A	Suitable foraging habitat occurs within and adjacent to the project site. No suitable rookery habitat occurs within the project site; however rookery habitat does exist in the Chelsea Mitigation area. This species was observed adjacent to the project site during field surveys.
Ardea herodias great blue heron (nesting)	--/--/G5, S4	Resides inshallow estuaries and fresh and saline emergent wetlands. Less common along riverine and rocky marine shores, in croplands, pastures, and in mountains above foothills (NatureServe 2009).	A	Suitable foraging habitat occurs within and adjacent to the project site. No suitable rookery habitat occurs within the project site; however, however h does exist immediately south of the southern-end of the project boundary for Track Option B. This species was observed adjacent to the project site during field surveys.
Asio flammeus short-eared owl	--/SSC/--	Usually found in open areas with few trees, such as annual and perennial grasslands, prairies, dunes, meadows, irrigated lands, and saline and fresh emergent wetlands. Nests usually located on dry sites with enough	A	Suitable habitat for this species does not occur within the project site.

Scientific Name/ Common Name	Federal/State/ CNPS/other Status	General Habitat Description	Habitat Present/ Absent	Rationale
		vegetation to conceal incubating female (CDFG 2008).		
Athene cunicularia Burrowing owl	--/SSC/--	Resides in open, dry annual or perennial grasslands, deserts, and scrublands with low growing vegetation. This species nests underground in existing burrows created by a number of burrowing mammals, most often ground squirrels (CDFG 2008).	HP	Suitable nesting habitat does not occur within the project site, however marginal wintering habitat may occur. One burrowing owl was sighted during November 2007 surveys.
Branta hutchinsii leucopareia cackling (=Aluetian Canada) goose	FD/--/--	Winters in the Sacramento and northern San Joaquin Valleys. Roosts on ponds or open ground. Often found on marshes, grassland, or agricultural fields (NatureServe 2009).	A	Suitable habitat for this species is not present within the project site.
Buteo regalis ferruginous hawk	--/--/G4, S3S4	Occurs in open grasslands, sagebrush flats, desert scrub, low foothills and surrounding valleys, and fringes of pinyon-juniper habitats. In California, the ferruginous hawk is an uncommon winter resident and migrant at lower elevations in the Modoc Plateau area, Central Valley, and Coast Ranges. It is a more common winter resident in southwestern California. Significant winter occurrences found in the Central Valley and along the central and north coasts (NatureServe 2009).	A	The project site is not within the breeding range of this species. Suitable wintering habitat for this species does not occur within the project site.
Buteo swainsoni Swainson's hawk	--/ST/--	Forages in grasslands, suitable grain or alfalfa fields, or livestock pastures adjacent to nesting habitat. Nests on large trees in open areas (CDFG 2006).	A	Suitable habitat for this species does not occur within the project site.
Charadrius alexandrines nivosus western snowy plover	FT/SSC/--	Occurs along the California coast and inland near the Salton Sea, Mono Lake, and alkali lakes. Most breeding occurs on dune-backed beaches, barrier beaches, and salt-evaporation ponds. This species requires sandy, gravely, or friable soil substrates for nesting. Winter habitat is primarily coastal: beaches, tidal flats, lagoon margins, and salt-evaporation ponds. Inland some birds regularly winter at agricultural waste-water ponds in the San Joaquin Valley and at desert saline lakes (particularly Salton Sea) in southern California (USFWS 2009c).	A	Suitable nesting habitat does not occur within the project site.
Circus cyaneus northern harrier	--/SSC/--	Permanent residents of the northeastern plateau and coastal areas and are less common residents of the Central Valley. Habitat consists of coastal	HP	Marginal nesting habitat occurs in the upper margins of marshes on Hercules Point, adjacent to the

Scientific Name/ Common Name	Federal/State/ CNPS/other Status	General Habitat Description	Habitat Present/ Absent	Rationale
		scrub, Great Basin grassland, marsh and swamp (coastal and fresh water), riparian scrubs, valley and foothill grassland, and wetlands. Nests on the ground, usually in tall, dense clumps of vegetation, either alone or in loose colonies. Occurs from annual grassland up to lodgepole pine and alpine meadow habitats, as high as 3000 meters (CDFG 2008).		project site. Suitable nesting habitat is present in the Chelsea Mitigation site.
Egretta thula snowy egret (nesting)	--/--/G5, S4	Rookery sites occur near marshes, tide-flats, lakes, rivers/streams and wet meadows. Prefers shallow water for foraging, including salt-marsh pools, tidal channels, shallow bays, grassy ponds and marshes, and flooded rice fields (NatureServe 2009).	A	Suitable foraging habitat occurs within and adjacent to the project site, however no suitable rookery habitat occurs within the project site. This species was observed adjacent to the project site during field surveys.
Elanus leucurus White-tailed kite (nesting)	--/FP/--	Occurs primarily in rolling foothills and valley margins with scattered oaks as well as river bottomlands or marshes next to deciduous woodland. Uses isolated, dense topped, trees in open areas for nesting and perching and forages in a variety of habitats including grassland, marshes, and agricultural fields. Feeds on rodents, snakes, and insects (NatureServe 2009).	HP	Suitable nesting habitat occurs within the willow riparian habitat within the project site.Species frequently occurs in in the Chelsea Mitigation area, and suitable nesting habitat is present as well.
Falco peregrinus anatum American peregrine falcon	FD/SD,FP/--	Active nesting sites known along the coast north of Santa Barbara and other mountains in northern California. Breeds mostly in woodland, forest, and coastal habitats. Breeds near water on high cliffs or banks and will nest on human-made structures (NatureServe 2009).	A	No nesting or foraging habitat for this species is present within the project site. Suitable foraging habitat for this species occurs in San Pablo Bay, but does not occur within the project site.
Geothlypis trichas sinuosa saltmarsh common yellowthroat	--/SSC/--	Breeding range bounded by Tomales Bay on the north, Carquinez Strait on the east, and Santa Cruz county to south, with occurrences in the Bay Area during migration and winter. Occurs in salt marshes. Nests just above ground or over water, in thick herbaceous vegetation, often at base of shrub or sapling, sometimes higher in weeds or shrubs up to about 1 meter (CDFG 2008).	HP	Suitable habitat for this species occurs within the tidal marsh habitat within the project site and in the Chelsea Mitigation area.
Haliaeetus leucocephalus bald eagle	FD/SE/--	Found near ocean shorelines, lakes, reservoirs, river systems, and coastal wetlands. Usually less than 2 km to water that offers foraging	A	Suitable habitat for this species does not occur within the project site.

Scientific Name/ Common Name	Federal/State/ CNPS/other Status	General Habitat Description	Habitat Present/ Absent	Rationale
		opportunities. Suitable foraging habitat consists of large bodies of water or rivers with abundant fish and adjacent perching sites such as snags or large trees (CDFG 1999).		
Hydroprogne caspia Caspian tern	--/--/G5, S4	Breeds in scattered colonies along the coast and prefers sandy or pebbly shores of lakes and large rivers and along the coast (NatureServe 2009).	A	Suitable habitat for this species does not occur within the project site, due to site high disturbance.
Laterallus jamaicensis coturniculus California black rail	--/ST/--	In coastal California during breeding season, presently found at Bodega Bay, Tomales Bay, Bolinas Lagoon, San Francisco Bay estuary, and Morro Bay. Overwhelming majority of birds in n. San Francisco Bay (San Pablo Bay) at relatively few sites. Occurs irregularly south to Baja California. Inland in small numbers in Salton Trough and on lower Colorado River from Bill Williams River (historically) to Laguna Dam. Nests in high portions of salt marshes, shallow freshwater marshes, wet meadows, and flooded grassy vegetation. Uses sites with shallower water than other North American rails. Most breeding areas vegetated by fine-stemmed emergent plants, rushes, grasses, or sedges. Sites used in coastal California characterized by taller vegetation, greater coverage and height of alkali heath (*Frankenia grandifolia*; NatureServe 2009).	HP	Marginal habitat for this species occurs within the tidal marsh habitats within the project site. However these habitats are likely too small and patchy to support a breeding population. The Chelsea Mitigation site provides marginal habitat for the species; however, the species has been document in the pickleweed tidal marsh near this area.
Melospiza melodia maxillaris Suisun song sparrow	--/SSC/--	Occurs in brackish esturarine marshes, at or near sea level, in Suisun Bay from the vicinity of the confluence of the Sacramento and San Joaquin rivers west to the Carquinez Straights (CDFG 2008).	A	The project site is not within the range of this species.
Melospiza melodia pusillula Alameda song sparrow	--/SSC/--	Known to occur in areas bordering southern and eastern fringes of San Francisco bay. Commonly found in saltmarsh, brackish marsh, and fringe areas, where marsh vegetation is limited to edges of dikes, land fills, or other margins of high ground bordering salt or brackish water areas (CDFG 2008).	HP	The project site is not within the range of this species; however, it is is known to nest in areas adjacent to the Chelsea Mitigation area.
Melospiza melodia samuelis San Pablo song sparrow	--/SSC/--	Distributed in marshes around San Pablo Bay continuously from Gallinas Creek in the west, along the northern San Pablo bayshore, and throughout the extensive marshes along the Petaluma,	HP	Suitable habitat for this species occurs within the project site. This species was observed within the project site during field surveys.

Scientific Name/ Common Name	Federal/State/ CNPS/other Status	General Habitat Description	Habitat Present/ Absent	Rationale
		Sonoma, and Napa rivers. Commonly found in saltmarsh, brackish marsh, salt marsh (altered), brackish marsh (altered), and fringe areas, where marsh vegetation is limited to edges of dikes, land fills, or other margins of high ground bordering salt or brackish water areas (CDFG 2008).		
Nycticorax nycticorax black-crowned night heron (nesting)	--/--/G5, S3	Yearlong residents in lowlands and foothills throughout most of California, including the Salton Sea and Colorado River areas. Habitat consists of marshes and swamps, riparian forest, riparian woodlands, and wetlands. Colonial nester, usually in trees, occasionally in tule patches. Rookery sites located adjacent to foraging areas (NatureServe 2009).	A	Suitable foraging habitat occurs within and adjacent to the project site, however no nesting habitat occurs within the project site.
Pandion haliaetus osprey	--/--/G5, S3	Breeds from Cascade Ranges south to Lake Tahoe, and along the North Coast Ranges south to Marin County. Associated strictly with large, fish-bearing waters, primarily in ponderosa pine through mixed conifer habitats. Uses large trees, snags, and dead-topped trees in open forest habitats for cover and nesting. Requires open, clear waters for foraging such as rivers, lakes, reservoirs, bays, estuaries, and surf zones (NatureServe 2009).	A	Suitable foraging habitat occurs within and adjacent to the project site, however no nesting habitat occurs within the project site and Chelsea Mitigation area. An osprey was observed adjacent to the project site during field surveys and is frequently observed in the Chelsea Mitigation area
Pelecanus occidentalis californicus California brown pelican	FE/SD/--	Occurs in estuarine, marine subtidal, and marine pelagic waters along the California coast. Nests on coastal islands of small to moderate size which afford immunity from attack by ground dwelling predators. Usually rests on water or inaccessible rocks (either offshore or on mainland), but also uses mudflats, sandy beaches, wharfs, and jetties (USFWS 2008c).	A	The project site is not within the breeding range of this species. Suitable foraging habitat for this species occurs in the deeper parts of the San Pablo Bay, but does not occur within or adjacent to the project site.
Phalacrocorax auritus double-crested cormorant (nesting)	--/--/G5, S3	Resides along the coast of California and on inland lakes, in fresh, salt and estuarine waters. Colonial nester on coastal cliffs, offshore islands and along lake margins in the interior of the state. Prefers water less than 9 meters deep with rocky or gravel bottom. Roosts beside water on offshore rocks, islands, steep cliffs, dead branches of trees, wharfs, jetties, or transmission lines. Perching sites must be barren of vegetation (NatureServe 2009).	A	Suitable foraging habitat occurs within and adjacent to the project site, however no nesting habitat occurs within the project site. This species was observed during field surveys.

Scientific Name/ Common Name	Federal/State/ CNPS/other Status	General Habitat Description	Habitat Present/ Absent	Rationale
Rallus longirostris obsoletus California clapper rail	FE/SE/--	Occurs in coastal wetlands and brackish areas around San Francisco Bay. In saline emergent wetlands, nests mostly in lower zones, where cordgrass is abundant and tidal sloughs are nearby. Builds a platform concealed by a canopy of woven cordgrass stems or pickleweed and gumweed. Also uses dead drift vegetation as platform. In fresh or brackish water, builds nest in dense cattail or bulrush. Forages in higher marsh vegetation, along vegetation and mudflat interface, and along tidal creeks (USFWS 2009d).	HP	Marginal habitat for this species occurs within the tidal marsh habitats within the project site and Chelsea Mitigation area. However these habitats are likely too small and patchy to support a breeding population.
Sternula antillarum browni California least tern	FE/SE/--	Breeding colonies are located along the coast from southern California to San Francisco Bay. Occur along marine and estuarine shores where small fish are abundant. Nest in loose colonies on the ground relatively free of human or predatory disturbance (USFWS 2007d).	A	Suitable habitat for this species does not occur within the project site, due to a high level of disturbance.
Strix occidentalis caurina northern spotted owl	FT/--/--	Resides in dense, old-growth, multi-layered mixed conifer, redwood, and Douglas-fir habitats, from sea level up to approximately 2,300 meters. In southern California, nearly always associated with oak and oak-conifer habitats (USFWS 2009e).	A	Suitable habitat for this species does not occur within the project site.
Xanthocephalus xanthocephalus yellow-headed blackbird	--/SSC/--	Nests in fresh water marshes, typically with vegetation such as cattails, tules, and bulrush with 2 to 4 foot deep water below. During the winter months, often forages in open fields, cultivated fields, and pastures (CDFG 2008).	A	This species is likely locally extirpated. The last record of this species in the vicinity of the site is over 100 years old.
Plants				
Amsinckia lunaris bent-flowered fiddleneck	--/--/1B	Occurs in the inner north coast ranges, western central portion of Central Valley, and San Francisco Bay Area. Habitat consists of grassland, coastal scrub, and open woodland; elevations 3-500 meters. Blooms March to June (CNPS 2007).	A	Suitable habitat for this species does not occur within the project site.
Arctostaphylos hookeri ssp. *montana* Mt. Tamalpais manzanita	--/--/1B	Known occurrences only in Marin county. Habitat consists of chaparral and valley and foothill grassland with serpentine and rocky soil; elevations 160 to 760 meters. Blooms February to April (CNPS 2007).	A	Suitable habitat for this species does not occur within the project site.
Arctostaphylos pallida pallid manzanita	FT/SE/1B	Known occurrences in Alameda and Contra Costa counties. Habitat consists of broadleafed upland forest, closed-cone coniferous forest, chaparral,	A	Suitable habitat for this species does not occur within the project site.

Scientific Name/ Common Name	Federal/State/ CNPS/other Status	General Habitat Description	Habitat Present/ Absent	Rationale
		cismontane woodland, coastal scrub (siliceous shale, sandy or gravelly); elevations 185 to 465 meters. Blooms from December to March (CNPS 2007).		
Astragalus tener var. *tener* alkali milk-vetch	--/--/1B	Known occurrences in Alameda, Contra Costa, Merced, Monterey, Napa, San Benito, Santa Clara, San Francisco, San Joaquin, Solano, Sonoma, Stanislaus, and Yolo Counties. Found in alkali playas, valley and foothill grassland in adobe clay, and vernal pools at elevations from 1 to 60 meters. Blooms from March to June (CNPS 2007).	A	Suitable habitat for this species does not occur within the project site. Pool and puddle features within the project site are disturbed, are on fill substrate, and do not support typical vernal pool vegetation.
Atriplex joaquiniana San Joaquin spearscale	--/--/1B	Known populations in Alameda, Contra Costa, Colusa, Glenn, Merced, Monterey, Napa, Sacramento, San Benito, Santa Clara, San Joaquin, Solano, Tulare, and Yolo counties. Habitat consists of chenopod scrub, meadows and seeps, playas, valley and foothill grasslands with alkaline soils; elevations 1 to 835 meters. Blooms from April to October (CNPS 2007).	A	Suitable habitat for this species does not occur within the project site.
Balsamorhiza macrolepis var. *macrolepis* big-scale balsamroot	--/--/1B	Occurs in Sacramento Valley, Sierra Nevada foothills, and San Francisco Bay Area. Habitat consists of chaparral, cismontane woodland, and open grassy slopes and valleys, sometimes in serpentine soil; elevations 90 to 1400 meters. Blooms from March to June (CNPS 2007).	A	Suitable habitat for this species does not occur within the project site.
Blennosperma bakeri Sonoma sunshine	FE/SE/1B	Known occurrences only in Sonoma County. Found in wetland areas in grassland and in vernal pools; elevations 10 to 110 meters. Blooms from March to May (CNPS 2007).	A	Suitable habitat for this species does not occur within the project site. Pool and puddle features within the project site are disturbed, are on fill substrate, and do not support typical vernal pool vegetation.
Blepharizonia plumose big tarplant	--/--/1B	Known occurrences in Alameda, Contra Costa, Kern, Monterey, San Benito, San Joaquin, San Luis Obispo, Solano, and Stanislaus counties. Found in dry valley and foothill grassland; elevations 30 to 505 meters. Blooms from July to October (CNPS 2007).	A	Suitable habitat for this species does not occur within the project site.
California macrophylla round-leaved filaree	--/--/1B	Found in California's Central Coast and Central Valley, Southern California, Baja California, and in Oregon. Habitat consists of cismontane woodland and valley and foothill grassland with clay soils;	A	Suitable habitat for this species does not occur within the project site.

Scientific Name/ Common Name	Federal/State/ CNPS/other Status	General Habitat Description	Habitat Present/ Absent	Rationale
		elevations 15 to 1,200 meters. Blooms from March to May (CNPS 2007).		
Calochortus pulchellus Mt. Diablo fairy-lantern	--/--/1B	Known occurrences in Contra Costa and Solano Counties. Habitat consists of chaparral, woodland and grassland, often in adobe soil; elevations 30 to 840 meters. Blooms from April to June (CNPS 2007).	A	Suitable habitat for this species does not occur within the project site.
Calochortus tiburonensis Tiburon mariposa-lily	FT/ST/1B	Known occurrences only in Marin county. Habitat consists of valley and foothill grassland with serpentine soil; elevations 50 to 150 meters. Blooms from March to June (CNPS 2007).	A	Suitable habitat for this species does not occur within the project site.
Calystegia purpurata ssp. *saxicola* coastal bluff morning-glory	--/--/1B	Known occurrences in Mendocino, Marin, and Sonoma counties. Habitat consists of coastal dunes, coastal scrub; elevation 15 to 105 meters. Blooms from May to August (CNPS 2007).	A	Suitable habitat for this species does not occur within the project site.
Castilleja affinis ssp. *neglecta* Tiburon paintbrush	FE/ST/1B	Known occurrences in Marin, Napa, and Santa Clara Counties. Known from six occurrences. Found in serpentine valley and foothill grasslands at elevations from 60 to 400 meters. Blooms from April to June (CNPS 2007).	A	Suitable habitat for this species does not occur within the project site.
Ceanothus purpureus holly-leaved ceanothus	--/--/1B	Known occurrences within Napa, Solano, and Sonoma Counties. This species is known to occur within chaparral habitats; elevations from 120 to 640 meters. Blooms from February to June (CNPS 2007).	A	Suitable habitat for this species does not occur within the project site.
Centromadia parryi ssp. *congdonii* Congdon's tarplant	--/--/1B	Known occurrences in Alameda, Contra Costa, Monterey, Santa Clara, Santa Cruz, San Luis Obispo, San Mateo, and Solano counties. Found in alkaline valley and foothill grassland; elevations from 1 to 230 meters. Blooms from May to November (CNPS 2007).	A	Suitable habitat for this species does not occur within the project site.
Centromadia parryi ssp. *parryi* pappose tarplant	--/--/1B	Occurs in the southern Sacramento Valley, southern Inner Coast Ranges, and San Francisco Bay Area. Habitat consists of coastal grassland, and alkaline grassland or marsh; elevations from 2 to 420 meters. Blooms from May to November (CNPS 2007).	A	Suitable habitat for this species does not occur within the project site.
Cicuta maculate var. *bolanderi* Bolander's water-hemlock	--/--/2	Known occurrences in Contra Costa, Los Angeles, Marin, Sacramento, Santa Barbara, San Luis Obispo, and Solano counties. Current distribution	A	The project site is outside the known range for this species.

Scientific Name/ Common Name	Federal/State/ CNPS/other Status	General Habitat Description	Habitat Present/ Absent	Rationale
		in the San Francisco Estuary is limited to the Suisun Bay. Habitat consists of coastal marshes and swamps with fresh or brackish water; elevations from 0 to 200 meters. Blooms from July to September (Goals Project 2000, CNPS 2007).		
Cirsium andrewsii Franciscan thistle	--/--/1B	Known populations in Contra Costa, Marin, San Francisco, and San Mateo counties. Habitat consists of broadleaved upland forest, coastal bluff scrub, coastal prairie, coastal scrub/mesic, sometimes with serpentine soils; elevations 0 to 135 meters. Blooms from March to July (CNPS 2007).	A	Suitable habitat for this species does not occur within the project site.
Cordylanthus maritimus ssp. *palustris* Point Reyes bird's-beak	--/--/1B	Known populations in Alameda, Humboldt, Marin, Santa Clara, San Mateo and Sonoma counties. Habitat consists of marshes and swamps (coastal salt); elevations 0 to 10 meters. Blooms from June to October (CNPS 2007).	HP	Suitable habitat for this species occurs within the tidal marsh habitat within the project site.
Cordylanthus mollis ssp. *mollis* soft bird's-beak	FE/SR/1B	Known populations in Contra Costa, Marin, Napa, Sacramento, Solano, and Sonoma counties. Habitat consists of coastal salt marshes and swamps; elevations 0 to 3 meters. Blooms July to November (CNPS 2007).	HP	Suitable habitat for this species occurs within the tidal marsh habitat within the project site. Critical habitat for this species occurs approximately 3 miles southwest on the Point Pinole shoreline.
Dirca occidentalis western leatherwood	--/--/1B	Known occurrences in Alameda, Contra Costa, Marin, Santa Clara, San Mateo, and Sonoma counties. Habitat consists of broadleafed upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, North Coast coniferous forest, riparian forest, riparian woodland with mesic soils; elevations 50 to 395 meters. Blooms from January to March (CNPS 2007).	A	Suitable habitat for this species does not occur within the project site.
Downingia pusilla dwarf downingia	--/--/2	Known populations from Fresno, Merced, Mariposa, Napa, Placer, Sacramento, San Joaquin, Solano, Sonoma, Stanislaus, Tehama, and Yuba counties. Habitat consists of valley and foothill grassland (mesic), vernal pools; elevation 1 to 445 meters. Blooms from March to May (CNPS 2007).	A	Suitable habitat for this species does not occur within the project site. Pool and puddle features within the project site are disturbed, are on fill substrate, and do not support typical vernal pool vegetation.
Eriogonum luteolum var. *caninum* Tiburon buckwheat	--/--/1B	Known occurrences in Alameda, Colusa, Lake, Marin, Napa, Santa Clara, San Mateo, Solano, and Sonoma Counties. Found in areas with serpentine soil. Found in chaparral, coastal prairie, and valley	A	Suitable habitat for this species does not occur within the project site.

