ADDENDUM TO A FINAL ENVIRONMENTAL IMPACT REPORT

SURFER'S POINT MANAGED SHORELINE RETREAT
State Clearinghouse # 2001011129
City EIR # 2352

This Addendum to the Surfer's Point Managed Shoreline Retreat (SCH #2001011129) Final Environmental Impact Report (EIR) is being prepared to provide additional information related to the proposed action, consistent with provisions specified in California Environmental Quality Act (CEQA) Guidelines §15164 (et. seq).

The Draft EIR for the proposed Surfer's Point Managed Shoreline Retreat Project (SCH #2001011129) was prepared and then circulated for a 45-day public review period from December 15, 2001 to January 31, 2001. The City Council of San Buenaventura held a public hearing on July 21, 2003. At this hearing the City Council passed a Resolution (2003-059) regarding the Final EIR as being accurate, objective, complete, and in conformance with the Guidelines for Implementation of CEQA and Procedures for the State of California and the City of San Buenaventura. Subsequent to the certification of the Final EIR the project description, specifically the removal of the existing eroded parking lot, the removal of a majority of Shoreline Drive that fronts Seaside Park Fairgrounds, and construction of a multi-use parking area with enough parking spaces to offset the existing eroded parking lot, was modified.

As discussed in the Final EIR, the eroded parking lot was to be reconstructed, as well as parking along Shoreline Drive. The impact analysis concluded that no unavoidable adverse impacts would result due to construction and operation of the reconstructed parking lot and Shoreline Drive.

Due to, the proposed project was modified and would relocate the parking area further inland than that which was analyzed in the Draft EIR. The location of the relocated multi-use parking area is currently a dirt parking area for the Fairgrounds. The proposed modification would pave and landscape this area, and would convert the existing eroded parking area would be incorporated as part of the Managed Retreat program and the portion of Shoreline Drive to be abandoned would be incorporated as part of the multi-use parking area.

The proposed modifications to the design characteristics of the proposed project do not represent significant changes that would result in any new significant environmental effects or an increase in severity of previously identified effects. The proposed modification would actually result in a reduction in the level of potential impacts associated with biological resources, water quality, beach access and recreation. Therefore, substantial changes to the Final EIR would not be required. Circumstances associated with the proposed Surfer's Point Managed Shoreline Retreat Project that were discussed in the Final EIR have not been subject to substantial change. Additionally, the proposed modifications to the proposed project do not introduce new

information which was not known at the time of the preparation of the Final EIR which would introduce new significant effects, increase the severity of effects previously identified and discussed, or represent new mitigation or alternatives that are significantly different from those addressed in the Final EIR.

Based on the foregoing, the proposed minor change to the description of the proposed project is not significantly different from the previously identified, and would not result in any new significant impact, or in a substantial increase in the severity of a previously identified environmental impact. The modified proposed project would reduce potential impacts associated with the previous design in relation to air quality and traffic, and would be considered environmentally superior to the former proposed in this regard.

City of San Buenaventura

Surfers Point Managed Shoreline Retreat

Final Environmental Impact Report

SCH #2001011129

March 2003

Surfers Point Managed Shoreline Retreat

Final
Environmental Impact Report
SCH #2001011129

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City of San Buenaventura

Environmental Impact Report

SURFERS POINT MANAGED SHORELINE RETREAT

Table of Contents

Page

Summary S-1
S.1 Description of Proposed Action S-1
S.2 Alternatives Under Consideration S-1
S.3 Environmental Impacts S-2
S.4 Required Approvals S-3
S.5 Other Actions in the Same Area S-3
S.6 Areas of Controversy/Unresolved Issues S-4

1.0 Purpose and Need 1-1
1.1 Introduction 1-1
1.2 Project Background 1-1
1.3 Project Purpose 1-2
1.4 Need for the Project 1-2
1.5 EIR/EA Scope of Work 1-2
1.6 Lead, Responsible, and Trustee Agencies 1-3
1.7 Intended Uses of the EIR/EA 1-4

2.0 Description of Project Alternatives 2-1
2.1 Project Applicant/Property Owner 2-1
2.2 Project Location 2-1
2.3 Characteristics of Project Alternatives 2-1
2.4 Construction Schedule 2-18
2.5 Construction Costs and Funding 2-21
2.6 Required Approvals 2-21
2.7 Areas of Public Controversy 2-22
2.8 Status of Other Projects in the Area 2-23

3.0 Environmental Setting 3-1
3.1 Land Use 3-1
3.2 Socioeconomic Setting 3-1
3.3 Biological Resources 3-2
3.4 Air Quality 3-12
3.5 Noise 3-13
3.6 Water Resources 3-13

3.7 Coastal Geology 3-15
3.8 Parking, Beach Access, and Recreation 3-27
3.9 Archaeological Resources 3-27
3.10 Hazardous Waste/Materials 3-31
3.11 Aesthetics 3-31

4.0 Environmental Impact Analysis 4-1
4.1 Land Use 4-1
4.2 Socioeconomic Impacts 4-3
4.3 Biological Resources 4-4
4.4 Air Quality 4-10
4.5 Noise 4-13
4.6 Water Resources 4-14
4.7 Coastal Geology 4-20
4.8 Parking, Beach Access, and Recreation 4-31
4.9 Archaeological Resources 4-38
4.10 Hazardous Waste/Materials 4-40
4.11 Aesthetics 4-41
4.12 Growth-Inducing Impacts 4-42
4.13 Cumulative Impacts 4-45

5.0 Distribution List and Document Availability 5-1
5.1 Distribution List 5-1
5.2 Document Availability 5-2

6.0 Comments and Coordination 6-1
6.1 Notice of Preparation 6-1
6.2 Notice and Circulation of Draft Environmental Document 6-2

7.0 References and Preparers 7-1
7.1 References 7-1
7.2 EIR Preparers 7-7

List of Tables

S-1 Summary of Environmental Impacts and Mitigation Measures S-5
2-1 Comparison of Project Alternatives 2-4
2-2 Estimates of Material to be Excavated and Imported: Alternatives 1-5 2-7
2-3 Construction Cost Comparison 2-22
2-4 Pending Projects in the City of Ventura 2-23
3-1 Summary of Marine Water Bacteriological Data from Two Stations Near Surfer's Point, Ventura, California 3-14
3-2 Streamflow and Sediment Flux for the Ventura River, 1969-1995 3-19
4-1 Comparison of Construction Truck Trips Alternatives 1-5 4-11
4-2 Comparison of Pre-Project and Post-Project Runoff Estimates 4-15
6-1 NOP Comments Received 6-1

List of Figures

2-1 Regional Location 2-2
2-2 Project Vicinity 2-3
2-3 Aerial View of Existing Conditions and Proposed Changes 2-5
2-4 Alternative 1: Buried Seawall Behind Retreat Zone 2-9
2-5 Existing & Possible Future Profile of Public Improvements 2-11
2-6 Alternative 2: Cobble Mattress with Sacrificial Dune Plan View 2-12
2-7 Alternative 2: Cobble Mattress with Sacrificial Dune Cross Section 2-13
2-8 Alternative 4: As Needed Extension of Existing Cobble Berm Without Retreat Zone 2-17
2-9 Alternative 5: Modified Surfrider Foundation Alternative 2-19
3-1 Mapped Habitats in Project Vicinity 3-4
3-2 Intertidal Habitats at Project Site 3-5
3-3 Subtidal Habitat at Project Site 3-6
3-4 Terrestrial Habitat at Project Site 3-9
3-5 Surfers Point Sand Budget 3-20
3-6 Winter and Summer Shore Profiles 3-22
3-7 Area of Potential Effects and Archaeological Survey Map 3-29
3-8 Site Photos 3-32
3-9 Site Photos 3-33
3-10 Site Photos 3-34
4-1 Conceptual Storm Drain Improvements 4-17
4-2 Modified Alternative 3: Cobble Berm with Retreat Zone 4-39
4-3 Conceptual Landscape Plan for Fairgrounds Parking Lot 4-43

Appendices

A Notice of Preparation/Initial Study, NOP Responses, Scoping Meeting Summary
B List of Bird Species
C Coastal Engineering Review
D Phase 1 Archaeological Survey
E Traffic and Circulation Study
F Historical Review/Negative HPSR
G Construction Cost Estimates
H Responses to Comments on the Draft EIR
I Noble Consultants, Inc. Report on Managed Plan for Shoreline Retreat
J Noble Consultants, Inc. Project Monitoring Report for Surfers Point Cobble Nourishment Project

SUMMARY

This document is a Draft Environmental Impact Report (EIR) for the Surfers Point Managed Shoreline Retreat project proposed by the City of San Buenaventura (Ventura).

The EIR has been prepared in compliance with the guidelines and requirements set forth by both the California Environmental Quality Act (CEQA). This document provides the following components:

- A description of the purpose and need for the proposed action
- A discussion of alternatives
- A description of the project's environmental setting
- Documentation of the project's potential environmental effects
- Measures recommended to mitigate significant environmental effects

S.1 DESCRIPTION OF PROPOSED ACTION

The project site is located at Seaside Park in the City of San Buenaventura, County of Ventura, California. The park is located along the south (seaward) side of Shoreline Drive, between Figueroa Street and the Ventura River. The site consists of about 1,800 linear feet of rocky beach and various beachfront facilities, including a beachfront bicycle/pedestrian path and a 352-space surface parking lot (223 of which are currently usable). The bike path and parking lot have been severely damaged by erosion associated with winter storms.

The proposed Surfers Point Managed Shoreline Retreat project involves three primary components: (1) stabilization/restoration of an approximately 1,800-foot stretch of beach; (2) replacement of the damaged shorefront bike path and parking lot; and (3) provision of more paved parking at the adjacent Ventura County Fairgrounds. The objectives for the project are:

- To relocate the shorefront bike path and public parking lot further inland
- To preserve public access to the Surfers Point area via Shoreline Drive
- To restore the lands seaward of Shoreline Drive to more natural beach habitat
- To provide a long term shoreline protection solution for Seaside Park and all improvements landward of Shoreline Drive
- To continue to provide adequate parking at Surfers Point and improve parking at the Fairgrounds
- To provide ongoing maintenance of the beach to preserve the more natural beach habitat and protect landward improvements

S.2 ALTERNATIVES UNDER CONSIDERATION

This EIR considers six alternative scenarios for the project:

- Alternative 1: Buried Seawall Behind the Retreat Zone
- Alternative 2: Cobble Mattress with Sacrificial Dune
- Alternative 3: Cobble Berm with Retreat Zone

- Alternative 4: As Needed Extension of Existing Cobble Berm with No Retreat Zone
- Alternative 5: Preferred Alternative
- Alternative 6: No Project

All of the alternatives other than the CEQA-required "No Project" alternative would involve use of techniques to protect the shoreline at Surfers Point. Alternatives 1, 2, 3 and 5 would also involve relocation of the existing shorefront bike path and parking lot about 64-½ feet inland to create a "retreat zone" at the beach that would be stabilized to protect the relocated improvements and all include paving of a 600-700 space dirt parking lot at the Ventura County Fairgrounds to improve parking for Fairgrounds patrons. The difference among these alternatives is the treatment of the retreat zone and methods used to protect the relocated bike path and parking area. Alternative 4 does not involve relocation of the shorefront bike path and parking lot, but instead would repair these improvements in their current locations. The specific approaches associated with each are described in detail in Section 2.0 and summarized as follows:

Alternative 1 would take no action within the retreat zone, but would provide a buried seawall seaward of the relocated bike path to provide protection of the path in the event of severe storms that cause further beach erosion.
Alternative 2 would place a cobble "mattress" within the retreat zone, topped by a "sacrificial" sand dune, and would also include the buried seawall seaward of the relocated bike path.
Alternative 3 would place a more substantial cobble "berm" within the retreat zone, but with no sacrificial sand dune and no buried seawall.
Alternative 4 involves extension of an existing cobble berm at the eastern end of Surfers Point to the Ventura River on an as needed basis and repair of the shorefront bike path and parking lot in their current locations. This alternative would not include a buried seawall or relocation of the bike path and existing parking area.
Alternative 5, which is the option recommended by the Surfers Point Working Group, involves the development of a cobble berm similar to that of Alternative 3, and the creation of a substantial sacrificial sand dune, revegetated with native dune habitat.
Alternative 6 would involve no change from current conditions at Surfers Point.

S.3 ENVIRONMENTAL IMPACTS

Table S-1 summarizes the anticipated impacts of the proposed project and the recommended measures to minimize those impacts. None of the alternatives would have negative environmental impacts that cannot be avoided; therefore, with recommended mitigation measures, the overall magnitude of environmental impact is roughly equivalent for Alternatives 1 through 5.

Although none of the alternatives would create any unavoidably adverse environmental impacts, each has certain advantages and disadvantages. For example, Alternative 1 has the advantages of providing a sandy beach that may be attractive to recreational beach users and minimizing maintenance costs; on the other hand, the lack of beach nourishment and presence of a buried seawall may hinder beach access during periods of erosion. The cobble mattress associated with Alternative 2 would improve the stability of the retreat zone as compared to

Alternative 1, while the sacrificial dune would provide a sandy beach area for recreational purposes; however, the cobble mattress would likely require more frequent renourishment than the more substantial cobble berm associated with Alternatives 3, 4, and 5. Alternative 4 would be the lowest cost alternative, but would not achieve the project objective of relocating the bike path and parking area further inland. Unlike Alternatives 3 and 4, Alternative 5 would provide for a substantial sand dune area, without the need for the buried seawall that is part of Alternatives 1 and 2.

The determination of which alternative is environmentally superior overall would depend upon which issues each individual reader considers most important. Alternative 5 appears to best meet the project objectives of relocating improvements inland and restoring the beach to provide a more natural habitat. On the other hand, Alternative 4 would involve the least initial disruption to the area, while Alternatives 1 and 3 would minimize future maintenance needs and associated periodic impacts relating to truck traffic and disruption of beach activities at Surfers Point.

S.4 REQUIRED APPROVALS

Certification of this EIR and approval of the project by the Ventura City Council would be required prior to initiating construction. In addition, the following approvals from other agencies would be required:

- Approval of the project by the 31st Agricultural District (the property owner)
- Approval of a lease by the State Lands Commission to allow the placement of cobble material below the mean high tide line in the westernmost 90 meters (300 feet) of the project site
- California Coastal Commission approval of a coastal development permit
- Federal Highway Administration approval of environmental documentation required to comply with the National Environmental Policy Act (NEPA) to allow federal funding of the bike path component of the project
- Section 404 permit from the U.S. Army Corps of Engineers for disturbance within the tidal area and approval of NEPA documentation as required by the Corps
- Section 401 Certification of the Section 404 permit
- Adherence to the State Water Resources Control Board National Pollution Discharge Elimination System (NPDES) general permit for stormwater discharges associated with construction activity

S.5 OTHER ACTIONS IN THE SAME AREA

The only pending project on the City of Ventura's pending projects list that is in the immediate vicinity of the project site is a proposal for a 250-275 room hotel and restaurant at the southeast corner of Harbor Boulevard and Figueroa Street. That project is currently going through the planning process with the City. A revised application for that project that scales back the proposal is expected to be submitted to the City. One City maintenance project is also in the planning stages in the area: an eastern extension of the Surfers Point Beach nourishment pilot project to Figueroa Street.

S.6 AREAS OF CONTROVERSY/UNRESOLVED ISSUES

No areas of significant public controversy are known to exist with respect to the proposed Surfers Point Managed Shoreline Retreat project. The primary points of concern that have been raised to date in the public discourse on the project relate to specific design details requested by the Surfrider Foundation in a response to the Notice of Preparation of the environmental document.

Table S-1 Summary of Environmental Impacts and Mitigation Measures

Impact	Mitigation Measures
LAND USE	
None of the project alternatives would create any land use compatibility conflicts or affect any agricultural resources.	None required for any alternative.
Alternatives 1-5 all appear to be consistent with the intent of applicable policies of the Land Use Element of the City of Ventura Comprehensive Plan. Alternative 6 (No Action) would fail to implement several Land Use Element policies pertaining to management of the Surfers Point shoreline.	None required for any alternative.
SOCIOECONOMIC IMPACTS	
None of the project alternatives would affect existing housing or involve the development of new housing.	None required for any alternative.
None of the project alternatives would have adverse impacts with regard to the provision of public services. Alternative 1 would have no ongoing maintenance requirements. Alternatives 2 and 5 would be expected to involve the greatest amount of ongoing maintenance among the studied alternatives.	None required for any alternative.
BIOLOGICAL RESOURCES	
Adverse impacts to marine biological resources, Essential Fish Habitat, sensitive species, and wetlands are not anticipated for any alternative. The length of construction, and thus temporary disturbance to nearshore species, would be shortest under Alternative 4.	None required, but the following measures are recommended for Alternatives 1-5. **BIO-1** Although no impact to the marine biota or habitats is expected, performing construction activity within the tidal zone during winter, daytime low tides would reduce the resuspension of sediments in the lower intertidal areas. **BIO-2** Prior to construction activities and removal of landscape trees and shrubs from the parking lot and the north side of Shoreline Drive, it is recommended that surveys be conducted to determine the presences or absence of nesting birds. In addition, it is recommended that pre-construction surveys be conducted over the entire project impact area to determine the presence or absence of sensitive animal and plant species. If a listed species and/or critical habitat is located in the area of potential impact, early consultation with the CDFG and the USFWS is needed.
Alternatives 1-5 could all disturb a dune area slated for restoration by the City of Ventura. However, because the existing vegetation is no longer considered significant or describable as a native "coastal dune community", this is not an adverse impact. Alternatives 2 and 5 would provide the best opportunity to attempt a new dune restoration project since they would create a sandy beach area at Surfers Point.	None required for any alternative.

Table S-1 Summary of Environmental Impacts and Mitigation Measures

Impact	Mitigation Measures
Alternatives 1-3 and 5 would involve the removal of a number of landscape trees and shrubs in the shorefront parking lot and along the north side of Shoreline Drive. However, these landscape species do not qualify as "heritage" trees under the City of San Buenaventura policies and the trees are of limited value as "specimen" trees. Therefore, no impact to biological resources is expected.	None required for any alternative. Measure BIO-2 above would minimize the potential for impacts to nesting birds in landscape trees.
AIR QUALITY	
Alternatives 1-5 would all generate a temporary increase in air pollutant emissions during project construction. Because such emissions would be temporary, they are considered to have no impact with respect to Ventura County Air Pollution Control District (APCD) thresholds. Nevertheless, standard air pollution control measures will be implemented as required by the City and APCD on all construction projects.	Although no impact is anticipated with regard to construction-related activity, the City of Ventura requires the following standard measures for all construction activity. **AQ-1** During clearing, grading, earth moving, or excavation operation, excessive fugitive dust emissions shall be controlled by regular watering, paving construction roads, or other dust preventive measures using the following procedures: • All material excavated or graded shall be sufficiently watered to prevent excessive amounts of dust. Watering shall occur at least twice daily with complete coverage, preferably in the late morning and after work is done for the day. • All clearing, grading, earth moving, or excavation activities shall cease during periods of high winds (i.e., greater than 30 mph averaged over one hour) so as to prevent excessive amounts of dust. • All material transported off site shall be either sufficiently watered or securely covered to prevent excessive amounts of dust. • Facemasks shall be used by all employees involved in grading or excavation operations during dry periods to reduce inhalation of dust, which may contain the fungus that causes San Joaquin Valley Fever. • The area disturbed by clearing, grading, earth moving, or excavation operations shall be minimized so as to prevent excessive amounts of dust. **AQ-2** After clearing, grading, earth moving, or excavation operations, and during construction activities, fugitive dust emissions shall be controlled using the following procedures: • All active portions of the construction site shall be sufficiently watered to prevent excessive amounts of dust. • All temporary roads shall be covered with gravel • Soil binders shall be spread immediately after seeding.

Table S-1 Summary of Environmental Impacts and Mitigation Measures

Impact	Mitigation Measures
	• All active portions of the construction site shall be sufficiently watered to prevent excessive amounts of dust. • All temporary roads shall be covered with gravel • Soil binders shall be spread immediately after seeding. • The area shall be wet down sufficiently at least twice a day, so as to form a crust on the surface with repeated soaking to maintain a crust and prevent wind erosion. • Adjacent public thoroughfares and streets shall be swept daily. • If construction is halted for more than 10 consecutive days, a chemical stabilizer shall be applied to graded portions of the site. **AQ-3** At all times, fugitive dust emissions shall be controlled using the following procedures: • On-site vehicle speed shall be limited to 15-mph. • All areas with vehicle traffic shall be watered periodically. • Use of petroleum-based dust pallatives shall meet the road oil requirements of Ventura County APCD Rule 74.4, Cutback Asphalt. • Streets adjacent to the project site shall be swept as needed to remove silt, which may have accumulated from construction activities so as to prevent excessive amounts of dust. **AQ-4** Construction related emissions shall be controlled using the following procedures: • Construction equipment shall be maintained and adjusted to minimize emissions. • Low-sulfur fuel (0.05 percent by weight) shall be used in construction equipment. • Construction truck trips shall be scheduled during non-peak hours to reduce peak hour emissions. • Construction activities shall be phased and scheduled to avoid high ozone days. • Construction shall be discontinued during second-stage smog alerts or conditions of high winds combined with low humidity.