Scientific Name/ Common Name	Federal/State/ CNPS/other Status	General Habitat Description	Habitat Present/ Absent	Rationale
		and foothill grassland at elevations from 10 to 500 meters. Blooms from June to September (CNPS 2007).		
Fritillaria liliacea fragrant fritillary	--/--/1B	Known populations in Alameda, Contra Costa, Monterey, Marin, San Benito, Santa Clara, San Francisco, San Mateo, Solano, and Sonoma counties. Habitat consists of cismontane woodland, coastal prairie, coastal scrub, valley and foothill grassland, often in serpentine soils; elevations 3 to 410 meters. Blooms from February to April (CNPS 2007).	A	Suitable habitat for this species does not occur within the project site. Pool and puddle features within the project site are disturbed, are on fill substrate, and do not support typical vernal pool vegetation.
Helianthella castanea Diablo helianthella	--/--/1B	Known occurrences from Alameda, Contra Costa, Marin, San Diego, San Francisco, and San Mateo counties. Habitat consists of closed-cone coniferous forest, chaparral, cismontane woodland, coastal scrub/rocky; elevations 15 to 490 meters. Blooms from March to July (CNPS 2007).	A	Suitable habitat for this species does not occur within the project site.
Hemizonia congesta ssp. congesta pale yellow hayfield tarplant	--/--/1B	Known occurrences from Mendocino, Marin, and San Francisco counties. Habitat consists of valley and foothill grassland and sometimes roadsides; elevations 20 to 560 meters. Blooms from April to November (CNPS 2007).	A	Suitable habitat for this species does not occur within the project site.
Hesperolinon congestum Marin western flax	FT/ST/1B	Known occurrences from Marin, San Francisco, and San Mateo counties. Habitat consists of chaparral and valley and foothill grassland with serpentine soils; elevations 5 to 370 meters. Blooms from April to July (CNPS 2007).	A	Suitable habitat for this species does not occur within the project site.
Hoita strobilina Loma Prieta hoita	--/--/1B	Known occurrences in Alameda, Contra Costa, Santa Clara, and Santa Cruz counties. Habitat consists of chaparral, cismontane woodland, and riparian woodland, usually with serpentinite, mesic soils. Elevations 30 to 860 meters. Blooms from May to October (CNPS 2007).	A	Suitable habitat for this species does not occur within the project site.
Holocarpha macradenia Santa Cruz tarplant	FT/SE/1B	Known occurrences in Alameda, Contra Costa, Monterey, Marin, Santa Cruz, and Sonoma counties. Habitat consists of coastal prairie, coastal scrub, and valley and foothill grassland, often in sandy clay soils; elevations 10 to 220 meters. Blooms from June to October (CNPS 2007).	A	Suitable habitat for this species does not occur within the project site.
Lasthenia conjugens Contra Costa goldfields	FE/--/1B	Occurs on the North, Central and South Coast; San Francisco Bay; and southern Sacramento Valley.	A	Suitable habitat for this species does not occur within the project site.

Scientific Name/ Common Name	Federal/State/ CNPS/other Status	General Habitat Description	Habitat Present/ Absent	Rationale
		Habitat consists of vernal pools, woodland, grassland, and alkaline playas, generally in wet areas; elevations 0 to 470 meters. Blooms from March to June (CNPS 2007).		Pool and puddle features within the project site are disturbed, are on fill substrate, and do not support typical vernal pool vegetation.
Lathyrus jepsonii var. *jepsonii* Delta tule pea	--/--/1B	Documented occurrences within Alameda, Contra Costa, Solano, Sacramento, Napa, Santa Clara, and San Joaquin counties. Current distribution is in Suisun Marsh and tidal brackish marshes along Napa River (DutchmanSlough). Habitat consists of marshes and swamps (freshwater and brackish). Found at elevations below 100 feet. Blooms from May to September (Goals Project 2000, CNPS 2007).	A	Suitable habitat for this species does not occur within the project site.
Legenere limosa Legenere	--/--/1B	Known occurrences in Lake, Napa, Placer, Sacramento, Shasta, San Mateo, Solano, Sonoma, Stanislaus, and Tehama counties. Habitat consists of vernal pools; elevation 1 to 880 meters. Blooms from April to June (CNPS 2007).	A	Suitable habitat for this species does not occur within the project site. Pool and puddle features within the project site are disturbed, are on fill substrate, and do not support typical vernal pool vegetation.
Lilaeopsis masonii Mason's liliaeopsis	--/SR/1B	Known occurrences in Alameda, Contra Costa, Napa, Sacramento, San Joaquin, and Solano counties. Habitat consists of marshes and swamps (brackish or freshwater) and riparian scrub; elevations 0 to10 meters. Blooms from April to November (CNPS 2007).	HP	Suitable habitat for this species occurs within the tidal marsh habitat within the project site.
Limnanthes vinculans Sebastopol meadowfoam	FE/SE/1B	Known occurrences in Napa and Sonoma counties. Found in meadows, seeps, valley and foothill grassland, and vernal pools, usually in vernally mesic areas; elevations 15 to 305 meters. Blooms from April to May (CNPS 2007).	A	Suitable habitat for this species does not occur within the project site. Pool and puddle features within the project site are disturbed, are on fill substrate, and do not support typical vernal pool vegetation.
Meconella oregano Oregon meconella	--/--/1B	Known occurrences in Contra Costa and Santa Clara counties and in Oregon and Washington. Habitat consists of coastal prairie and coastal scrub; elevations 250 to 620 meters. Blooms from March to April (CNPS 2007).	A	Suitable habitat for this species does not occur within the project site.
Monardella villosa ssp. *globosa* robust monardella	--/--/1B	Occurs within the outer North Coast Ranges and San Francisco Bay Area. Habitat consists of oak woodland, chaparral, coastal scrub, grassland, and openings in woodland and chaparral; elevations 100 to 915 meters. Blooms from June to July	A	Suitable habitat for this species does not occur within the project site.

Scientific Name/ Common Name	Federal/State/ CNPS/other Status	General Habitat Description	Habitat Present/ Absent	Rationale
		(CNPS 2007).		
Pentachaeta bellidiflora white-rayed pentachaeta	FE/SE/1B	Known occurrences in Marin, Santa Cruz, and San Mateo counties. Habitat consists of cismontane woodland and valley and foothill grassland, often with serpentine soils; elevations 35 to 620 meters. Blooms from March to May (CNPS 2007).	A	Suitable habitat for this species does not occur within the project site.
Plagiobothrys glaber hairless popcorn-flower	--/--/1A	Known from population occurrences in Alameda, Merced, Marin, San Benito, and Santa Clara counties. Presumed extinct. Habitat consists of meadows and seeps (alkaline), marshes and swamps (coastal salt); elevations 15 to 180 meters. Blooms from March to May (CNPS 2007).	A	Suitable habitat for this species does not occur within the project site.
Polygonum marinense Marin knotweed	--/--/3	Known occurrences in Marin, Napa, Solano, and Sonoma counties. Habitat consists of marshes and swamps (coastal salt or brackish); elevations 0 to 10 meters. Blooms from April to October (CNPS 2007).	A	The project site is outside the known range for this species.
Senecio aphanactis chaparral ragwort	--/--/2	Occurs in coastal counties in California from the Bay Area to San Diego. Habitat consists of chaparral, cismontane woodland, coastal scrub with alkaline soil; elevations 15 to 800 meters. Blooms from January to April (CNPS 2007).	A	Suitable habitat for this species does not occur within the project site.
Streptanthus albidus ssp. *peramoenus* most beautiful jewel flower	--/--/1B	Know occurrences in Alameda, Contra Costa, Monterey, Santa Clara, and San Luis Obispo Counties. Chaparral, cismontane woodland, valley and foothill grassland (often in serpentinite soil); elevations 110 to 1000 meters. Blooms March to June (CNPS 2007).	A	Suitable habitat for this species does not occur within the project site.
Streptanthus niger Tiburon jewel-flower	FE/SE/1B	Known occurrences only from Marin County. Habitat consists of valley and foothill grassland with serpentine soils; elevations 30 to 150 meters. Blooms from May to June (CNPS 2007).	A	Suitable habitat for this species does not occur within the project site.
Suaeda californica California seablite	FE/--/1B	Known populations in Alameda, Santa Clara, San Francisco, and San Luis Obispo counties. Presumed extinct in San Francisco Estuary. Habitat consists of coastal salt marsh and coastal strand; elevations 0 to 15 meters. Blooms from July to October (Goals Project 2000, CNPS 2007).	A	Suitable habitat for this species does not occur within the project site.
Symphyotrichum lentum Suisun Marsh aster	--/--/1B	Known occurrences in Contra Costa, Napa, Sacramento, San Joaquin, and Solano counties.	A	Suitable habitat for this species does not occur within the project site.

Scientific Name/ Common Name	Federal/State/ CNPS/other Status	General Habitat Description	Habitat Present/ Absent	Rationale
		Habitat consists of marshes and swamps (brackish and freshwater); elevations 0 to 3 meters. Blooms from May to November (CNPS 2007).		
Trifolium amoenum showy rancheria clover	FE/--/1B	Known occurrences in the San Francisco Bay Area and southern North Coast Range. Habitat consists of grassland and coastal bluff scrub, sometimes in serpentine soil; elevations 5 to 415 meters. Blooms from April to June (CNPS 2007).	A	Suitable habitat for this species does not occur within the project site.
Trifolium depauperatum var. *hydrophilum* saline clover	--/--/1B	Known populations in Alameda, Monterey, Napa, San Benito, Santa Clara, San Luis Obispo, San Mateo, Solano, and Sonoma counties. Occurs in marshes and swamps; mesic/alkaline areas in valley and foothill grassland; and in vernal pools; elevations 0 to 300 meters. Blooms from April to June (CNPS 2007).	A	The project site is outside the known range for this species.
Triquetrella californica coastal triquetrella	--/--/1B	Known populations in Contra Costa, Mendocino, San Diego, and San Francisco counties. Habitats consist of coastal bluff scrub and coastal scrub/soil; elevations 10 to 100 meters. This species in a non-flowering moss.	A	Suitable habitat for this species does not occur within the project site.
Viburnum ellipticum oval-leaved viburnum	--/--/2	Known populations in Contra Costa, Fresno, El Dorado, Glenn, Humboldt, Mendocino, Napa, Shasta, and Sonoma counties. Deciduous shrub found in chaparral, cismontane woodland, and lower montane coniferous forest; elevations 215 to 1,400 meters. Blooms from May to June (CNPS 2007).	A	Suitable habitat for this species does not occur within the project site.
Natural Communities				
Coastal Brackish Marsh	--/--/G2, S2.1	Similar to Coastal Salt Marshes, but brackish from freshwater input. Most extensively developed around Suisun Bay at the mouth of the Sacramento-San Joaquin Delta. Salinity may vary considerably, and may increase at high tide or during seasons of low freshwater runoff or both. Usually intergrades with Coastal Salt Marshes toward the ocean and occasionally with Freshwater Marshes at the mouths of rivers, especially in the Sacramento-San Joaquin River Delta. Dominated by perennial, emergent, herbaceous monocots to 2m tall. Cover is often complete and dense (Holland 1986).	HP	This habitat type is present along the lower reach of Refugio Creek.

Scientific Name/ Common Name	Federal/State/ CNPS/other Status	General Habitat Description	Habitat Present/ Absent	Rationale
Coastal Terrace Prairie	--/--/G2, S2.1	Forms on sandy loams on marine terraces near the coast (below approximately 700-1,000 feet) within the zone of coastal fog incursion. Dense, tall grassland (to 1m tall) dominated by both sod and tussock-forming perennial grasses. Most stands are quite patchy and variable in composition, reflecting local differences in available soil moisture capacity (Holland 1986).	A	This habitat type is not present within the project site.
Northern Coastal Salt Marsh	--/--/G3, S3.2	Marsh of sheltered inland margins of bays, lagoons, and estuaries, from the California-Oregon border south to Pt. Conception. Plant species are usually segregated horizontally with cord grass nearer the open water, pickleweed at mid-littoral elevations, and a richer mixture closer to high ground (Holland 1986).	HP	This habitat type is present along the margin of Hercules Point.
Northern Maritime Chaparral	--/--/G1, S1.2	A fairly open chaparral (50-80 percent cover, usually fairly easy to walk through) found from Santa Cruz to Sonoma County near the coast, usually as islands in Mixed Evergreen Forests or adjacent to Northern Coastal Scrub. Dominated by several narrowly restricted *Manzanita* or *Ceanothus* species. Associated with sandy substrates within the zone of coastal fog incursion, usually on rolling to hilly terrain.	A	This habitat type is not present within the project site.
Northern Vernal Pool	--/--/G2, S2.1	Vernal pool classification that encompasses northern hardpan vernal pool and northern claypan vernal pool. Found on terraces and basin rims from central San Joaquin Valley north to Shasta County. Vegetation is of a low, amphibious, herbaceous community dominated by annual herbs and grasses. Germination and growth begin with winter rains. Rising spring temperatures evaporate the pools, leaving bands of vegetation that colorfully encircle the pool (Holland 1986).	A	This habitat type is not present within the project site.
Serpentine Bunchgrass	--/--/G2, S2.2	Perennial grassland of serpentine soils. Serpentine soils are scattered in the Coast Ranges and Sierra Nevada mountains throughout California. Dominated by perennial bunchgrasses in genera such as *Bromus*, *Melica*, *Nassella*, *Poa*, *Calamagrostis*, and *Festuca*.	A	This habitat type is not present within the project site.

Scientific Name/ Common Name	Federal/State/ CNPS/other Status	General Habitat Description	Habitat Present/ Absent	Rationale

Absent [A] - no habitat present and no further work needed. Habitat Present [HP] -habitat is, or may be present. The species may be present. Critical Habitat [CH] - project footprint is located within a designated critical habitat unit, but does not necessarily mean that appropriate habitat is present. Status: Federal Endangered (FE); Federal Threatened (FT); Federal Proposed (FP, FPE, FPT); Federal Candidate (FC), Federal Species of Concern (FSC); Federal Delisted (FD); State Endangered (SE); State Threatened (ST); Fully Protected (FP); State Rare (SR); State Species of Special Concern (SSC); State Delisted (SD); California Native Plant Society (CNPS), etc.

California Native Plant Society (CNPS)

1A = Presumed extinct or extirpated in California.
1B = Rare, threatened, or endangered in California and elsewhere.
2 = Rare, threatened, or endangered in California but more common elsewhere.
3 = Review list. Plants about which more information is needed to assign to other lists or reject.

Global Ranking
Species or Natural Community Level

G1 = Less than 6 viable element occurrences (EO) OR less than 1000 individuals OR less than 2000 acres.
G2 = 6-20 EOs OR 1000-3000 individuals OR 2000-10000 acres.
G3 = 21-100 EOs OR 3000-10000 individuals OR 10000-50000 acres.
G4 = Apparently secure; this rank is clearly lower than G3 but factors exist to cause some concern (i.e., there is some threat, or somewhat narrow habitat).
G5 = Population or stand demonstrably secure to ineradicable due to being commonly found in the world

Subspecies Level

Subspecies receive a T-rank attached to the G-rank. With the subspecies, the G-rank reflects the condition of the entire species; whereas, the T-rank reflects the global situation of just the subspecies.

State Ranking

S1 = Less than 6 EOs OR less than 100 individuals OR less than 2000 acres
- *S1.1 = very threatened*
- *S1.2 = threatened*
- *S1.3 = no current threats known*

S2 = 6-20 EOs OR 1000-3000 individuals OR 2000-10000 acres
- *S2.1 = very threatened*
- *S2.2 = threatened*
- *S2.3 = no current threats known*

S3 = 21-100 EOs OR 3000-10000 individuals OR 10000-50000 acres
- *S3.1 = very threatened*
- *S3.2 = threatened*
- *S3.3 = no current threats known*

S4 = Apparently secure within California; this rank is clearly lower than S3 but factors exist to cause some concern (i.e., there is some threat, or somewhat narrow habitat. NO THREAT RANK.
S5 = Demonstrably secure to ineradicable in California. NO THREAT RANK.

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APPENDIX H

EDR Radius Map Report with GeoCheck

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

Hercules ITC
Bayfront and Sanderling
Hercules, CA 94547

Inquiry Number: 2648609.1s
December 01, 2009

The EDR Radius Map™ Report with GeoCheck®

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
Toll Free: 800.352.0050
www.edrnet.com

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-05) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

BAYFRONT AND SANDERLING
HERCULES, CA 94547

COORDINATES

Latitude (North):	38.020900 - 38˚ 1' 15.2''
Longitude (West):	122.284400 - 122˚ 17' 3.8''
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	562811.9
UTM Y (Meters):	4208170.0
Elevation:	7 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	38122-A3 MARE ISLAND, CA
Most Recent Revision:	1980

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL..... National Priority List
Proposed NPL..... Proposed National Priority List Sites
NPL LIENS..... Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL..... National Priority List Deletions

EXECUTIVE SUMMARY

Federal CERCLIS list

CERCLIS ..... Comprehensive Environmental Response, Compensation, and Liability Information System

Federal CERCLIS NFRAP site List

CERC-NFRAP ..... CERCLIS No Further Remedial Action Planned

Federal RCRA CORRACTS facilities list

CORRACTS ..... Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ..... RCRA - Transporters, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ..... RCRA - Large Quantity Generators
RCRA-SQG ..... RCRA - Small Quantity Generators
RCRA-CESQG ..... RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

US ENG CONTROLS ..... Engineering Controls Sites List
US INST CONTROL ..... Sites with Institutional Controls

Federal ERNS list

ERNS ..... Emergency Response Notification System

State and tribal landfill and/or solid waste disposal site lists

SWF/LF ..... Solid Waste Information System

State and tribal leaking storage tank lists

LUST ..... Geotracker's Leaking Underground Fuel Tank Report
SLIC ..... Statewide SLIC Cases
INDIAN LUST ..... Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

UST ..... Active UST Facilities
AST ..... Aboveground Petroleum Storage Tank Facilities
INDIAN UST ..... Underground Storage Tanks on Indian Land

State and tribal voluntary cleanup sites

VCP ..... Voluntary Cleanup Program Properties
INDIAN VCP ..... Voluntary Cleanup Priority Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ..... A Listing of Brownfields Sites

EXECUTIVE SUMMARY

Local Lists of Landfill / Solid Waste Disposal Sites

ODI	Open Dump Inventory
DEBRIS REGION 9	Torres Martinez Reservation Illegal Dump Site Locations
WMUDS/SWAT	Waste Management Unit Database
SWRCY	Recycler Database
HAULERS	Registered Waste Tire Haulers Listing
INDIAN ODI	Report on the Status of Open Dumps on Indian Lands

Local Lists of Hazardous waste / Contaminated Sites

US CDL	Clandestine Drug Labs
SCH	School Property Evaluation Program
Toxic Pits	Toxic Pits Cleanup Act Sites
CDL	Clandestine Drug Labs
US HIST CDL	National Clandestine Laboratory Register

Local Lists of Registered Storage Tanks

CA FID UST	Facility Inventory Database
HIST UST	Hazardous Substance Storage Container Database
SWEEPS UST	SWEEPS UST Listing

Local Land Records

LIENS 2	CERCLA Lien Information
LUCIS	Land Use Control Information System
LIENS	Environmental Liens Listing
DEED	Deed Restriction Listing

Records of Emergency Release Reports

HMIRS	Hazardous Materials Information Reporting System
CHMIRS	California Hazardous Material Incident Report System
LDS	Land Disposal Sites Listing
MCS	Military Cleanup Sites Listing

Other Ascertainable Records

RCRA-NonGen	RCRA - Non Generators
DOT OPS	Incident and Accident Data
DOD	Department of Defense Sites
FUDS	Formerly Used Defense Sites
CONSENT	Superfund (CERCLA) Consent Decrees
ROD	Records Of Decision
UMTRA	Uranium Mill Tailings Sites
MINES	Mines Master Index File
TRIS	Toxic Chemical Release Inventory System
TSCA	Toxic Substances Control Act
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
SSTS	Section 7 Tracking Systems
ICIS	Integrated Compliance Information System

EXECUTIVE SUMMARY

PADS	PCB Activity Database System
MLTS	Material Licensing Tracking System
RADINFO	Radiation Information Database
FINDS	Facility Index System/Facility Registry System
RAATS	RCRA Administrative Action Tracking System
CA WDS	Waste Discharge System
NPDES	NPDES Permits Listing
Cortese	"Cortese" Hazardous Waste & Substances Sites List
HIST CORTESE	Hazardous Waste & Substance Site List
CONTRA COSTA CO. SITE LIST	Site List
Notify 65	Proposition 65 Records
DRYCLEANERS	Cleaner Facilities
WIP	Well Investigation Program Case List
HAZNET	Facility and Manifest Data
EMI	Emissions Inventory Data
INDIAN RESERV	Indian Reservations
SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing
PCB TRANSFORMER	PCB Transformer Registration Database

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants	EDR Proprietary Manufactured Gas Plants

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

State- and tribal - equivalent NPL

RESPONSE: Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

A review of the RESPONSE list, as provided by EDR, and dated 08/27/2009 has revealed that there are 4 RESPONSE sites within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
BIO-RAD LABORATORIES	***2000 ALFRED NOBEL DRIVE***	***NE 1/4 - 1/2 (0.401 mi.)***	***1***	***7***
HERCULES, INC.	***560 RAILROAD AVENUE***	***SW 1/2 - 1 (0.581 mi.)***	***3***	***18***

EXECUTIVE SUMMARY

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
HERCULES INC	***CORNER OF SAN PABLO /***	***SE 1/2 - 1 (0.845 mi.)***	***A6***	***51***
CENTEX HOMES OF CALIFORNIA	***I-80 / SYCAMORE***	***SE 1/2 - 1 (0.906 mi.)***	***7***	***67***

State- and tribal - equivalent CERCLIS

ENVIROSTOR: The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

A review of the ENVIROSTOR list, as provided by EDR, and dated 08/27/2009 has revealed that there are 5 ENVIROSTOR sites within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
BIO-RAD LABORATORIES Status: Certified	***2000 ALFRED NOBEL DRIVE***	***NE 1/4 - 1/2 (0.401 mi.)***	***1***	***7***
HERCULES, INC. Status: Certified / Operation & Maintenance	***560 RAILROAD AVENUE***	***SW 1/2 - 1 (0.581 mi.)***	***3***	***18***
GELSAR Status: Certified	***SAN PABLO AVENUE/SYCAMO***	***SE 1/2 - 1 (0.805 mi.)***	***4***	***45***
HERCULES INC Status: Certified / Operation & Maintenance	***CORNER OF SAN PABLO /***	***SE 1/2 - 1 (0.845 mi.)***	***A6***	***51***
CENTEX HOMES OF CALIFORNIA Status: Certified	***I-80 / SYCAMORE***	***SE 1/2 - 1 (0.906 mi.)***	***7***	***67***

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Hazardous waste / Contaminated Sites

HIST Cal-Sites: Formerly known as ASPIS, this database contains both known and potential hazardous substance sites. The source is the California Department of Toxic Substance Control. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

A review of the HIST Cal-Sites list, as provided by EDR, and dated 08/08/2005 has revealed that there are 4 HIST Cal-Sites sites within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
BIO-RAD LABORATORIES	HERCULES INDUSTRIAL PAR	E 1/4 - 1/2 (0.499 mi.)	2	16
HERCULES, INC.	***560 RAILROAD AVENUE***	***SW 1/2 - 1 (0.581 mi.)***	***3***	***18***
HERCULES INC	***CORNER OF SAN PABLO /***	***SE 1/2 - 1 (0.845 mi.)***	***A6***	***51***
CENTEX HOMES OF CALIFORNIA	***I-80 / SYCAMORE***	***SE 1/2 - 1 (0.906 mi.)***	***7***	***67***

EXECUTIVE SUMMARY

Other Ascertainable Records

CA BOND EXP. PLAN: Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

A review of the CA BOND EXP. PLAN list, as provided by EDR, and dated 01/01/1989 has revealed that there are 2 CA BOND EXP. PLAN sites within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
HERCULES, INC.	***560 RAILROAD AVENUE***	***SW 1/2 - 1 (0.581 mi.)***	***3***	***18***
HERCULES, INC.	CORNER OF SAN PABLO AVE	SE 1/2 - 1 (0.845 mi.)	A5	51

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped:

Site Name	Database(s)
CALTRANS HERCULES	LDS
CITY OF HERCULES	HAZNET
HERCULES WWTP	FINDS
HERCULES MIDDLE SCHOOL	FINDS
24/680 CALTRANS	SLIC
HERCULES MIDDLE SCHOOL	SCH, ENVIROSTOR

OVERVIEW MAP - 2648609.1s

Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Manufactured Gas Plants

National Priority List Sites

Dept. Defense Sites

0 1/4 1/2 1 Miles

Indian Reservations BIA

Power transmission lines

Oil & Gas pipelines

100-year flood zone

500-year flood zone

National Wetland Inventory

Areas of Concern

N

SITE NAME: Hercules ITC	CLIENT: HDR
ADDRESS: Bayfront and Sanderling Hercules CA 94547	CONTACT: Jeanette Winter
LAT/LONG: 38.0209 / 122.2844	INQUIRY #: 2648609.1s
	DATE: December 01, 2009 4:00 pm

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DETAIL MAP - 2648609.1s

0 1/16 1/8 1/4 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- Areas of Concern

SITE NAME: Hercules ITC	CLIENT: HDR
ADDRESS: Bayfront and Sanderling Hercules CA 94547	CONTACT: Jeanette Winter INQUIRY #: 2648609.1s
LAT/LONG: 38.0209 / 122.2844	DATE: December 01, 2009 4:00 pm

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MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL		1.000	0	0	0	0	NR	0
Proposed NPL		1.000	0	0	0	0	NR	0
NPL LIENS		TP	NR	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL		1.000	0	0	0	0	NR	0
Federal CERCLIS list								
CERCLIS		0.500	0	0	0	NR	NR	0
Federal CERCLIS NFRAP site List								
CERC-NFRAP		0.500	0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS		1.000	0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF		0.500	0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG		0.250	0	0	NR	NR	NR	0
RCRA-SQG		0.250	0	0	NR	NR	NR	0
RCRA-CESQG		0.250	0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
US ENG CONTROLS		0.500	0	0	0	NR	NR	0
US INST CONTROL		0.500	0	0	0	NR	NR	0
Federal ERNS list								
ERNS		TP	NR	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE		1.000	0	0	1	3	NR	4
State- and tribal - equivalent CERCLIS								
ENVIROSTOR		1.000	0	0	1	4	NR	5
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF		0.500	0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST		0.500	0	0	0	NR	NR	0
SLIC		0.500	0	0	0	NR	NR	0
INDIAN LUST		0.500	0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
State and tribal registered storage tank lists								
UST		0.250	0	0	NR	NR	NR	0
AST		0.250	0	0	NR	NR	NR	0
INDIAN UST		0.250	0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
VCP		0.500	0	0	0	NR	NR	0
INDIAN VCP		0.500	0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS		0.500	0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
ODI		0.500	0	0	0	NR	NR	0
DEBRIS REGION 9		0.500	0	0	0	NR	NR	0
WMUDS/SWAT		0.500	0	0	0	NR	NR	0
SWRCY		0.500	0	0	0	NR	NR	0
HAULERS		TP	NR	NR	NR	NR	NR	0
INDIAN ODI		0.500	0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US CDL		TP	NR	NR	NR	NR	NR	0
HIST Cal-Sites		1.000	0	0	1	3	NR	4
SCH		0.250	0	0	NR	NR	NR	0
Toxic Pits		1.000	0	0	0	0	NR	0
CDL		TP	NR	NR	NR	NR	NR	0
US HIST CDL		TP	NR	NR	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
CA FID UST		0.250	0	0	NR	NR	NR	0
HIST UST		0.250	0	0	NR	NR	NR	0
SWEEPS UST		0.250	0	0	NR	NR	NR	0
Local Land Records								
LIENS 2		TP	NR	NR	NR	NR	NR	0
LUCIS		0.500	0	0	0	NR	NR	0
LIENS		TP	NR	NR	NR	NR	NR	0
DEED		0.500	0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS		TP	NR	NR	NR	NR	NR	0
CHMIRS		TP	NR	NR	NR	NR	NR	0
LDS		TP	NR	NR	NR	NR	NR	0
MCS		TP	NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA-NonGen		0.250	0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
DOT OPS		TP	NR	NR	NR	NR	NR	0
DOD		1.000	0	0	0	0	NR	0
FUDS		1.000	0	0	0	0	NR	0
CONSENT		1.000	0	0	0	0	NR	0
ROD		1.000	0	0	0	0	NR	0
UMTRA		0.500	0	0	0	NR	NR	0
MINES		0.250	0	0	NR	NR	NR	0
TRIS		TP	NR	NR	NR	NR	NR	0
TSCA		TP	NR	NR	NR	NR	NR	0
FTTS		TP	NR	NR	NR	NR	NR	0
HIST FTTS		TP	NR	NR	NR	NR	NR	0
SSTS		TP	NR	NR	NR	NR	NR	0
ICIS		TP	NR	NR	NR	NR	NR	0
PADS		TP	NR	NR	NR	NR	NR	0
MLTS		TP	NR	NR	NR	NR	NR	0
RADINFO		TP	NR	NR	NR	NR	NR	0
FINDS		TP	NR	NR	NR	NR	NR	0
RAATS		TP	NR	NR	NR	NR	NR	0
CA BOND EXP. PLAN		1.000	0	0	0	2	NR	2
CA WDS		TP	NR	NR	NR	NR	NR	0
NPDES		TP	NR	NR	NR	NR	NR	0
Cortese		0.500	0	0	0	NR	NR	0
HIST CORTESE		0.500	0	0	0	NR	NR	0
CONTRA COSTA CO. SITE LIST		0.250	0	0	NR	NR	NR	0
Notify 65		1.000	0	0	0	0	NR	0
DRYCLEANERS		0.250	0	0	NR	NR	NR	0
WIP		0.250	0	0	NR	NR	NR	0
HAZNET		TP	NR	NR	NR	NR	NR	0
EMI		TP	NR	NR	NR	NR	NR	0
INDIAN RESERV		1.000	0	0	0	0	NR	0
SCRD DRYCLEANERS		0.500	0	0	0	NR	NR	0
PCB TRANSFORMER		TP	NR	NR	NR	NR	NR	0
EDR PROPRIETARY RECORDS								
EDR Proprietary Records								
Manufactured Gas Plants		1.000	0	0	0	0	NR	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

APPENDIX I

HITC Vehicle Emissions Analysis

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

Hercules ITC Summary Emissions

Ferry Emissions

	Pollutants (lbs/day)				
	POC	**NOx**	**CO**	**SOx**	**PM10**
Proposed Ferry Emissions	11.72	46.85	26.48	0.47	1.32

Motor Vehicle Emissions Associated with Ferry Trips

	Pollutants (lbs/day)				
	POC	**NOx**	**CO**	**SOx**	**PM10**
Proposed Emissions	0.69	1.29	13.42	0.01	0.05
Current Emissions	2.88	4.96	50.81	0.04	0.12
Net Change in Emissions	-2.19	-3.67	-37.39	-0.02	-0.07

Motor Vehicle Emissions Associated with Rail Trips

	Pollutants (lbs/day)				
	POC	**NOx**	**CO**	**SOx**	**PM10**
Proposed Emissions	0.60	1.11	11.58	0.01	0.04
Current Emissions	4.70	8.08	82.79	0.06	0.20
Net Change in Emissions	-4.10	-6.97	-71.20	-0.05	-0.16

Net Total Emission Associated with Hercules ITC

	Pollutants (lbs/day)				
	POC	**NOx**	**CO**	**SOx**	**PM10**
Net Ferry Emissions	11.72	46.85	26.48	0.47	1.32
Net MV (Ferry)	-2.19	-3.67	-37.39	-0.02	-0.07
Net MV (Rail)	-4.10	-6.97	-71.20	-0.05	-0.16
Total Net Change	5.42	36.21	-82.11	0.39	1.09
proposed	13.01	49.25	51.48	0.49	1.41
current	7.58	13.04	133.60	0.10	0.33
	5.42	36.21	-82.11	0.39	1.09

Motor Vehicle Gallons of Fuel Used

2006	9812.7						
	VMT (1000 miles)	**Gallons Gasoline (1000 gallons)**	**Gallons Diesel (1000 gallons)**	**Gasoline (gallons)**	**Diesel (gallons)**	**Total Btu**	**PMT**
LDA	85,018	3,946	11.78	277.70	0.83	32,043,358.69	
LDT1	20,917	1,152	26.79	81.09	1.89	9,571,938.94	
LDT2	33,499	1,882	3.61	132.42	0.25	15,261,632.83	
Total	139,434	6,980	42.18	491.21	2.97	**56,876,930.46**	
Btu/PMT						5,796.34	9812.566
2010	2653.3						
	VMT (1000 miles)	**Gallons Gasoline (1000 gallons)**	**Gallons Diesel (1000 gallons)**				
LDA	90,457	4,134	7.4	74.81	0.13	8,620,656.89	
LDT1	21,896	1,213	21.62	21.95	0.39	2,575,440.58	
LDT2	34,254	1,935	2.48	35.03	0.04	4,033,915.47	
Total	146,607	7,282	31.5	131.79	0.57	**15,230,012.94**	24650.01
Ferry						253,964,249.26	
Btu/PMT						10,920.66	

Conversion

	Gallon	Btu
Gasoline	1	115000
Diesel	1	130500

Note:
http://bioenergy.ornl.gov/papers/misc/energy_conv.html

From EMFAC2007

Hercules ITC
2025 Mode of Access

	Destination Mode	
Origin Mode	Ferry	Rail
Rail	0%	0%
Fery	0%	0%
Bus	15%	2%
Park and Ride	48%	59%
Kiss and Ride	5%	7%
Bike or Walk	32%	32%
	100%	100%

Rail Terminal Trip Distribution

Existing

Geographical Demand Zone	Relative Size	Total PR	Total KR	Peak PR	Peak KR	Richmond/ San Jose Rail Station to Peak PR	Distance miles	Richmond/ San Jose Rail Station to Peak KR	Distance miles	Martinez Sacramento Rail Station to Peak PR	Distance miles	Martinez Sacramento Rail Station to Peak KR	Distance miles
West Rodeo	5	20	2	20	2	4	9.8	0	9.8	16	12.6	2	12.6
East Rodeo	5	20	2	20	2	4	9.8	0	9.8	16	12.4	2	12.4
Waterfront Hercules	5	20	2	20	2	4	9.6	0	9.6	16	12.3	2	12.3
West Hercules	1	4	0	4	0	1	8.6	0	8.6	3	12.5	0	12.5
East Hercules	8	32	4	32	4	6	10.1	1	10.1	25	11.5	3	11.5
West Pinole	2	8	1	8	1	2	6.9	0	6.9	6	13.2	1	13.2
Central Pinole	2	8	1	8	1	2	6.5	0	6.5	6	14.2	1	14.2
Pinole Valley	2	8	1	8	1	2	7.3	0	7.3	6	12.7	1	12.7
S. Central Pinole	2	8	1	8	1	2	6.0	0	6.0	6	13.5	1	13.5
East Pinole	4	16	2	16	2	3	8.5	0	8.5	13	14.2	1	14.2
	36	143	16	143	16	29	9.0	3	9.0	114	12.6	13	12.6

Proposed

Geographical Demand Zone	Relative Size	Total PR	ITC Distance Miles	Total KR	ITC Distance Miles	Peak PR	ITC Distance Miles	Peak KR	ITC Distance Miles
West Rodeo	5	20	2.6	2	2.6	20	2.6	2	2.6
East Rodeo	5	20	2.7	2	2.7	20	2.7	2	2.7
Waterfront Hercules	5	20	1.2	2	1.2	20	1.2	2	1.2
West Hercules	1	4	1.9	0	1.9	4	1.9	0	1.9
East Hercules	8	32	2.5	4	2.5	32	2.5	4	2.5
West Pinole	2	8	2.1	1	2.1	8	2.1	1	2.1
Central Pinole	2	8	2.1	1	2.1	8	2.1	1	2.1
Pinole Valley	2	8	1.9	1	1.9	8	1.9	1	1.9
S. Central Pinole	2	8	2.4	1	2.4	8	2.4	1	2.4
East Pinole	4	16	3.8	2	3.8	16	3.8	2	3.8
	36	143	2.4	16	2.4	143	2.4	16	2.4

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

Ferry Terminal Trip Distribution

Existing

Geographical Demand Zone	Relative Size	Total PR	Total KR	Peak PR	Peak KR	SF to Peak PR	SF Distance miles	BART to Peak PR	BART Distance miles	SF to Peak KR	SF Distance miles	BART to Peak KR	BART Distance miles	HTC to Peak PR	HTC Distance miles	HTC to Peak KR	HTC Distance miles
West Rodeo	5	37	4	18	2	3	25.5	3	9.8	0	25.5	0	9.8	13	1.6	2	1.6
East Rodeo	5	37	4	18	2	3	25.4	3	9.8	0	25.4	0	9.8	13	1.8	2	1.8
Waterfront Hercules	5	37	4	18	2	3	25.0	3	9.6	0	25.0	0	9.6	13	1.2	2	1.2
West Hercules	1	7	1	4	0	1	24.2	1	8.6	0	24.2	0	8.6	3	1.4	0	1.4
East Hercules	8	59	7	30	3	4	25.7	4	10.1	0	25.7	0	10.1	21	1.5	2	1.5
West Pinole	2	15	2	7	1	1	22.5	1	6.9	0	22.5	0	6.9	5	2.0	1	2.0
Central Pinole	2	15	2	7	1	1	22.1	1	6.5	0	22.1	0	6.5	5	2.0	1	2.0
Pinole Valley	2	15	2	7	1	1	23.0	1	7.3	0	23.0	0	7.3	5	1.6	1	1.6
S. Central Pinole	2	15	2	7	1	1	22.9	1	6.0	0	22.9	0	6.0	5	2.3	1	2.3
East Pinole	4	30	3	15	2	2	24.2	2	8.5	0	24.2	0	8.5	10	3.7	1	3.7
	36	266	30	133	15	20	24.6	20	9.0	2	24.6	2	9.0	93	1.9	11	1.9

Proposed

Geographical Demand Zone	Relative Size	Total PR	ITC Distance miles	Total KR	ITC Distance miles	Peak PR	ITC Distance miles	Peak KR	ITC Distance miles
West Rodeo	5	37	2.6	4	2.6	18	2.6	2	2.6
East Rodeo	5	37	2.7	4	2.7	18	2.7	2	2.7
Waterfront Hercules	5	37	1.2	4	1.2	18	1.2	2	1.2
West Hercules	1	7	1.9	1	1.9	4	1.9	0	1.9
East Hercules	8	59	2.5	7	2.5	30	2.5	3	2.5
West Pinole	2	15	2.1	2	2.1	7	2.1	1	2.1
Central Pinole	2	15	2.1	2	2.1	7	2.1	1	2.1
Pinole Valley	2	15	1.9	2	1.9	7	1.9	1	1.9
S. Central Pinole	2	15	2.4	2	2.4	7	2.4	1	2.4
East Pinole	4	30	3.8	3	3.8	15	3.8	2	3.8
	36	266	2.4	30	2.4	133	2.4	15	2.4

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

Current Trips

			POC	NOx	CO	SOx	PM10
Emission Factor		g/mi	0.351	0.603	6.176	0.005	0.015
	New Destination	VMT/day					
Hercules to SF	Ferry	2,168.5	1.68	2.88	29.52	0.02	0.07
Hercules to HTC	Ferry	774.2	0.60	1.03	10.54	0.01	0.03
Hercules to BART	Ferry	789.1	0.61	1.05	10.74	0.01	0.03
Hercules to Martinez/Sacramento	Rail	5,158.7	3.99	6.85	70.23	0.05	0.17
Hercules to Richmond/San Jose	Rail	922.2	0.71	1.23	12.55	0.01	0.03
Total		9,812.6	7.58	13.04	133.60	0.10	0.33

2006 EMFAC2007 Results
San Francisco Bay Area Air Basin Simple Average

Reactive Organic Compounds

		Light-Duty Autos	Light Duty Trucks 1	Light-Duty Trucks 2	Light-Duty Trucks	Light-Duty Autos and Trucks
VMT	1000 mi/day	85018	20917	33498	54415	139433
ROC	tons/day	32.410	11.042	10.432	21.474	53.884
	g/mi	0.35	0.48	0.28	0.36	0.35

Oxides of Nitrogen

		Light-Duty Autos	Light Duty Trucks 1	Light-Duty Trucks 2	Light-Duty Trucks	Light-Duty Autos and Trucks
VMT	1000 mi/day	85018	20917	33498	54415	139433
NOx	tons/day	46.971	18.639	27.005	45.644	92.615
	g/mi	0.50	0.81	0.73	0.76	0.60

Carbon Monoxide

		Light-Duty Autos	Light Duty Trucks 1	Light-Duty Trucks 2	Light-Duty Trucks	Light-Duty Autos and Trucks
VMT	1000 mi/day	85018	20917	33498	54415	139433
CO	tons/day	536.792	206.498	205.880	412.378	949.170
	g/mi	5.73	8.96	5.58	6.88	6.18

Sulfur Dioxide

		Light-Duty Autos	Light Duty Trucks 1	Light-Duty Trucks 2	Light-Duty Trucks	Light-Duty Autos and Trucks
VMT	1000 mi/day	85018	20917	33498	54415	139433
SOx	tons/day	0.382	0.135	0.18	0.315	0.697
	g/mi	0.00	0.01	0.00	0.01	0.005

Particultate Matter

		Light-Duty Autos	Light Duty Trucks 1	Light-Duty Trucks 2	Light-Duty Trucks	Light-Duty Autos and Trucks
VMT	1000 mi/day	85018	20917	33498	54415	139433
PM10	tons/day	1.129	0.377	0.829	1.206	2.335
	g/mi	0.012	0.02	0.02	0.02	0.02

Hercules Intermodal Transit Center
Existing Trips Diverted to Ferries

Peak Hour

% Hercules Transit Center	Hercules Transit Center Trips	% Hercules to San Franscisco	Hercules to San Franscisco Trips	% Richmond and El Cerrito del Norte BART	Richmond and El Cerrito del Norte BART Trips	Total Trips
70%	197	15%	42	15%	42	281

Daily

% Hercules Transit Center	Hercules Transit Center Trips	% Hercules to San Franscisco	Hercules to San Franscisco Trips	% Richmond and El Cerrito del Norte BART	Richmond and El Cerrito del Norte BART Trips	Total Trips
70%	786	15%	169	15%	169	1124

Hercules Intermodal Transit Center
Existing Trips Diverted to Rail

Peak Hour

% Martinez Rail Station	Martinez Rail Station Trips	% Richmond Rail Station	Richmond Rail Station Trips	Total Trips
80%	193	20%	48	241

Daily

% Hercules Transit Center	Hercules Transit Center Trips	% Richmond Rail Station	Richmond Rail Station Trips	Total Trips
80%	619	20%	155	774

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

Proposed Trips

			POC	NOx	CO	SOx	PM10
Emission Factor		g/mi	0.220	0.410	4.274	0.004	0.016
	Destination	VMT/day					
Hercules to ITC	Ferry	1,424.1	0.69	1.29	13.42	0.01	0.05
Hercules to ITC	Rail	1,229.2	0.60	1.11	11.58	0.01	0.04
Total		2,653.3	1.29	2.40	25.00	0.02	0.10

2010 EMFAC2007 Results
San Francisco Bay Area Air Basin Simple Average

Reactive Organic Compounds

		Light-Duty Autos	Light Duty Trucks 1	Light-Duty Trucks 2	Light-Duty Trucks	Light-Duty Autos and Trucks
VMT	1000 mi/day	90457	21896	34254	56150	146607
ROC	tons/day	20.184	7.663	7.675	15.338	35.522
	g/mi	0.20	0.32	0.20	0.25	0.22

Oxides of Nitrogen

		Light-Duty Autos	Light Duty Trucks 1	Light-Duty Trucks 2	Light-Duty Trucks	Light-Duty Autos and Trucks
VMT	1000 mi/day	90457	21896	34254	56150	146607
NOx	tons/day	31.853	13.833	20.496	34.329	66.182
	g/mi	0.32	0.57	0.54	0.55	0.41

Carbon Monoxide

		Light-Duty Autos	Light Duty Trucks 1	Light-Duty Trucks 2	Light-Duty Trucks	Light-Duty Autos and Trucks
VMT	1000 mi/day	90457	21896	34254	56150	146607
CO	tons/day	371.150	155.034	164.579	319.613	690.763
	g/mi	3.72	6.42	4.36	5.16	4.27

Sulfur Dioxide

		Light-Duty Autos	Light Duty Trucks 1	Light-Duty Trucks 2	Light-Duty Trucks	Light-Duty Autos and Trucks
VMT	1000 mi/day	90457	21896	34254	56150	146607
SOx	tons/day	0.388	0.116	0.181	0.297	0.685
	g/mi	0.00	0.00	0.00	0.00	0.004

Particultate Matter

		Light-Duty Autos	Light Duty Trucks 1	Light-Duty Trucks 2	Light-Duty Trucks	Light-Duty Autos and Trucks
VMT	1000 mi/day	90457	21896	34254	56150	146607
PM10	tons/day	1.225	0.409	1.020	1.429	2.654
	g/mi	0.012	0.02	0.03	0.02	0.02

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

Peak Hour

	Peak Hour Ridership	% Transit Access	Transit Trips	% Pedestrian or Bicycle Access	Pedestrian or Bicycle Trips	% Park and Ride Access	Park and Ride Trips	Park and Ride Vehicles	% Kiss and Ride Access	Kiss and Ride Trips	Total Trips
Ferry	281	15%	42	32%	90	48%	134	85	5%	15	281
Rail	241	2%	5	32%	77	59%	143	143	7%	16	241

Daily

	Peak Hour Ridership	% Transit Access	Transit Trips	% Pedestrian or Bicycle Access	Pedestrian or Bicycle Trips	% Park and Ride Access	Park and Ride Trips	Park and Ride Vehicles	% Kiss and Ride Access	Kiss and Ride Trips	Total Trips
Ferry	1124	15%	169	32%	360	48%	539	343	5%	57	1124
Rail	964	2%	19	32%	308	59%	569	569	7%	67	964

APPENDIX J

Conceptual Restoration Plan

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

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Conceptual Restoration Plan

Chelsea Wetland Restoration Project

12 June 2009

Prepared for:

City of Hercules
111 Civic Drive
Hercules, CA 94547

Project No. 1136

Conceptual Restoration Plan
Chelsea Wetland Restoration Project

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CONCEPTUAL RESTORATION PLAN

1.0 Introduction

The City of Hercules (the City) is proposing the restoration of tidal marsh habitat on the Chelsea parcel. The restoration site is a vacant 11-acre lot adjacent to Pinole Creek in the City of Hercules, Contra Costa County, California (Figure 1) that historically supported tidal marsh habitat. A large portion of the site was filled approximately 100 years ago during the rapid urbanization of the Hercules/Pinole area. The site currently supports annual grasslands, a small tidal drainage channel with adjacent pockets of tidal marsh, and a few small, scattered seasonal wetlands. We will accomplish the restoration by excavating the fill deposited on the site to appropriate marsh elevations and by reintroducing the tides through improved culverts connecting to Pinole Creek. We will incorporate into the design an existing marsh-upland transitional area on the site to enhance this important ecotone. The project will complement and enhance other local ecosystem restoration efforts as it will be adjacent and hydrologically connected to the planned Pinole Creek Greenway Demonstration Project (Pinole Creek Project), a pilot scale effort to enhance flood conveyance and ecosystem function in Pinole Creek. The project will also provide off-channel flood storage for lower Pinole Creek.