Table S-1 Summary of Environmental Impacts and Mitigation Measures

Impact	Mitigation Measures
NOISE	
Alternatives 1-5 would all generate temporary noise level increases during construction. Primary sources of noise would be heavy construction equipment and delivery trucks on local roadways. Additional truck-related noise would occur periodically over the life of the project due to renourishment of the beach. Noise would not exceed City standards under any alternative because the project site is located over 1,000 feet from the nearest sensitive receptor. Exceedance of adopted City standards is not anticipated for any alternative.	All alternatives would be required to comply with the City's Noise Ordinance, which restricts construction activity to between the hours of 7 AM and 8 PM. Mitigation beyond this standard requirement is not necessary.
WATER RESOURCES	
Paving of the 7.3-acre dirt parking lot as would occur under Alternatives 1-5 would alter hydrological patterns in the area to some degree. However, the design would be required to comply with City and NPDES storm water requirements. In addition, the design of the planned Fairgrounds drainage system would redirect surface water from the Ventura River outfall directly to the Pacific Ocean, and would therefore reduce disruption of natural hydrological cycles in the Ventura River Estuary.	All alternatives would comply with City flood control requirements. No mitigation beyond standard requirements is necessary for any alternative.
The project site is within flood zone V, an area of 100-year coastal flooding. The proposed facilities (bike path, surface parking) are not considered critical facilities. Alternatives 1-5 would all reduce susceptibility to flooding of landward improvements as compared to current conditions. The cobble berm associated with Alternatives 3, 4 and 5 would provide the greatest benefit in terms of flood protection among the studied alternatives with Alternative 5 providing maximum protection against storm waves in terms of shoreline protection.	None required for any alternative.
Alternatives 1-5 could result in temporary water quality impacts during construction and long-term water quality impacts due to the paving of the 7.3-acre dirt parking lot on the Fairgrounds property. However, compliance with NPDES general construction permit requirements would alleviate temporary construction effects, while compliance with the Ventura County Stormwater Quality Urban Impact Mitigation Plan (SQUIMP) would alleviate long-term impacts.	The City would be required to prepare a Stormwater Pollution Prevention Plan (SWPPP), which would need to be approved by the State Water Quality Control Board prior to demolition/construction activity. The SWPPP would typically include the following types of requirements: • Maintenance of construction equipment in good working order to minimize oil leakage • Performance of maintenance requiring the use of petroleum products in areas that can be readily cleaned • Removal of unnecessary debris and materials at the end of each construction day • Removal of all debris, litter, leaks, and spills as soon as they occur Implementation of such measures, in addition to any site-specific requirements imposed by the Board, would reduce temporary construction impacts to a level which may be considered to have no impact. The SQUIMP requires parking lots of 5,000 square feet or more to comply with various best management

Table S-1 Summary of Environmental Impacts and Mitigation Measures

Impact	Mitigation Measures
	practices (BMPs). Specific requirements for the design of parking lots include: • Reduce impervious land coverage of parking areas • Infiltrate runoff before it reaches the storm drain system • Treat runoff before it reaches the storm drain system • Treat to remove oil and petroleum hydrocarbons • Ensure adequate operation and maintenance of treatment systems, particularly sludge and oil removal, and system fouling/plugging prevention control Design details for each of these requirements would be subject to City of Ventura and Fairgrounds approval. Compliance with these standard requirements would reduce impacts to a level of non-significance.
COASTAL GEOLOGY	
Alternatives 1-5 would all improve protection of upland improvements (bike path, parking areas) as compared to current conditions. Though the buried seawall associated with Alternative 1 would improve protection, the absence of energy-absorbing cobble would increase the potential for exposure of the seawall as compared to Alternative 2. The cobble mattress associated with Alternative 2 would reduce the likelihood of buried seawall exposure as compared to Alternative 1, but would be expected to require more frequent maintenance than the cobble berm of Alternatives 3, 4 and 5. On the other hand, Alternatives 3, 4 and 5 do not include a buried seawall to protect the upland improvements in the event of severe erosion; therefore, the potential for erosion damage could be greater under those alternatives in the event that renourishment cannot be undertaken immediately following a major erosional event (for example, if cobble material is not immediately available).	None required for any alternative since all would improve conditions as compared to what currently exists. Nevertheless, design modifications (essentially, replacement of the cobble mattress with a more substantial berm similar to Alternative 3) are recommended for Alternative 2 to maximize the benefits associated with project implementation.
The dissipative surface of the cobble mattress (Alternative 2) or cobble berm (Alternatives 3, 4 and 5) could incrementally improve the quality of the surf by reducing wave reflection. In the unlikely event that erosion progresses to the point that the buried seawall associated with Alternatives 1 or 2 wall is exposed and waves not only reach but also reflect off the wall, the reflected waves could degrade the quality of the surf. Renourishment of the cobble mattress as necessary and as envisioned as part of Alternative 2 would alleviate such effects if they occur. As Alternative 1 does not include renourishment, such effects could remain until the next period of accretion under that alternative.	None required for any alternative, though renourishment of the beach as needed under Alternative 1 would limit beach erosion to relatively short durations.

Table S-1 Summary of Environmental Impacts and Mitigation Measures

Impact	Mitigation Measures
Alternatives 1-5 all appear to be generally consistent with the intent of applicable City of Ventura policies relating to shoreline management as well as with applicable policies of the Draft Policy on Coastal Erosion Planning and Response issued by the State Resource Agency. Alternative 4 does not, however, implement policies suggesting relocation of development further inland to avoid conflicts with coastal processes. Alternative 6 (No Action) may be inconsistent with various City policies since it would not provide for protection of the bike path and parking lot and may therefore result in further degradation of accessibility over time.	None required for any alternative.
PARKING, BEACH ACCESS, AND RECREATION	
Alternatives 1-5 would all involve temporary disruption of access to Surfers Point during construction. Alternatives 1-3 and 5 would all require temporary closure of Shoreline Drive and beach parking to allow for reconstruction of the bike path and parking areas. Alternative 4 would have similar effects, but may not require closure of Shoreline Drive since it involves repair of the existing bike path and parking lot rather than reconstruction of these facilities.	**PAR-1** The project contractor and the City shall develop a Traffic Control Plan to control construction traffic and circulation within the Shoreline Drive corridor during the construction period. An access plan shall also be developed for the area addressing vehicular access, pedestrian access, and bicycle access during the Phase I construction period. A construction schedule shall also be developed to avoid significant construction during peak activity periods at the Fairgrounds. **PAR-2** A Parking Management Plan shall be developed by the Fairgrounds to provide temporary parking for public beach users during the period when the beach parking lots are removed/repaired and the replacement parking has not been finished. The plan shall also identify parking areas for construction workers and equipment.
Alternatives 1-5 would generally improve recreational opportunities as compared to current conditions by replacing the damaged bike path and restoring the beach at Surfers Point. Each would result in somewhat different conditions with respect to beach recreational opportunities. Alternative 1 would provide a sandy beach during periods of accretion but the buried seawall may impair beach access during periods of excessive erosion. Alternatives 2 and 5 would provide a sand dune that would also provide recreational opportunities during periods of accretion. In Alternative 2, the buried seawall could temporarily impair access during periods of erosion, although renourishment of the cobble mattress/dune as needed would alleviate such effects. In addition, during periods of high wind, sand from the dune could accumulate on the bike path and parking area. Alternatives 3 and 4 do not include a buried seawall, but also would not provide for a sandy beach or dune area and may therefore be less desirable than Alternatives 1, 2 and 5 from a recreational standpoint.	Implementation of Measure CG-1 would reduce the possible impairment of beach access associated with Alternative 1 during periods of erosion by requiring renourishment of the beach as needed if erosion approaches or exposes the buried seawall. Such renourishment is part of Alternative 2. The following minor design modification is suggested for Alternative 3 to maximize the long-term recreational benefits of that alternative: • Provision of a sandy area that extends from the berm crest to the parapet wall would provide opportunities for beach recreation under Alternative 3. Depending upon the anticipated use, the surface could consist of either sand or grass. A geotextile should be installed under the recreational area to reduce the potential for sand displacement into the cobble berm in response to foot traffic and wave overwash. This recommended modification to Alternative 3 is illustrated on Figure 4-2. The following modification is recommended for Alternative 4 if that alternative is chosen.

Table S-1 Summary of Environmental Impacts and Mitigation Measures

Impact	Mitigation Measures
	A sandy surface for beach recreation between the berm crest and the bike path may be provided if the cobble berm is extended to the west before erosion reaches the vicinity of the bike path. It should be noted, however, that the sandy surface will exist only in the western portion of the project area, and only if the berm is extended in a timely manner.
Alternatives 1-5 do not appear to conflict with applicable City of Ventura or California Coastal Act policies relating to beach access or recreation. Coastal Commission staff, however, have indicated in previous correspondence the opinion that failure to relocate the bike path further inland (such as in Alternative 4) may conflict with Coastal Act policy. Alternative 6 may conflict with various policies since it would be expected to result in continued degradation of conditions at Surfers Point.	None required for any alternative.
ARCHAEOLOGICAL RESOURCES	
None of the project alternatives would disturb any known cultural resources. Though unlikely, Alternatives 1-5 all have the potential to disturb as yet undiscovered cultural resources.	The following measures would apply to Alternatives 1-5 and would mitigate any possible impacts to as yet undiscovered cultural resources. **AR-1** A professional archaeologist shall be retained to monitor ground disturbance if excavation extends below existing fill into native soils. The archeologist shall have the power to temporarily halt or redirect project construction in the event that potentially significant cultural resources are exposed. A monitoring report shall be prepared upon completion of construction if an archaeologist is needed. **AR-2** In the event that archaeological resources are unearthed during project construction, all earth disturbing work within the vicinity of the find must be temporarily suspended or redirected until an archeologist has evaluated the nature of the find. After the find has been appropriately mitigated, work in the area may resume. A Chumash representative shall be retained to monitor any mitigation work associated with Native American cultural material. **AR-3** If human remains are unearthed, State Health and Safety Code Section 7050.5 requires that no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to Public Resources Code Section 5097.98. If the remains are determined to be of Native American descent, the coroner has 24 hours to notify the Native American Heritage Commission.

Table S-1 Summary of Environmental Impacts and Mitigation Measures

Impact	Mitigation Measures
HAZARDS	
It has been suggested that removal of the bike path and parking lot as would occur under Alternatives 1-3 and 5 may create health hazards by exposing contaminants in soil beneath the bike path/parking lot and allowing them to enter surface waters. However, remediation of known areas of contamination was conducted prior to construction of the existing Surfers Point improvements in 1989 and there is no evidence that contamination of fill material placed under the bike path/parking lot has occurred since that time. Removal of non beach grade material as would occur under Alternatives 1-3 and 5 would minimize the potential for migration of solid materials (rebar, concrete) into the ocean.	Although it is not anticipated that fill material beneath the existing bike path and parking lot is contaminated, the following measure is recommended to alleviate health hazards in the event that unknown contaminants are discovered during demolition and excavation. **H-1** If potentially contaminated soil is encountered during removal of the existing shorefront bike path and parking lot, demolition/construction activities shall halt until an assessment of the soil is conducted by a qualified individual. If contamination exceeding regulatory action levels is discovered, the contamination shall be remediated in accordance with applicable regulatory requirements prior to commencing with demolition and construction.
AESTHETICS	
All alternatives would generally improve visual conditions by replacing the erosion-damaged bike path and parking lot. Alternatives 1-3 and 5 would all involve the removal of existing landscape shrubs and trees along the north side of Shoreline Drive and in the existing shorefront parking lot and could involve the removal of some or all of the landscaping along the south side of Shoreline Drive.	None required for any alternative. The following is recommended for Alternatives 1-3 and 5 to ensure that the removal of landscaping along Shoreline Drive does not create a permanent negative effect. **AES-1** For Alternatives 1-3 and 5, landscape trees and shrubs along the Shoreline Drive during construction should be replaced with appropriate landscaping as part of the final project design. For the north side of Shoreline Drive, the landscape plan should be similar in concept to that shown on Figure 4-3. For the south side of Shoreline Drive, landscaping should consist of groundcovers, shrubs, and/or tree species that would not hinder automobile parking along the south side of the street or restrict views from Shoreline Drive or access to the beach or bike path.
Though not necessarily an adverse impact, the sacrificial sand dune associated with Alternative 2 and 5 may partially obstruct views of the ocean from Shoreline Drive. This change in visual conditions would not occur under the other alternatives.	Although not needed as mitigation, possible loss of ocean views from the bike path associated with Alternatives 2 and 5 could be minimized by using a maximum dune elevation comparable to the elevation of the bike path.

1.0 PURPOSE AND NEED

1.1 INTRODUCTION

This document is a Final Environmental Impact Report (EIR - State Clearinghouse No. 2001011129) for the Surfers Point Managed Shoreline Retreat project proposed by the City of San Buenaventura (Ventura). The document is intended to meet the environmental review requirements of the California Environmental Quality Act (CEQA). Environmental review is required because the proposed action constitutes a project under CEQA.

This Final EIR includes the EIR text and appendices, comments on the Draft EIR, and responses to those comments. Some minor changes to the text of the EIR have been made in response to the comments on the Draft EIR that the City received during the 45-day public review period. Areas where changes to the EIR text have been made are indicated with a line in the outside border of the page.

The proposed project generally involves replacement of a damaged beachfront bike path and parking lot with a new path and on-street parking along Shoreline Drive, as well as the restoration and stabilization of the beach at Surfers Point. Each of the alternatives analyzed in this EIR is described in detail in Section 2.0, *Description of Project Alternatives*. This section describes the purpose of and need for the project, the EIR scope and content, lead, responsible, and trustee agencies for the project, and the intended uses of the EIR.

1.2 PROJECT BACKGROUND

In 1989, the City of Ventura and the State Fairgrounds constructed the Surfers Point redevelopment project as the last component of the City's program to revitalize the shorefront between the Ventura Pier and the Ventura River. The project involved the development of about 2.4 hectares (6 acres) of shorefront land with a new street right-of-way (Shoreline Drive), a Class I beachfront bike path, public parking facilities, and a small dune habitat.

Shortly after completion of the redevelopment project, winter storm waves began to seriously erode dune areas at Surfers Point. Ultimately, erosion became severe enough that portions of the bike path collapsed. In response, the City considered various emergency measures to temporarily halt the erosion until a permanent solution could be developed. Ultimately, the City applied twice to the California Coastal Commission for coastal permits to construct a rock revetment near the western end of the Surfers Point site. The Coastal Commission denied both permit applications, indicating that the improvements constructed in 1989 were intended to be temporary since they were constructed in an area known to be subject to hazardous conditions. Instead, the Commission recommended relocating the improvements further inland and seeking non-structural solutions to the erosion problems at Surfers Point. The City, however, issued an emergency coastal permit on December 11, 1992, and constructed the revetment from December 14-16 of the same year. The revetment was intended to be temporary in nature, but currently remains in place.

In 1995, State Senator Jack O'Connell and Assemblyman Brooks Firestone convened a Working Group consisting of representatives of concerned agencies (Coastal Commission, State Parks

Department, Fairgrounds Commission, City of Ventura) and other interested parties to resolve longstanding issues relating to preservation of the Surfers Point shoreline. The task before the Working Group was to determine how best to restore and protect a popular bike path and pedestrian walkway, parking area, dune habitat, and beach access point. A number of alternatives were developed, ranging from traditional methods to protect the bike path and parking lots in their existing locations to complete removal and abandonment of the public improvements within a designated buffer zone. After considerable review, the consensus determination was that a managed retreat plan should be developed to accomplish the following:

- *To relocate the shorefront bike path and public parking lot further inland*
- *To preserve public access to the Surfers Point area via Shoreline Drive*
- *To restore the lands seaward of Shoreline Drive to more natural beach habitat*
- *To provide a permanent shoreline protection solution for Seaside Park and all improvements landward of Shoreline Drive*
- *To continue to provide adequate parking at Surfers Point and improve parking at the Fairgrounds*
- *To provide ongoing maintenance of the beach to preserve the more natural beach habitat and protect landward improvements*

In the Fall of 2000, the City of Ventura implemented the Surfers Point Beach nourishment pilot project, which involved the placement of cobble material along an approximately 213-meter (700-foot) stretch of the shoreline immediately east of the Surfers Point Managed Shoreline Retreat project site. That project, which was the subject of City of Ventura case no. EIR-2238, was intended to serve as a pilot project to determine whether or not the use of a cobble berm would help resolve erosion problems in the Surfers Point area. The success of the pilot project is discussed in Section 3.7 of this EIR.

1.3 PROJECT PURPOSE

The primary purposes of the project are to stabilize the beach at Surfers Point, relocate the shorefront bike path and public parking lot further inland, enhance public access to the beach, implement the Fairgrounds Master Plan, and introduce more natural shoreline features.

1.4 NEED FOR THE PROJECT

As discussed in Section 1.2, periodic coastal erosion at Surfers Point has limited public access to the area as well as its recreational use. The purpose of the Surfers Point Managed Shoreline Retreat project is to implement a program that will provide a permanent solution to the beach erosion problems in a manner that will meet the objectives of the Surfers Point Working Group, provide necessary protection of shorefront improvements, and avoid adverse impacts to coastal processes and nearby beaches. The project would implement several policies within the Land Use Element of the City of Ventura Comprehensive Plan relating to preservation and enhancement of recreational and visitor-serving uses at Surfers Point (specific Comprehensive Plan policies are discussed in Section 4.1.1).

1.5 EIR SCOPE OF WORK

In accordance with the *CEQA Guidelines* and City of Ventura CEQA procedures, an Initial Study was prepared for the project and a Notice of Preparation (NOP) was distributed to affected agencies and the public for review and comment in late January 2001. The NOP, Initial Study, and responses to the NOP are presented in Appendix A. The City of Ventura held an EIR scoping meeting on March 6, 2001 to gather additional input from the community on the scope and content of the document.

The scoping process for the project identified potentially adverse impacts in the following issue areas:

- *Coastal Geology and Erosion*
- *Biological Resources*
- *Archaeological Resources*
- *Parking, Beach Access, and Recreation*
- *City and California Coastal Commission Policies*

This EIR addresses the issues referenced above as well as other issues for which impacts could occur. The document identifies potentially adverse and unavoidable environmental impacts, including site-specific and cumulative effects of the project. Where necessary and feasible, the EIR recommends mitigation measures that would reduce or eliminate adverse and unavoidable environmental effects to a level of non-significance.

In preparing the EIR, use was made of pertinent City, Coastal Commission, and FHWA policies and guidelines, existing EIRs, and other background documents prepared by the City, including the "Managed Plan for Shoreline Retreat" document (Noble Consultants, Inc., December 2000) that describes the project history, geologic and coastal conditions in the area, and the range of options for the managed shoreline retreat that have been considered. A full reference list is contained in Section 6.0, *References and Preparers*.

The level of detail contained throughout this document is consistent with the requirements of CEQA and applicable court decisions. The *CEQA Guidelines* provide the standard of adequacy on which this document is based. The *Guidelines* state:

> *An EIR should be prepared with a sufficient degree of analysis to provide decision-makers with information which enables them to make a decision which intelligently takes account of environmental consequences. An evaluation of the environmental effects of the proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts. The courts have looked not for perfection, but for adequacy, completeness, and a good faith effort at full disclosure. (Section 15151).*

1.6 LEAD, RESPONSIBLE, AND TRUSTEE AGENCIES

The *CEQA Guidelines* and City of Ventura CEQA procedures require identification of "lead," "responsible" and "trustee" agencies. The City of Ventura is the lead agency for the project because it has the principal responsibility for approving the project. Authority to certify the EIR and approve the project is vested with the City, which would need to find that the project is consistent with the City's Local Coastal Program (LCP) and issue a development permit in order to allow the project to proceed.

A "responsible agency" is a public agency other than the "lead agency" that has discretionary approval over the project. The project site is located entirely on state owned land and involves actions both above the mean high tide line (placement of cobble fill and sand, demolition of the existing bike/pedestrian path and parking lot, construction of a new path and parking along Shoreline Drive, and paving of an existing dirt parking lot on the Ventura County Fairgrounds) and below the mean high tide line (placement of cobble fill material). The 31st Agricultural District owns the portions of the site above the mean high tide line, while the State Lands Commission owns those portions of the site below the mean high tide line. Therefore, both agencies have discretionary approval authority over portions of the project.

The project site is also within the Coastal Zone as defined in the California Coastal Act. Therefore, the California Coastal Commission has jurisdiction over the site and would also be a responsible agency. The Coastal Commission would need to issue a coastal permit for any action below the high tide line. Although the City of Ventura retains permitting authority in areas above the high tide line, any approvals within this zone could be appealed to the Coastal Commission.

The U.S. Army Corps of Engineers is considered a responsible agency because it will need to issue a Department of the Army 404 Permit pursuant to the Clean Water Act of 1977 for the discharge of fill material into the Pacific Ocean. The Regional Water Quality Control Board (RWQCB) will need to issue a State 401 Certification pursuant to the State Water Resources Control Board Resolution No. 88-112 related to the U.S. Army Corps of Engineers Nationwide Permit. Thus, the RWQCB is also a responsible agency.

A "trustee agency" refers to a state agency having jurisdiction by law over natural resources affected by a project. The California Coastal Commission is therefore also a trustee agency for the project.

1.7 INTENDED USES OF THE EIR

The EIR is intended to be used as an information document that discloses the environmental consequences associated with the actions and approvals required to implement the proposed project. The City of Ventura, other reviewing agencies, and the public will use this EIR in their evaluation of the proposed project.

2.0 DESCRIPTION OF PROJECT ALTERNATIVES

This section describes the alternatives being considered for the management of the Surfers Point Shoreline. Six alternatives are described. Five of these involve alternative shoreline management strategies. The sixth alternative is the required "No Project" alternative, which involves leaving the beach and improvements in their current condition.

2.1 PROJECT APPLICANT/PROPERTY OWNER

The project applicant is the City of San Buenaventura (Ventura). Ventura City Hall is located at 501 Poli Street, Ventura, California. The project site, including an existing bike path and parking lot, and Shoreline Drive, is owned and maintained by the 31st Agricultural District. The bike path is within an easement that was incorporated within the State Senator Omar Rains Bicentennial Bikeway and is the responsibility of the State Department of Parks and Recreation.