The project goals include:

1. Restore onsite tidal marsh habitats to reflect historic conditions
2. Provide flood storage benefits to the cities of Pinole and Hercules
3. Provide passive recreational opportunities along the existing San Francisco Bay Trail

Wetlands and Water Resources, Inc. (WWR) has prepared this Conceptual Restoration Plan for the Chelsea Wetlands in collaboration with the City of Hercules and the Contra Costa County Flood Control District (the District). This plan includes the following elements:

- Site Description (Section 2)
- Conceptual Restoration Plan (Section 3)
- Project Maintenance and Monitoring (Section 4)

2.0 Site Description

This section describes historic and current conditions on the project site and in the immediate vicinity that are pertinent to developing the restoration design.

2.1 Land Ownership

The project site is comprised of three land parcels owned by different entities (Figure 2). The main "Chelsea parcel" (7.5 acres), owned by the City of Hercules, is the largest parcel. PG&E owns a small parcel (0.4 acres) situated between the City's parcel and Pinole Creek. These two parcels are collectively referred to as the "Chelsea parcel" in this document as this is where the bulk of the new

Chelsea Wetlands will be created. The third parcel, which runs along the southern boundary of the project site, is owned by the adjacent Chelsea by the Bay Homeowners Association (HOA) (3.1 acres). The City of Hercules is the project lead, while the other two property owners will be either co-applicants or provide easements.

2.2 Current and Historic Land Uses

The project site was at one time part of a large complex of tidal marshes and mudflats that fringed San Pablo Bay and provided essential habitat for a wide range of animals, birds, and plants. Beginning in the mid 19th century, many of these low-lying areas around the Bay were diked, drained, and filled to support agriculture and urban development, resulting in the loss of approximately 82% of the North Bay's historic tidal wetlands (Goals report 1999). The loss of habitat directly translated into reductions in native wildlife populations. Without the habitats they need to sustain themselves, many birds, animals, and plants have become threatened or endangered.

While the exact time that the Chelsea parcel was filled is unknown, we presume that it happened sometime in the late 19th/early 20th century based on historical aerial photograph review (ENGEO 2008a) and conversations with local historians and City officials. The Phase 1 Environmental Assessment for the project site indicates that the site supported sparse commercial and residential development from at least the 1930s through the 1960s. However, there are no Records of Environmental Consideration (RECs) listed for the site in any local, state, tribal, or federal databases (ENGEO 2008a).

The Chelsea parcel is currently zoned as open space and supports annual grasslands and small, scattered seasonal wetlands. The adjacent HOA parcel appears not to have been filled and still supports tidal salt marsh, seasonal wetlands, and annual grasslands. A small channel connected to Pinole Creek runs along the southern project boundary. The areas surrounding the project site were slowly developed over time and the site is now bordered by housing developments to the south and east, the Amtrak/Union Pacific Railroad to the north, and the Pinole Creek flood control channel to the west (Figure 2).

2.3 Surrounding Land Uses and Habitats

The land uses and habitat features surrounding the project site are displayed in Figure 2. Residential development occurs to the south and east of the project site. The Chelsea by the Bay subdivision, which borders the project site to the south, was constructed in the late 1980s. The residential area to the east of the project site, on the east side of Santa Fe Avenue has been slowly developed over the past 100 years.

Pinole Creek runs west of the project site and is separated from the site by a paved and gravel walkway/access road. The portion of Pinole Creek bordering the project site is located approximately 800 feet upstream from San Pablo Bay, making it tidally influenced. Several beds of California cordgrass (*Spartina foliosa*) occur near the mouth of Pinole Creek, while other portions of the creek are dominated by Alkali bulrush (*Bolboschoenus maritimus*). Both vegetation types are classified as coastal brackish marsh.

A large tidal marsh, which is a part of the East Bay Regional Park District's San Pablo Bay Regional Shoreline Park, is located approximately 140 feet to the northwest of the project site. The tidal marsh is separated from the site by a constructed berm (containing the San Francisco Bay Trail), a row of planted eucalyptus trees, Railroad Avenue (now closed to vehicles), and the Amtrak railroad right-of way (containing railroad tracks and areas of compacted dirt and gravel). The tidal marsh is dominated by pickleweed (*Sarcocornia pacifica*), but contains other tidal marsh species including fleshy jaumea (*Jaumea carnosa*) and marsh gumplant (*Grindelia stricta* var. *angustifolia*).

A freshwater marsh is located to the southeast of the project site. The marsh is generally choked with cattails (*Typha* spp.) with no large open water areas visible. Willows (*Salix* spp.) occur in locations throughout the marsh, as well as dense stands of Himalayan blackberry (*Rubus discolor*). The tidal channel traversing the southern project site boundary continues into and terminates within the freshwater marsh. Upon entering the marsh, vegetation within the channel (primarily cattails) becomes dense and open water areas are limited. A small drainage channel and two ponds occur east and upslope of the freshwater marsh and connect to the marsh via a culvert under Santa Fe Avenue. This channel is completely choked with cattails and willows while the ponds contain open aquatic habitat and are generally surrounded by cattails.

2.4 Project Site Conditions

This section describes the existing conditions on the project site in terms of topography, soils, hydrology, biological resources, jurisdictional areas, and structures/utilities. Representative site photographs can be found in Appendix A.

2.4.1 Topography

Topographic data of the project site and the surrounding area were collected by Moran Engineering and HJW in June 2007 to support the development of the Pinole Creek Project. WWR collected additional focused topographic data on the project site in October of 2007 to supplement the Moran Engineering dataset. All elevation data were referenced to the North American Vertical Datum of 1988 (NAVD8888). Figure 3 shows the digital elevation model (DEM) of the project site.

Much of the Chelsea parcel has elevations from 8 to 10 ft with some depressional areas being as low as 7 ft. These elevations are well above mean higher-high water (MHHW), which is 6.4 ft (see section 2.4.3, Hydrology, below). The HOA parcel has elevations ranging from 6 ft adjacent to the on-site channel to 10 ft at the upland margins, indicating that some areas receive occasional spillover water from the tidal channel.

The project site is surrounded by berms on all four sides, essentially forming a basin (Figure 4). The southern berm is created by the Chelsea by the Bay housing development, the eastern berm is formed by Santa Fe Avenue, the northern berm is created by the Bay Trail, and the western berm forms the District maintenance road along Pinole Creek. This road is relatively low (9.5 to 10 ft) and is occasionally overtopped by Pinole Creek during extreme flood events.

2.4.2 Geology and Soils

ENGEO Inc. performed a preliminary geotechnical assessment of the project site in September 2007 (ENGEO 2008b). The information contained in this section comes from that report.

The project site is located in the Coast Ranges geomorphic province of California, a region characterized by a series of parallel, northwesterly trending, folded, and faulted mountain ranges and valleys. The site geology is primarily undivided Quarternary deposits. The USDA soil survey of Contra Costa County indicates that the site is underlain entirely by Clear Lake Clay (bay mud) (Figure 5), a substrate highly suitable for wetland creation.

ENGEO conducted a field exploration of site soil conditions on September 25, 2007. Five hand auger borings were drilled to a depth of approximately five feet below ground surface (bgs). The locations of the borings are shown in Figure 6. The soil characteristics were logged to describe subsurface conditions and samples were collected for geotechnical and environmental testing.

Subsurface Conditions

A majority of the Chelsea Parcel (borings B1, B3, and B5) is characterized by a layer of fill extending to depths ranging from three to five feet bgs. The fill consists of silty clay material with various amounts of claystone or siltstone fragments. Underneath this upper layer of fill exists a layer of highly expansive native clay, representing the natural bay mud deposits. Borings B2 and B4, which were taken in the marsh/upland transitional parcel and the small channel that traverses the Chelsea Parcel, indicate that this natural Bay Mud layer exists directly below the surface in these areas.

Environmental Testing

Laboratory tests were performed on a composite sample of the five discrete soil samples. The sample was analyzed for the following substances:

- Petroleum hydrocarbons
- Organochlorine pesticides
- Volatile organic compounds
- Semi-volatile organic compounds
- Nitrosamines
- CAM-17 metals
- CAM-17 metals soluble threshold limit concentration

The results were compared to respective California Human Health Screening Levels (CHHSLs) developed by the California EPA and the Environmental Screening Levels (ESLs) developed by the San Francisco Bay Regional Water Quality Control Board (SFRWQCB). None of the detected target analyte concentrations exceeded respective CHHSLs and ESLs for a residential land use scenario, the most conservative soil re-use scenario. Based on these data, the on-site soil is suitable to be off-hauled for unrestricted use.

2.4.3 Hydrology

The lower reach of Pinole Creek is essentially a tidal slough that connects to San Pablo Bay approximately 800 ft downstream of the project site. Environmental Data Solutions (EDS) determined the tidal datums on Pinole Creek for the Pinole Creek Project in June of 2007. These tidal datums are listed in Table 1.

The site has a limited tidal connection to Pinole Creek through a 3-ft culvert under the District maintenance road. The culvert invert is at 2.6 ft, which is 2.2 ft above mean lower low water (MLLW), indicating the site only receives water during the higher portions of the tidal cycle. This culvert connects to the small channel which traverses the southeastern boundary of the project site and terminates in the adjacent freshwater marsh (Figure 7). The range of normal tidal influence only extends to the first 1,300 ft of the channel, short of the freshwater marsh. Due to the presence of perennial surface water and shallow ground water, it is assumed that this freshwater marsh is fed primarily by groundwater. At the upstream end of the channel, another 3-ft culvert provides stormwater input from the housing development on the east side of Santa Fe Avenue. This input of freshwater is highly variable and is only appreciable in the winter.

As described in Section 2.4.1, Topography, most of the Chelsea parcel is out of the range of the tides and hence does not receive water from the on-site channel. There are few isolated areas that may be low enough to receive occasional spillover from the channel during extreme high tides and storm events. Several areas in the HOA parcel are low enough to receive spillover from the channel during these high-water events. These areas on the project site support pickleweed wetlands which are discussed below in Section 2.4.4, Biological Resources.

Along the base of the Bay Trail berm on the northern side of the project area there is a small 2-ft culvert that drains a portion of Railroad Avenue, on the northern side of the Bay Trail berm. This culvert is damaged and provides limited seasonal freshwater input to the largest wetland on the Chelsea parcel (see section 2.4.5, Jurisdictional Areas, below).

During storm events, the water in Pinole Creek occasionally reaches high enough elevations to overtop the District road and flood the project site. Images taken during the January 1, 2006 storm illustrate this phenomenon (see Appendix A, Site Photographs).

2.4.4 Biological Resources

WWR evaluated the project site biological conditions in the winter of 2008 and presented the results in the Biological Evaluation Report (WWR 2008a). The information in this section is summarized from that document.

Plant Communities

Four plant communities occur on the project site, including annual grassland (the dominant cover), pickleweed wetland, salt-alkali marsh, brackish bulrush-cattail wetland, and annual grassland. These plant communities are classified based on the CNDDB *Vegetation Classification and Mapping Program* (CDFG 2003). The locations of these plant communities are displayed in Figure 8. Of these habitat types, pickleweed wetlands and brackish bulrush-cattail wetland are considered sensitive plant communities by the California Department of Fish and Game (CDFG).

Annual grasslands (9.078 ac) cover the majority of the project site. Non-native grasses, including wild oats (*Avena* sp.) and beardless wildrye (*Leymus triticoides*), are abundant on the site. Other dominant herbaceous vegetation includes spreading hedgeparseley (*Torilis arvensis*) garden vetch (*Vicia sativa*), ripgut brome (*Bromus diandrus*), and cutleaf geranium (*Geranium dissectum*). Large stands of field mustard (*Brassia rapa*) and scattered patches of curly dock (*Rumex crispus*), Harding grass(*Phalaris aquatica*), and salt grass(*Distichlis spicata*) occur within the grassland. A stand of coyote brush (*Baccharis pilularis*) occurs in the western corner of the project site. This native shrub quickly establishes in disturbed areas. A stand of coyote brush, intermixed with Himalayan blackberry (*Rubus discolor*), also occurs in the southeast corner of the site. Approximately ten non-native palm trees occur along the eastern site boundary. The southern site boundary contains a row of moderate-sized non-native pine (*Pinus* spp.) and eucalyptus trees, which were likely planted as a wind/visual barrier for the adjacent development.

There are isolated pockets of freshwater seasonal wetlands (0.436 ac) scattered throughout the annual grassland where rainwater accumulates in topographic depressions. These areas are discussed in more detail below under Section 2.4.5, Jurisdictional Areas.

Pickleweed wetlands (0.855 ac) are dominated by pickleweed and occur in low-lying portions of the site. These areas pond water following rain events and likely have remnant soil salinities, which favor the establishment of salt-tolerant vegetation. Some of the lower-elevation areas on the HOA parcel also receive occasional spillover of brackish water from the channel during extreme high tides and storm events.

Salt-alkali marsh (0.377 ac) habitat is found in the first 1,000 ft of the tidal channel traversing the southern project boundary (starting from the culvert on Pinole Creek). California cordgrass and alkali bullrush occur within lower portions of the channel, transitioning into a matrix of pickleweed, saltgrass, and marsh gumplant. Plant species bordering the channel include Harding grass, wild radish (*Raphanus raphanistrum*), and various non-native annual grasses.

Brackish bulrush-cattail wetland (0.084 ac) occurs in the tidal channel above the first 1,000 ft. The vegetation in the channel is dominated by cattails and California bulrush *(Schoenoplectus californicus*) and transitions into a matrix of more salt-tolerant species at higher elevations (saltgrass, pickleweed, marsh gumplant). This transition to salt tolerant species is likely due to intrusion of brackish water during storm events and remnant soil salinity.

Special Status Species

Due to the disturbed nature of the project site and the fact that no special status plant species have been noted on any of the many site visits, it is assumed that the project site does not currently support any special status plants. There are, however, many special status wildlife species that could potentially occur on the site. Review of the California Natural Diversity Database (CNDDB) and knowledge of the project region identified 18 special-status wildlife species (including mammal, amphibian, reptile, bird, and fish species) that could potentially occur on the project site. These species, along with their potential use of the project site, are listed in Table 2. Most species have a low likelihood of occurrence due to the presence of marginal or poor habitat conditions. The species with the greatest likelihood of occurring on site include **Cooper's hawk** (*Accipiter cooperi)*, **white-tailed kite** (*Elanus leucurus)*, **saltmarsh common yellowthroat** (*Geothlypis trichas sinuosa)*, and **osprey** (*Pandion haliaetu*).

2.4.5 Jurisdictional Areas

WWR performed a wetland delineation in March of 2008 to identify areas potentially falling under the jurisdiction of the U.S. Army Corps of Engineers (Corps), BCDC, or CDFG. The results of this effort are presented in the Potential Jurisdictional Determination Report (WWR 2008b). The following information in this section comes directly from that report. The location of all

jurisdictional waters on the site can be found in Figure 9. The Corps verified wetland delineation map and concurrence letter can be found in Appendix B.

There are **1.752 acres** of wetlands on the project site, which are subject to Corps jurisdiction under Section 404 of the Federal Clean Water Act. These wetlands fall into three general categories: brackish/salt marsh, brackish/salt marsh with tidal channel, and freshwater seasonal wetlands. The brackish/salt marshes (**0.855 ac**) consist of the pickleweed wetlands; the brackish marsh with tidal channel (**0.461 ac**) consists of the salt-alkali marsh and brackish bulrush cattail wetlands found in and along the tidal drainage channel. The freshwater seasonal wetlands (**0.436 ac**) mainly occur in isolated depressions that are fed primarily by rainwater. In addition, a **0.150** ac area of the brackish/salt marsh with tidal channel is subject to Corps jurisdiction under Section 10 of the Rivers and Harbors act as it falls below MHW.

Pinole Creek in the vicinity of the project site supports coastal brackish marsh vegetation along the channel margins. The creek channel and adjacent marsh areas fall under Section 10 and/or Section 404 Corps jurisdiction depending on elevation. The Pinole Creek channel may also be subject to regulation by the CDFG as a "stream" under Section 1602 of the California Fish and Game Code. A stream is defined under these regulations as a body of water that flows at least periodically or intermittently through a bed or channel having banks, and that supports fish or other aquatic life. CDFG jurisdiction extends to the edge of riparian vegetation associated with a creek. However, the fully tidal nature of Pinole Creek in the vicinity of the project site is expected to make the channel and adjacent banks not subject to CDFG jurisdiction.

2.4.6 Structures and Utilities

There are relatively few engineered structures and utilities on the project site. As described in Section 2.4.3, Hydrology, there are three culverts that connect to the site. There is also a fourth culvert that exists along the alignment of the tidal drainage channel (Figure 7). This culvert was presumably installed to provide a channel crossing point in this area for maintenance activities on the HOA parcel. There are two visible concrete foundations on the property that supported structures in the past (Figure 8). The larger of the two foundations is a 2,075 square foot concrete pad, approximately eight inches thick, near the southwest corner of the site, adjacent to the tidal drainage channel. The second foundation is rectangular concrete footer wall that is partially buried by the adjacent Bay Trail berm. The wall is flush with the ground and barely visible. A six-inch sewage force main crosses the project site along the boundary between PG&E and City parcels. The pipe is buried approximately one to two feet below the ground surface.

2.5 Project Site Constraints

The project site has only four major constraints, all of which are easily dealt with:

1) Protect adjacent residential areas from flooding
2) Maintain access to the District road on Pinole Creek
3) Protect sewage force main on the property
4) Maintain or reduce current mosquito production levels

2.5.1 Protect Adjacent Residential Areas from Flooding

As described earlier, the project site is bordered by residential areas on two sides. It is essential that the construction of the project does not increase the flooding risk to these communities.

2.5.2 Maintain Access to the District Road along Pinole Creek

The District maintenance road runs between Pinole Creek and the project site. Restoration activities on the project site must not conflict with the District's ability to continue to use this road during dry weather conditions.

2.5.3 Protect Sewage Force Main on the Property

As described above in Section 2.4.6, a six-inch sewage force main runs along the border of the PG&E and City parcels, buried approximately one to two feet below the ground surface (Figure 2). The project design must accommodate this pipe.

2.5.4 Maintain or Reduce Current Mosquito Production Levels

The project site in its current condition supports the production of significant quantities of mosquitoes, requiring regular treatment from the Contra Costa County Mosquito and Vector Control District. Since the project site is bordered by residential developments, it is essential that the restoration activities not increase mosquito production over current levels.

3.0 Conceptual Restoration Plan

This section describes the goals of the Chelsea Wetland Restoration Project and presents the design details of the conceptual restoration plan.

3.1 Project Goals

This project has three primary goals:

1. Restore tidal marsh habitat
2. Enhance flood storage on lower Pinole Creek
3. Provide recreational opportunities along the existing Bay Trail

These goals are discussed in more detail below.

3.1.1 Restore Tidal Marsh Habitat

The overarching goal of the Chelsea Wetlands Restoration Project is to restore tidal marsh, a once-common ecotone between bottomland tidal floodplain communities and riparian corridors. Throughout the San Francisco Estuary, historic efforts to control and straighten stream corridors in both urban and rural areas has cut off many of these corridors from their floodplains. This region-wide loss caused the populations of many wildlife species dependent on such habitats to plummet. Restoring tidal marsh to the Chelsea parcel will provide important reproductive and non-reproductive habitat for a wide range of resident and migratory wildlife, including wading and passerine birds, waterfowl, small mammals, reptiles, amphibians, and fish. Several special-status species will benefit from the restoration project. These species are listed in Table 3. The project will restore multiple physical and biological dynamics associated with variable estuarine conditions and winter storm flows, with an emphasis on restoring an aquatic-terrestrial food web that ultimately is capable of enhancing the populations of all local wildlife, whether or not they use the restored habitat directly.

The project will restore/enhance the following amounts of habitat:

- 5.2 acres of new tidal salt marsh
- 0.7 acres of new tidal channel (~1,400 linear ft)
- 0.05 acres of existing tidal channel (~400 linear ft)
- 1.1 to 1.8 acres of new marsh-upland transition (depending on alternatives)
- 2.1 acres of existing marsh-upland transition (consisting of tidal marsh, seasonal wetlands, and upland habitats)

3.1.2 Enhance Flood Storage on Lower Pinole Creek

Pinole Creek was modified in 1964 by the District and the U.S. Army Corps of Engineers (Corps) to provide flood conveyance for runoff expected from a 50-year recurrence interval (RI) storm event. During the last 43 years, as much as 4 feet of sediment have deposited in areas of the channel and development and other land use changes in the watershed have increased runoff so that the creek now provides protection against a storm of only a 15-year RI in the vicinity of the project site. The Union Pacific railroad bridge immediately downstream of the project site also serves as a constriction that prevents effective flood conveyance. Due to the nature of development in the watershed, it is difficult to enlarge the channel to increase capacity and, aside from the vacant Chelsea property, there is little room for off-channel flood storage. Because of these conditions, flooding is a constant threat to the surrounding community. On New Year's Day 2006, properties along lower Pinole Creek incurred flood damage when the creek overtopped its banks.

The Chelsea Wetland Project is located immediately north of and adjacent to Pinole Creek and will provide flood attenuation benefits to the Pinole Creek watershed by serving as an offline detention

basin. Elements are incorporated into the project design to improve the transfer of flood waters from the creek into the newly created wetlands on the Chelsea parcel (see Section 3.2, Restoration Design, below). Depending on the final design specifications, the Chelsea Wetlands will provide a minimum of 18.7 acre-feet of flood storage. Under current conditions, the Chelsea property offers only 7.4 acre-feet of off-channel storage.

3.1.3 Provide Recreational Opportunities along the Existing Bay Trail

Approximately 1,200 linear feet of the San Francisco Bay Trail run along the Project site. As tidal marsh is relatively scarce along the Bay Trail in this area of Contra Costa County, the Project will provide valuable nature/wildlife viewing opportunities. With future developments planned in the area, including the Hercules Multimodal Transit Center to the northeast, usage of the Bay Trail in the project vicinity is expected to increase. To enhance passive recreation opportunities on the Bay Trail, the Project will add interpretive signage in various locations along the newly created wetlands. These signs will describe tidal marsh ecology, the restoration process, and how the wetlands integrate into the Pinole Creek watershed. In addition, the project also includes the creation of two turnouts on the bay trail, which will provide wildlife viewing platforms.