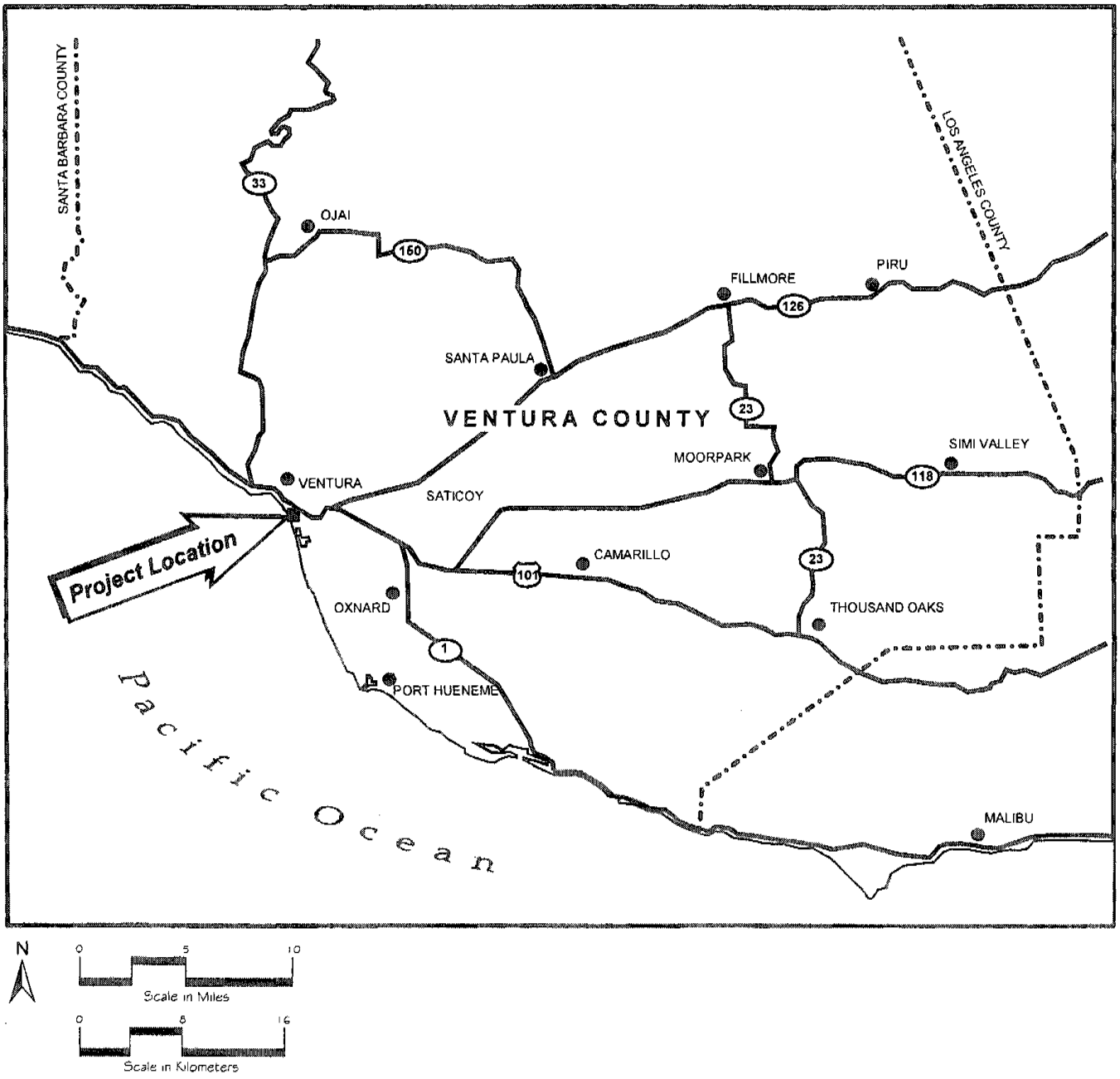
2.2 PROJECT LOCATION

The project site is located at Seaside Park in the City of Ventura, County of Ventura, California. The park is located along the south (seaward) side of Shoreline Drive, between Figueroa Street and the Ventura River. The site consists of about 550 linear meters (1,800 feet) of rocky beach and various beachfront facilities, including a beachfront bike path and a surface parking lot with a total of 352 parking spaces (223 of which are currently in use). As discussed in Section 1.0, the bike path and parking lot have been severely damaged by erosion associated with winter storms. The site also includes an approximately 7.3-acre area of the Ventura County Fairgrounds that would be paved to provide additional parking for Fairgrounds visitors.

Figure 2-1 shows the project site within the Ventura County region, while Figure 2-2 shows the site in the context of the surrounding area.

2.3 CHARACTERISTICS OF PROJECT ALTERNATIVES

As mentioned above, this EIR considers six alternative scenarios for the project. All of the alternatives other than the CEQA-required "No Project" alternative would involve use of techniques to protect the shoreline at Surfers Point. Alternatives 1, 2, 3 and 5 would also involve relocation of the existing shorefront bike path and parking lot about 20 meters (64-½ feet) inland to create a "retreat zone" at the beach that would be stabilized to protect the relocated improvements and include paving of a 600-700 space dirt parking lot at the Ventura County Fairgrounds to improve parking for Fairgrounds patrons. The difference among these alternatives is the treatment of the retreat zone and methods used to protect the relocated bike path and parking area. Alternative 4 includes the paving of the dirt parking lot, but would not create a retreat zone. Instead, that alternative considers repairing the bike path and parking lot in their current locations, with no shoreline retreat zone. Alternative 6 would involve no change from current conditions at Surfers Point.



Regional Location

Figure 2-1

Project Vicinity

Figure 2-2

Table 2-1 provides an overview of the project alternatives, while Table 2-2 compares the amount of material that would be excavated and imported under Alternatives 1-5. Figure 2-3 illustrates the locations of the major project components under consideration. A detailed description of each of the alternative scenarios follows.

Table 2-1 Comparison of Project Alternatives

Possible Project Component	Alternative 1 Buried Seawall Behind the Retreat Zone	Alternative 2 Cobble Mattress with Sacrificial Dune	Alternative 3 Cobble Berm with Retreat Zone	Alternative 4 As Needed Extension of Existing Cobble Berm/No Retreat Zone	Alternative 5 Preferred Alternative	Alternative 6 No Action
Creation of a "retreat zone" and relocation of the shorefront bike/pedestrian path and parking lot approximately 20 meters (64-½ feet) inland	X	X	X		X	
Placement of cobble material along the shoreline for stabilization		X	X	X	X	
Creation of an artificial sand dune at the beach		X			X	
Construction of a buried seawall structure seaward of the bike path	X	X				
Modifications to Shoreline Drive	X	X	X		X	
Paving of the 3-hectare (7.3-acre) dirt parking lot at the Ventura County Fairgrounds	X	X	X		X	

X indicates that the alternative includes the given project component.

a. Alternative 1: Buried Seawall Behind the Retreat Zone. Alternative 1 involves the removal of the existing bike path and parking lot along an approximately 550-meter (1,800-foot) long stretch of the shoreline at Surfers Point in the City of Ventura. The existing Class I bike path would be relocated to the north (away from the ocean) and the parking lot would be replaced with on-street parking along Shoreline Drive. The specific actions associated with this alternative are described in detail below.

Shoreline Protection. This alternative assumes that all improvements seaward of the existing location of Shoreline Drive (existing bike path and parking lot) would be demolished and the area would be re-graded to a smooth slope. No attempt would be made to address

Aerial View of Existing Conditions and Proposed Changes Figure 2-3

future episodes of erosion through renourishment of the beach, and erosion episodes would presumably continue at the current frequency. This concept is illustrated in Figure 2-4.

The impact of Alternative 1 on the remaining improvements is dependent upon the magnitude and extent of future cycles of beach recession and accretion and their coincidence with coastal storm events. It is anticipated that the retreat zone would continue to erode during times of narrow to non-existent beach protection. The erosion sequences would be tempered by times when the shoreline is wider as a result of beneficial river discharges and littoral contributions. In order to assure the preservation of the improvements landward of the retreat zone during those times of depleted beach sand, this alternative includes a buried seawall seaward of the relocated bike path. The toe of the wall would be at about 0.6 to 1.2 meters (2 to 4 feet) below mean lower low water (MLLW). All but about the uppermost 0.75 meters (2-½ feet) of the wall would be buried in place (see Figure 2-4). As indicated in Table 2-2, construction of the buried seawall would involve temporary excavation of an estimated 19,880 cubic meters (26,000 cubic yards) of material and placement of about 518 meters (1,700 linear feet) of sheet pile wall and 6,441 metric tons (or tonnes) (7,100 tons) of stone to create a toe for the wall.

The seawall structure would be buried. Nevertheless, portions of the seawall, particularly on the west end of Surfers Point, could potentially become exposed following major storm events until subsequent river discharges deliver enough sediment to the shoreline to rebury the structure.

Relocation of Improvements. In conjunction with the shoreline protection, all of the existing infrastructure improvements seaward of the Shoreline Drive right-of-way, including the damaged bike path and a 352-space parking lot, would be removed. In addition, the 1.8-meter (6-foot) wide sidewalks on both sides of Shoreline Drive would be removed. A 1.8-meter (6-foot) wide landscaped parkway on the north side of Shoreline Drive, including approximately 76 landscape trees, would also be removed to allow for parking on the north side of Shoreline Drive. As indicated in Table 2-2, removal of these facilities would involve excavation of an estimated 2,332 tonnes (2,650 tons) of asphalt and curb material.

Current plans call for the preservation of the landscape parkway and street trees along the south side of the street, although it is possible that some trees would need to be removed to accommodate the bike path and on-street parking on the south side of Shoreline Drive. It should be noted that only 223 of the 352 spaces in the existing parking lot are currently in use. The remainder (129 spaces) are no longer usable because of damage associated with coastal erosion.

The new construction would involve replacement of the existing bike path, addition of on-street parking along Shoreline Drive, and the development of a parking lot on the Ventura County Fairgrounds site. The new Class I bike path would be 3.6 meters (12 feet) in width and would be built approximately 20 meters (64-½ feet) to the north of the existing path (away from the ocean). Parking would be provided on both sides of Shoreline Drive. Approximately 169 perpendicular on-street spaces would be provided along the south side of the street and 75 parallel parking spaces would be provided on the north side. The 244 spaces to be provided more than offset the loss of 223 usable spaces associated with removal of the existing parking lot. At this time, the City's policy is not to charge for on-street parking.

Table 2-2 Estimates of Material to be Excavated and Imported Alternatives 1- 5

Task	Work Item	Alternative 1 Buried Seawall Behind the Retreat Zone	Alternative 2 Cobble Mattress with Sacrificial Dune	Alternative 3 Cobble Berm with Retreat Zone	Alternative 4 As Needed Extension of Existing Cobble Berm with No Retreat Zone	Alternative 5 Preferred Alternative
Excavation						
Existing Facilities Demolition	Asphalt removal	2,268 tonnes (2,500 tons)	2,268 tonnes (2,500 tons)	2,268 tonnes (2,500 tons)	N/A	2,268 tonnes (2,500 tons)
	Curb removal	136 tonnes (150 tons)	136 tonnes (150 tons)	136 tonnes (150 tons)	N/A	136 tonnes (150 tons)
	Excavation to remove buried debris[a]	N/A	14,530 m^3 (19,000 CY)	14,530 m^3 (19,000 CY)	N/A	14,530 m^3 (19,000 CY)
Buried Seawall	Sheet pile wall	518 meters (1,700 LF)	518 meters (1,700 LF)	N/A	N/A	N/A
	Toe stone	6,441 tonnes (7,100 tons)	6,441 tonnes (7,100 tons)	N/A	N/A	N/A
	Excavation to place stone[b]	19,880 m^3 (26,000 CY)	19,880 m^3 (26,000 CY)	N/A	N/A	N/A
Cobble Placement	Excavation to place cobble[c]	N/A	13,760 m^3 (18,000 CY)	33,640 m^3 (44,000 CY)	N/A	33,640 m^3 (44,000 CY)
Importation of Sand and Cobble						
Cobble Placement	Cobble for mattress	N/A	25,400 tonnes (28,000 tons)	N/A	N/A	N/A
	Cobble for berm	N/A	N/A	48,990 tonnes (54,000 tons)	48,990 tonnes (54,000 tons)	48,990 tonnes (54,000 tons)
Sand Importation	Sacrificial Dune	N/A	8,410 m^3 (11,000 CY)	N/A	N/A	8,410 m^3 (11,000 CY)
	Re-grading of retreat zone[c]	N/A	N/A	1,223 m^3 (1,600 CY)	N/A	N/A

Key
LF = lineal feet
CY = cubic yards
m^3 = cubic meters
tonnes = metric tons
N/A = Not Applicable

[a] *Assumes excavation of 1.5 meters (5 feet) of subsurface soil below existing fill layer. Excavated material is to be screened for debris. Clean material is to be used as backfill to restore pre-existing grade.*
[b] *Temporary excavation to bury stone or cobble in position. All beach quality material will be used as backfill to re-construct the pre-existing grade after stone or cobble placement.*
[c] *Assumes importation of sand to construct a 1-foot thick layer between the bike path and the edge of the cobble berm.*

The current and proposed profiles of the improvements along the Surfers Point shoreline are illustrated in Figure 2-5. The final design of the connections to the existing bike path segments at the east and west ends of the proposed new bike path have not been finalized at this point. It is likely that the eastern connection would be through Promenade Park, while the western connection would be at the cul-de-sac at the end of Shoreline Drive.

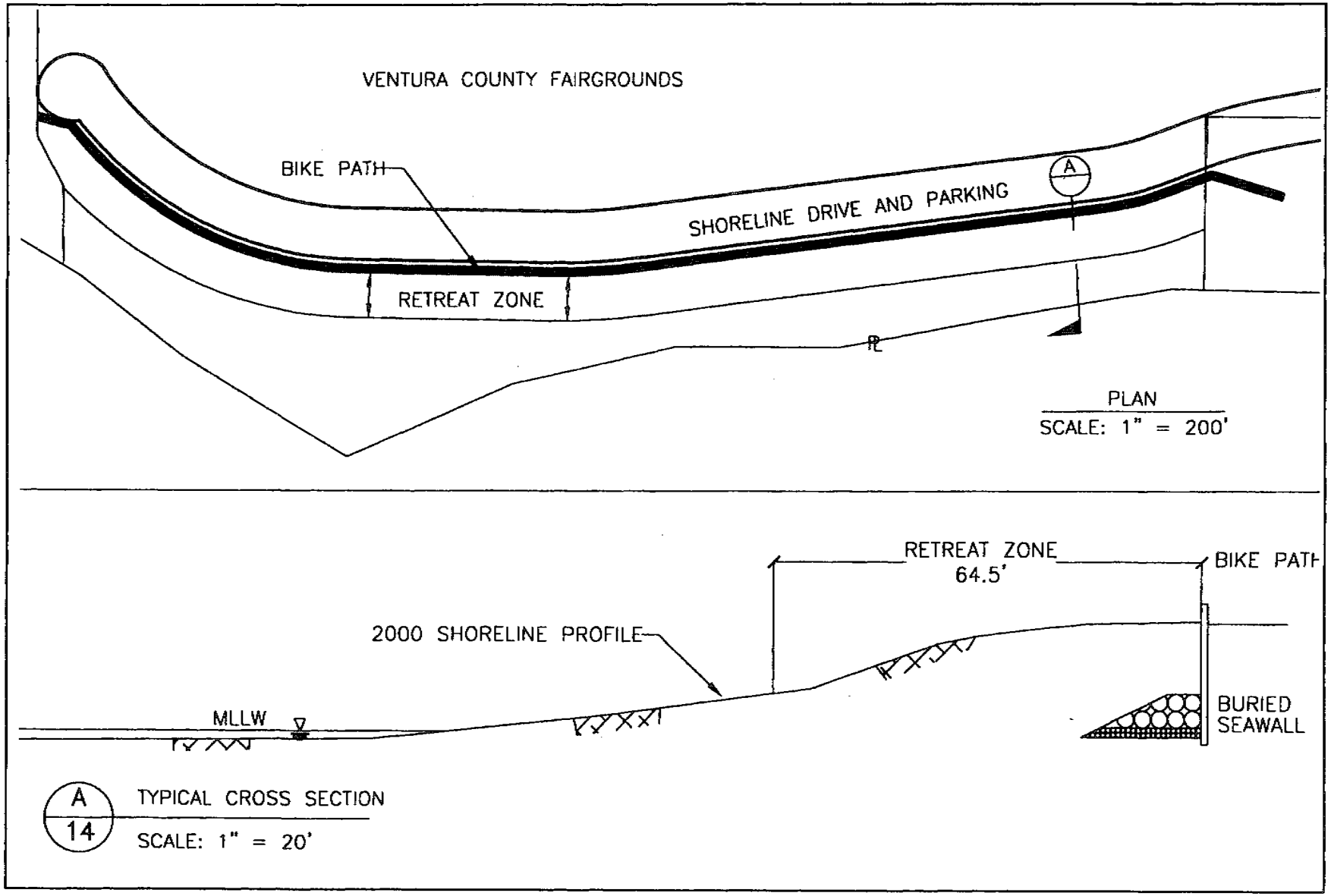
Parking Lot Paving. In conjunction with the project, an approximately 3.0-hectare (7.3-acre) informal dirt parking lot on the Ventura County Fairgrounds would be paved and striped for formal surface parking (see Figure 2-3). This fee parking area would provide an estimated 600-700 spaces. The new parking lot is intended primarily to serve Fairground users, although beach users could use the facility as well, in the event that on-street parking on Shoreline Drive is unavailable.

The specific design for the paved parking lot has not been finalized at this point. However, the layout would likely be similar to that described in the Parking Lot & Storm Drain Improvements Project Final EIR that was prepared by the City of Ventura in 1995. That design called for 669 parking spaces with several landscaped islands in various locations throughout the site. It also included a small retaining wall along the south side of the parking lot, installation of nighttime lighting consisting of light poles approximately 9.9 meters (32-½ feet) in height, and installation of an irrigation system for the landscaped islands. The parking lot would also include various improvements to the storm drain system as outlined in the 1995 Final EIR, including abandonment of the Ventura River outfall and re-routing of all stormwater discharges from the Fairgrounds directly to the ocean. The parking lot design would be in accordance with applicable requirements of the Ventura County Storm Water Quality Urban Impact Mitigation Plan (SQUIMP). Specific requirements are discussed in Sections 3.6 and 4.6.

b. Alternative 2: Cobble Mattress with Sacrificial Dune. This alternative emerged as the preferred alternative of the Surfers Point Working Group over the course of discussions about how to proceed with the managed shoreline retreat project. A plan view of this alternative, which involves relocation of the existing shorefront bike path and parking lot and construction of a cobble mattress and sacrificial sand dune area, is shown on Figure 2-6.

The relocation of the Class I bike path, removal of the shorefront parking lot and replacement with on-street parking (including removal of landscape trees), and paving of the existing 3.0-hectare (7.3-acre) parking lot that would occur under this alternative would be identical to that described for Alternative 1. In conjunction with removal of the existing bike path and parking lot, about 1.5 meters (5 feet) of subsurface soil below the existing fill layer (an estimated 14,530 cubic meters - 19,000 cubic yards - of material) would be temporarily excavated and screened for debris. Clean material would be used as backfill to restore the pre-existing grade, supplemented as necessary with imported cobble and/or sand.

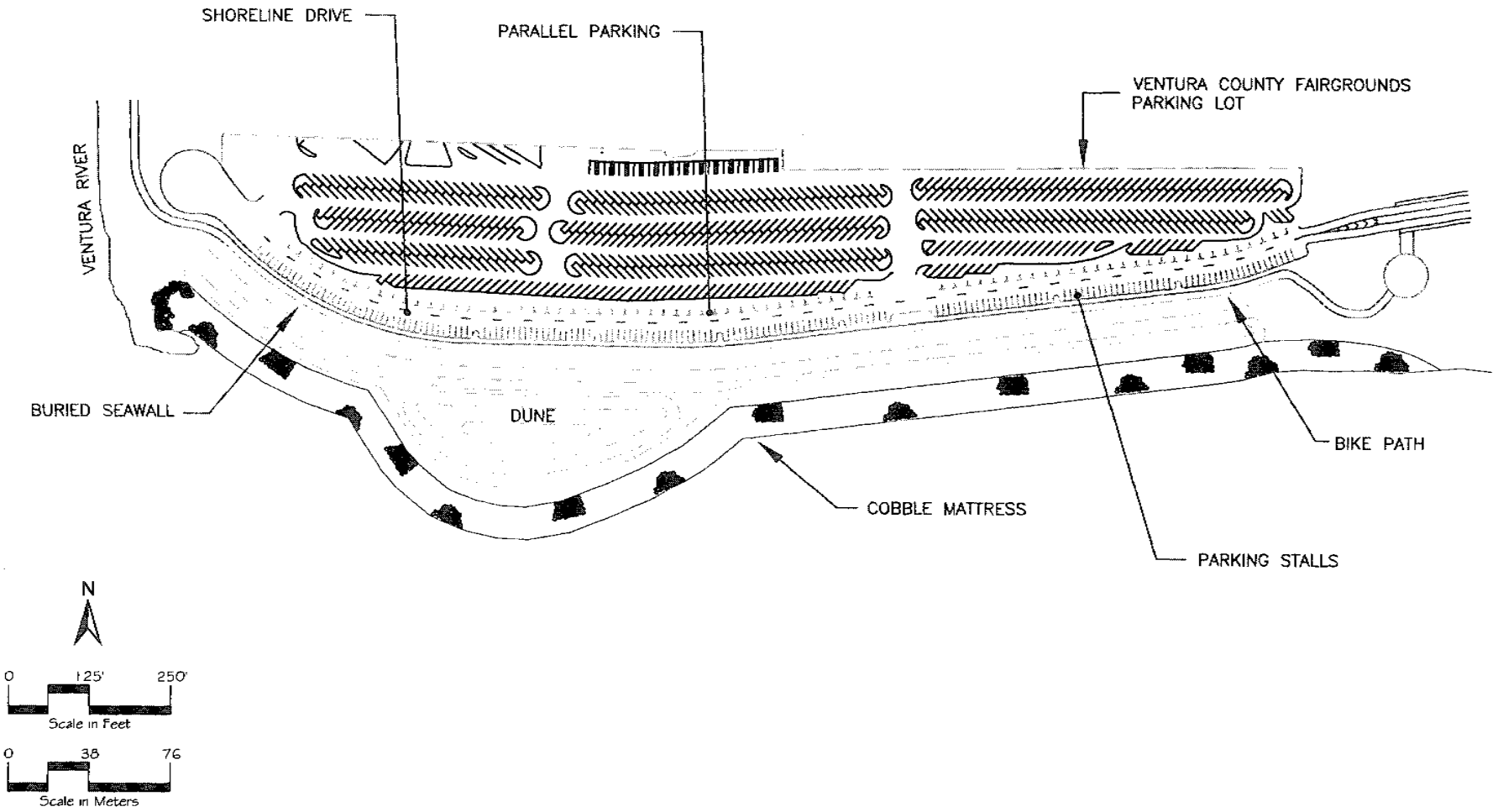
The cobble mattress and artificial dune concept associated with Alternative 2 is illustrated on Figure 2-7. Under this alternative, the beach profile would be stabilized with a cobble mattress. Construction of the cobble mattress would first require temporary excavation of about 13,760 cubic meters (18,000 cubic yards) of material on the foreshore slope to allow cobble to be buried. Then, an estimated 25,400 tonnes (28,000 tons) of imported cobble would be placed on the foreshore slope to provide a more erosion resistant beach face and excavated beach quality material would be used as backfill to reconstruct the pre-existing grade. It is anticipated that



Source: Noble Consultants Inc., December 2000

Alternative 1: Buried Seawall Behind Retreat Zone

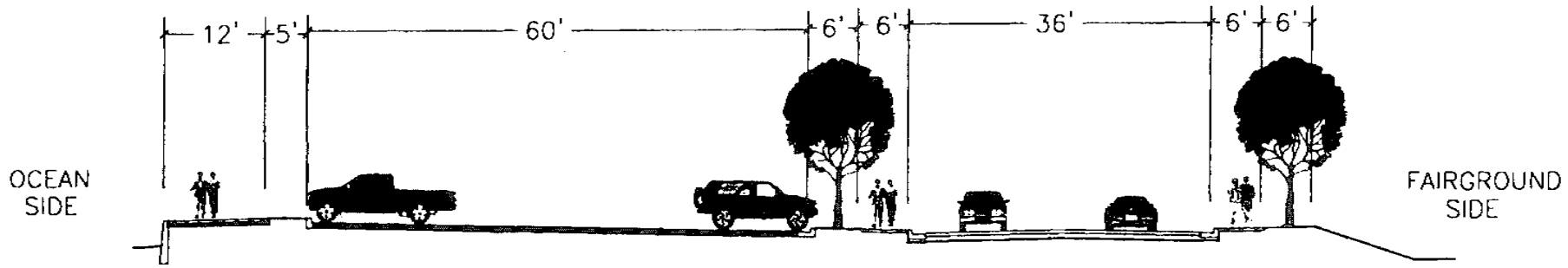
Figure 2-4



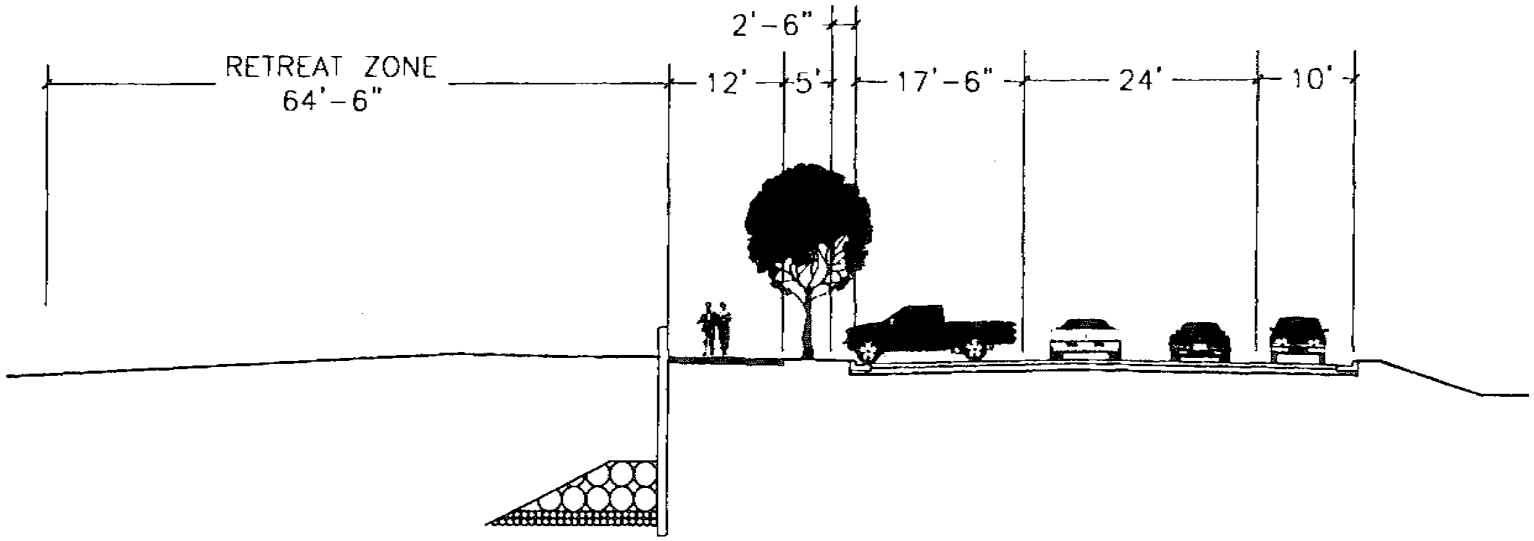
Source: Noble Consultants, 2001

Alternative 2: Cobble Mattress with Sacrificial Dune Plan View

Figure 2-6



EXISTING CONDITIONS



REVISED SEASIDE PARK PLAN FOR ALTERNATIVES 1-3 & 5

Source: Noble Consultants Inc., December 2000

Existing & Possible Future Profile of Public Improvements

Figure 2-5

the berm composition would be comparable to that of the natural berm at Emma Wood State Beach, with a mean cobble size of about 30 centimeters (one foot) in diameter.

Within the buffer zone of retreat, a low height sacrificial sand dune would be established behind the cobble mattress and in front of the re-located bike path, parking area, and roadway to provide limited protection during storm events. It is estimated that about 8,410 cubic meters (11,000 cubic yards) of sand would be imported to create the sacrificial dune.

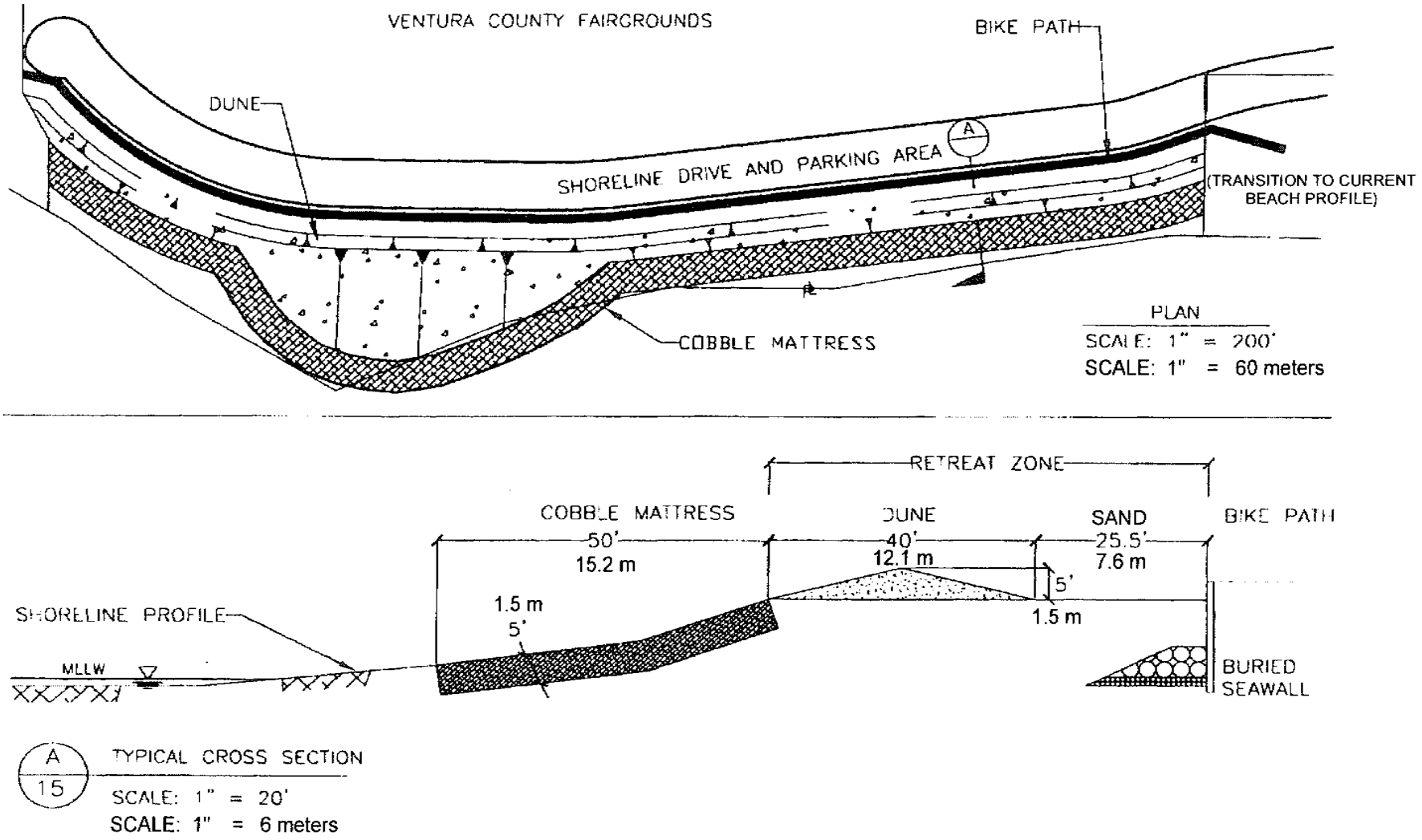
Because the cobble mattress concept is experimental and unproven, this alternative includes construction of a buried seawall at the retreat limit line to guarantee preservation of the backshore lands and associated improvements. Similar to Alternative 1, the toe of the wall would be at about 0.6 to 1.2 meters (2 to 4 feet) below mean lower low water (MLLW). All but about the uppermost 0.75 meter (2-½ feet) of the wall would be buried behind the cobble mattress and sand dune (see Figure 2-6). As with Alternative 1, construction of the buried seawall would involve temporary excavation of an estimated 19,880 cubic meters (26,000 cubic yards) of material and placement of 518 meters (1,700 linear feet) of sheet pile wall and about 6,441 tonnes (7,100 tons) of stone to create a toe for the wall.

The cobble mattress and sacrificial sand dune are intended to provide protection to landward improvements during storms but portions of the cobble mattress and dune could potentially erode away during major events. As such, the beach is expected to require periodic renourishment as erosion of the sand and cobble material occurs over time. At a minimum, the City will assess the cobble mattress and/or sacrificial dune at the end of each rainy season (April 30). Whenever more than 1.5 vertical meters (5 vertical feet) of the buried seawall remains exposed along 25% or more of the buried seawall and, by the end of the next accretion season (October 15), natural accretion has not renourished the beach, the City will renourish the beach by January 31 of the following year assuming that all regulatory permits needed to allow renourishment are in place by that time.

The amount of erosion that might occur cannot be predicted with any certainty as it would depend upon the severity of future storms and other climatic factors. However, it is estimated that up to 10% of the sand and cobble material might erode away on an annual basis (Noble Consultants, Inc., 1996). If cobble and sand do erode away, this material would provide the secondary benefit of serving as a feeder site for downdrift beaches.

Possible sources of sand and cobble include future projects on the Ventura and Santa Clara rivers, periodic dredging of the Ventura Harbor, area construction sites, and the Matilija Dam. The dam is likely to produce a large amount of material if decommissioned as proposed.

c. **Alternative 3: Cobble Berm with Retreat Zone.** The relocation of the Class I bike path, removal of the shorefront parking lot and replacement with on-street parking (including removal of landscape trees), and paving of the existing 3.0-hectare (7.3-acre) parking lot that would occur under this alternative would be identical to that described for Alternative 1. Similar to Alternative 2, about 5 feet of subsurface soil below the existing fill layer (an estimated 14,530 cubic meters - 19,000 cubic yards - of material) would be temporarily excavated and screened for debris in conjunction with removal of the existing bike path and parking lot. Clean



Source: *Noble Consultants, December 2000*

Alternative 2: Cobble Mattress with Sacrificial Dune Cross Section

Figure 2-7

would involve extending an existing cobble berm pilot project that was constructed by the City of Ventura in October 2000 all the way to the Ventura River on an as needed basis. Under this scenario, a cobble berm would be added over time along the 550-meter (1,800-foot) stretch of beach that encompasses the project site. The berm would be similar to the existing berm east of the project site and would be at a slope of approximately 1:5 (vertical to horizontal). The existing berm east of the project site would also be supplemented with additional cobble as needed. This concept is illustrated on Figure 2-8.

Under this alternative, the shorefront bike path and parking lot would not be relocated. Rather, both facilities would be repaired and left in their current locations. Thus, there would be no retreat zone or restoration of the beach within this area. Based upon the proposed design of the cobble berm under this alternative, it is not anticipated that a buried seawall would be needed for protection of the bike path assuming that the berm is adequately maintained.

Similar to Alternatives 2 and 3, the cobble berm is intended to provide protection to landward improvements during storms but may erode away during events. As such, the berm is expected to require periodic renourishment as erosion of the cobble material occurs over time. If cobble material does erode away, it would provide the secondary benefit of serving as a feeder site for downdrift beaches.

As with Alternatives 2 and 3, possible sources of cobble include future projects on the Ventura and Santa Clara rivers, periodic dredging of the Ventura Harbor, area construction sites, and the Matilija Dam, which is likely to produce a large amount of material if the dam is decommissioned as currently proposed.

Paving of the 3.0-hectare (7.3-acre) Fairgrounds dirt parking lot as described under Alternative 1 could be included in this alternative. However, since this alternative would presumably restore all 352 spaces in the shorefront parking lot, there would appear to be no justification to pave the Fairgrounds lot as part of this alternative.

This alternative would meet several of the project objectives, though it would not meet the objective of managed retreat from the shoreline as it would not relocate the shorefront bike path and parking lot further inland. In addition, as mentioned above, it may not entail paving of the Fairgrounds parking lot and therefore may not meet the objective of improving parking amenities for Fairgrounds patrons.

e. Alternative 5: Preferred Alternative. Alternative 5, the Preferred Alternative, is the option recommended by the Surfers Point Working Group. The Preferred Alternative is based upon a concept originally presented by the Surfrider Foundation. The original concept was modified in coordination with Coastal Frontiers Corporation (a coastal engineering specialist under contract to the City) to ensure that its design would be viable. This alternative is intended to maximize the opportunities for beach restoration while minimizing impacts to the active shoreline and coastal access and recreation. The relocation of the Class I bike path, removal of the shorefront parking lot and replacement with on-street parking (including removal of landscape trees), and paving of the existing 3.0-hectare (7.3-acre) parking lot that would occur under this alternative would be identical to that described for Alternative 1.

material would be used as backfill to restore the pre-existing grade, supplemented as necessary with cobble and/or sand.

The shoreline protection method that would be implemented under this is similar to the environment at the Emma Wood State Beach shoreline. Boulders and cobble would be imported to construct a natural cobble berm, as shown on Figure 2-8. In contrast to the modest cobble mattress of Alternative 2, which would be backed by a buried seawall, the cobble berm of Alternative 3 is intended to serve as the primary means of protection for the upland improvements. Patterned after the natural cobble berm at Emma Wood State Beach, the engineered berm would incorporate a substantial toe below the elevation of MLLW to resist undermining, and a substantial crest to absorb wave runup and reduce wave backwash.

Construction of the cobble berm would first require temporary excavation of an estimated 33,640 cubic meters (44,000 cubic yards) of material from the foreshore slope to allow imported cobble material to be buried in position. An estimated 48,990 tonnes (54,000 tons) of cobble would then be placed on the foreshore slope and beach quality excavated material would be used as backfill to reconstruct the pre-existing grade.

Based on the findings of the current research, the sacrificial sand dune associated with Alternative 2 would be eliminated because of the opinion that sand infiltration may lead to destabilization of the gravel, cobble and boulder (GCB) berm structure. Nevertheless, re-grading of the retreat zone following completion of the cobble berm would entail the importation of an estimated 1,223 cubic meters (1,600 cubic yards) of sand to create an approximately 1-foot thick layer of sand between the bike path and cobble berm.

The apparent stability of GCB berms and the experience observed at Emma Wood implies that provisions for supplemental erosion protection are not required. Therefore, no landward buried seawall structure is required for this alternative if the berm is built to the required cross section and is adequately maintained. Only a short (approximately 0.75-meter, or 30-inch) parapet wall would be constructed along the seaward side of the bike path (see Figure 2-8).

Similar to Alternative 2, the cobble berm is intended to provide protection to landward improvements during storms but portions of the berm could potentially erode away during major events. As such, the berm is expected to require periodic renourishment as erosion of the cobble material occurs over time. The commitment to renourishment would be the same as that described for Alternative 2. If cobble material does erode away, it would provide the secondary benefit of serving as a feeder site for downdrift beaches as described for Alternative 2.

As with Alternative 2, possible sources of cobble include future projects on the Ventura and Santa Clara rivers, periodic dredging of the Ventura Harbor, area construction sites, and the Matilija Dam, which is likely to produce a large amount of material if the dam is decommissioned as currently proposed.

d. Alternative 4: As Needed Extension of Existing Cobble Berm without Retreat Zone. Alternative 4 was developed during the preparation of the EIR based on the apparent success of the cobble nourishment pilot project that was implemented at the eastern end of Surfers Point in Fall 2000 (this pilot project is discussed further in Section 3.7). This alternative

This alternative, illustrated on Figure 2-9, is effectively a derivative of the large cobble berm of Alternative 3. The difference lies in the attention to the existing artificial fill within the retreat zone and the comprehensive restoration of the remnant dunes. The alternative includes the following components:

1) Remove non-beach-grade fill material within the retreat zone, including any contaminated soils and all debris found below the parking lot and bike path.

2) Replace the excavated material with cobble and beach quality sand in order to:

    a. Construct a buried cobble berm within the backshore area of the west half of the project area near the river mouth;
    b. Re-shape and augment the existing cobble test section within the east half of the project area to establish a more protective cobble berm;
    c. Re-establish dunes over the buried cobble berm in the west half, and, to a limited extent, over buried portions of the cobble in the east half of the project area. Dune restoration and management will include:
        i. Re-vegetate with native dune plants
        ii. Designate walkways for beach access
        iii. Interpretive signage to educate beach users

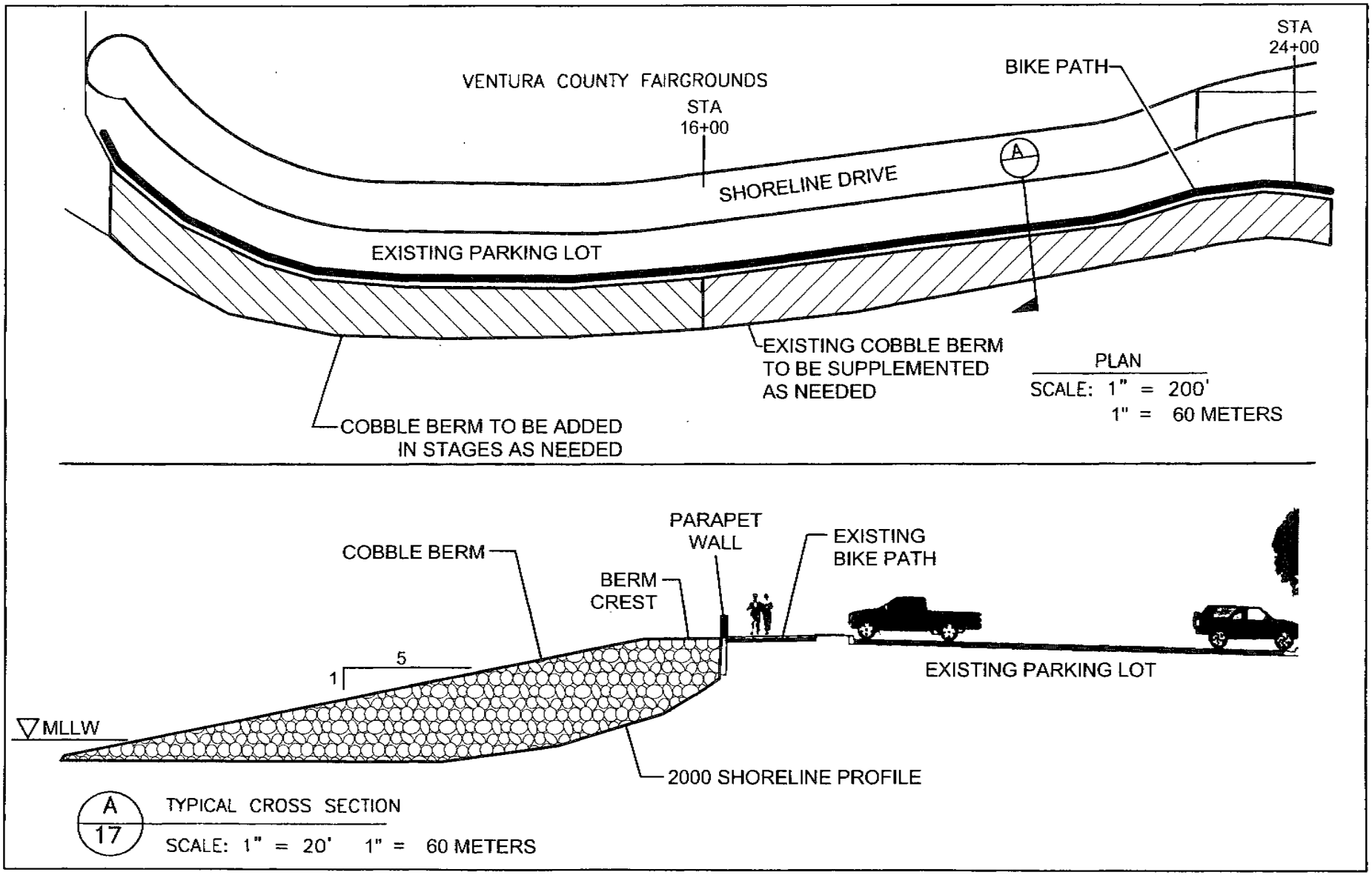
The cobble berm would have a 5(H):1(V) face and a flat crest capable of accommodating wave overtopping from the design storm event. In the western portion of the project area, the berm would be constructed in the backshore area (landward of the existing shoreline) and then buried beneath beach-quality sand. In the eastern portion, the berm would be constructed by re-shaping and augmenting the existing cobble test section to create the desired 5(H):1(V) slope and a substantial toe below MLLW.

f. Alternative 6: No Project. The No Project alternative would maintain the existing shoreline and public improvements in their current condition. There would be no change from the current erosion management plan and the current development would be kept at its present location. No attempt to repair the existing damage to the existing bike path or parking lot would be made. This alternative would not meet any of the stated project objectives.