3.2 Restoration Design

The features of the proposed restoration design are shown in Figure 10. The design includes the following elements:

1. Excavate new tidal marsh and tidal channel complex
2. Improve tidal and flood overflow connections with Pinole Creek
3. Create habitat transition berms around project perimeter
4. Integrate existing marsh-upland transitional area
5. Build flood walls in low points around project perimeter
6. Add passive recreational Bay Trail improvements

These design elements are described in detail below.

3.2.1 Excavate New Tidal Marsh and Tidal Channel Complex

The project will begin with the excavation of a new tidal marsh plain on the Chelsea parcel. We will remove approximately 50,000 cubic yards of fill to bring the ground surface down to appropriate elevations for restoring tidal marsh (Figure 11). The soils at the excavation depth are primarily native bay mud, and should therefore support the establishment of tidal marsh vegetation. We will construct a large tidal channel through the center of the site to bring in water from Pinole Creek. The channel will have a top width of 20 ft and will be approximately 4 ft deep. We will grade the marsh to drain toward this new channel. We will grade the marsh perimeter to 5.5ft NAVD88 and it will slope toward the channel banks, which will be at 5.0 ft NAVD88. These elevations will make the new marsh plain approximately 0.5-1 ft below MHW. This design will allow the new marsh plain to

be regularly inundated during the tidal cycle, which will help to condition the soils and bring in seeds to promote vegetation establishment. As vegetation becomes established, rates of sedimentation will increase and the marsh plain will begin to seek its own elevation equilibrium. This self design process will eliminate the need to plant the marsh plain and will reduce initial maintenance costs of the project. In addition, the first 1,000 ft of the existing on-site tidal channel will be filled in and graded to marsh plain elevations.

3.2.2 Improve Tidal and Flood Overflow Connections with Pinole Creek

Currently, the project site is connected to Pinole Creek through a 3 ft culvert under the District maintenance road. We will replace this culvert with twin 5-ft culverts that will provide sufficient cross sectional area to allow full tidal exchange between Pinole Creek and the property (Figure 12). We will position the culvert inverts at 1 ft NAVD88 to capture the full tidal range in Pinole Creek. The creek-side face of the culvert array will be sloped to follow the contour of the bank so that there is minimal obstruction to creek flow. These culverts will spill directly into the newly created tidal channel which will distribute the tidal water throughout the wetlands.

To provide flood overflow connection with Pinole Creek, we will lower a 100 ft section of the District maintenance road that borders the project site by approximately 1 ft, creating a weir (Figure 12). Under normal conditions, water will enter and exit the wetland via the new culvert array. However, during flood events when water levels rise drastically above normal, water from Pinole Creek will spill over this weir and into the wetlands. When flood waters recede, the excess water will drain from the wetlands over the weir and out through the culverts. We will pave the weir and will reinforce the slopes on the creek and wetland sides with rip-rap to prevent erosion to the road.

Under this restoration design design, the Chelsea Wetlands will provide a minimum of 18.7 acre-feet of flood storage. Under current conditions, the Chelsea property offers 7.4 acre-feet of off-channel storage and since there is currently no weir installed in the roadway, the water must crest the road surface before it spills into the Chelsea parcel. The added storage and lower overflow elevation will improve the flood protection provided to the cities of Hercules and Pinole.

The potential benefits of the Chelsea Wetlands on Pinole Creek flood conveyance were modeled using HEC-RAS (version 4) in the unsteady-state flow analysis. Input hydrographs for the 100-yr 12-hour storm and the 10-yr 6-hour storms were developed from a HEC-HMS hydrology model provided by the District. The input hydrographs show peak flows of approximately 4,100 cfs and 2,200 cfs for the 100-yr and 10-yr hydrographs, respectively. The model was run for the creek channel under existing conditions (pre-Pinole Creek Project). The flood modeling results show a substantial projected flood control benefit from the proposed Chelsea Wetlands project over existing conditions. Even modeled against a high tide downstream boundary condition, water surface elevations under the peak flow condition of the hydrograph were reduced by 1.2 feet for the

10-yr 6-hour flood flow condition and by up to 2 feet for the 100-year 12-hour storm condition. The proposed project provides a demonstrable reduction in water surface elevation over existing conditions.

3.2.3 Create Habitat Transition Berms around Project Perimeter

Much of the perimeter of the newly created marsh (with the exception of where it borders the existing marsh-upland transitional area) is bordered by steep berms. In these areas, we will grade the berms down to the marsh plain at a gentle (10:1) slope to provide a smooth transition between marsh and upland habitats. This transitional area is an important ecotone with benefits to many bird and wildlife species. We will plant the berms with appropriate native vegetation to preclude the establishment of weedy invasives (Table 4). The existing culvert along the Bay Trail berm that drains Railroad Avenue can either be retained or removed depending on the City's preference.

There are two alternatives for the berm along the Chelsea by the Bay housing development on the southern project boundary. Alternative 1 involves leaving the berm in its present configuration and grading the lower portion to transition into the marsh plain. Alternative 2 involves widening the existing berm to provide more of a buffer between the marsh and the housing development. The berm will have a top elevation of 12 ft NAVD88 and a top width of 10 ft and will transition down to meet the marsh plain at a 5:1 slope. This berm will be planted with appropriate vegetation as described above. Though this berm would create a smoother transition to the marsh than currently exists, and provide a buffer between the marsh and the housing development, it would also require the removal of many large trees that exist on the berm slope. This would deprive the homeowners of shade and a visual screen in their back yards, and may not be a preferred option for them. The implementation of this alternative will depend completely on homeowner willingness to proceed.

3.2.4 Integrate Existing Marsh-Upland Transitional Area

We will integrate the marsh-upland transitional area that borders the Chelsea parcel into the newly created tidal marsh. We will grade the border at a 10:1 slope down to meet the marsh plain. In addition, a branch of the new tidal channel will tie into the existing drainage channel that runs through the transitional area to bring tidal water to the parcel and to receive the freshwater inputs from the surrounding watershed during the rainy season. It is expected that the restoration activities on the Chelsea parcel will cause some changes to the vegetation community on the transitional parcel. It is likely that areas of salt marsh will expand due to the increased tidal prism on the Chelsea parcel, which may cause increased groundwater elevations and salinities. The increased volume of water transferred into the existing drainage channel from the new tidal channel may cause deepening and widening of the existing channel, leading to an expansion of this habitat type and associated adjacent tidal marsh habitats. These changes to the transitional parcel will be beneficial to birds and wildlife and will increase the overall habitat value of the project site. The culvert under Santa Fe Avenue at the southeast corner of the transitional parcel will remain intact.

3.2.5 Build Floodwalls in Low Points around Project Perimeter

The District is planning on constructing floodwalls down the length of lower Pinole Creek in conjunction with the Pinole Creek Project. In their planned configuration, they will wall off the Chelsea parcel from the creek, preventing flood waters from flowing onto the property. When the Chelsea project is constructed, we will remove the walls separating the property from Pinole Creek to allow flood storage on the project site. To maintain the same level of flood protection afforded by the walls on Pinole Creek to the roads and housing developments surrounding the project site, we will construct floodwalls in those areas around the project perimeter where the ground surface is lower than the planned Pinole Creek floodwall elevation of 14 ft NAVD88 (Figure 4). In most areas, these new floodwalls will be one foot or less tall to achieve the 14-ft height and will be constructed as earthen berms reinforced with vinyl sheet pile. We will construct approximately 965 ft of floodwalls around the perimeter.

3.2.6 Add Passive Recreational Bay Trail Improvements

As previously described, the San Francisco Bay Trail runs along the northern border of the project site. Under this configuration, the Chelsea Wetlands will offer passive recreation opportunities to Bay Trail users in the form of nature and wildlife viewing. To enhance these opportunities, we plan to install two turnouts along the Bay Trail to accommodate wildlife viewing. These two turnouts will have signage describing the ecological and flood control features of the wetlands. In addition, we will place signs on the east and west boundaries of the project site along the Bay Trail, identifying the Chelsea Wetlands and describing the wetland restoration process.

3.3 Construction Methods

This section describes the general equipment and methods that will be used in the construction of the project. These details will be flushed out completely in the final design phase.

3.3.1 Equipment

The project will be constructed using three major pieces of heavy equipment: long-reach excavator, bulldozer, and dump truck. Other pieces of specialized equipment may be used during construction. These will be identified during the final design stage.

Long-Reach Excavator

This is a standard excavator used for most land-based construction projects. It will be used for all excavation activities in the project, including removing existing fill from the marsh plain, digging the new tidal channel, and digging out the new culvert alignment and flood-overflow weir.

Bulldozer

This is a standard bulldozer used for most land-based construction projects. It will be used for grading the new marsh plain, habitat transition berms, and the flood-overflow weir.

Dump Truck

This is a standard dump truck used for most land based construction projects. It will be used to haul material excavated from the new marsh plain to other areas on the site for building habitat transition berms, and for off-hauling all excess excavated materials to the selected disposal sites.

3.3.2 Site Access and Equipment Staging

All equipment will be staged on the Chelsea Parcel during construction. At this time in the planning process, it is assumed that all equipment will access the site via Santa Fe Ave., on the east side of the project site or via the District maintenance road along Pinole Creek. Dump trucks taking excavated fill from the construction site to approved off-site disposal areas will use Railroad Ave. and Tennant Ave. to get to San Pablo Ave., the nearest major road (Figure 13). At this time, the City has agreed to open the now-defunct Railroad Ave. to truck traffic during construction. Should it not be possible to use Railroad Ave. at the time of construction, the alternate route will be to access San Pablo Ave. via Santa Fe Ave. This route is less preferred because residential development along it is denser and there are more stop signs, hills, and turns than on the Railroad Ave. route.

3.3.3 Excavated Soil Disposal

Project construction will involve the excavation of approximately 50,000 cubic yards of fill soil. While some of this material will be retained on-site for various uses, the bulk of it will need to be disposed of at an off-site location. Soil off-haul and disposal can be expensive due to trucking costs and disposal fees at landfills. While landfill disposal is the default scenario at this stage in the planning process, a preferred disposal scenario for the excavated soil would be to find a local construction project in need of fill material, which would likely eliminate any disposal fees, reduce trucking distance, and potentially offer trucking cost sharing. The viability of this option will depend on the status of construction projects at the time of project implementation, which cannot be forecast at this time.

3.3.4 Construction Schedule

We anticipate construction taking place during the dry season (May – October). Construction should take approximately eight to twelve weeks to complete.

3.4 Project Impacts to Sensitive Resources

The project involves the restoration and enhancement of tidal marsh and adjacent marsh-upland transitional habitats that will provide valuable habitat for fish and wildlife and restore important tidal floodplain ecological functions to lower Pinole Creek. The construction of the project will, however,

impact existing jurisdictional habitats and wildlife on the project site. There will be both short-term, construction-related impacts and permanent impacts to these resources. These impacts and the anticipated avoidance measures are described briefly below. A more complete treatment of the impacts and avoidance measures is presented in the project Biological Evaluation report (WWR 2008a). We will outline the complete suite of impact avoidance measures in the project permits from the various resource and regulatory agencies.

3.4.1 Impacts to Jurisdictional Resources

The construction of the project will directly impact **1.01 acres** of existing wetland habitats on the Chelsea parcel that fall under Corps jurisdiction (Figure 14). Restoring over 5 acres of tidal marsh will more than sufficiently mitigate for the habitats lost due to construction activities.

The construction activities will not directly impact the wetland habitats on the existing marsh-upland transitional parcel, however there could be long term indirect impacts to these areas. As described in Section 3.2.4 above, the increased tidal prism on the property may lead to increased groundwater levels and groundwater salinities on the parcel. These changes may cause an expansion in the area of salt marsh habitat and a conversion of freshwater seasonal wetlands to salt marsh. In addition, the increased volume of water transferred into the existing drainage channel from the new tidal channel may cause deepening and widening of the existing channel, leading to an expansion of this habitat type and associated adjacent tidal marsh habitats. These impacts are viewed to be beneficial to the habitat value of the site and will not require any mitigation.

There will be impacts to Corps jurisdictional habitats on Pinole Creek due to the construction of the flood overflow weir and culvert array on the District maintenance road (Figure 14). The new culvert array will include an outfall structure on the creek bank created from concrete and rip-rap materials, which will result in the loss of **0.009 acre** of coastal brackish marsh. Depending on the final engineering designs, it may be necessary to armor the creek bank along the weir with rip-rap to prevent erosion to the road and bank during flood-overflow events. This activity would result in the loss of **0.059 acre** of coastal brackish marsh. The total area of habitats on Pinole Creek under Corps jurisdiction that could be permanently impacted is therefore **0.068 acre**. These areas will also fall under CDFG jurisdiction if it is determined that the tidal reach of Pinole Creek qualifies as "stream" habitat under Section 1602 of the California Fish and Game Code.

The project will be self mitigating for losses of salt/brackish marsh and channel habitats as it will result in a net increase in these habitat types. There will be a net loss of freshwater wetland habitats due to project construction, however these habitats are fragmented and due to their small size are presumed to be of low habitat value. The restoration of the site to its original state (tidal marsh) should be adequate mitigation for any loss of freshwater wetlands.

3.4.2 Impacts to Sensitive Wildlife

Though the project will create much needed habitats for fish and wildlife, construction activities could result in short-term impacts to special-status species. The species most directly impacted are described in Table 2, and include small marsh-dependent mammals, amphibians, fish, and several bird species.

Mammals:

The mammals that could be potentially impacted by construction include the salt marsh harvest mouse and San Pablo vole. These mammals could occupy the salt marsh habitat on the project site and could therefore be injured or killed during excavation activities.

To avoid impacts to these species we will install temporary fencing along the border of the construction area to prevent individuals from entering. The fencing will remain in place throughout the construction period.

Amphibians:

Though favorable habitat is not present on site, the California red legged frog (CRLF) could potentially occur as the site may act as a dispersal corridor between nearby suitable habitats. Though the potential for occurrence is quite low, it is still possible that individuals could infrequently access the site, where they could potentially be injured or killed during construction activities.

To avoid impacts to CRLF, a clearance survey for the frogs would be performed no more than two weeks before construction activities begin. If CRLF are found, construction activities will be postponed until further consultation with the USFWS takes place.

Fish:

The onsite tidal channel may provide marginal habitat for juvenile steelhead trout and Chinook salmon and tidewater gobies. Though highly unlikely, it is possible that the filling of this small channel during construction could result in the loss of individuals of these species.

To avoid impacts to these species, a qualified fisheries biologist will be present at the outset of work occurring within the small tidal channel. The biologist shall implement USFWS and NMFS approved procedures to ensure that no special status species are harmed during construction. The biologist will survey the channel at low tide to confirm that no fish are present, after which the culvert would be blocked until excavation is complete. If fish are found in the channel, they will be netted, and released in Pinole Creek.

Birds:
Several special-status bird species may use the trees on-site as roosting habitat or forage in the on-site drainage channel or within adjacent reaches of Pinole Creek. In addition, it is possible that burrowing owls could occur on the site. Nesting and foraging activities of these species could be affected by construction activities.

To the extent possible, we will plan all construction activities outside of the nesting/breeding season of native bird species (typically February through August). Should we need to perform any construction activities during the nesting season, we will conduct a pre-construction survey for nesting special-status birds on and adjacent to the project site no more than two weeks before the commencement of construction activities. We will also conduct surveys for clapper rail and black rail in areas of the nearby tidal marsh, within 600 ft of the project boundary, using methods acceptable to USFWS and CDFG. Should any nesting birds or rails be found, we will establish disturbance buffers around the birds based on consultations with CDFG and USFWS, or we will halt construction activities until a biologist determines that nests are no longer occupied or the construction avoidance windows expire.

In addition, no more than two weeks prior to the commencement of construction activities during the non-nesting season of burrowing owl (typically September through January), we will conduct a clearance survey for wintering (non-breeding) burrowing owls. If owls are observed within the disturbance footprint, we will eremove them from the burrows through the use of exclusion devices utilizing one-way doors. Once owls have evacuated the burrows, we will excavate and fill them by hand to prevent re-occupation.

3.5 Addressing Project Site Constraints

There are four major project site constraints described in Section 2.5 above:

1) Protect adjacent residential areas from flooding
2) Maintain access to the District road on Pinole Creek
3) Protect sewage force main on the Property
4) Maintain or reduce current mosquito production levels

The restoration design adequately addresses all of these constraints as described below.

3.5.1 Protect Adjacent Residential Areas from Flooding

The project itself will reduce flooding potential to surrounding areas by serving as an off-channel storage basin during flood events. Preliminary hydraulic modeling indicates that the Chelsea Wetlands will offer flood stage reduction benefits to Pinole Creek. The project also involves the construction of floodwalls along the lower-lying areas of the project perimeter to improve flood protection to adjacent areas over current conditions.

3.5.2 Maintain Access to the District Road on Pinole Creek

The project will maintain access to the District maintenance road by utilizing culverts as the main connection to Pinole Creek as opposed to an open channel. Also, the flood overflow weir that is planned for the road is designed to allow the road to be used during non-flood conditions.

3.5.3 Protect Sewage Force Main on the Property

The City of Hercules Department of Public Works has indicated that the force main on the property can be modified to accommodate our design for the project. No design elements will be incorporated that would prevent the continued use of this pipe.

3.5.4 Maintain or Reduce Current Mosquito Production Levels

The project will reduce mosquito production over current conditions. Well-drained tidal marshes do not produce significant quantities of mosquitoes because they do not pond water for extended periods of time. We will grade the new tidal marshes to drain toward the main, central channel, ensuring that the marsh will not hold water in isolated depressions at low tide.

4.0 Project Maintenance and Monitoring

This section describes the proposed maintenance and monitoring plan for the completed project. We will describe these two items in detail in separate documents to be completed later in the project development phase.

4.1 Project Maintenance

Project maintenance will involve the following components.

1) Vegetation management
2) Culvert maintenance
3) District road and weir maintenance
4) Bay Trail maintenance

The City of Hercules will carry out vegetation management and culvert maintenance. Vegetation management will primarily involve removing non-native vegetation during the first few years following project construction to aid the development of a native plant community in the wetlands. Culvert maintenance will include the periodic removal of debris from the culvert array on Pinole Creek to ensure unobstructed tidal exchange in the wetlands.

The District currently maintains their adjacent access road, where we will construct the new flood overflow weir. The District will continue to maintain this stretch of road, including the new weir structure following project construction.

The City of Hercules and the East Bay Regional Parks District share maintenance responsibilities for the segment of the Bay Trail adjacent to the project site. These two entities will be responsible for maintaining all signage and turnouts constructed during the project.

4.2 Monitoring Plan

We will monitor the following elements for a period of at least five years following project construction:

1) Topography and geomorphology
2) Vegetation
3) Bird use
4) Flood storage

The methods for monitoring these various elements are discussed below. A detailed monitoring plan will be developed separately as part of the final design stage of the project.

4.2.1 Topography and Geomorphology

We will establish three cross sections across the marsh plain-channel complex. We will permanently monument these cross sections so that they can be re-established in subsequent years. We will survey the cross sections in years 1, 3, and 5 following construction. In addition, we will survey the channel longitudinal profile. These data will inform us if there have been significant changes in marsh plain elevations and if the channel is stable, or if it is eroding or filling in with sediment.

We will have an aerial photograph of the project area taken in years 1, 3, and 5 following construction. We will orthorectify these photographs and use them for various monitoring activities. From these photographs we will digitize the boundaries of the channel complex on the project site. These data will allow us to determine changes in the channel planform (i.e. widening, meandering) over time.

4.2.2 Vegetation

We will use the aerial photographs taken in years 1, 3, and 5 to delineate areas of vegetation using Geographic Information System (GIS) technology. We will determine changes in marsh vegetation cover over time using these data. We will ground truth the resulting vegetation maps by field observation. We will perform vegetation inventories during this time as well.

4.2.3 Bird Use

We will work with the local chapter of the Audubon Society and Friends of Pinole Creek to perform bird surveys at the project site once a year. We will use these data to determine the different kinds and species of birds that use the site and any change in species richness and diversity in the bird community over time.

4.2.4 Flood Storage

We will install a staff gauge in an easily accessible location in the wetland. During flood events where water levels in Pinole Creek rise drastically above normal, a volunteer from the Friends of Pinole Creek will record the level on the staff gauge. These data will enable us to determine the amount of water stored in the wetlands during flood events of various magnitudes.

5.0 References

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Wetlands and Water Resources, Inc. (WWR). 2008a. Draft Biological Evaluation Report, Chelsea Wetlands Restoration Project. Prepared for the City of Hercules.

WWR. 2008b. Potential Jurisdictional Delineation, Chelsea Wetlands Restoration Project. Prepared for the City of Hercules.

Tables

Table 1
Tidal Datum Reckoning Results
Pinole Creek

Elevations adjusted based on benchmark update, January 2008

	San Francisco		Pinole Creek		
Datum	**Elev [1] (ft NAVD)**	**Elev (ft MLLW)**	**Elev (ft NAVD)**	**# Tides**	**Uncert (ft) [2]**
HOWL	8.72	8.66	7.70		
MHHW	5.90	5.84	6.43	65	0.13
MHW	5.29	5.23	5.87	67	0.13
MTL[4]	3.24	3.18	3.51		0.13
MLW	1.20	1.14	1.14	45	0.14
MLLW[5]	0.06	0.00	0.35		
LOWL	-2.82	-2.88	--		

Notes:

HOWL = highest observed water level (Jan 1983-Dec 2001 at San Francisco)
MHHW = mean higher high water
MHW = mean high water
MTL = mean tide level
MLW = mean low water
MLLW = mean lower low water
LOWL = lowest observed water level (Jan 1983-Dec 2001 at San Francisco)

1 NOS San Francisco station ID 9414290.

2 Uncertainty derived from NOAA (2003) based on record duration.

3 HOWL for Pinole occurred at 6/15/2007 12:24:00 AM

4 Mean tide level (MTL) calculated as mid-point between MLW and MHW.

5 Monitoring station was not subtidal. Missing some low and all lower-low tides. MLLW was estimated by subtracting the tidal range at nearby tidal benchmark 9415074 from the calculated MHHW.

Table 2

Special-Status Wildlife Species Documented in the Project Vicinity

Common and Scientific Name	Status		Habitat Requirements	Historical and Potential Occurrence
	Federal	State		
Mammals				
Pallid bat *Antrozous pallidus*	--	CSC	Inhabits deserts, grasslands, shrublands, woodlands and forests. Most commonly found in open, dry habitats with rocky areas for roosting. Also known to roost within oak woodlands.	***Not Expected*:** marginal roosting habitat present and the species prefers dry habitats.
San Pablo vole *Microtus californicus*	--	CSC	Inhabits salt marshes on the south shore of San Pablo Bay. Feeds on a wide variety of grasses, sedges, and herbs.	***Potential:*** in its current condition the project site provides limited potential habitat for the species. However, given the presence of suitable habitat in the neighboring large tidal marsh, and the presence of some pickleweed habitat on the site, there is some potential that the species could occur within the project boundaries.
Big free-tail bat *Nyctinomops macrotis*	--	CSC	Requires cliffs or rocky outcrops for roosting sites.	***Not Expected:*** suitable roosting habitat not present.
Salt marsh harvest mouse *Reithrodontomys raviventhris*	FE	CE, CFP	Pickleweed and salt marsh stands in tidal and diked coastal salt marshes.	***Potential:*** in its current condition the project site provides limited pickleweed habitat, which is the preferred habitat of the species. However, the species is known to occur within diked tidal marshes with similar habitat composition to the project site. Further, given the presence of suitable habitat in the neighboring large tidal marsh, and that the species occupies habitats surrounding tidal marshes to escape high tides, the species could occur within the project boundaries.
Salt-marsh wandering shrew *Sorex vagrans halicoetes*	--	CSC	Salt marshes of the south arm of San Francisco Bay; dense, low-lying pickleweed areas.	***Not Expected:*** outside of expected range of the species.
Suisun shrew *Sorex ornatus sinuosus*	--	CSC	Tidal marshes of the northern shores of San Pablo and Suisun Bay.	***Not Expected:*** outside of expected range of the species.

Table 2

Special-Status Wildlife Species Documented in the Project Vicinity

Common and Scientific Name	Status		Habitat Requirements	Historical and Potential Occurrence
	Federal	State		
Amphibians and Reptiles				
Western pond turtle *Clemmys marmorata*	--	CSC	Aquatic habitats including ponds, streams, and irrigation ditches. Requires basking sites such as partially submerged logs, vegetation mats, or open mud banks.	***Not Expected*:** Suitable habitat not present on the project site. While the species could occur in Pinole Creek, high salinity levels in the lower reach of the creek (near the project site) likely deters the species from occurring (including egg laying in adjacent habitats). The nearby freshwater marsh lacks open water habitats of suitable size to support the species.
Alameda whipsnake *Masticolphis lateralis euryxanthus*	FT	CT	Inhabits south facing slopes and ravines where shrubs form vegetation mosaic with oak trees and grasses.	***Not Expected:*** suitable habitat is not present and the project site is outside of expected distribution of the species.
California red-legged frog *Rana draytonii*	FT	CSC, CP	Permanent water sources such as ponds, lakes, reservoirs, streams and adjacent riparian woodlands.	***Potential*:** the project site does not provide favorable habitat for the species and cannot sustain resident frogs. However, the species is known to occur in Pinole Creek, approximately 4 miles upstream of the project site (CNDDB) and there is some potential that non-breeding frogs could disperse to the lower reach of the creek. The species is also known to occur in nearby Refugio Creek and there is some potential that frogs could occur in the nearby ponds and disperse to the adjacent freshwater marsh. As there is potential the species could occur in nearby habitats, there is low potential that the species could temporarily and infrequently occur on the project site.

Table 2

Special-Status Wildlife Species Documented in the Project Vicinity

Common and Scientific Name	Status		Habitat Requirements	Historical and Potential Occurrence
	Federal	State		
Birds				
Cooper's hawk (nesting) *Accipiter cooperi*	--	CSC	Inhabits primarily open, interrupted or marginal woodlands. Nests mainly in riparian groves of deciduous trees in canyon bottoms on river flood-plains. Also nests in coast live oak.	***Potential:*** trees on and bordering the project site provide suitable nesting habitat.
Tricolored blackbird (nesting colony) *Agelaius tricolor*	BCC	CSC	Nests in freshwater marshes and riparian scrub.	***Potential (near project site):*** suitable nesting habitat is present in the adjacent freshwater marsh, but onsite habitats are marginal.
Great egret (rookery) *Ardea alba*	--	***	Nests colonially in large trees. Rookery sites are typically located near marshes, tide-flats, irrigated pastures, and margins of rivers and lakes.	***Potential:*** trees on and bordering the project site provide suitable rookery habitat; no rookeries have been reported. Extent of local urbanization reduces rookery potential.
Great blue heron (rookery) *Ardea herodias*	--	***	Nests colonially in tall trees, cliff sides, and sequestered spots on marshes. Rookery sites are usually in close proximity to foraging areas such as marshes, lake margins, tide-flats, wet meadows, rivers, and streams.	***Potential:*** trees on and bordering the project site provide suitable rookery habitat; no rookeries have been reported. Extent of local urbanization reduces rookery potential.
Short-eared owl (nesting) *Asio flammeus*	--	CSC	Found in open areas with few trees such as grasslands, prairies, meadows, dunes, irrigated lands, and saline and fresh emergent marshes; builds nest on ground.	***Not Expected***: not known to nest in the project region; could occur as a winter migrant.
Western burrowing owl (occupied burrow sites) *Athene cunicularia*	BCC	CSC	Forages and nests in grasslands and open scrub with small mammal burrows.	***Potential:*** no ground squirrel burrows or other suitable small mammal burrows observed and nesting by the species has not been observed within 16 miles of the project site (CNDDB). Therefore, it is unlikely that the species nests on the site. However, the species could occur as a winter migrant and utilize structures such culverts as shelter.

Table 2

Special-Status Wildlife Species Documented in the Project Vicinity

Common and Scientific Name	Status		Habitat Requirements	Historical and Potential Occurrence
	Federal	State		
Northern harrier (nesting) *Circus cyaneus*	--	CSC	Inhabits coastal salt and freshwater marshes. Nests and forages in grasslands, from salt grass in desert sink to mountain cienagas. Nests on ground in shrubby vegetation, usually at marsh edge. Nests are large mounds of sticks in wet areas.	***Potential*:** suitable nesting habitat present. Extent of local urbanization reduces nesting potential.
Yellow warbler (nesting) *Dendroica petechia brewsteri*	--	CSC	Found in riparian areas.	***Not Expected:*** suitable riparian woodland/scrub habitats are not present on the project site.
White-tailed kite (nesting) *Elanus leucurus*	--	CFP	Usually nests in large bushes or trees, often in isolated stand, surrounded by open foraging habitat.	***Potential:*** species frequently occurs in the project area and suitable nesting habitat is present on and near the project site.
Saltmarsh common yellowthroat (nesting) *Geothlypis trichas sinuosa*	--	CSC	Fresh and salt water marshes; requires thick continuous cover down to water surface for foraging.	***Potential:*** suitable nesting habitat is present on and bordering the project site.
California black rail *Laterallus jamaicensis coturniculus*	--	CT	Salt marshes bordering larger bays; pickleweed typically present.	***Potential (near project site):*** in its current condition, the project site provides marginal habitat for the species. However, the species has been documented in the pickleweed tidal marsh near the project site.
Alameda song sparrow (nesting) *Melospiza melodia pusilluia*	--	CSC	Inhabits salt marshes bordering south arm of San Francisco Bay. Nests low in marsh gumplant bushes and in pickleweed.	***Potential:*** known to nest in the project area, including brackish marsh habitats along Pinole Creek. Some suitable nesting habitat present on the project site.
Osprey (nesting) *Pandion haliaetu*	--	CSC	Nests built in tree tops within 15-miles of a good fish producing body of water.	***Potential:*** observed in the project area; potential nesting habitat on and near the project site.
Double crested cormorant (rookery) *Phalacrocorax auritus*	--	CSC	Colonial nester on coastal cliffs, offshore islands, and along lake margins in the interior of the state.	***Not Expected:*** suitable nesting/roosting habitat not present.

Table 2

Special-Status Wildlife Species Documented in the Project Vicinity

Common and Scientific Name	Status		Habitat Requirements	Historical and Potential Occurrence
	Federal	State		
California clapper rail *Rallus longirostris obsoletus*	FE	CE	Salt marshes bordering larger bays; pickleweed typically present.	***Potential (near project site):*** in its current condition, the project site provides marginal habitat for the species. However, the large tidal marsh near the project site provides suitable habitat.
Fish				
Green sturgeon *Acipenser medirostris*	FT	--	Spawn in deep pools or "holes" in large, turbulent, freshwater river mainstems including the Sacramento and Feather Rivers. Adults live in oceanic waters, bays, and estuaries when not spawning. Green sturgeons are believed to spend the majority of their lives in near-shore oceanic waters, bays, and estuaries.	***Not Expected:*** green sturgeon may potentially be found in the vicinity of lower Pinole Creek as foraging adults or juveniles. However, given the small size of the onsite drainage channel, shallow water depth, the density of emergent vegetation, and that the channel is separated from Pinole Creek by a culvert, the species is not expected to occur within the onsite drainage channel.
Delta smelt *Hypomesus transpacificus*	FT	CT	This fish is endemic to the upper Sacramento-San Joaquin estuary and occurs primarily in open, surface waters of Suisun Bay, in the Sacramento River upstream to Isleton, and in the San Joaquin River.	***Not Expected:*** the project site is outside of the expected distribution of the species. In the event that individual fish occur in Pinole Creek, it is very unlikely that the species would occur within the onsite drainage channel given its small size, shallow water depth, density of emergent vegetation, and that the channel is separated from Pinole Creek by a culvert.
Steelhead trout *Oncorhyncus mykiss*	FT	--	Highly flexible life history and may follow a variety of life-history patterns including freshwater residents (non-migratory) at one extreme and individuals that migrate to the open ocean (anadromous) at another extreme.	***Potential:*** the species has been reported in Pinole Creek on numerous occasions between 1975 and 2002 (Leidy et al. 2005). Juveniles and smolts could enter the onsite drainage channel, although it is considered to provide marginal habitat.

Table 2

Special-Status Wildlife Species Documented in the Project Vicinity

Common and Scientific Name	Status		Habitat Requirements	Historical and Potential Occurrence
	Federal	State		
Chinook salmon *Oncorhynchus tshawytscha*	FT	CT	Migrates up rivers/creeks to spawn and juveniles then return to the ocean.	***Potential:*** the species has not been reported in Pinole Creek. However, there is some potential that juveniles and smolts could occur within Pinole Creek briefly during rearing or migration periods. If present in the creek, juveniles and smolts could enter the onsite drainage channel, although it is considered to provide marginal habitat.
Tidewater goby *Eucyclogobius newberyi*	FE	CSC	Restricted to coastal, brackish-water habitats in California and are found primarily in discrete lagoons, estuaries or stream mouths.	***Potential:*** the species has not been reported in Pinole Creek. However, as available information indicates that the species is tolerant of a very wide range of salinity, temperature, and other water quality conditions, there is some potential that the species could occur in lower Pinole Creek. If present in the creek, individuals could enter the onsite drainage channel, although it is considered to provide marginal habitat.

Status Key:

Federal:

FE: Federal Endangered
FT: Federal Threatened
BCC: Federal Bird of Conservation Concern

State:

CE: California Endangered
CT: California Threatened
CSC: California Species of Special Concern
***: Special Animal

Table 3:
Special Status Wildlife Species Benefitting from Tidal Marsh Restoration

Common Name	Scientific Name	Status	Habitat Usage
Steelhead, central California coast ESU	*Oncorhynchus mykiss irideus*	FT	Juveniles rear in shallow, vegetated sub-tidal waters.
Chinook salmon, various ESUs	*Oncorhynchus tshawytscha*	Varies[1]	Juveniles rear to varying degrees in brackish waters.
California clapper rail	*Rallus longirostris obsoletus*	FE	Forages and breeds in tidal salt marsh bordering San Francisco Bay, particularly in highly channelized areas with dense vegetation, especially cordgrass.
California black rail	*Laterallus jamaicensis coturniculus*	FSC	Forages and breeds in channelized upper marsh with an open understory.
Saltmarsh common yellowthroat	*Geothlypis trichas sinuosa*	FSC CSSC	Forages and breeds in dense fresh to salt marsh, primarily associated with tall plants such as cattails and bulrush.
San Pablo song sparrow	*Melospiza melodia samuelis*	FSC	Forages and breeds in wetland and riparian habitat, primarily in areas with dense shrubby vegetation.
Northern harrier	*Circus cyaneus*	CSSC	Breeds in open areas, particularly grasslands adjacent to wetlands. Forages in grasslands, wetlands, and agricultural areas.
Salt marsh harvest mouse	*Reithrodontomys raviventris halicoetes*	FE CE	Forages and breeds in tidal or non-tidal high salt marsh or brackish marsh around the San Francisco Estuary; seasonal dispersal or use of adjacent grasslands (non-breeding).

Status Key:

Federal:
FE = federally listed as endangered
FT = federally listed as threatened
FSC = federal species of concern

State:
CE = state listed as endangered
CT = state listed as threatened
CI = culturally and/or commercially important
CSSC = state species of special concern

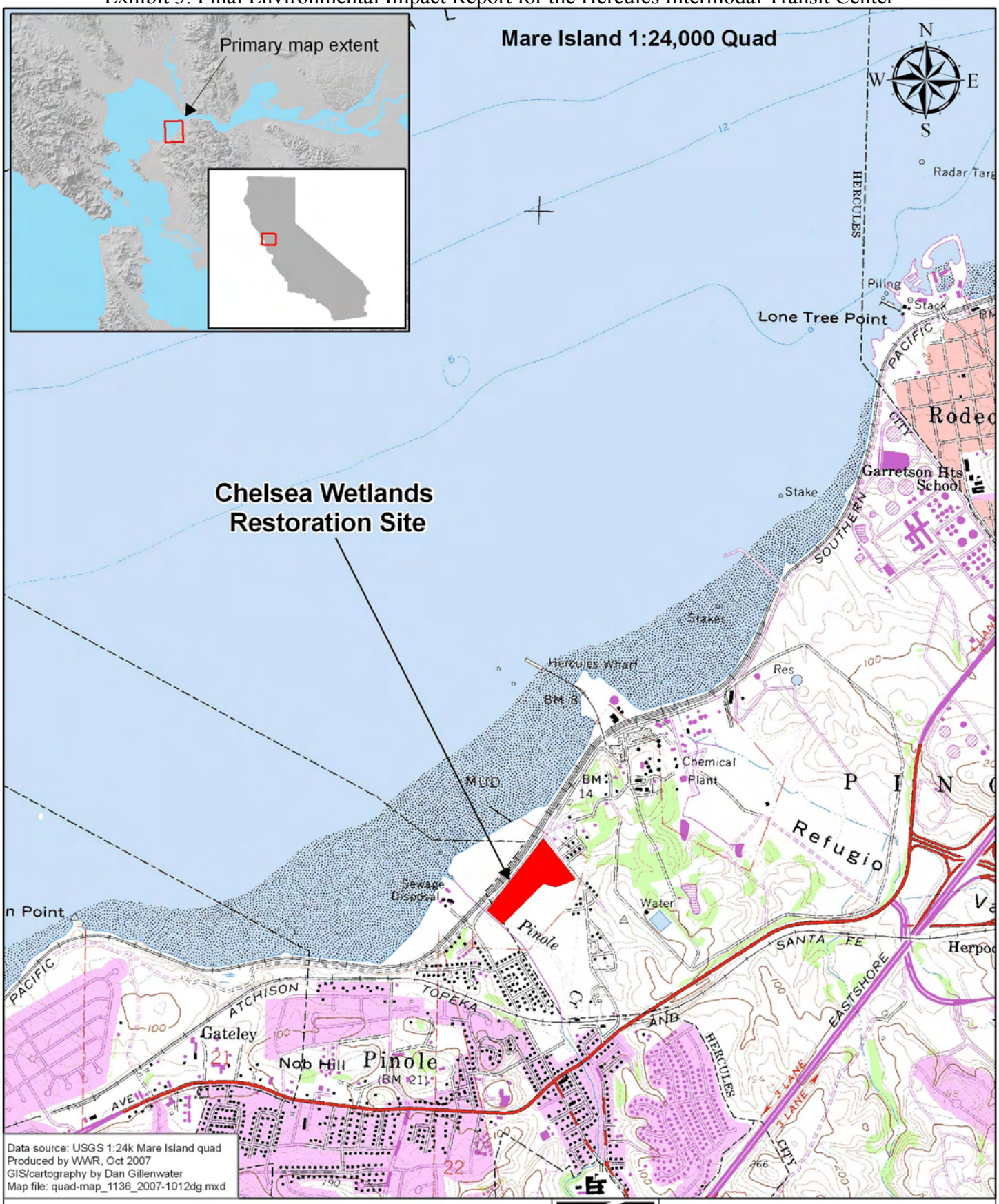
1. Status dependent on ESU; ranges from CI to FE

Table 4: Project Site Plant List - Proposed Conditions

Habitat Type	Common Name	Scientific Name
Tidal Channel	California cordgrass	*Spartina foliosa*
(Self colonization)	alkali bullrush	*Bolboshoenus maritimus*
Tidal Marsh Plain	pickleweed	*Sarcocornia pacifica*
(Self colonization)	saltgrass	*Distichlis spicata*
	fleshy jaumea	*Jaumea carnosa*
	alkali seaheath	*Frankenia salina*
	marsh gumplant	*Grindelia stricta*
Marsh-Upland	pickleweed	*Sarcocornia pacifica*
Transitional Areas	saltgrass	*Distichlis spicata*
(maintain existing conditions	fleshy jaumea	*Jaumea carnosa*
with invasive species removal)	alkali seaheath	*Frankenia salina*
	marsh gumplant	*Grindelia stricta*
	coyote brush	*Baccharis piluiaris*
	beardless wildrye	*Leymus triticoides*
	curly dock	*Rumex crispus*
	meadow barley	*Hordeum brachyantherum*
Upland Margins of	toyon	*Heteromeles arbutifolia*
Habitat Berms	coyote brush	*Baccharis piluiaris*
(active planting)	California sagebrush	*Artemisia californica*
	California buckeye	*Aesculus californica*
	California rose	*Rosa californica*

Figures

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center



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0 600 1,200 Meters

CITY OF HERCULES CALIFORNIA

WETLANDS AND WATER RESOURCES

VICINITY MAP

Chelsea Wetlands Restoration Project
City of Hercules
Hercules, California

October 2007	Project No. 1136	Figure 1

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

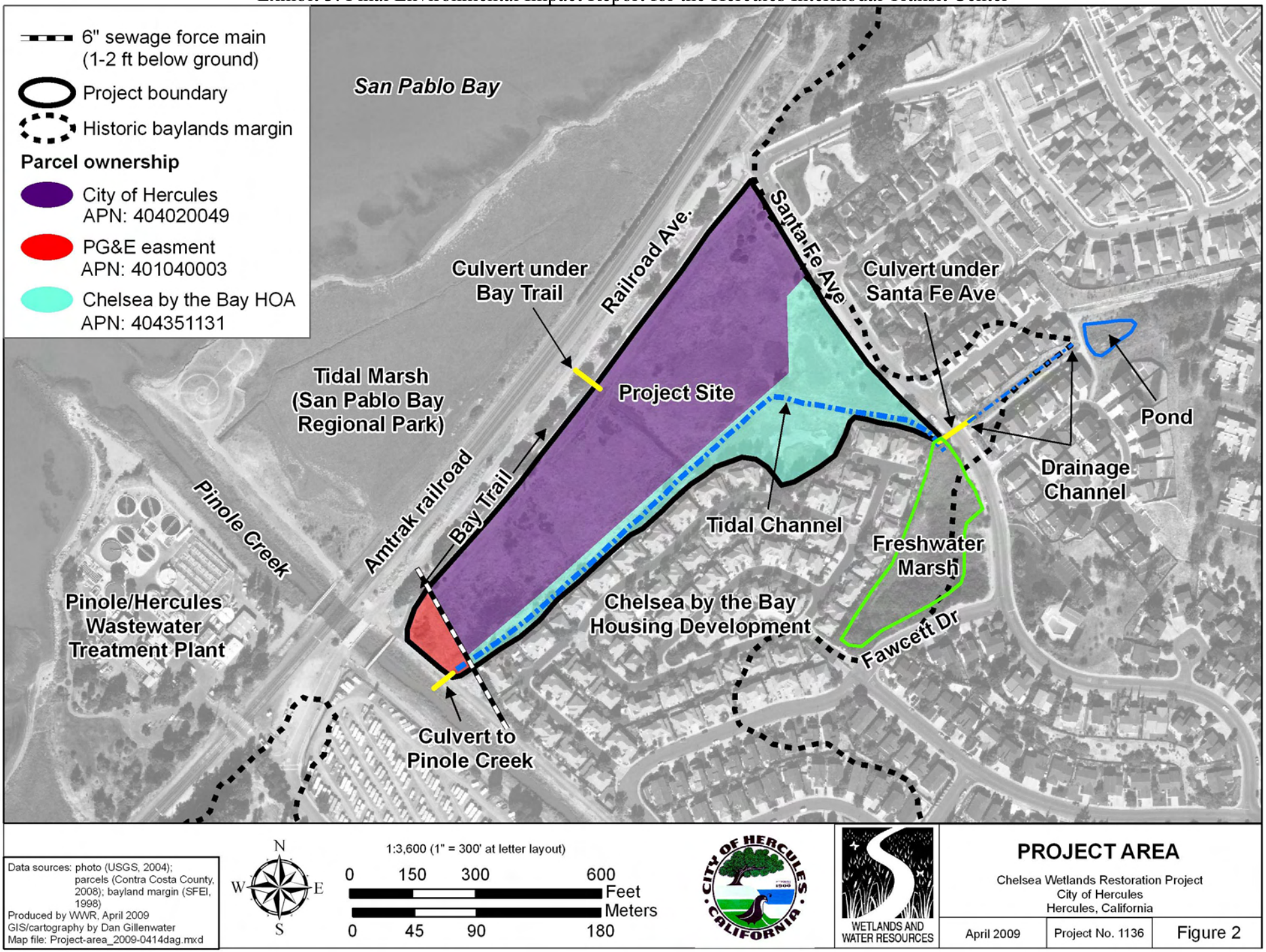


Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

Data sources: topo points (WWR; Moran Engineering 2007); DEM (WWR, 2007); photo (USGS, 2004)
Produced by: WWR, Feb 2009
GIS/cartography by Dan Gillenwater
Map file: current-topo_1136_2009-0309lee.mxd

N W E S

1:2,400 (1" = 200' at letter layout)