2.4 CONSTRUCTION SCHEDULE

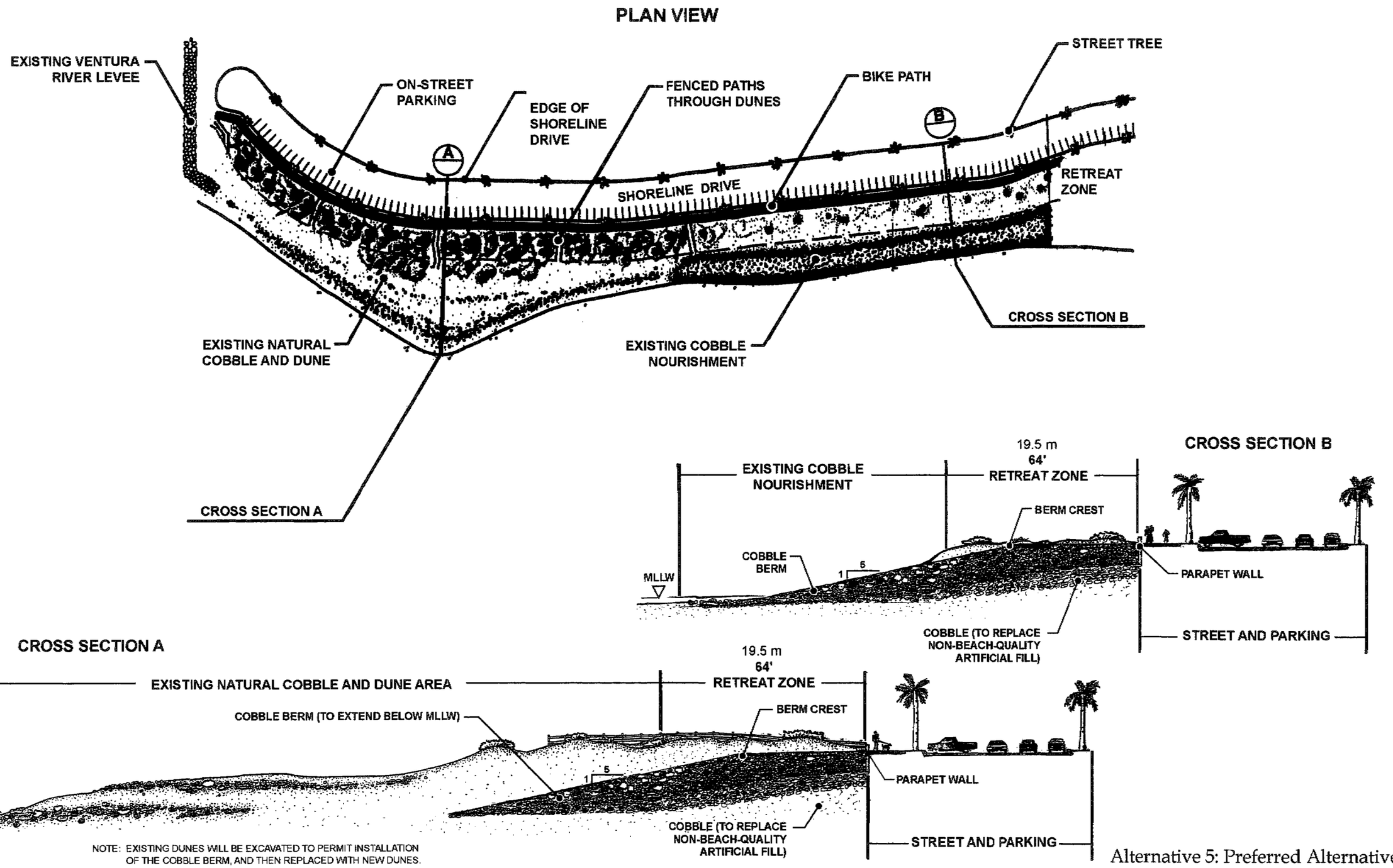
The specific timing of project construction would depend upon such factors as how long it takes to obtain necessary approvals, availability of cobble and sand, and availability of funding. Funding limitations may mean that the project is ultimately constructed in phases. Nevertheless, the general timeframes that would be required for Alternatives 1-5 are discussed below.

Alternative 1 – Demolition and removal of the existing bike path and parking lot would take about 1 month, construction of the buried seawall and stone toe would take an estimated 4-½ months, and reconstruction of the bike path and Shoreline Drive and paving of the Fairgrounds parking lot would take about 3 months. Thus, the entire job would take about 8-9 months.



Alternative 4: As Needed Extension of Existing Cobble Berm without Retreat Zone

Figure 2-8



Alternative 5: Preferred Alternative

Figure 2-9

Source: Paul Jenkin and Coastal Frontiers Corporation

Alternative 2 – The construction schedule would be identical to that of Alternative 1 except this alternative would also involve emplacement of cobble and sand in the seaward of the relocated bike path, which would take about three additional weeks. The entire job would take about 9 months to complete.

Alternative 3 – Demolition and reconstruction of the bike path and parking lot would be identical to that of Alternative 1 (1 month and 3 months, respectively). Emplacement of cobble would take approximately 1 month. Therefore, the entire job would take about 5 months under this alternative.

Alternative 4 – As this alternative involves only the extension of the existing cobble berm and repair of bike path and parking lot, the timeline is expected to be shorter than that of Alternatives 1- 3 and 5. Emplacement of the cobble would take approximately 1 month and repair of the bike path and parking lot is estimated to take 1-2 months. Therefore, the entire job would take 2- 3 months.

Alternative 5 – The timeframe for this alternative is expected to be essentially the same as that of Alternative 3 (i.e., demolition and reconstruction of the bike path and parking lot would be take 1 month and 3 months, respectively) and emplacement of cobble would take approximately 1 month. Emplacement of sand for the creation of the artificial dune is estimated to take about 2 weeks (slightly longer than under Alternative 2 due to the potentially greater volume of sand and more comprehensive dune restoration). The entire job would take about 5-½ to 6 months.

It should be noted that the above time estimates for Alternatives 2–5 assume that sufficient cobble is available to complete the job all at once. If sufficient cobble is not available at any one time, construction of the mattress or berm may need to be completed in phases.

2.5 CONSTRUCTION COSTS AND FUNDING

The City of Ventura has obtained federal grant monies for design work on the project through the Ventura County Transportation Commission (VCTC). Funding for project construction has not as yet been identified. Estimates of overall construction costs for Alternatives 1-5 are shown in Table 2-3. More detailed itemized cost breakdowns for each alternative are included in Appendix G.

2.6 REQUIRED APPROVALS

Certification of the EIR component of this document and approval of the project by the City of Ventura would be required prior to initiating construction.

The following approvals from other agencies would be required prior to project construction:

- Approval of the project by the 31st Agricultural District (the property owner)
- Approval of a lease by the State Lands Commission to allow the placement of cobble material below the mean high tide line in the westernmost 90 meters (300 feet) of the project site

Table 2-3 Construction Cost Comparison

Item	Construction Cost				
	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Demolition	$175,000	$175,000	$175,000	$24,000	$175,000
Fairgrounds parking lot	$1,656,000	$1,656,000	$1,656,000	$0	$1,656,000
Shoreline Drive improvements	$511,000	$511,000	$511,000	$0	$511,000
Retreat zone conversion					
Buried wall	$1,804,000	$1,804,000	$0	$0	$0
Buried curb (5' deep)	$0	$0	$119,000	$46,000	$119,000
Parapet wall (2' high)	$0	$0	$55,000	$31,000	$55,000
GBC	$0	$439,000	$839,000	$127,000	$717,000
Dune fill	$0	$158,000	$0	$0	$113,000
Sand fill	$0	$250,000	$38,000	$0	$250,000
Bike path	$50,000	$50,000	$50,000	$105,000	$50,000
Landscape (bike path)	$50,000	$50,000	$50,000	$24,000	$50,000
Landscape (dune)	$0	$400,000	$0	$100,000	$500,000
Miscellaneous	$200,000	$200,000	$200,000	$25,000	$200,000
Sub-total	$4,446,000	$5,693,000	$3,693,000	$482,000	$4,396,000
Contingency @ 15%	$667,000	$854,000	$554,000	$72,000	$659,000
Total estimate (rounded)	**$5,100,000**	**$6,500,000**	**$4,200,000**	**$600,000**	**$5,100,000**
Additional cost for subsurface debris removal (if required)	$684,000	$684,000	$684,000	$0	$684,000

Source: Noble Consultants, August and October 2002.

- California Coastal Commission approval of a coastal development permit
- Federal Highway Administration approval of environmental documentation required to comply with the National Environmental Policy Act (NEPA) to allow federal funding of the bike path component of the project
- Section 404 permit from the U.S. Army Corps of Engineers for disturbance within the tidal area and approval of NEPA documentation as required by the Corps
- Section 401 Certification of the Section 404 permit
- Adherence to the State Water Resources Control Board National Pollution Discharge Elimination System (NPDES) general permit for stormwater discharges associated with construction activity

2.7 AREAS OF PUBLIC CONTROVERSY

The primary points of concern that have been raised to date in the public discourse on the project relate to the costs and feasibility of the project, failure of Alternative 4 to achieve the objective of implementing a managed retreat from the shoreline, and specific design details requested by the Surfrider Foundation and others in response to the Notice of Preparation of the environmental document and in public meetings that have been held by the City. To the

degree feasible at this stage of the planning process for the project, this EIR addresses the concerns raised by the Surfrider Foundation. Alternative 5 is based upon a concept originally presented by the Surfrider Foundation.

2.8 STATUS OF OTHER PROJECTS IN THE AREA

Table 2-4 summarizes planned and pending development in Ventura. Although the proposed Surfers Point Managed Shoreline Retreat project by its nature generally would not contribute to any cumulative environmental effects, cumulative development is considered in the EIR analysis as appropriate. The only pending project on the City's list that is in the immediate vicinity of the project site is a proposal for a 250-275 room hotel and restaurant at the southeast corner of Harbor Boulevard and Figueroa Street. That project is currently going through the planning process with the City and, at this point, is expected to be scaled back prior to any approval. Two City maintenance projects are also in the planning stages in the area: (1) an eastern extension of the Surfers Point Beach nourishment pilot project to Figueroa Street, which is the subject of an addendum to a Mitigated Negative Declaration that was prepared for the original pilot project (case no. EIR-2238); and (2) the rehabilitation of the Ventura Beach Promenade, which involves the restoration of portions of the Promenade foundation and deck and is currently undergoing CEQA environmental review.

Table 2-4 Pending Projects in the City of Ventura

Project Type	Building Permits Issued/Under Construction	In Plan Check	Received All Planning Approvals	In Planning Process	Total
Residential					
Single Family	116	45	358	80	599
Condominiums	14	77	37	59	187
Apartments	47	104	22	638	811
Total	177	226	417	777	1,597
Commercial	4 3,796 m^2 (40,864 sf)	2 25,820 m^2 (277,974 sf)	7 13,180 m^2 (141,915 sf)	14 57,800 m^2 (622,181 sf)	27 100,600 m^2 (1,082,934 sf)
Industrial	8 33,020 m^2 (355,373 sf)	5 12,840 m^2 (138,201 sf)	3 13,280 m^2 (142,992 sf)	2 13,020 m^2 (140,634 sf)	18 72,209 m^2 (777,200 sf)
Institutional	2 5,888 m^2 (63,383 sf)	0	2 12,010 m^2 (129,304 sf)	2 8,687 m^2 (93,508 sf)	6 26,590 m^2 (286,195 sf)

Source: City of San Buenaventura, Pending Projects Summary, January 2001.
m^2 = square meters
sf = square feet

3.0 ENVIRONMENTAL SETTING

3.1 LAND USE

3.1.1 Area Land Use and General Plan Designations

The project site consists of about 1,800 linear feet of rocky beach, various shorefront improvements, and a 3.0-hectare (7.3-acre) dirt parking lot on the Ventura County Fairgrounds property. The shorefront improvements include a Class I bike path and a surface parking lot, both of which have been severely damaged by wave-related erosion. The shorefront parking lot was originally constructed with 352 spaces, but today only about 223 spaces are usable.

Immediately adjacent to the project site is the Ventura County Fairgrounds, a multi-purpose activity center that hosts a variety of events, including the annual Ventura County Fair. To the east along the east side of Figueroa Street is Promenade Park, a grassy park that supports passive recreation. Further east are several multi-family residential buildings, the Seaside Promenade, and various commercial facilities, including the Holiday Inn. To the west is the Ventura River.

The entire site, including the bike path and beach area, is designated "Fairgrounds/Public Use" under the Land Use Plan of the City of Ventura Comprehensive Plan and zoned "Parks" under the City of Ventura Zoning Code.

3.1.2 Agricultural Resources

The Farmland Protection Policy Act (FPPA) protects land that is identified as prime, unique, or of statewide or local importance. The project site consists of an approximately 550-meter (1,800-foot) stretch of beach, a shorefront bike path and parking lot, Shoreline Drive, and a 3.0-hectare (7.3-acre) dirt parking lot. The site does not contain any agricultural activity and is not classified as prime, unique, or statewide importance farmland by the State of California Department of Conservation.

3.2 SOCIOECONOMIC SETTING

3.2.1 Population and Housing

The project site consists of an approximately 550-meter (1,800-foot) stretch of beach at Surfers Point, a public bike path, parking lot, and street, and a dirt parking lot at the Ventura County Fairgrounds. There is no resident population or housing on the site. The nearest housing is a beachfront apartment building located over 300 meters (1,000 feet) east of the site.

3.2.2 Public Services

The City of Ventura provides such services as police and fire protection, parks and recreation, water provision, wastewater disposal, and road maintenance throughout Ventura, including Surfers Point. Southern California Edison provides electrical service in the City, while Southern California Gas provides natural gas service.

The City maintains Shoreline Drive on the project site. The 31st Agricultural District provides general maintenance of the public parking lot on-site along the seaward side of Shoreline Drive, as well as the existing dirt parking lot on the Ventura County Fairgrounds property. As the shorefront bike path is part of the Omer Rains Bicentennial Bikeway, the California Department of Parks and Recreation is responsible for its maintenance.

3.3 BIOLOGICAL RESOURCES

3.3.1 Regulatory Setting

Federal, state, and local authorities under a variety of legislative acts share regulatory authority over biological resources. Primary authority for general biological resources lies within the land use control and planning authority of local jurisdictions, in this instance, the City of Ventura. The California Department of Fish and Game (CDFG) is a trustee agency for biological resources throughout the state under CEQA and also has direct jurisdiction under the state Fish and Game Code. Under the state and federal Endangered Species Acts, the CDFG and the U.S. Fish and Wildlife Service (USFWS) also have direct regulatory authority over specially designated organisms and their habitats. The U.S. Department of the Army, Corps of Engineers also has regulatory authority over specific biological resources, namely wetlands and waters of the United States, under Section 404 of the federal Clean Water Act.

In response to their legislative mandates, regulatory authorities have defined sensitive biological resources as those specific organisms that have regionally declining populations such that they may become extinct if population trends continue. Habitats are also considered sensitive biological resources if they have limited distributions, have high wildlife value, include sensitive species, or are particularly susceptible to disturbance.

Sensitive species are classified in a variety of ways, both formally (e.g., State or Federal Threatened and Endangered Species) and informally ("Special Animals"). Species may be formally listed and protected as Threatened or Endangered by the CDFG or USFWS or as California Fully Protected (CFP). Informal listings by agencies include California Species of Special Concern (CSC) (a broad database category applied to species, roost sites, or nest sites) or as USFWS Candidate taxa. CDFG and local governmental agencies may also recognize special listings developed by focal groups (i.e., Audubon Society Blue List; California Native Plant Society (CNPS) Rare and Endangered Plants; U.S. Forest Service regional lists).

Vegetation in California is accorded sensitivity rankings by the CNPS and CDFG within the community classification of Holland (1986, 1992), modified as appropriate to conform to more recently accepted series concepts of Sawyer and Keeler-Wolf (1995). Wetlands and riparian habitat are protected by statutes within the Clean Water Act, California Fish and Game Code, and local and regional water quality control boards.

3.3.2 Marine Biological Resources

The following discussion is based on regional and site-specific literature and on a diver-biologist reconnaissance survey of the habitats and biota within the nearshore area of the proposed project conducted by LeRay deWitt, subconsultant to Rincon Consultants. The region

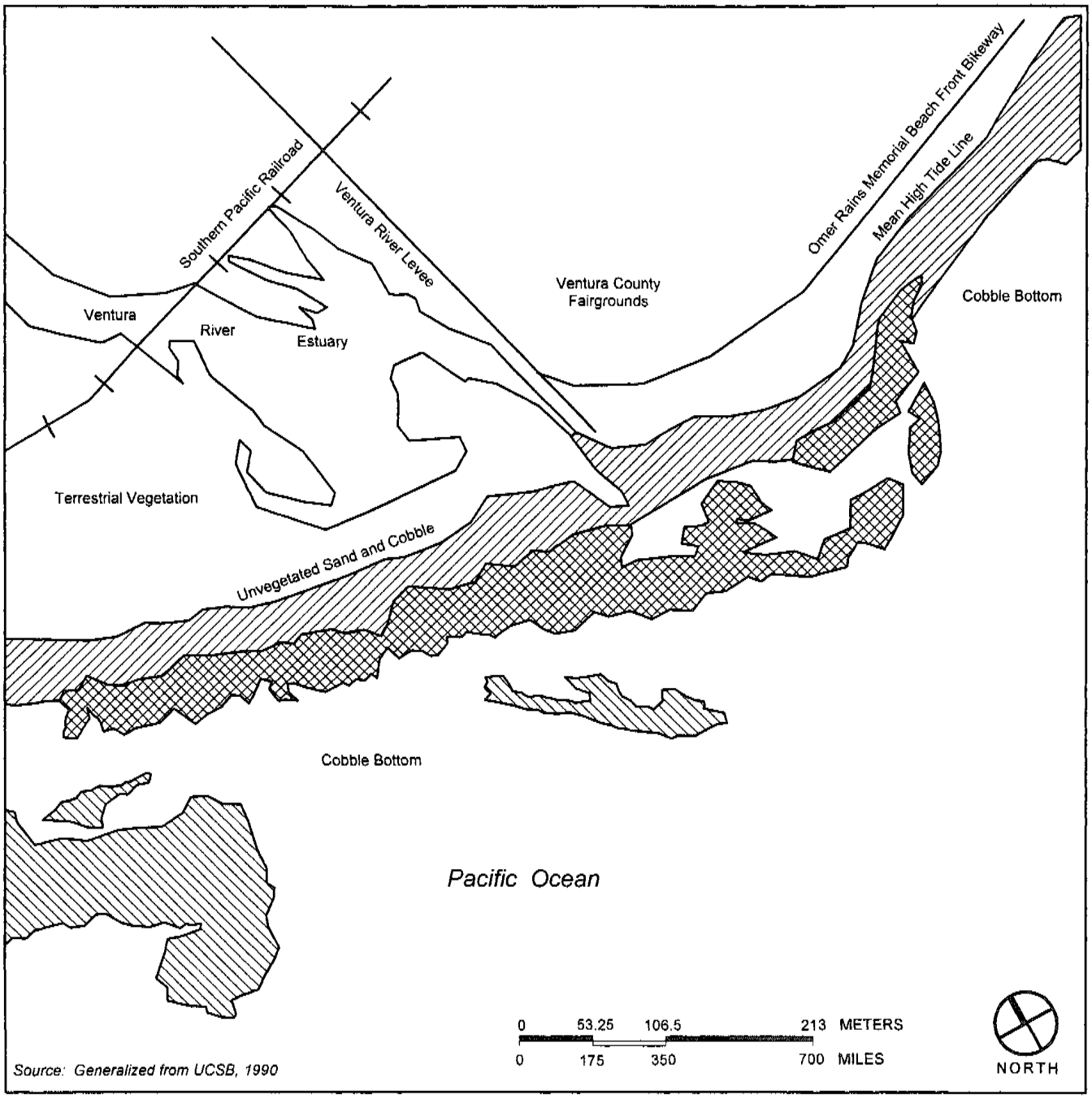
and site is defined as the inter- and shallow subtidal (to the 3-meter [10-foot] water depth) zone from the mouth of the Ventura River to the eastern boundary of Surfer's Point Park.

Marine wetland and deepwater habitats were mapped in the site vicinity (see Figure 3-1) as part of the analysis of botanical resources at the nearby Emma Wood State Beach and Ventura River Estuary (UCSB, 1990). The boundary between marine wetland and deepwater habitat coincides with the mean lower low water elevation (subtidal area). The upland beach area consists of unvegetated sand and cobble substrate, grading to an unconsolidated shore intertidal habitat (as defined by Cowardin, et al, 1979) that contain various amounts of small green algae, primarily *Ulva* and *Enteromorpha* species, that use the cobble for attachment. The lower intertidal area contains increasing amounts of red algae, primarily *Gigartina* and *Porphyra* species. Subtidal areas are comprised of an unconsolidated cobble bottom with some feather boa kelp (*Egregia menziesii* - a brown algae) attached to the cobble. Further offshore west of the river mouth, outside of wave action, are scattered kelp beds dominated by giant bladder kelp (*Macrocystis pyrifera*).

The inter- and shallow subtidal habitats constitute the primary biological resources at the site. The intertidal area is used by mole crabs, clams, and polychaete worms. These organisms bury themselves in the sand and between cobbles, and feed on particles brought in on the waves. These species in turn are fed on by shorebirds during low tide and fish during high tide. Because the project site is used extensively by humans, the ability of land-based species to feed along the shore is limited to those times when people are not present in large numbers. In addition, the mixture of sand and cobble and the strong wave energy at this site create a harsh environment that limits the numbers of animal, plant, and algal species.

The intertidal zone within the project site is a mixture of cobble and sand, with the western third of the site being predominantly sand and the eastern two-thirds mostly cobble with isolated patches of sand near the base of an existing cobble berm near the middle of the site (see Figure 3-2). The intertidal cobbles at the site support a limited epibiota, including the green alga *Enteromorpha* spp. and barnacles. Avifauna observed during the December 2000 biological survey by deWitt include sandpipers, willets, and marbled godwits, while gulls were present to common throughout the area. Appendix B lists bird species observed in the vicinity of the Ventura River mouth and at the project site in December 2000.

The low-intertidal and shallow-subtidal habitat throughout the survey area consists of cobble and small boulders; isolated 15 to 45 centimeter (0.5 to 1.5 foot) wide patches of sand are present, but not common (see Figure 3-2, A&B). Nearshore (to the 1.5-meter [5-foot] isobath) epibiota is dominated by a filamentous red algal complex that included *Neoptilota* species and some corallines. Many of the cobbles/ boulders have no epibiota, indicating they had been recently overturned or uncovered (see Figure 3-3, C&D). In water depths from 0.9 to 1.5 meters (3 to 5 feet), the feather boa kelp *Egregia laevigata* is present to common and formed relatively dense beds that reached the water surface (Figure 3-2, B). The largest *Egregia* bed was observed off the point that separates the east and west beaches of the site. That bed extends to the east approximately 90 meters (300 feet) from the "point." A leafy red algae, *Prionitis lanceolata* is also present within this depth zone.