0 100 200 400 Feet

0 30 60 120 Meters

CITY OF HERCULES CALIFORNIA

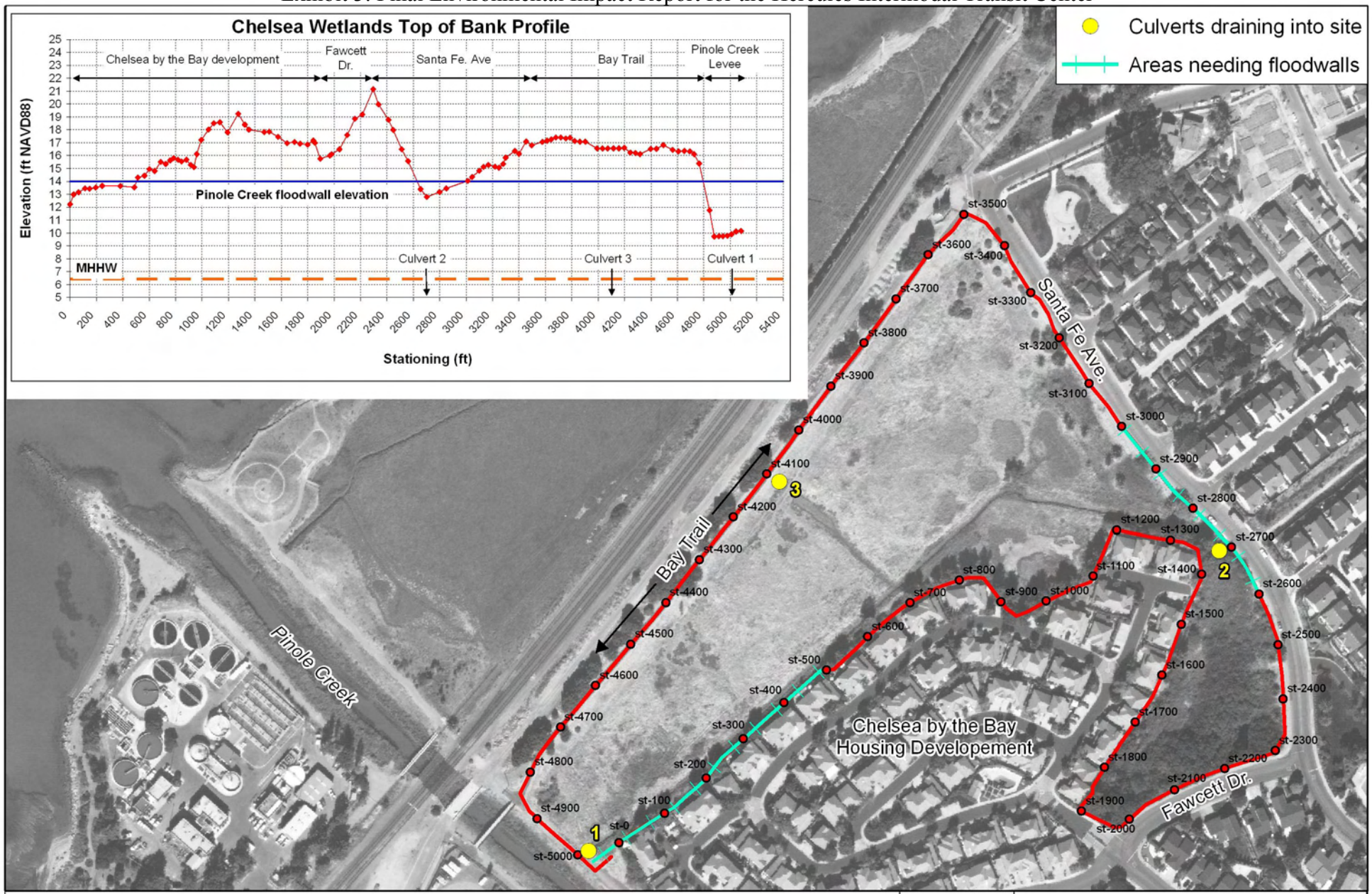
WETLANDS AND WATER RESOURCES

CURRENT SITE TOPOGRAPHY

Chelsea Wetlands Restoration Project
City of Hercules
Hercules, California

February 2009 | Project No. 1136 | Figure 3

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center



Data source: profile data (WWR, 2007); photo (USGS, 2004)
Produced by WWR, February 2009
GIS/cartography by Dan Gillenwater
Map file: Chelsea-TOB-profle_2009-0309lee.mxd

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0 75 150 Meters

WETLANDS AND WATER RESOURCES

CHELSEA BASIN PERIMETER PROFILE

Chelsea Wetlands Restoration Project
City of Hercules
Hercules, California

March 2009 | Project No. 1136 | Figure 4

Project boundary

Data sources: photo (USGS, 2004);
Soils (USDA, 2007)
Produced by WWR, February 2009
GIS/cartography by Dan Gillenwater
Map file: USDA-soils_2009-0309lee.mxd

N W E S

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0 30 60 120 Meters

CITY OF HERCULES CALIFORNIA

WETLANDS AND WATER RESOURCES

USDA SOIL TYPES

Chelsea Wetlands Restoration Project
City of Hercules
Hercules, California

February 2009 | Project No. 1136 | Figure 5

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center

Data sources: photo (USGS, 2004); Bore locations (ENGEO, 2008)
Produced by WWR, July 2008
GIS/cartography by Dan Gillenwater
Map file: Soil-bore-locations_2008-0725dag.mxd

N W E S

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0 100 200 400 Feet

0 30 60 120 Meters

CITY OF HERCULES CALIFORNIA

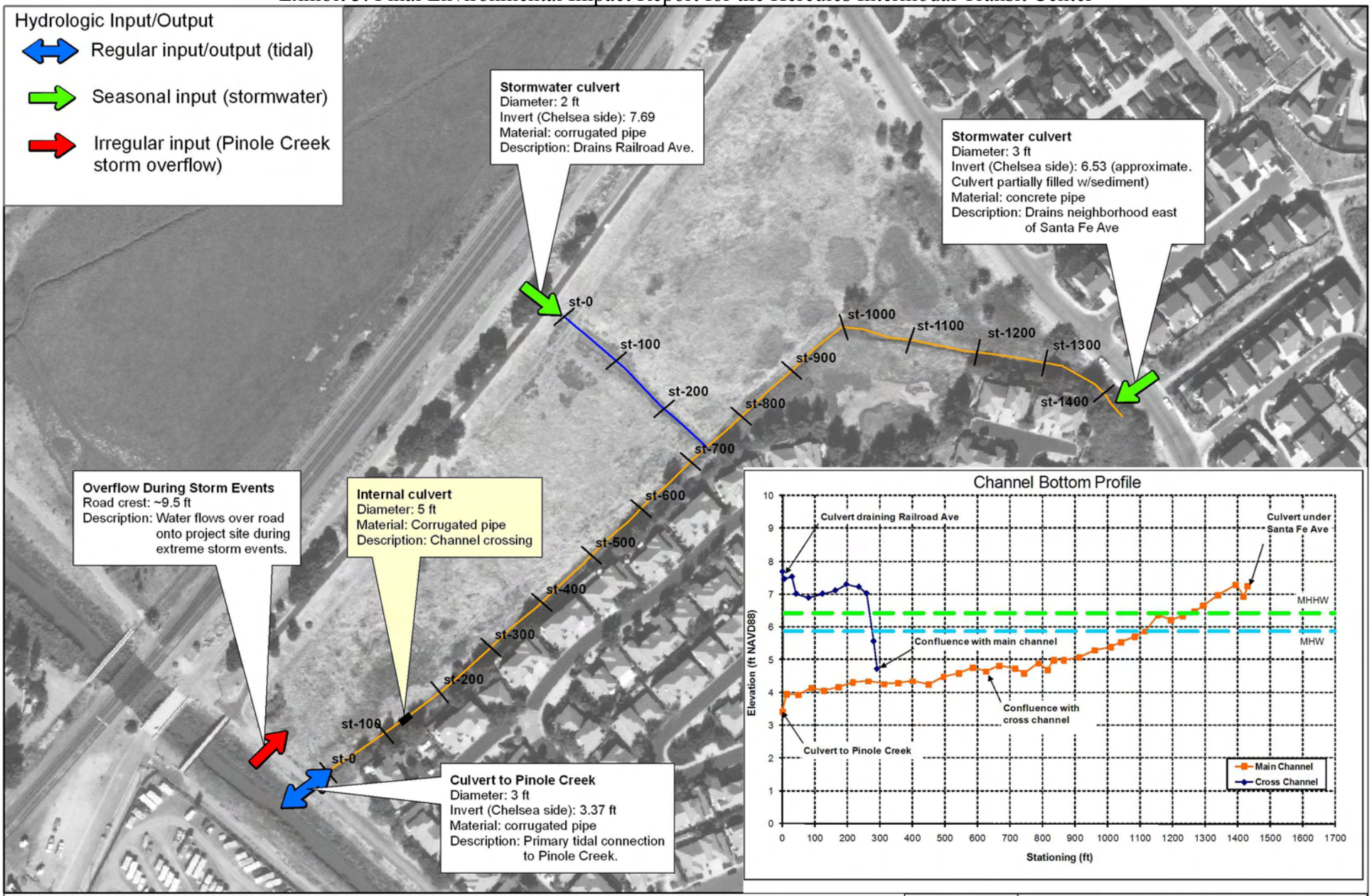
WETLANDS AND WATER RESOURCES

ENGEO SOIL BORE LOCATIONS

Chelsea Wetlands Restoration Project
City of Hercules
Hercules, California

July 2008 | Project No. 1136 | Figure 6

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center



Data sources: photo (USGS, 2004); habitat data (WWR, 2008)
Produced by WWR, June 2009
GIS/cartography by Dan Gillenwater
Map file: biological-conditions_2009-0603dag.mxd

N W E S

1:2,400 (1" = 200' at letter layout)

0 100 200 400 Feet

0 30 60 120 Meters

CITY OF HERCULES CALIFORNIA

WETLANDS AND WATER RESOURCES

EXISTING BIOLOGICAL CONDITIONS

Chelsea Wetlands Restoration Project
City of Hercules
Hercules, California

June 2009 | Project No. 1136 | Figure 8

Study area (10.9 ac)

Data sources: photo (USGS, 2004); delineation data (WWR, 2008)
Produced by WWR, June 2009
GIS/cartography by Dan Gillenwater
Map file: jurisdictional-resources_2009-0612dag.mxd

N W E S

1:2,400 (1" = 200' at letter layout)

0 100 200 400 Feet

0 30 60 120 Meters

CITY OF HERCULES CALIFORNIA

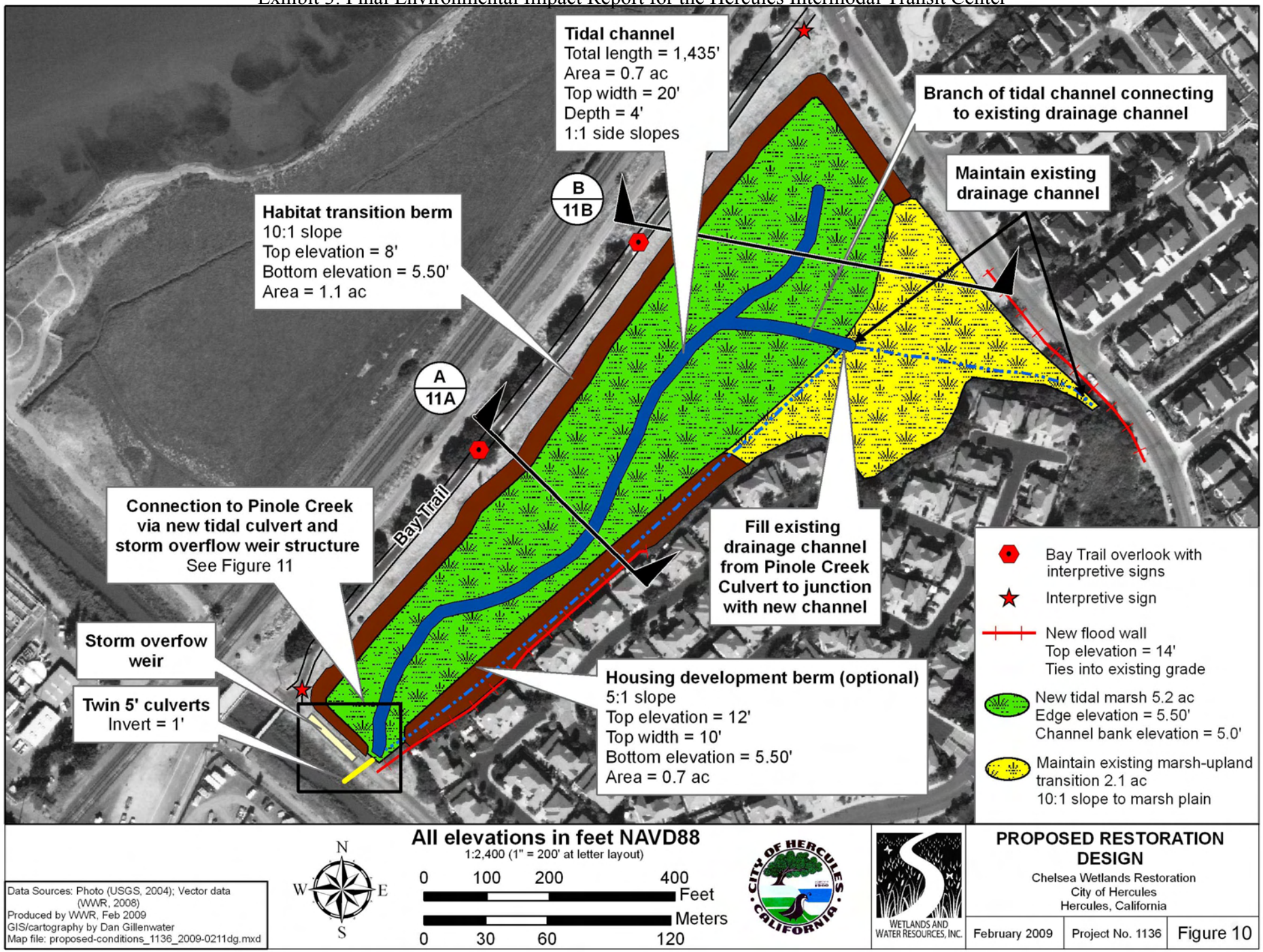
WETLANDS AND WATER RESOURCES

CORPS JURISDICTIONAL HABITATS

Chelsea Wetlands Restoration Project
City of Hercules
Hercules, California

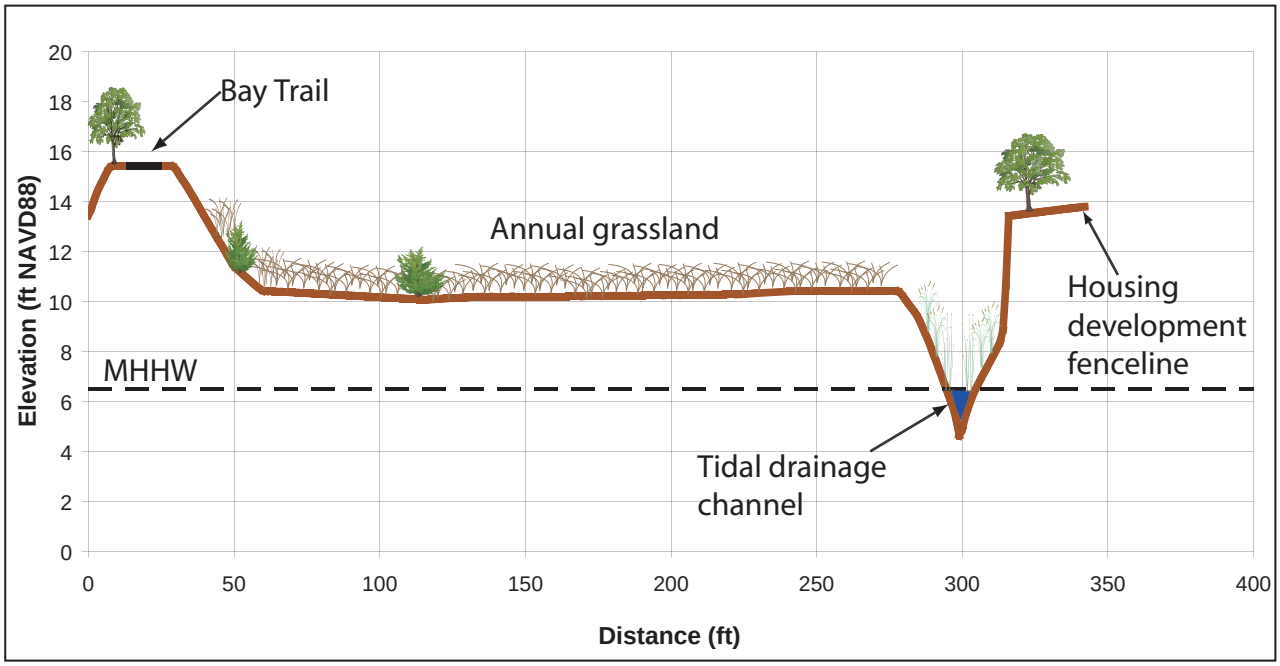
June 2009 | Project No. 1136 | Figure 9

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center



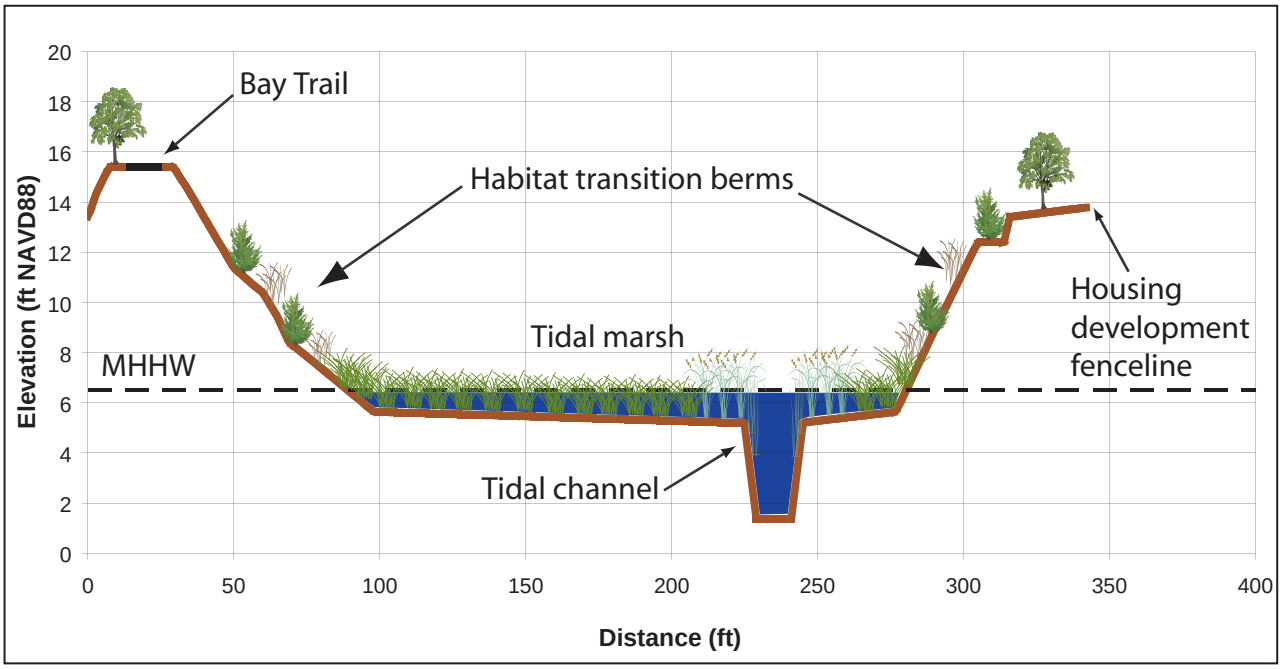
A
-

1. Existing Conditions



A
-

2. Proposed Conditions



CROSS SECTION VIEWS
CURRENT AND PROPOSED CONDITIONS
Chelsea Wetlands Restoration
City of Hercules
Hercules, California

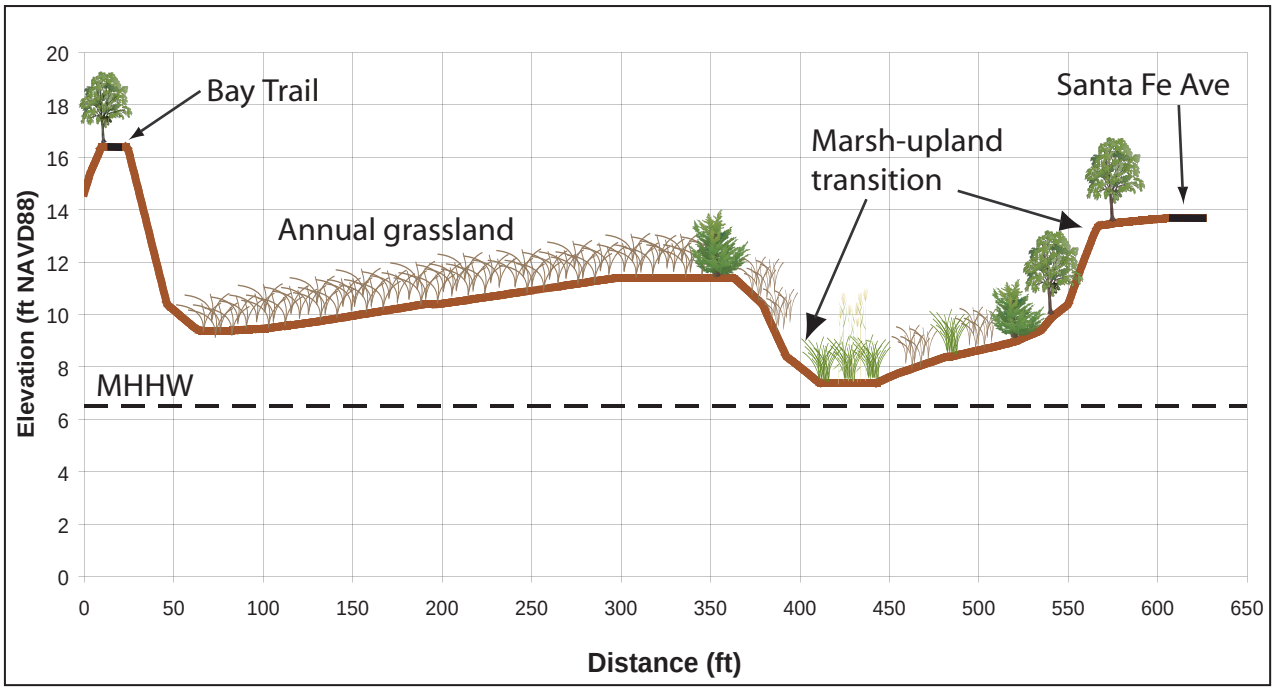
WETLANDS AND WATER RESOURCES, INC.