LEGEND

Marine Wetland and Deepwater Habitats Per Botanical Resources of Emma Wood State Beach and the Ventura River Estuary

High Intertidal Wetlands
Bryopsis corticulans
Chaeotomorpha linum
Enteromorpha intestinalis
Grateloupia doryphora
Ulva angusta

Subtidal Deepwater Habitats
Chondria midifica
Egregia menziesii
Macrocystis pyrifera
Phyllospadix torreyi (vascular)
Pterosiphonia dendroidea

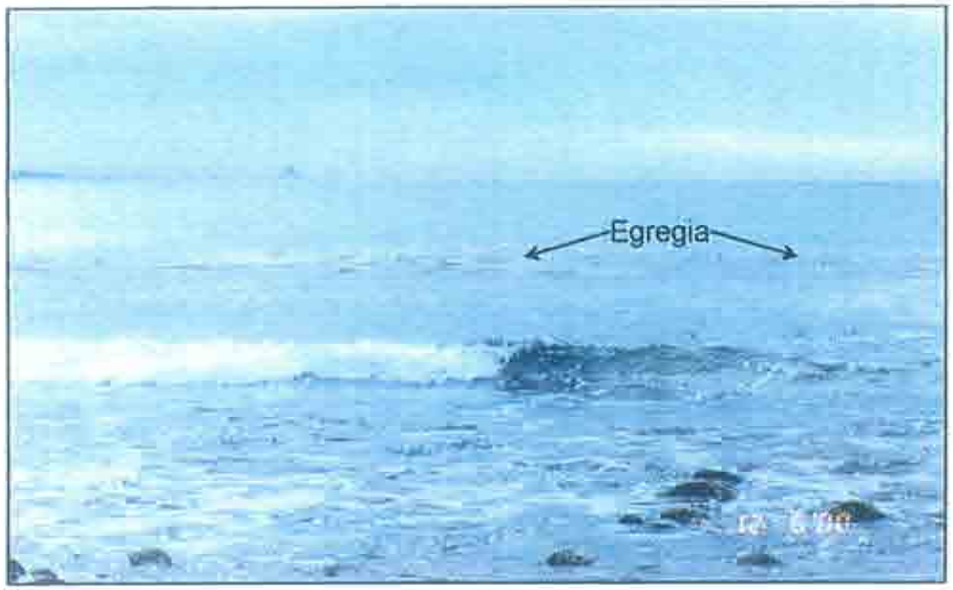
Mid and Low Intertidal
Gigartina leptorynchos
Gracilaria sjoestedtii
Grateloupia doryphora
Porphyra lanceolata
Phyllospadix torreyi (vascular)

Mapped Habitats in Project Vicinity

Figure 3-1

A. Low-Intertidal Cobble Bed (Central Portion of Site)

C. Sand and Cobble Intertidal (Western Portion of Site)



B. Low-Intertidal Cobble Bed and Offshore *Egregia* Bed (Western Portion of Site)

D. Cobble Berm and Narrow Sand Beach (Eastern Portion of Site)

Intertidal Habitats at Project Site

Figure 3-2

A. Surf Grass, *Phyllospadix torreyi*, Attached to Subtidal Boulder

C. Brown Algae Cover

B. Feather Boa Kelp, *Egregia laevigata*, Attached to Subtidal Cobbles and Boulders

D. Typical Algal Cover on Subtidal Cobble Bed

Subtidal Habitat at Project Site

Figure 3-3

Five patches of surf grass, *Phyllospadix torreyi*, were observed in and around the *Egregia* (see Figure 3-3, A). The largest of the patches is estimated to be 15 centimeters (0.5 feet) in diameter; most were less than 10 centimeters (0.3 feet) in diameter. No kelp, *Macrocystis* spp., was observed within the survey area (maximum water depth surveyed was about 3 meters (10 feet), slightly shallower than kelp would be expected to occur in an open coast environment). Fish and macroinvertebrates are not common within the survey area. During the survey, diver-biologists observed four fish: a pile perch, *Damalichthys vacca*, a leopard shark, *Triaks semifasciata*, a sand bass, *Paralabrax nebulifer*, and a half moon, *Medialuna californiensis*. One subadult rock crab, *Cancer antennarius*, was also observed near the *Egregia* bed.

Due to the relative instability of the cobble habitat and the exposure to wave action, the marine biota of the nearshore area is depauperate when compared to other rocky habitats such as a reef. Nonetheless, several species are likely to be present in limited numbers in the sand/cobble areas. Littleneck clams (*Protothaca* sp.) and bean clam (*Donax gouldi*) may be found buried next to cobbles used by gastropods such as the black turban (*Tegula funebralis*) (Envicom Corporation, June 1995). The cobble area likely contains a few striped shore crabs (*Pachygrapsus crassipes*) and yellow shore crabs (*Hemigrapsus oregonensis*). Within the sands of the upper intertidal area, beach hoppers (*Orchestoidea californiana*) and some mole or sand crabs (*Emerita analoga*) are possible along with various species of polychaete worms (Envicom Corporation, June 1995). These latter species provide a food resource for the various shorebirds that occur in this area. However, few bird species frequent the project site, especially as compared to the adjacent Ventura River estuarine area, indicating limited food availability.

Grunion (*Leuresthes tenuis*) are members of the silversides family, Atherinidae, along with the jacksmelt and topsmelt. They normally occur from Point Conception, California, to Point Abreojos, Baja California. They inhabit the nearshore waters from the surf to a depth of 18 meters (60 feet), and breed locally on sandy beaches in the intertidal area. Because the project site is composed primarily of cobble with limited sand cover, it is not considered an important grunion spawning area.

3.3.3 Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act (MSA), as amended, is the principal federal statute governing the management of U.S. marine fisheries. The MSA's purpose and policy statements (§2(b)-(c)), elaborated upon through a declaration of ten National Standards, serve as the primary objectives for fishery conservation and management (§301(a)). Although it has been amended frequently since 1976, most recently by the 2000 Shark Finning Prohibition Act (H.R. 5461), several basic principles of the MSA have not changed over the course of its amendment history. These include the basic principle that the biological conservation of a fishery resource has priority over use of that resource. A second basic principle is that conservation and management decision-making must be based on the best available scientific information, and, moreover, that this information includes social, economic and ecological factors along with biological factors.

The MSA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), established a requirement to describe and identify "essential fish habitat" (EFH) in each fishery management plan. The MSA also requires federal agencies to consult with National Marine Fisheries Service (NMFS) on actions, or proposed actions, permitted, funded, or undertaken by

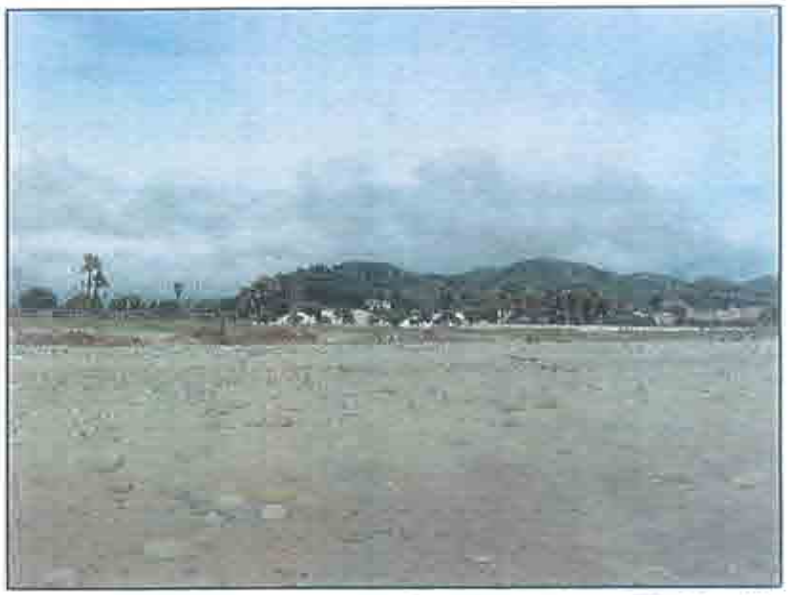
the agency, that may adversely affect EFH. EFH is defined as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." *Waters* include aquatic areas and their associated physical, chemical and biological properties. *Substrate* includes sediment underlying the waters. *Necessary* means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem. *Spawning, breeding, feeding, or growth to maturity* covers all habitat types utilized by a species throughout its life cycle. Adversely affect means any impact that reduces the quality and/or quantity of EFH. Adverse effects may include direct (e.g., contamination; physical disruption), indirect (e.g., loss of prey), site-specific or habitat-wide impacts, including individual, cumulative or synergistic consequences of actions.

The Pacific Coast Groundfish Fishery Management Plan (1998) and Coastal Pelagic Species Fishery Management Plan (1999) have designated essential fish habitat for this region. At least four species named in the Coastal Pelagic Species Fishery Management Plan may occur within or adjacent to the project site. These species include the northern anchovy (*Engraulis mordax*), Pacific sardine (*Sardinops sagax*), Pacific mackerel (*Scomber japonicus*), and jack mackerel (*Trachurus symmetricus*). EFH for Pacific coast groundfish is defined as the aquatic habitat necessary to allow for groundfish production to support long-term sustainable fisheries for groundfish and for groundfish contributions to a healthy ecosystem. Descriptions of groundfish fishery EFH for each of the 83 species and their life stages result in over 400 EFH identifications. When these EFHs are taken together, the groundfish fishery EFH includes all waters from the mean higher high water line, and the upriver extent of saltwater intrusion in river mouths, along the coasts of Washington, Oregon, and California seaward to the boundary of the U.S. Economic Exclusion Zone (EEZ). More specific mapping of highly important habitats (such as reefs and giant kelp beds) is currently being conducted starting with the San Francisco Bay area (M. Helgey, NMFS, April 2001), but in this area, the only applicable EFHs are the general ones for pelagic and groundfish.

3.3.4 Terrestrial Biological Resources

The terrestrial area consists of the land and associated habitats that exist above the mean higher high water level of the Pacific Ocean. The initial landward area above the ocean at the project site is similar to that described above for the marine area, consisting of an unvegetated sand and cobble beach. For most of the width of the project site, the beach grades into an upland soil area near the edge of the existing bike path, along which is a thin strip of vegetation that includes the invasive exotic weed *Arundo* and tree tobacco (*Nicotiana glauca*). Other non-native plants present include storksbill (*Erodium* sp.), ripgut brome (*Bromus diandrus*), foxtail barley (*Hordeum murinum*), mustard (*Brassica* sp.), crabgrass (*Digitaria sanguinalis*), Bermuda grass (*Cynodon dactylon*), sea fig (*Carpobrotus* sp.), castor bean (*Ricinnus communis*), sea rocket (*Cakile maritima*), and weedy tumbleweeds (both *Salsola tragus* and *Amaranthus albus*) (Figure 3-4, A&D). Scattered native plants included saltgrass (*Distichlis spicata*), saltbush (*Atriplex lentiformis*), coyote brush (*Baccharis pilularis*) and sand verbena (*Abronia* sp.). At the far western end of the proposed project site, a strand of vegetation is present that includes, along with non-native annual and perennial grasses, remnant elements of the coastal dune plant community. Plants present include scattered individuals of silver beachbur (*Ambrosia chamissonis*), beach evening primrose (*Camissonia cheiranthifolia*), and sand verbena.

A. West portion of site at eroded bike path. Note thin strip of non-native vegetation.



C. View north across proposed revetment area. Debris pile marks edge of former dune.

B. View of remnant dune and restoration area. Foreground dune plant is non-native sea rocket.

D. East portion of site illustrating weedy grasses on slope at edge of parking lot. Note landscaping trees in background.

Terrestrial Habitat at Project Site

Figure 3-4

Near the middle of the site, just east of the western eroded area are the remains of a former stabilized coastal dune. This area is partially protected by a split rail fence between the parking lot and the sand beach and is signed as a "Dune Restoration Area" (see Figure 3-4, B). The vegetated area includes about 7,000 square feet of soil slope and sand, of which the dominant plants are ripgut brome and foxtail barley (see Figure 3-4, D). The predominant dune plant in the sand area is sea rocket, an import from the dune community of Europe. Only a few native dune plants (beach evening primrose and silver beachbur) are present in this area.

Beyond the beach area, the constructed bike path and parking lot contain no plant resources except for landscaping trees (New Zealand Christmas tree and Guadalupe fan palm) and shrubs (natal plum) within the planter areas in the parking lot and along Shoreline Drive. Floristically, the area is highly disturbed and contains no significant native vegetation.

Because of the lack of vegetation and other physical resources, the terrestrial portion of the site contains few animal species, and most present are those adapted to urban areas or are associated with the beach habitat. No amphibians were observed or would be expected within the project site, while the only reptile expected (not observed) would be the western fence lizard (*Sceloperus occidentalis*). Signs of pocket gophers (*Thomomys bottae*) and California ground squirrel (*Spermophilus beecheyi*) indicate the only native mammals present or expected to occur within the upland area portion of the site. Marine mammals (further discussed below) are not expected or known to use the project site as a haul-out area. The few birds seen at the site (see Appendix B) included mostly urban-adapted species or those tolerant of human disturbance. It is noted that the adjacent Ventura River mouth contains a much larger diversity and population of native animals (as illustrated by the bird species listed in Appendix B).

3.3.5 Sensitive Biological Resources

A "sensitive biological resource" refers to any rare, threatened or endangered plant or animal species, or those species considered regionally declining by local authorities. Habitats are also considered sensitive if they exhibit a limited distribution, have high wildlife value, contain sensitive species, or are particularly susceptible to disturbance. Sensitive species are classified in a variety of ways, both formally (e.g. State or Federal Threatened and Endangered Species) and informally ("Special Animals"). Species may be formally listed and protected as Threatened or Endangered by the CDFG or USFWS or as California Fully Protected (CFP). Informal listings by agencies include California Species of Special Concern (CSC) (a broad database category applied to species, roost sites, or nest sites); or as USFWS Candidate taxa. CDFG and local governmental agencies may also recognize special listings developed by focal groups (i.e. Audubon Society Blue List; California Native Plant Society (CNPS) Rare and Endangered Plants; U.S. Forest Service regional lists).

This section lists those rare or otherwise sensitive species that were found on the site or that have the potential to occur in the project site vicinity. The potential for occurrence of sensitive resources is based on site characteristics and the known regional distribution and habitat affinities of the species. Lists of federal and state sensitive plant and animals as published by the California Department of Fish and Game (January 2001 a, b, & c; July 2000) were used in the preparation of this section. In addition, a database report for the Ventura Quadrangle from the California Natural Diversity Data Base (CNDDB) using the Rarefind software (March 5, 2001) was used to identify sensitive species and communities in the area. No sensitive plant species

are known to occur or are likely to be present at the project site given its lack of vegetation and historical disturbance.

Two sensitive marine and estuarine fish could occur within the project vicinity: the southern steelhead trout (*Oncorhychus mykiss irideus* – southern California Evolutionarily Significant Unit) and the tidewater goby (*Eucyclogobius newberryi*). The southern steelhead ESU is listed as endangered by the National Marine Fisheries Service and is known to occur within the Ventura River and estuary. It formerly spawned in large numbers within the Ventura River watershed, but populations were decimated in the early 1950s by dam construction and drought (CNDDB, 2001). Low numbers of this species may occur within the project vicinity prior to entry and exit from the Ventura River during spawning runs in the winter. In addition, the estuary possibly serves as juvenile trout habitat during the summer months. The tidewater goby is currently listed as federally endangered, but populations north of Orange County have been proposed for delisting (Federal Register, January 3, 2001). The Ventura River population of tidewater goby was used to successfully reintroduce this species to Malibu Lagoon in 1991 and is considered to be a relatively large population (CNDDB, 2001). Because its primary habitat is limited to brackish lagoon waters, it would be expected within the project area only during population dispersal movements, which are not well understood.

The Western snowy plover (*Charadrius alexandrinius nivosus*) Pacific coastal population is listed as federally threatened due primarily to loss of breeding habitat. This species formerly nested along sandy beaches and in coastal dune areas throughout coastal California, but human disturbance and loss of habitat have limited its numbers. The nearest known nesting area is approximately 4,000 meters (2.5 miles) southeast of the site, though egg collections were made in the project vicinity between 1915 and 1948 (CNDDB, 2001). No snowy plovers were observed during a May-June field survey by Impact Sciences (2000); however, that species has a "moderate potential" to occur at the site, seasonally foraging along the beach. It is unlikely to nest in this vicinity given the level of human disturbance.

The California least tern (*Sterna antillarum browni*) is listed as endangered by both the federal and state regulatory authorities. This migratory species nests in colonies from April through August along the coasts of California from San Francisco south to Baja California. The least tern nests in sand dunes or upland mudflats and the nearest nesting population is at the Santa Clara River estuary, 4,000 meters (2.5 miles) southeast of the site. It is not known to have nested in the project vicinity, and it would only be expected in the area during foraging in the nearshore waters and possibly at the Ventura River estuary lagoon.

The California brown pelican (*Pelecanus occidentalis californicus*) was placed on the state and federal endangered species lists due to sharp population declines related to the use of certain pesticides, primarily DDT and DDE. Since the banning of these chemicals, the species has made a significant recovery. Anacapa Island is the only nesting colony in California, but the brown pelican is a fairly common resident along the coast. They roost primarily along the ocean shoreline and forage in nearshore waters. They are frequently seen in the site vicinity and are known to occasionally bathe and roost at the Ventura River lagoon.

All marine mammals are protected by the Marine Mammal Protection Act and several species, particularly dolphins, could be expected to be observed in the nearshore waters at and around

the site. Marine mammals that would be most common in the nearshore waters include the common dolphin (*Delphinus delphis*) and the Pacific white-sided dolphin (*Lagenorhynchus obliquidens*). During migration periods, California grey whales (*Eschrichtius robustus*) could occur further offshore, but in relatively shallow water. Harbor seals (*Phoca vitulina*) and California sea lions (*Zalophus californianus*) could also be observed within or just outside the *Egregia* bed. According to J. Cordero (pers. comm.), there are only two marine mammal haul-out sites within the Ventura area: sand beaches at Point Mugu and at the Carpinteria (Veneco) pier. Although individual marine mammals may be sighted along the Ventura shoreline, the beach at the project site is not expected to be utilized as a haul-out area for either of those species.

Other sensitive species that may occur in the area are primarily associated with the Ventura River estuary and adjacent habitats. These species include the California Species of Concern (CSC) southwestern pond turtle (*Clemmys marmorata pallida*) and the state endangered Belding's savanna sparrow (*Passerculus sandwichensis beldingi*). The pond turtle is potentially found in the backwaters of the upstream portion of the lagoon, while the savanna sparrow is a resident breeder of the pickleweed saltmarsh on the west end of the lagoon in Emma Wood State Park. The southern tarplant (*Centromadia parryi* ssp *australis*) is on the California Native Plant Society 1B list (rare, threatened, or endangered in California and elsewhere), but has no federal or state status, and was reported at the river mouth in 1992. Aphanisma (*Aphanisma blitoides*) is also listed as a CNPS 1B plant and was reported 2,400 meters (1.5 miles) west of the river mouth within coastal bluff habitat (CNDDB, 2001). The Ventura area has habitat suitable for the Ventura marsh milkvetch (*Astragulus pycnostachyus* var *lanosissimus*), which was formerly believed to be extinct until a population was discovered on degraded sand dunes in the City of Oxnard, 6 miles southeast of the project site. This species is now listed as endangered by the state and proposed endangered by the federal government. Least bell's vireo (*Vireo bellii pusillus*) is known to exist in the Ventura Quadrangle. This species is both federally and state listed and is a summer resident in Southern California inhabiting low riparian growth in the vicinity of or in dry river bottoms. The tricolored blackbird (*Agelauius tricolor*), while not federally or state listed, is a CSC. In 1993, 40 tricolored blackbirds were observed nesting along the Ventura River, one mile north of U.S. Highway 101. None of these species, however, would be expected within the project site.

The adjacent Ventura River estuary is considered a sensitive habitat given the presence of multiple sensitive species and the limited remaining occurrence of coastal lagoons in southern California. Coastal dune scrub is also considered a sensitive community, but the remnant elements of this community at the project site no longer constitute designation as this community.

3.4 AIR QUALITY

The project site is within the jurisdiction of the Ventura County Air Pollution Control District. Ventura County is considered a "non-attainment area" for the federal ozone standard. The County is also a non-attainment area for the state standards for ozone and particulate matter.

There are no major generators of air pollutants in the vicinity of Surfers Point. The sensitive receptors located nearest the project site are multi-family residences located over 1,000 feet to the east along the beachfront promenade.

3.5 NOISE

The most significant sources of noise in the vicinity of the project site are surf sound and traffic noise from U.S. Highway 101, located about 1,200 feet to the north. Trains on the Union Pacific Railroad, located about 1,000 feet to the north, are also a source of periodic noise. Noise relating to traffic on Shoreline Drive and in the Ventura County Fairgrounds parking lot are audible in the site vicinity, but is not substantial other than during major events at the Fairgrounds (the annual Ventura County Fair, for example).

There are no noise sensitive uses in the immediate vicinity of the site. The nearest sensitive use is a beachfront apartment building located over 1,000 feet to the east. Noise generated at the site would not generally be audible at that location. A new hotel proposed at the southeast corner of Harbor Boulevard and Figueroa Street is currently going through the planning process at the City, but has not been approved at this point. Noise levels at the site are within an acceptable range for recreational uses.

3.6 WATER RESOURCES

3.6.1 Hydrology

The project site is within the alluvial fan of the Ventura River. The adjacency of the site to the present day location of the river mouth means that wide fluctuations in the shoreline may be expected in direct response to the variability of river discharges and related volumes of sediment that are carried in storm runoff.

3.6.2 Floodplain

The project site is within Zone V, an area of 100-year coastal flooding.

3.6.3 Water Quality

a. Marine Water Quality in the Site Vicinity. Personal contacts with the Ventura County Environmental Health Division, the Los Angeles Regional Water Quality Control Board, Ojai Sanitation District, City of Ventura, and the Southern California Coastal Water Research Project were made to obtain data on the marine water quality of the site. With the exception of the County-provided bacteriological data at Surfer's Point, the agencies indicated that no marine water quality sampling had occurred within the area. The Ojai Sanitation District discharges its treated sewage effluent into the Ventura River; however, monitoring stations for that discharge are located north of the estuary.

Since assuming the duties from the City of Ventura in 1998, the County has taken weekly ocean water samples at two beach stations near the project site: Station 13000 "Surfers Point" (south of the Ventura River across from the Fairgrounds) and Station 14000 "Promenade Park (south of a drain across from Figueroa Street). At the time the water sample is collected, the number of

people in the water, surface water temperature, and notes on the water flows from the river (13000) or drain (14000) are also recorded. Hauge (pers. comm.) stated that the County does post warning signs when high bacterial counts are found and that those high-count conditions usually occur when there is a "large" sewage discharge associated with substantial storm runoff. Table 3-1 provides a summary of the bacteriological data for the two project site locations.

Table 3-1 Summary of Marine Water Bacteriological Data From Two Stations Near Surfers Point, Ventura, California

Year	Total Coliform[1]	Fecal Coliform	Enterococcus	Temperature (^{0}F)
1998 (Oct-Dec)	6-2,613	2-6,488	<2-75	53-60
1999 (Jan-Dec)	<10->24,192	<10-2,909	<10-782	52-67
2000 (Jan-Oct)	<10->24,192	<10-15,531	<10-2,005	54-68

[1]State Standard is 10,000 for total coliform, 400 for fecal coliform, and 104 for enterococcus.
Source: Ventura County Environmental Health Division, unpublished.

The highest total coliform counts for 1999 were recorded at Station 13000 (near the Ventura River mouth) in January, June, and September; highest fecal coliform counts for that year were at Station 14000 in October. A similar pattern was also found in 2000, and high counts that year were most common when the Ventura River was flowing.