February 2009	Project No. 1136	**Figure 11A**

marsh-XS_1136_2009-0211dag.ai

B
-

1. Current Conditions



B
-

2. Proposed Conditions

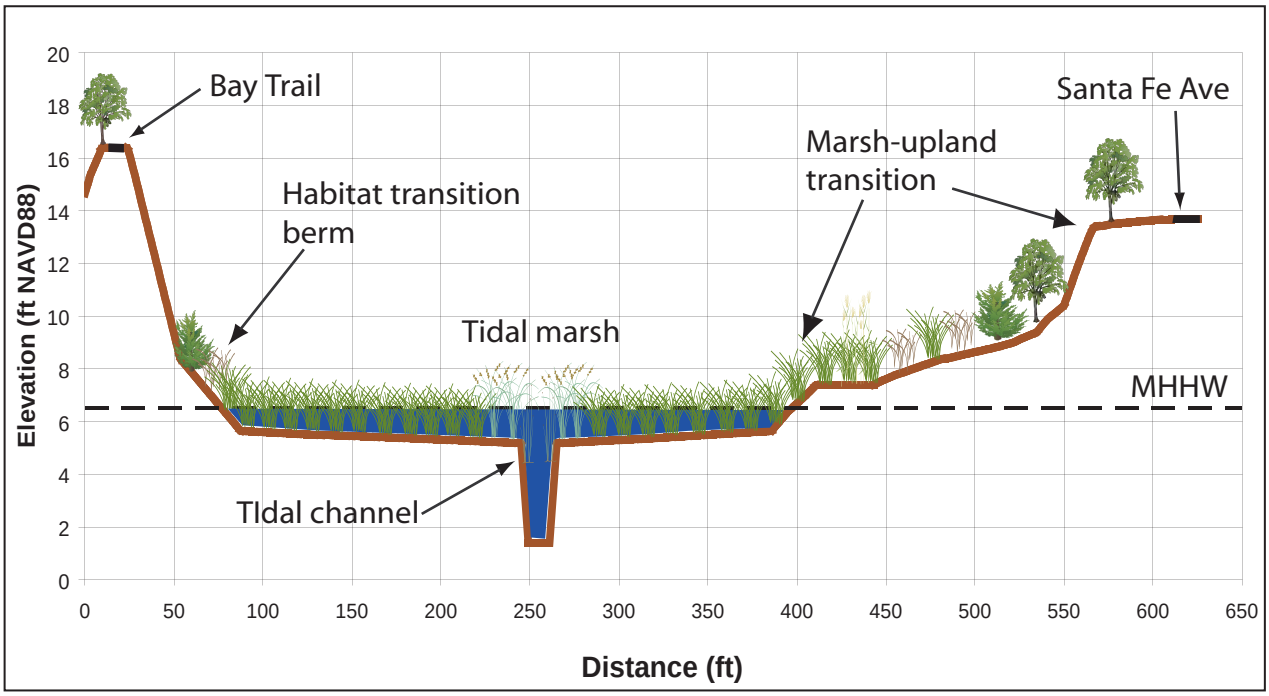
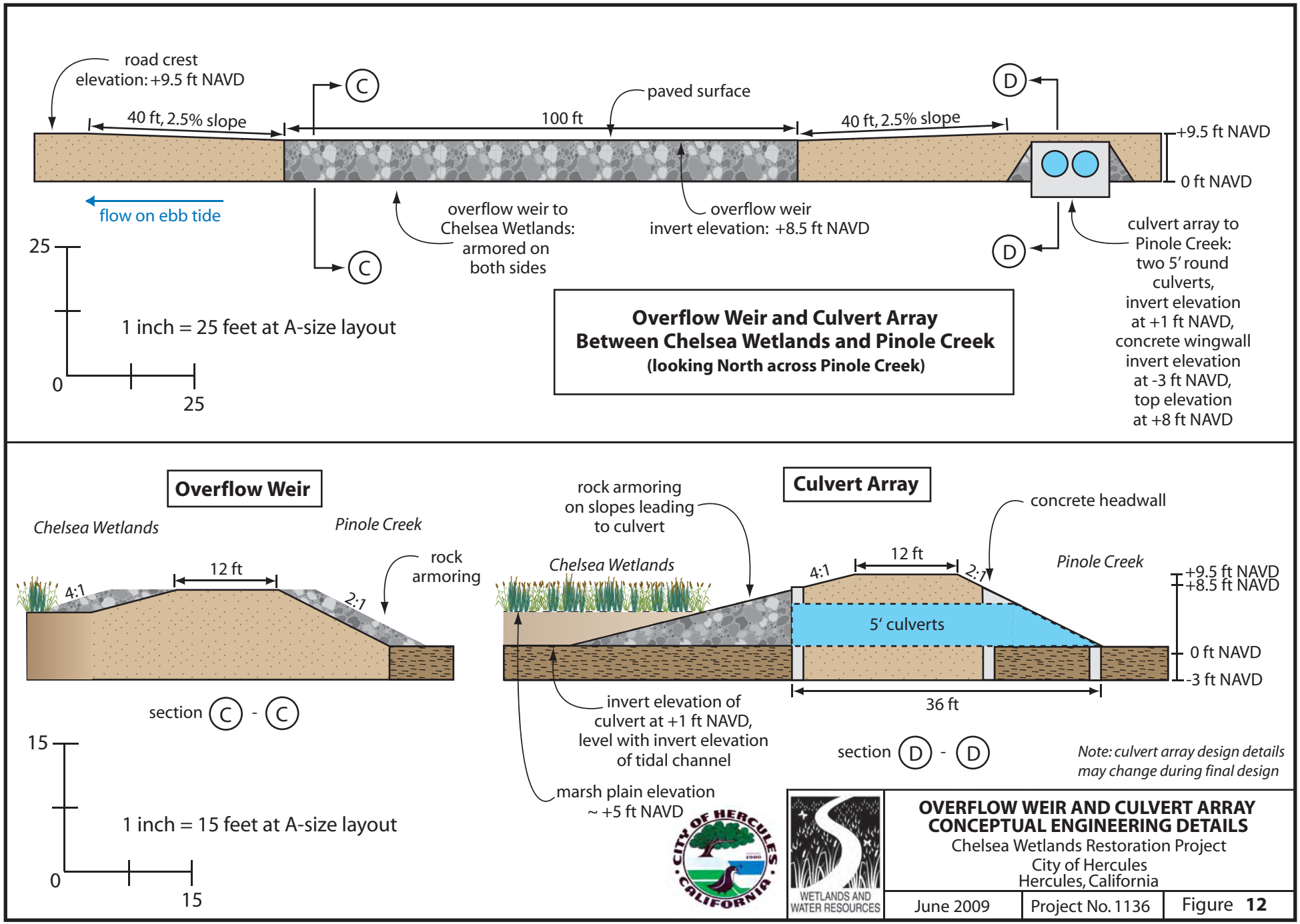


Image source: marsh-XS2_1136_2009-0211dag.ai

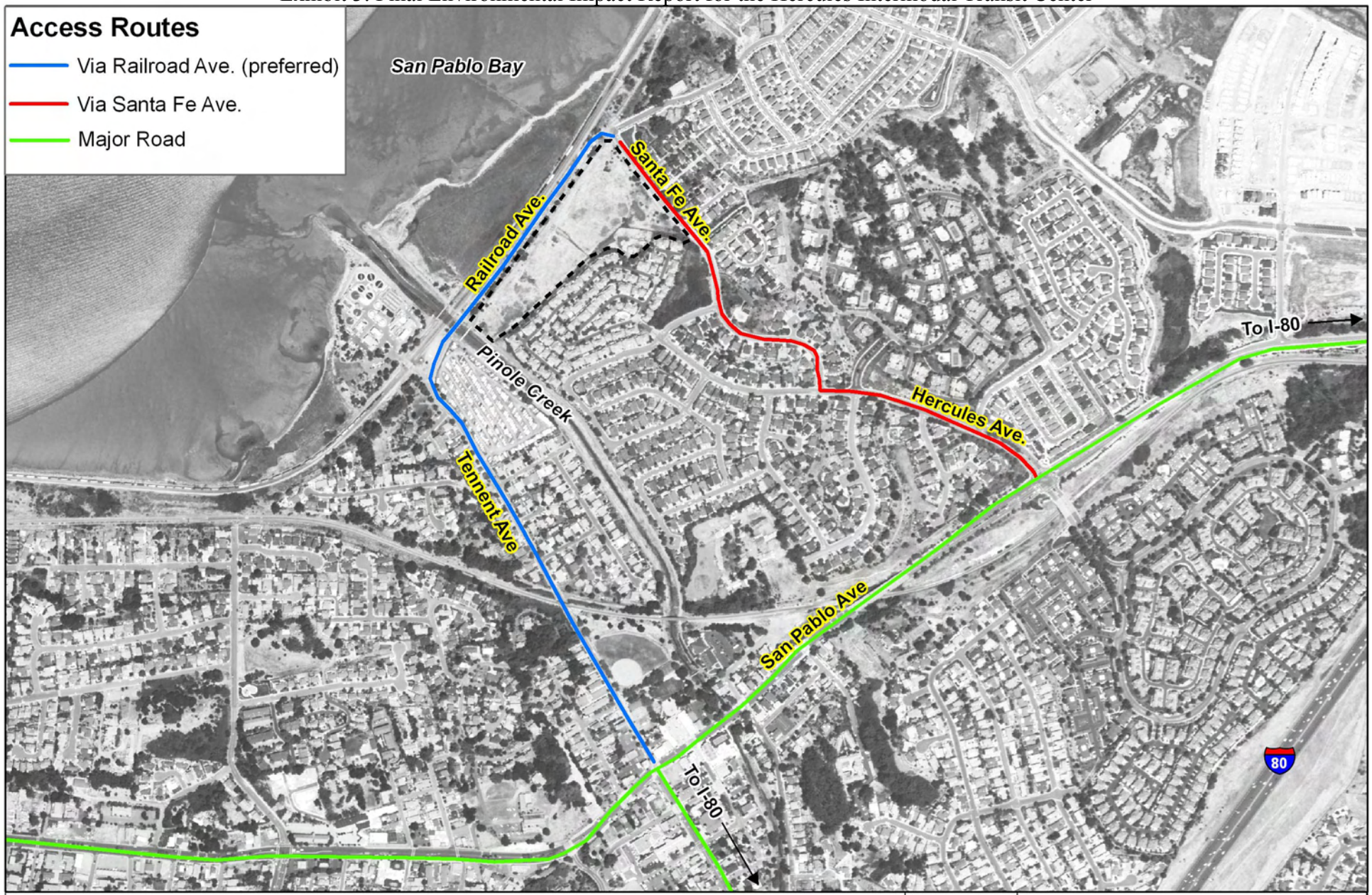
CROSS SECTION VIEWS
CURRENT AND PROPOSED CONDITIONS
Chelsea Wetlands Restoration
City of Hercules
Hercules, California

February 2009	Project No. 1136	**Figure 11B**



Graphic file: weir and culvert detail_2009-0611dag.ai

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center



Project Site

Data sources: NAIP (air photo, 2005)
Produced by WWR, Marsh 2009
GIS/cartography by Dan Gillenwater
Map file: Fig13_site-access_2009-0316.mxd

N W E S

1:9,600 (1" = 800' at letter layout)

0 400 800 1,600 Feet

0 125 250 500 Meters

CITY OF HERCULES CALIFORNIA

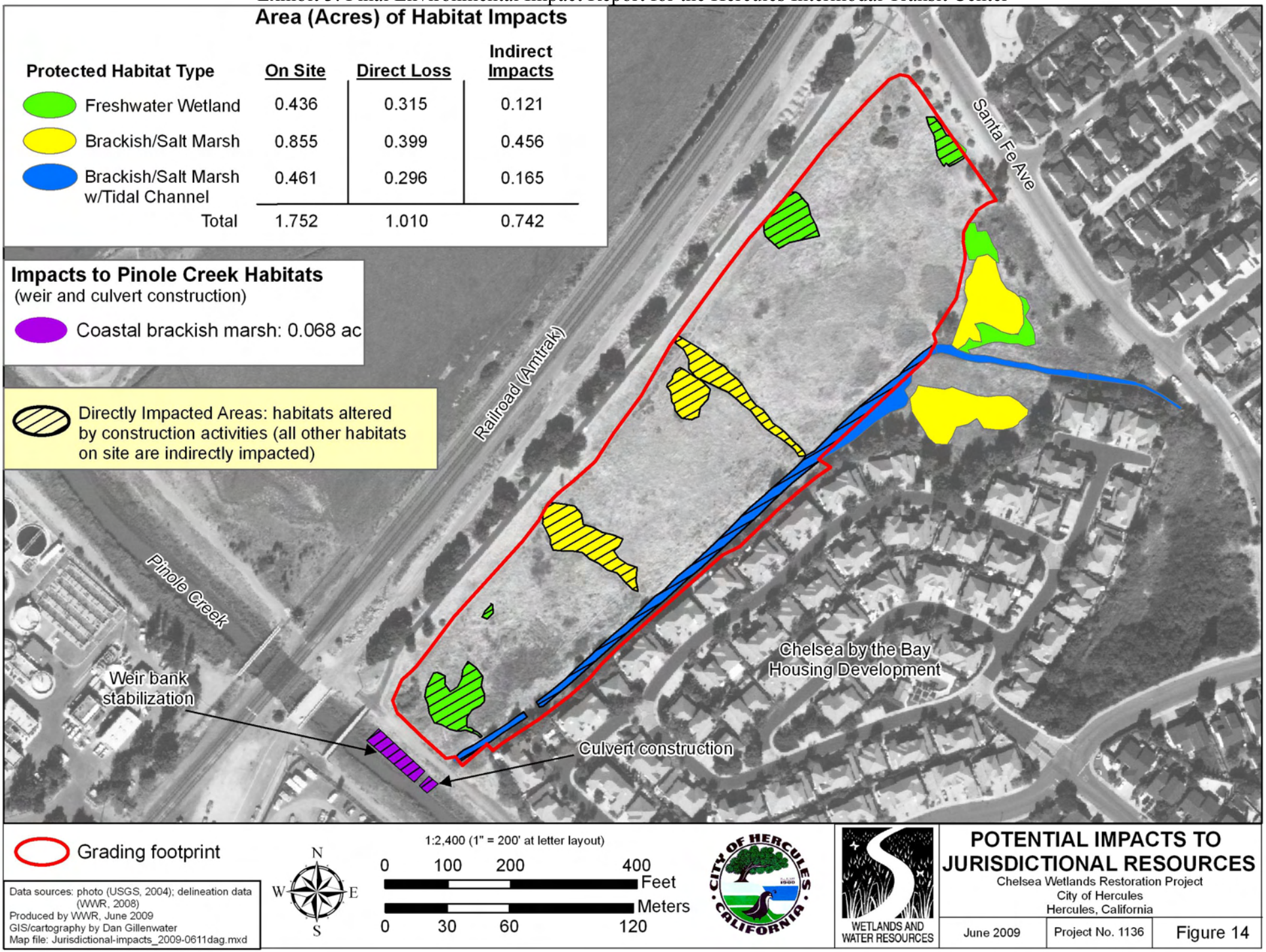
WETLANDS AND WATER RESOURCES

PROJECT SITE ACCESS ROUTES

Chelsea Wetlands Restoration Project
City of Hercules
Hercules, California

March 2009 | Project No. 1136 | Figure 13

Exhibit 3: Final Environmental Impact Report for the Hercules Intermodal Transit Center



Appendix A:
Site Photographs

Photo 1: Annual grasslands covering most of the project site

(photo by Dan Gillenwater, 3/5/2008)

Photo 2: Pickleweed wetland in a depressional area

(photo by Dan Gillenwater, 3/5/2008)

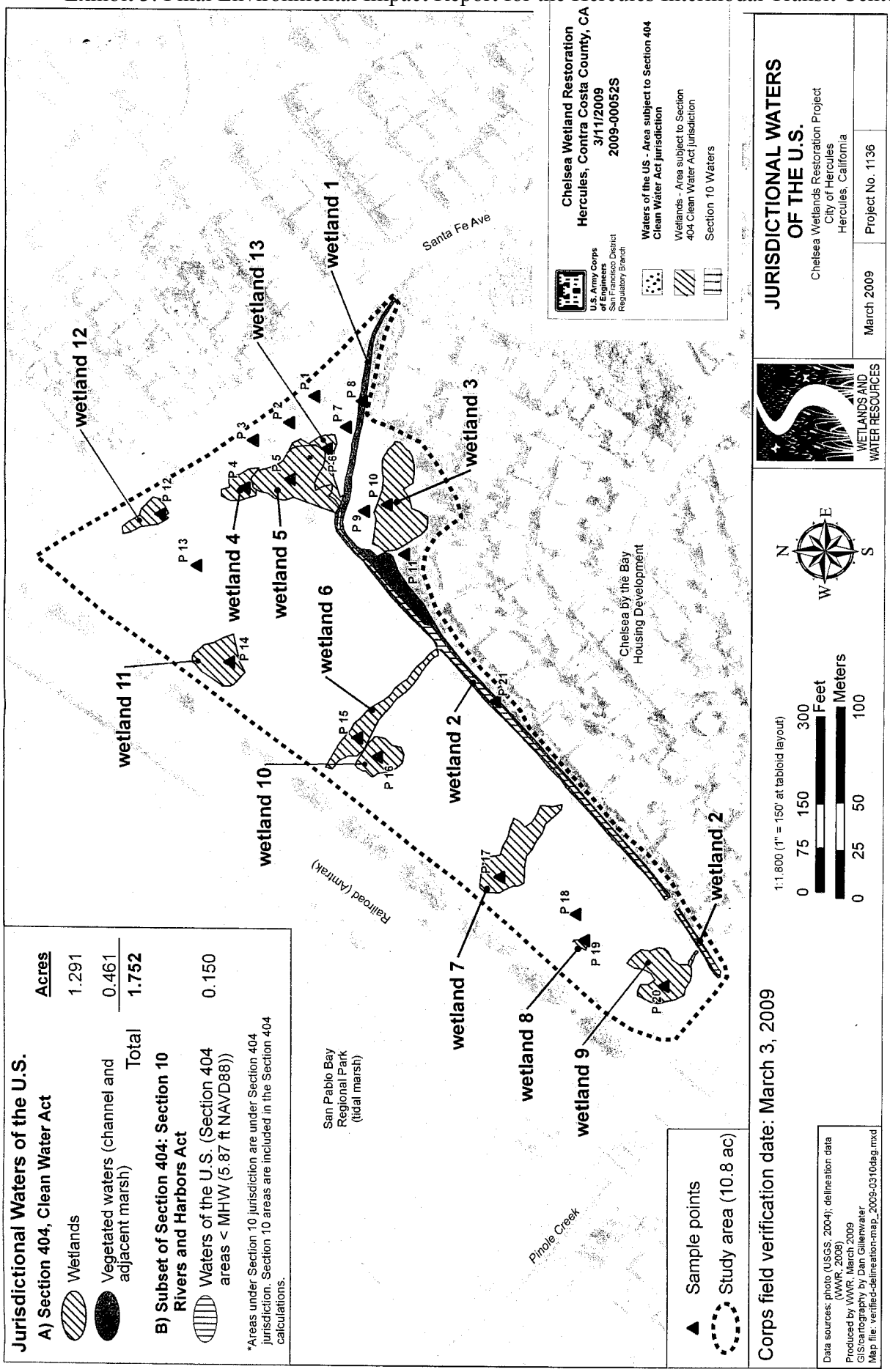
Photo 3: Tidal channel through site with associated marsh vegetation (photo by Dan Gillenwater, 10/1/2007)

Photo 4: District maintenance road separating the project site from Pinole Creek (photo by Dan Gillenwater, 9/6/2007)

Photo 5: Pinole Creek adjacent to the project site, looking south toward Pinole (photo by Dan Gillenwater, 9/6/2007)

Photo 6: Flooding on the project site following the 12/31/2005 storm (photo by Carol Allen, 1/1/2006)

Appendix B:
Corps Verified Wetland Delineation Map


Jurisdictional Waters of the U.S.
A) Section 404, Clean Water Act
Acres
Wetlands 1.291
Vegetated waters (channel and adjacent marsh) 0.461
Total 1.752
B) Subset of Section 404: Section 10 Rivers and Harbors Act
Waters of the U.S. (Section 404 areas < MHW (5.87 ft NAVD88)) 0.150
*Areas under Section 10 jurisdiction are under Section 404 jurisdiction. Section 10 areas are included in the Section 404 calculations.
Sample points
Study area (10.8 ac)
Corps field verification date: March 3, 2009
Data sources: photo (USGS, 2004); delineation data (WWR, 2008)
Produced by WWR, March 2009
GIS/cartography by Dan Gillenwater
Map file: verified-delineation-map_2009-0310dag.mxd
1:1,800 (1" = 150' at tabloid layout)
0 75 150 300 Feet
0 25 50 100 Meters
N
E
S
W
Chelsea Wetland Restoration
Hercules, Contra Costa County, CA
3/11/2009
2009-00052S
U.S. Army Corps of Engineers
San Francisco District
Regulatory Branch
Waters of the US - Area subject to Section 404 Clean Water Act jurisdiction
Wetlands - Area subject to Section 404 Clean Water Act jurisdiction
Section 10 Waters
JURISDICTIONAL WATERS OF THE U.S.
Chelsea Wetlands Restoration Project
City of Hercules
Hercules, California
WETLANDS AND WATER RESOURCES
March 2009
Project No. 1136
wetland 1
wetland 2
wetland 3
wetland 4
wetland 5
wetland 6
wetland 7
wetland 8
wetland 9
wetland 10
wetland 11
wetland 12
wetland 13
Santa Fe Ave
Railroad (Amtrak)
Pinole Creek
San Pablo Bay Regional Park (tidal marsh)
Chelsea by the Bay Housing Development

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
1455 MARKET STREET
SAN FRANCISCO, CALIFORNIA 94103-1398

MAR 30 2009

Regulatory Division

SUBJECT: File Number 2009-00054S

Mr. Dan Gillenwater
Wetlands and Water Resources, Inc.
818 5th Avenue, Suite 208
San Rafael, California 94901

Dear Mr.Gillenwater:

This letter is written in response to your submittal of January 11, 2009 requesting confirmation of the extent of Corps of Engineers jurisdiction at Chelsea Wetland Restoration Site, City of Hercules, Contra Costa County, California

The Corps concurs with the maps provided in the jurisdictional delineation map prepared by Wetland and Water Resources, Inc. dated March, 2009. We have based this jurisdictional delineation on the current conditions on the site as verified during a site visit performed by our staff on March 3, 2009. A change in those conditions may also change the extent of our jurisdiction. This jurisdictional delineation will expire in five years from the date of this letter. However, if there has been a change in circumstances that affects the extent of Corps jurisdiction, a revision may be completed before that date.

All proposed work and/or structures extending bayward or seaward of the line on shore reached by: (1) mean high water (MHW) in tidal waters, or (2) ordinary high water in non-tidal waters designated as navigable waters of the United States, must be authorized by the Corps of Engineers pursuant to Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. Section 403). Additionally, all work and structures proposed in unfilled portions of the interior of diked areas below former MHW must also be authorized under Section 10 of the same statute.

All proposed discharges of dredged or fill material into waters of the United States must be authorized by the Corps of Engineers pursuant to Section 404 of the Clean Water Act (CWA) (33 U.S.C. Section 1344). Waters of the United States generally include tidal waters, lakes, ponds, rivers, streams (including intermittent streams), and wetlands.

Your proposed activity may be within our jurisdiction and a permit may be required for your project. Application for Corps authorization should be made to this office using the application form in the enclosed pamphlet. To avoid delays it is essential that you enter the file number at the top of this letter into Item No. 1 of the application. The application must include plans showing the location, extent and character of the proposed activity, prepared in accordance with the requirements contained in this pamphlet. You should note, in planning your project, that

upon receipt of a properly completed application and plans, it may be necessary to advertise the proposed work by issuing a Public Notice for a period of 30 days.

Our Nationwide Permits and Regional General Permits have already been issued to authorize certain activities provided specified conditions are met. Your completed application will enable us to confirm that your activity is already authorized. You are advised to refrain from starting your proposed activity until we make a determination that the project is covered by an existing permit. Commencement of work before you receive our notification will be interpreted as a violation of our regulations.

You are advised that the Corps has established an Administrative Appeal Process, as described in 33 C.F.R. Part 331 (65 Fed. Reg. 16,486; March 28, 2000), and outlined in the enclosed flowchart and "Notification of Administrative Appeal Options, Process, and Request for Appeal" form (NAO-RFA). If you do not intend to accept the approved jurisdictional determination, you may elect to provide new information to the District Engineer for reconsideration or submit a completed NAO-RFA form to the Division Engineer to initiate the appeal process. You will relinquish all rights to appeal, unless the Corps receives new information or a completed NAO-RFA form within sixty (60) days of the date of the NAO-RFA.

Should you have any questions regarding this matter, please call Kyle Dahl of our Regulatory Division at (415) 503-6783. Please address all correspondence to the Regulatory Division and refer to the File Number at the head of this letter. If you would like to provide comments on our permit review process, please complete the Customer Survey Form available online at http://per2.nwp.usace.army.mil/survey.html.

Sincerely,

Mark O'Leignon for

Jane M. Hicks
Chief, Regulatory Division

Enclosures

Copy Furnished

CA RWQCB, Oakland, CA