High levels of bacteria within the water column can pose a health hazard to swimmers. In addition, they can limit the biological productivity of the intertidal and nearshore waters. For example, the littleneck clam and similar mollusks can be weakened by high bacteria levels and population levels can be reduced. Bacteria-contaminated mollusks can also enter the food chain and thereby decrease the number of fish that would otherwise be supported in a given area, and may also cause problems regarding human consumption of fish caught in the area.

b. **Ventura County SQUIMP.** The Ventura Countywide Stormwater Quality Urban Impact Mitigation Plan (SQUIMP) was developed as part of the Countywide Stormwater Quality Management Program, which was established pursuant to Section 402(p) of the federal Clean Water Act. Section 402(p) requires that all point source discharges of pollutants into waters of the United States, including discharges from municipal storm drain systems, be regulated by a National Pollution Discharge Elimination System (NPDES) permit.

The SQUIMP contains a list of the minimum required Best Management Practices (BMPs) that are to be used for various types of projects. For parking lots with 5,000 square feet or more of impervious parking or access surfaces that are potentially exposed to storm water runoff, the following design criteria are required:

- Reduce impervious land coverage of parking areas
- Infiltrate runoff before it reaches the storm drain system
- Treat runoff before it reaches the storm drain system
- Treat to remove oil and petroleum hydrocarbons at parking lots that are heavily used

- Ensure adequate operation and maintenance of treatment systems, particularly sludge and oil removal, and system fouling/plugging prevention control

3.7 COASTAL GEOLOGY

The description of coastal processes and cobble berms that follows is taken from a *Coastal Engineering Review of the Plan for Managed Shoreline Retreat at Surfers Point* (May 2001), prepared by Coastal Frontiers Corporation and Inman and Masters Consultants. The full text of the review is included in Appendix C.

3.7.1 Coastal Processes

a. Coastal Setting. Surfers Point is a south-facing beach on the eastern protrusion of the Ventura River delta. It is situated in the central portion of the Santa Barbara Littoral Cell, a coastal compartment that contains a complete cycle of sediment including sources, transport paths, and sinks. The Santa Barbara Littoral Cell extends from Point Conception to Point Mugu, a distance of 96 miles. This is the longest cell in southern California and includes a variety of coastal type and shoreline orientation. The State of California (1977) *Assessment and Atlas of Shoreline Erosion* lists Surfers Point as having cobble beaches partially protected by concrete rubble fronting shoreline facilities subject to damage from wave action.

The physiography of the Santa Barbara Littoral Cell suggests that it contains at least two subcells with different beach conditions: one west of the Ventura pier and the other continuing to the southeast of the pier. The western subcell is cliffed and contains pocket beaches with natural downcoast control points where small headlands act much like groins. The sediment in this coastal section is supply limited, as evidenced by the presence of areas where the sand cover is thin to absent, particularly downcoast of the headlands. The prevailing waves traveling easterly down the "slot" between the mainland and the Channel Islands cause the sand transport to be strongly to the east, with few reversals. The occasional reversal in wave direction moves sand adjacent to the downcoast point of each pocket beach to a temporary position upcoast of that point.

The west subcell, including Surfers Point, is a region of active accretion/erosion waves caused by episodic deposition at stream deltas and sporadic erosion and sand accretion at coastal structures (Inman, 1987). Photos show that the accretion wave from the February 1969 flood deposit off the Ventura River had reached Ventura Pier by May 1969, and its maximum effect was centered at the pier by November 1969. The erosion shown by the beach profiles obtained at the Ventura Pier, beginning in the winter of 1983 and continuing to the present, appears to be the gradual attenuation of the sand accretion waves that followed the heavy rainfall years of 1975-76 and 1982-83 (Noble, 1989).

Plates 1 and 2 of Appendix C (page 6) display an accretion wave that is currently moving eastward along the project site. Formed during the winter of 2000-01 in response to moderate rainstorms, the wave is recognizable as a spit that extends east from the river jetty. As seen in Plate 2, the spit is composed of gravel and cobble material as well as sand.

Impressive shoreline changes are known to have occurred within the historic past along the coastal zone from Ventura Pier to Oxnard Shores. For example, the U.S. Army Corps of Engineers, Los Angeles District (USACE LAD, 1961) reported that "a sea cliff, about 23 meters (75 feet) high and about 800 meters (one-half mile) inland from the shoreline marks the limit of shore retreat during recent time. The backshore area, which was relatively narrow in 1855, became exceptionally wide after the floods of 1914 and 1916. The widened area was subdivided as the Pierpont Bay development in 1926." Comparative surveys show that the shoreline at a point which is now the south jetty of Ventura Harbor was about 200 meters (650 feet) seaward of its 1855 position in 1938. Following the 1939 floods, the shoreline accreted and was still about 300 meters (1,000 feet) seaward of the 1855 position in 1948. The survey of 1959-61 shows it to have been about 200 meters (650 feet) seaward of the 1855 shoreline.

b. Tidal Datums and Sea Level Change. All wave driven coastal processes operate relative to the basic datum of mean sea level (MSL), with variations about this datum governed by the astronomical tide and by water level anomalies resulting from storm surge and phases of the El Niño/Southern Oscillation (ENSO). Tide gage records at Santa Barbara, Rincon Island, and Ventura have been intermittent in recent years. Consequently, the tidal datum for Surfers Point (Ventura) was determined by comparison of 13 years of overlapping data between Rincon Island and Los Angeles Outer Harbor, obtained from the NOAA web site (NOAA, 1998; Flick, *et al.*, 1999; R.E. Flick and S.A. Jenkins, personal communication).

The diurnal tidal range, the difference between mean higher high water (MHHW) and mean lower low water (MLLW), is about 1.6 meters (5.4 feet) at Ventura. During strong El Niño events as in 1983, warm surface water increases sea level by about 0.6 feet, while strong onshore winds may increase water level about 0.5 feet. The maximum observed sea level measured at La Jolla, California, in August 1983 was 2.4 feet above MHHW, where the diurnal range is also 1.6 meters (5.4 feet). These water level fluctuations are superposed on a general sea level rise of 0.23 meters (0.75 feet)/century based on tide gage records from 1925-1999 taken at the ocean pier at La Jolla, California. The last 20 years of the record show an increase of about 0.3 meters (1 foot)/century (Flick, *et al.*, 1999). On the other hand, the limited records for Ventura and Santa Barbara suggest that coastal uplift is about equal to sea level rise in the Santa Barbara Channel region, which is part of the tectonically active Transverse Ranges province (Inman and Jenkins, 1999; Pinter, *et al.*, 2001). Hence, while tectonic activity raises concerns about seismic activity, it also appears to remove sea level rise as a major design consideration for the Surfers Point project area.

Coastal construction is often related to the National Geodetic Vertical Datum (NGVD) of 1929, a fixed datum relative to land-based benchmarks. In the Ventura area, NGVD is about 3 centimeters (0.1 foot) above MSL.

c. Wave Climate. A wave climate study for Surfers Point should be based on deep-water wave statistics obtained from a detailed database such as the Coastal Data Information Project (CDIP, 1995; 2001). When these deep-water waves are shoaled over the bathymetry of the Santa Barbara Channel (e.g., CSLC, 1979) using refraction/diffraction programs (e.g., Dalrymple, *et al.*, 1984), a wave climate applicable to Surfers Point is obtained. To acquire a first order understanding of wave conditions at the project site, several typical wave conditions from the CDIP database were identified and processed using the above procedure. The bathymetry

of the Santa Barbara Basin trends approximately 100°- 280° True. It was found that deep-water waves with periods of 12 seconds and heights of 2 meters (6.6 feet) traveling from 280°T refract around the bulge of the Ventura River delta and approach the beach at Surfers Point from 230°T with breaker heights of about 2.5 meters (8.2 feet). These waves break at Surfers Point, where the shoreline trends about 85°-275° T, with breaker angles of about 45-55°, transporting large volumes of sand along the shore and providing the good rides that surfers prefer.

The potential longshore sand transport rate for 2.5-meter (8.2-foot) high waves breaking with an angle of 45° to the shore is about 159,800 cubic meters (209,000 cubic yards [yd^3]) per day on a sand beach where the supply of sand is unlimited. Where the supply of sand is limited, as along beaches underlain by cobbles, the transport cannot exceed the available supply of sand. These 2.5-meter (8.2-foot) waves typically last about one day and waves of similar intensity occur a number of times during the winter, suggesting that a rough estimate of the potential net longshore transport at Surfers Point may be about 1 million cubic meters (1.3 million yd^3)/year to the east.

d. Streamflow and Sediment Flux. The streamflow and sediment flux patterns of small California rivers are linked to the El Niño/Southern Oscillation (ENSO) cycle, which recurs every 3 to 7 years. The El Niño intensity has increased during the last 30 years, producing a wet climate in comparison to the previous 30 years of relatively dry climate. These climate changes are in general agreement with the Pacific/North American (PNA) decadal climate pattern in central and southern California: a dry climate extending from about 1944 to about 1968 and a wet climate extending from about 1969 to the present. The dry period is characterized by consistently low annual river sediment flux. The wet period has a mean annual sediment flux about 5 times greater, caused by strong El Niño events (Inman and Jenkins, 1999).

The maximum sediment flux from the Ventura River in the 56-year period 1940-1995 occurred during the El Niño flood of 1969, when 4.3 million cubic meters (5.6 million yd^3[1]) of sediment was brought to the sea (see Table 3-2). The seven El Niño years in the 27-year period 1969-1995 brought a total of 15.3 million cubic meters (20.0 million yd^3) to the sea, an average of 2.2 million cubic meters (2.9 million yd^3)/year. In comparison, the 20 drier years brought a total of about 840,000 cubic meters (1.1 million yd^3) or an average of 43,000 cubic meters (56,000 yd^3)/year. Therefore, within this "wet" period, the average El Niño year provided 52 times more sediment than the average drier (La Niña) year.

In summary, the Ventura River carries significant amounts of sediment to the sea during El Niño flood years that recur about every 4-5 years. Excluding the maximum, 100-year flood of 1969, the average for the six wet years between 1969 and 1995 is 1.8 million cubic meters (2.4 million yd^3)/year. In contrast, the average river borne sediment flux during dry years is about 43,000 cubic meters (56,000 yd^3)/year. The streamflow and sediment flux of the Ventura River is listed for the 27-year period between 1969 and 1995 in Table 3-2.

In addition to the sandy sediment flux described above, the Ventura River is a significant supplier of cobble sized material. The supply rate for cobbles is not known, but it has been

[1] *1 metric ton = 1.1 U.S. (short) ton ~ 0.93 yd^3 of sediment with (dry) bulk density of 1.4 metric ton/m^3.*

sufficient over time to build the pronounced cobble delta that is present today, extending well below sea level.

e. Budget of Sediment. In the absence of a budget of sediment for Surfers Point, an approximation can be made using published transport estimates and data from the annual sediment fluxes from the Ventura River (see Table 3-2). Previous studies of the sediment budget in areas near Surfers Point include Bowen and Inman (1966), Intersea Research (1981), Bailard/Jenkins (1982), BEACON (Noble, 1989), and a coastal processes data summary (Inman, *et al.*, 1986).

Waves approaching the vicinity of Surfers Point through the west window (~280°True) account for the majority of the longshore transport of sand. Occasional waves from tropical storms approaching from the south through the opening between Anacapa Island and Point Mugu may cause short term reversals, but when they do occur, their intensity can result in severe beach erosion. Calculation of wave-driven littoral sand transport rates at Carpinteria, 15 miles west of the Ventura River delta, show that the easterly transport is about 240,000 cubic meters (314,000 yd^3)/year in contrast to an upcoast (westerly) transport of 34,000 cubic meters (45,000 yd^3)/year (Bailard/Jenkins Consultants, 1982). The net annual transport is 269,000 yd^3/year to the east, which compares favorably with the value of 190,000 cubic meters (250,000 yd^3)/year calculated from the long-term budget of sediment at Carpinteria (Noble, 1989). At Emma Wood State Beach, the long-term net easterly littoral transport of sand was estimated to be 165,000 cubic meters (216,000 yd^3)/year (Noble, 1989).

The flux of sediment from the Ventura River is episodic, averaging 1.8 million cubic meters (2.4 million yd^3)/year for the six flood years between 1970 and 1995 (excluding the largest flood year, which was 1969), and 43,000 cubic meters (56,000 yd^3)/year for the 20 dry years between 1970 and 1995. Thus, every 4 to 5 years, a flood occurs that transports an average of 42 times more sand than during the dry years.

A rough estimate of the budget of sediment for Surfers Point can be made by assuming that episodicity between flood and dry years governs the river flux of sediment, while the wave climate produces a more uniform net annual longshore drift of sand (e.g., Hicks and Inman, 1987). Under these circumstances, about 165,000 cubic meters (216,000 yd^3)/year is transported easterly along the coast past Emma Wood toward Surfers Point. During dry years, an additional 43,000 cubic meters (56,000 yd^3)/year becomes available from the Ventura River for a dry year total of 208,000 cubic meters (272,000 yd^3)/year (see Figure 3-5). During the episodic floods, the combined longshore sand transport and river borne material provide a total sand supply of 2 million cubic meters (2.6 million yd^3)/year, about 10 times more sand than is available for transport during dry years. For a year or two following floods, there is sand available for the beach at Surfers Point. During the following dry years, there is little sand available, compared to an estimated potential transport by waves of about 1 million cubic meters (1.3 million yd^3)/year. Therefore, during these dry years, sand is present at Surfers Point only a few months following each year's modest winter discharge from the Ventura River.

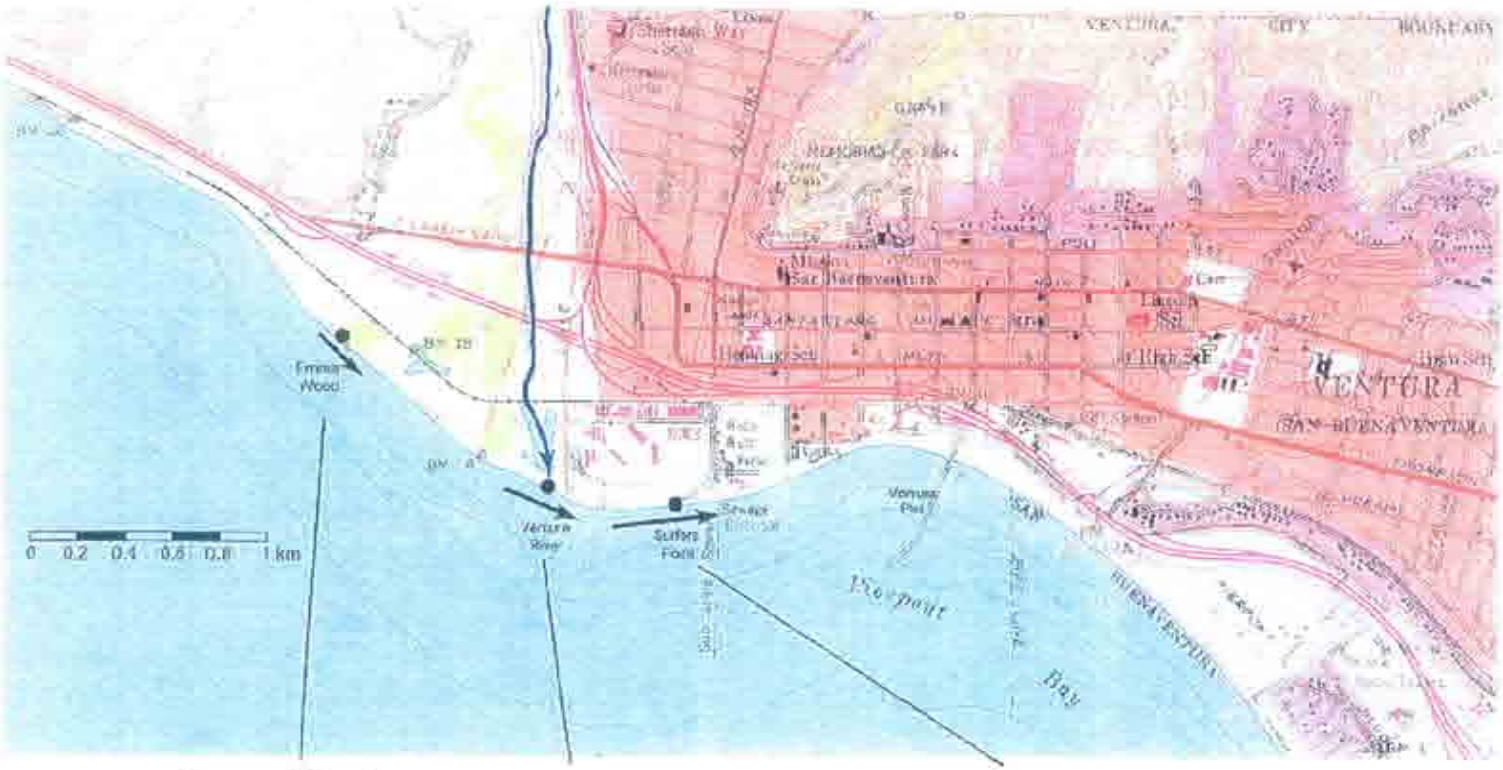
The above analysis, supported by observation, shows that the shoreline at Surfers Point fluctuates widely with the episodic flood transport of sand from the Ventura River. Flood years bring more sand than the waves can transport, forming an accretionary bulge that is moved

Table 3-2 Streamflow and Sediment Flux for the Ventura River, 1969-1995[a]

Water Year[b]	Streamflow 10^6 m^3/year	Sediment Flux[c] 10^6 tonnes/year	Sediment Flux > 10% of 1969 Flux
1969	308	6.03[d]	100%
1970	12.3	0.0297	--
1971	13.9	0.0338	--
1972	3.66	0.00344	--
1973	58.2	0.446	--
1974	16.7	0.0425	--
1975	16.5	0.0324	--
1976	1.70	0.00146	--
1977	0.982	0.000868	--
1978	293	3.19	53%
1979	38.4	0.0333	--
1980	161	1.60	27%
1981	9.64	0.00421	--
1982	4.73	0.00601	--
1983	265	2.95	49%
1984	34.6	0.129	--
1985	3.48	0.00375	--
1986	55.6	0.736	12%
1987	3.48	0.00375	--
1988	5.54	0.00766	--
1989	1.79	0.00134	--
1990	0.447	0.000159	--
1991	23.6	0.0712	--
1992	64.2	0.333	--
1993	246	2.63	44%
1994	7.41	0.0120	--
1995	342	4.37	72%

[a] *Data from Inman, et. al. (1998).*
[b] *Water year extends from October 1 of the preceding calendar year to September 30 of the water year.*
[c] *1 metric ton = 1.1 U.S. (Short) ton = 0.93 yd3 of sediment having (dry) bulk density of 1.4 metric ton/m3.*

easterly across the delta and along Surfers Point in the form of a traveling accretion wave (Inman, 1987). The sand wave begins soon after the flood, producing a seaward bulge in the coast that gradually moves easterly along Surfers Point, widening the shorezone. Within a year or two, the flood supply of sand moves beyond Surfers Point, and during subsequent dry years, the beach disappears most of the time, leaving a protective cobble berm. Thus, there is no



	Emma Wood		Ventura River		Surfers Point			
	Littoral Drift of Sand m^3 / yr	+	Sand Flux m^3 / yr	=	Sand Input m^3 / yr	—	Potential Littoral Drift of Sand m^3 / yr	= Sand on Beach m^3 / yr
Flood Year	165,000		1,800,000		1,965,000		1,000,000	965,000
Dry Year	165,000		43,000		208,000		1,000,000	0

Estimated budget of sand for Surfers Point for dry and flood years of the Ventura River, referenced to the USGS Ventura 15' Quadrangle, 1967.

Surfers Point Sand Budget

Figure 3-5

single, natural position for the shoreline at Surfers Point. Rather, a shoreline that fluctuates episodically within a broad range constitutes the natural condition.

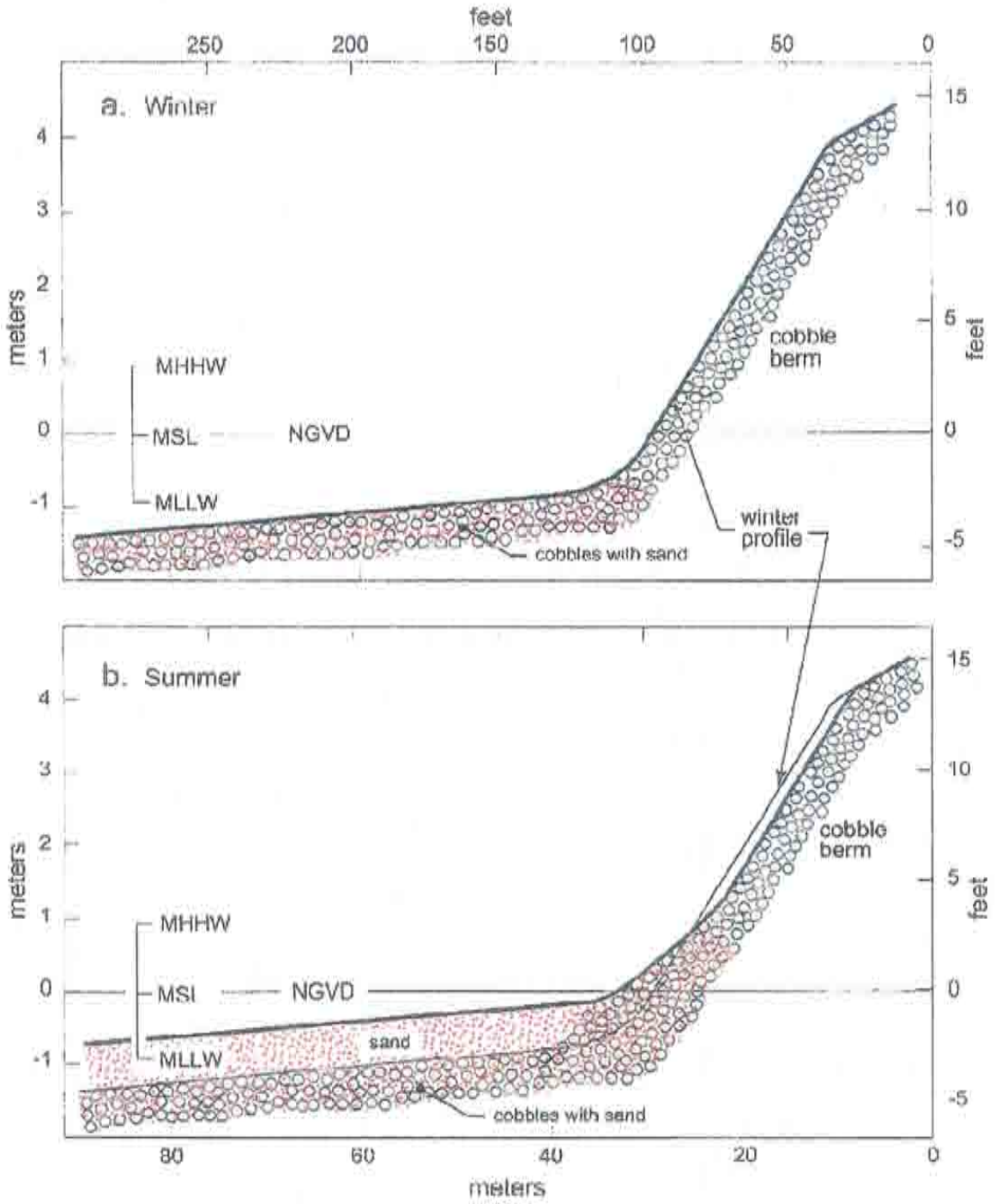
3.7.2 Cobble Berms

a. Natural Cobble Berms. Cobble berms are common to mountainous coasts with narrow shelves and seacliffs where fast flowing streams and cliff erosion provide a source of cobbles. River borne cobbles are a bedload phenomenon that move during maximum stress. They are usually deposited at or below sea level on the deltas of fast flowing streams such as the Ventura River, and remain in place when covered with sand. When the more mobile sand is removed, storm waves act on the exposed cobbles and move them shoreward to eventually form cobble berms. For example, during years of severe storms such as the El Niño year of 1982-83, beaches in southern California that were distant from river sources of sediment were denuded of sand, with only the basal cobble conglomerate remaining on the wave-cut platform. Waves forced cobbles onshore, forming cobble beaches and berms, until sand transported along the beach from river sources covered them (Inman, 1985). Similarly, beaches downdrift of breakwaters are denuded of sand, exposing the basal cobble conglomerate to wave action and the formation of cobble berms (e.g., Inman, 1976).

Beaches along these coasts are often thin (1.8-meter [6-foot]) deposits over wave-cut platforms in country rock. When the shelf is narrow, the increased slope of the platform may constitute a boundary condition that determines the nature of the sedimentary material that can repose on the beach during seasonal summer/winter changes in profile. A common bedform response to deposition over steep platforms, where both sand and cobbles are available, is for the foreshore to consist primarily of sand while the backshore is mainly cobble. Under lower summer waves, sandy sediments move onshore, often forming a low sand beach face against the cobbles. Under higher winter waves, the sand is moved offshore and the waves work directly on the cobble berm. Cobbles are the primary basal material deposited over a wave-cut platform (Pinter *et al.*, 2001).

When cobbles become exposed, high waves move them onshore to form cobble berms. These berms provide effective protection against seacliff erosion. They are also the key to seasonal beach adjustments to winter waves. Cobbles decrease wave reflection, permitting sand to repose closer to the shore than otherwise would be possible with the more intense reflection common to wave-cut seacliffs and vertical seawalls.

The seaward face of the cobble berm undergoes minor seasonal changes. At Surfers Point, it was observed that, during winter, the overall berm face was slightly steeper, while during summer, the toe of the cobble face may move seaward causing a slight decrease in overall slope (see Figure 3-6). These seasonal fluctuations appear to be associated with the change in permeability and void space of the cobble formation and the resulting differential between wave uprush and backwash over the porous cobble surface. Maximum uprush with minimum backwash occurs in winter when the cobble voids are free of sand. The uprush achieves maximum penetration into the cobble berm, the backwash decreases relative to the uprush, and the slope of the cobble beach face increases. During the summer, a blanket of sand covers the foreshore and the toe of the cobble berm. This blanket reduces the permeability and increases the backwash, resulting in a flatter slope near the toe of the berm. Cobbles from above roll downslope, causing a seaward fill of cobbles at the beach toe and an overall decrease in slope.



(a) Winter profiles of cobble berm with (b) summer changes associated with onshore migration of sand blanket. Datum is NGVD (1929) with MSL and diurnal tide ranges inserted. Winter profile is average of Surfers Point profiles 17+00 through 20+00 for the period 29 October 2000 - 7 March 2001.

Winter and Summer Shore Profiles

Figure 3-6

The extent of this seasonal change should depend upon the cobble size, the wave characteristics, and the amount of sand build-up at the cobble berm.

A natural cobble berm exists on the west side of the Ventura River Delta, at Emma Wood State Beach. Comprised of a mixture of gravel, cobbles, and boulders, the berm extends from a low-tide terrace near the elevation of MLLW to a top elevation of about +4 meters (13 feet) (MLLW Datum). The berm face is inclined at a slope of 5(V):1(H), while the berm crest exceeds 50 feet in width. A representative view is presented in Plate 1 of Appendix C (page 6).

Based on an analysis of aerial photographs, Appendix B of the Noble Consultants Report (Plan for Managed Shoreline Retreat, 2000) indicates that the shoreline in the area of the Emma Wood berm has remained stable for the past 70 years (Everts, 2000b). Additional confirmation of the berm stability was obtained from a comparison of historical profiles contained in a study of the feasibility of installing a man-made surfing reef (Coastal Frontiers, 1988). An example is provided on Figure 5 of Appendix C (page 17), in which it can be seen that the berm (from 0 to +4 meters [0 to +13 feet], MLLW), experienced only minor changes between 1964 and 1988. An additional finding of the surfing reef study was a predominance of cobbles and boulders on the sea bottom extending well offshore of the cobble berm, to depths exceeding 6 meters (20 feet) (MLLW).

b. Engineered Cobble Berms. Beaches with a sandy foreshore and cobble berm are common natural adaptations to high energy environments with limited sand supply. During the low waves of summer, sand covers the foreshore and forms a sand beach face and low berm against the higher cobble storm berm. During winter, the sand is mostly gone and the waves work the cobble berm, which provides effective natural protection for the coast. Conceptually, it is not a major step to proceed from natural cobble berms to the idea of placing an artificial cobble berm as an aid to shore protection.

During the past two decades, the concept of engineered cobble berms has been discussed in engineering journals under the titles of rubble beaches (Johnson, 1987), berm breakwaters (Willis *et al.*, 1988), sacrificial beaches (Leidersdorf, *et al.*, 1990), and dynamic revetments (Ahrens, 1990). Studies of berm breakwaters and of natural cobble/boulder beaches and their potential engineering uses are cited in Table 2 of Appendix C (page 18). Inspection of the literature shows that the engineering studies mainly address stationary, angular, rubble breakwaters in hydraulic models with little attention to the nearly insurmountable problems of model-prototype similitude. The beach process studies were not made with shore protection in mind, and they address gravel, pebble, and small cobble berms with no studies of the dynamics of large cobble and boulder berms comparable to those under consideration for Surfers Point. The engineering studies of angular, multi-sized rubble cannot be applied directly to cobble berms composed of rounded material because of the differences in the dynamic behavior of angular and rounded materials. The angular material locks in place, attenuating wave energy by fluid resistance and porosity. The rounded material rolls and slides, attenuating wave energy by fluid resistance, porosity, and the work performed in moving cobble mass up and down the berm face. Also, it is well known (e.g., Inman, 1949) that natural beach material is subject to intense hydrodynamic sorting, producing a berm whose residual material is well sorted (i.e., strongly unimodal in size).

The importance of the slope of rubble breakwaters was demonstrated by the failure of the breakwater at Plymouth, England. The hurricane of 1817 modified the 3(H):1(V) constructed slope to 5:1, and despite continuing attempts to rebuild the 3:1 slope, subsequent storms made it evident that nature required a slope of 5:1 to withstand storms. Plymouth Breakwater was the first major coastal structure to use a design configuration determined by nature. Later studies showed that the 5:1 slope was the correct equilibrium slope for that size rubble under storm conditions (Inman and Masters, 1994). While the principle of natural determination of slope will apply to engineered cobble berms, the dynamic slopes for rounded cobble-boulder berms will be different than those calculated from experiments on angular rubble. In the case of engineered cobble/boulder berms, it is also important that the berm have sufficient thickness to allow for the natural slope adjustments from summer waves to storm waves.

The movable cobble berm is a very efficient wave absorber, with minimal wave reflection. This is because of the high permeability of the large void spaces and the energy expended in moving the cobble mass up and down the berm face. Further, the cobble berm will adjust its slope in the event of storm waves with little loss of effectiveness.

It should be noted that pebbles and small cobbles less than about 4 inches in diameter have been known to become ballistic during the runup of storm waves over cobble-boulder berms composed primarily of larger-sized material. This phenomenon is related to poor sorting within the mix of material. Smaller clasts moved by the waved become ballistic when they strike larger objects that are slower moving or stationary. Following formation of cobble-boulder berms due to severe beach erosion downdrift from the Oceanside Harbor in the 1970's and 1980's, ballistic pebbles and cobbles traveled about 9 meters (30 feet) past the berm crest and broke car windows and storefront windows along Front Street (Inman, 1976; Inman and Masters, 1991).

In summary, there are few established engineering criteria that apply to rounded cobble berms, while the process studies of natural cobble berms are few and were not made with shore protection in mind. Consequently, it is necessary to synthesize principles gained from engineering and process studies and apply them judiciously as "conceptual guides" for shore protection measures at Surfers Point.

c. **Surfers Point Test Section.** To investigate the functional effectiveness of an engineered cobble berm at Surfers Point, a prototype test section was installed at the east end of the project area in Fall 2000. The location of the test section is illustrated on Figure 2 of Appendix C (page 3). The test section particulars are as follows:

- The experimental berm commences at Station 16+00 and ends at Station 25+00.
- An estimated 6,100 cubic meters (8,000 yd^3) of material ranging in size from fines to boulders was installed between Stations 16+00 and 21+50 on September 11-15. The berm face was inclined at 5(H):1(V).
- An estimated 760 cubic meters (1,000 yd^3) of material was installed between Stations 21+50 and 25+00 on September 18-19 and October 24-26. Although the material ranged from fines to boulders, the fines content was higher than in the case of the (6,100 cubic meters (8,000 yd^3) placed on September 11-15. It was necessary to utilize a steeper berm face, inclined at approximately 3:1, due to a limited supply of suitable fill material.

- The fill material was derived from two construction sites on the Ventura River located approximately 14.5 kilometers (9 miles) upstream of the coast.
- To monitor the performance of the test section, a survey program was initiated on August 31, 2000 and continued on a monthly basis through April 4, 2001. Data acquisition, which was undertaken by Benner and Carpenter (J. Moore, personal communication), consisted of measuring the location and elevation of randomly-spaced points, from which synthetic shore-perpendicular profiles could be derived through the use of a triangular irregular network ("TIN") model.

Gross changes in the test section that occurred between December 1 and May 4 are illustrated on Plates 2 through 4 of Appendix C . On December 1, prior to the onset of winter storms, a substantial quantity of sand and silt remained on the upper portion of the slope (Appendix C, Plate 2). By March 6, this material had been removed by wave impact, leaving a relatively smooth slope composed of gravel, cobbles, and boulders (Appendix C, Plate 3). On May 5, a mildly-sloping sand beach was observed fronting the cobble test section (Appendix C, Plate 4). The sand intersected the cobble berm approximately 4 feet above MSL, and extended several feet below MSL. The material was of fluvial origin, having debouched from the Ventura River in response to substantial winter rainstorms and moved to the east via longshore transport.

To estimate the extent to which the berm material had been sorted by waves, a visual appraisal of sediment size was conducted at Station 18+50 on May 4, 2001. On the upper berm face at an approximate elevation of +3.4 meters (11 feet) MLLW, the berm consisted of all sizes of material from fines to those with a maximum dimension of 46 centimeters (18 inches) (Appendix C, Plate 3). Wave runup had been infrequent at this elevation, as evidenced by the fact that it was located above the debris line. The material apparently represented the "as placed" distribution of sizes. Farther down the berm face at an approximate elevation of +2.1 meters (7 feet) MLLW, where the material had been washed repeatedly by waves, the maximum dimensions of the clasts ranged from 5 to 30 centimeters (2 to 12 inches) (Appendix C, Plate 4). Here, the sand, silt, and small gravel had been removed, leaving a better-sorted, more permeable berm of cobble-sized material. A comparison of the photographs shows that on the upper berm (Appendix C, Plate 3), the spaces between clasts are filled with fine material; on the lower berm (Appendix C, Plate 4), the spaces between clasts are open and porous, providing greater penetration and dissipation of wave runup.

Additional insight into the performance of the test section was obtained from an analysis of the monthly survey data. To quantify the changes that occurred during the winter of 2000-01, synthetic profiles were created at 30-meter (100-foot) intervals using the survey data from August, October, and December 2000, and March and April 2001. Seasonal changes in the test section profiles are summarized in Figure 3-6.

Between Stations 16+00 and 20+00, where the test section was installed at a slope of 5:1, the profiles obtained on April 2 were virtually identical to those obtained on October 29 with the exception of a slight modification at the toe of the berm. The obvious conclusion is that the cobble berm in this area remained stable throughout the winter season. Farther to the east, between Stations 21+00 and 24+00, the profiles suggest that material was eroded from the upper portion of the berm and deposited on the lower portion. Thus, it was concluded that the 3:1 slopes were unable to withstand the winter wave conditions without readjustment to a flatter,

more stable inclination. The profiles at Station 25+00 differ from the others in the test section, in that they reflect the occurrence of accretion on the upper slope between December 2000 and March 2001. A possible explanation is the easterly transport and subsequent deposition of sediment eroded from the updrift portion of the test section. It is also possible, however, that the apparent change resulted from the survey methodology rather than from natural causes (i.e., different representations of the edge of the test section resulted from interpolating between widely-spaced points to create synthetic profiles).

Although the western (5:1) portion of the cobble berm proved to be stable, the profiles on either side of the test section suggest that wave conditions were unexceptional during the 2000-01 winter season. To the west, the upper portions of the profiles evidenced little change at Stations 10+00 and 11+00, cut-and-fill reshaping at Stations 13+00 and 14+00, and erosion at Stations 12+00 and 15+00. The large accumulation of sediment that occurred below +1.5 meters (5 feet) between the March and April surveys is attributable to the aforementioned influx of river sediment. This material did not reach the cobble test section until after the April 2 survey, but was clearly evident on May 5 (Appendix C, Plate 4).

To the east of the test section, the upper portions of the profiles at Stations 26+00 through 30+00 were stable to slightly accretive during the winter season. The lack of significant erosion may be attributed in part to the absence of severe storm waves, but also in part to the incidental nourishment provided by sediment eroded from the test section.

In conclusion, that portion of the cobble berm test section with an as-built slope of 5:1 remained stable under the moderate wave conditions that prevailed during the 2000-01 winter storm season. The ability of the test section to withstand more extreme wave conditions remains to be demonstrated, although the long-term stability of the natural cobble berm at Emma Wood State Beach bodes well in this regard. That portion of the test section with an as-built slope of 3:1 was reshaped to a flatter configuration, indicating that the original slope was too steep to remain stable.

3.7.3 Coastal Management Policies

a. City of Ventura Comprehensive Plan. The Ventura Comprehensive Plan includes several policies relating to coastal erosion and shoreline management. Applicable policies of the Resources Element and the Safety Element are listed in Section 4.7, followed by a discussion of the project's consistency or lack thereof with each policy.

b. Draft Policy on Coastal Erosion Planning and Response. On March 26, 2001, the Resource Agency of the State of California issued a "Draft Policy on Coastal Erosion Planning and Response" that provides a model for policy guidance about the approach that agencies should consider in addressing coastal erosion and beach loss along the California Coast. The Draft Policy includes both "overarching principles" and specific policy direction for coastal protection projects that potentially apply to the proposed project. Specific policies and a discussion of the project's consistency or lack thereof with such policies are included in Section 4.7.

c. **California Department of Parks and Recreation Coastal Erosion Policy.** On December 28, 1999, the California Department of Parks and Recreation adopted a policy allowing structural protection or re-protection of coastal developments when the cost of protection is commensurate with the value of the development and when it can be demonstrated that the protection would not negatively affect the beach or near-shore environment. The specific language of this policy and a discussion of consistency with the policy are included in Section 4.7.

3.8 PARKING, BEACH ACCESS, and RECREATION

3.8.1 Recreation

Surfers Point is a popular recreational area for Ventura residents. Its location makes it one of the best surfing spots in the area, while the shorefront bike path and the site's proximity to the Ventura River provide additional recreational opportunities. The Ventura County Fairgrounds are located immediately north of Surfers Point. The Fairgrounds host the annual Ventura County Fair, as well as various trade shows, off-track betting, and stock car racing.

3.8.2 Site Access

Shoreline Drive currently provides access to the project area. This three-lane roadway (two through lanes and a center turn lane) currently provides access to the existing Seaside Park and Fairgrounds parking areas. On-street parking is currently prohibited along Shoreline Drive in the project area. Shoreline Drive extends easterly from its terminus at the Ventura River to Figueroa Street. Figueroa Street then connects with Harbor Boulevard and proceeds northerly under U.S. Highway 101 to the downtown area of Ventura.

3.8.3 Parking

Currently, there are approximately 223 usable parking spaces available in the Surfers Point fee parking lot. This lot originally provided 352 parking spaces but 129 spaces have been lost due to storm damage and beach erosion. There are 35 designated parking spaces and 4 unmarked spaces available in the Surfers Point free parking lot, which is located east of the fee lot.

Additional parking resources are provided in paved and unpaved parking lots located on the north side of Shoreline Drive on the Ventura County Fairgrounds property. These lots are generally unused during weekdays but are used during weekends and when special events are held at the Fairgrounds. The annual Ventura County Fair occurs during the first two weeks of August and generates the largest demand for parking in the area. Throughout the year, non-fair events are also held at the Fairgrounds. These non-fair events also place demands on the on-site and off-site parking supply in the area.

3.9 ARCHAEOLOGICAL RESOURCES

As part of this study, Conejo Archaeological Consultants conducted a Phase I archaeological survey. The Phase I study included both a records search at the South Central Coast Information Center (SCCIC) housed at California State University, Fullerton, and a field reconnaissance of the Area of Potential Effects (APE) for the project. This survey is included in its entirety in Appendix D.

3.9.1 Records Search

The SCCIC records search indicated that 12 archaeological sites are located within ½-mile of the site, two of which are located south of U.S. Highway 101. These two sites, CA-VEN-3 and CA-VEN-842H, are described below.

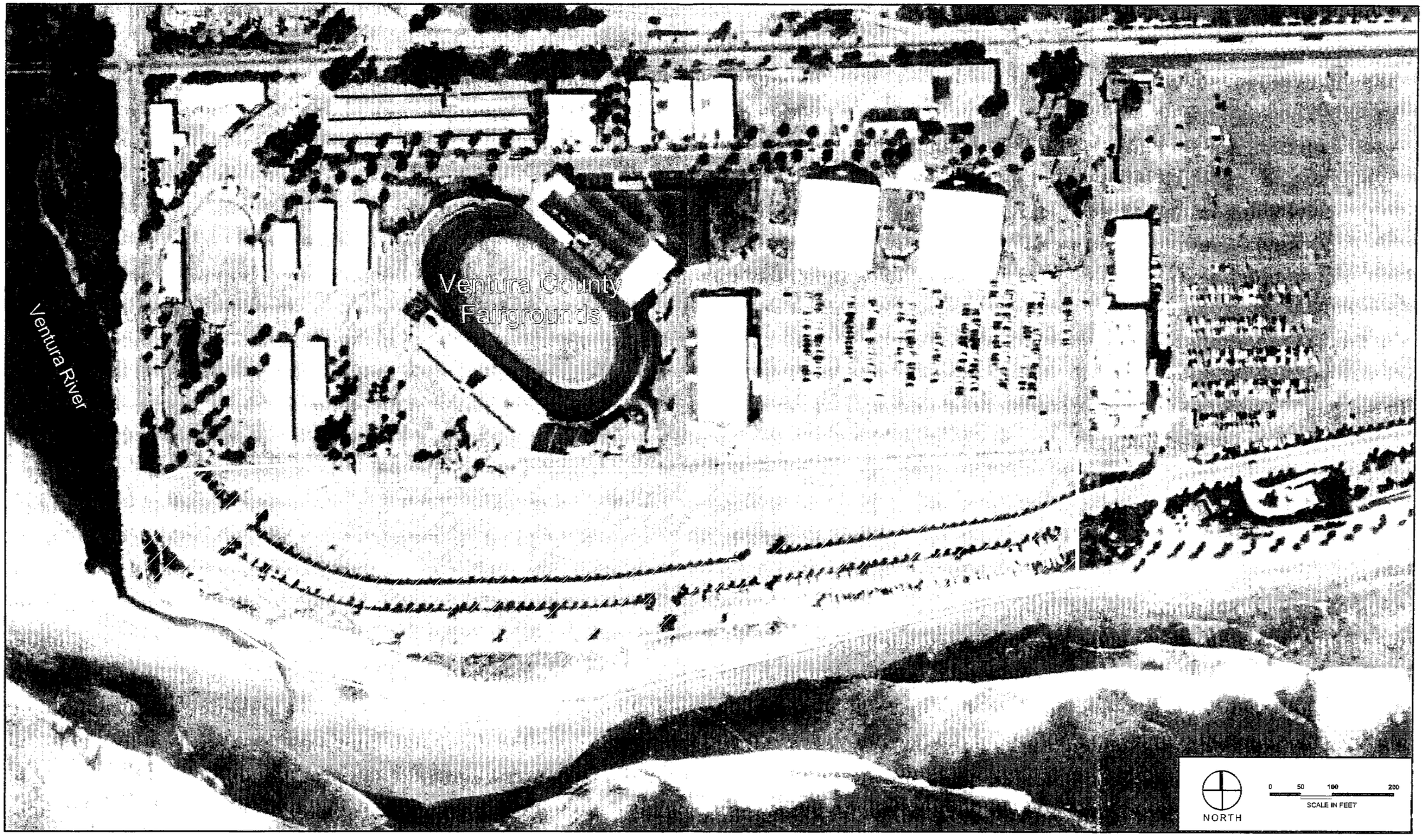
> **CA-VEN-3** represents the historic Chumash village of *Shisholop*, which is located approximately 300 meters (1,000 feet)east of the project site's eastern boundary. Early explorers describe the village as consisting of approximately 30 round thatched houses and a population of about 300-400. CA-VEN-3 was first recorded by Hoover and Rensch in 1984. In 1951, Eberhart recorded the site as a "shell midden, village site." The first scientific archaeological investigations of the site were undertaken by Greenwood and Browne in 1965 and 1967. A Phase II excavation and monitoring program conducted in Promenade Park by Fugro West in 1994 and 1995 determined that the western edge of CA-VEN-3 (the area closest to the project APE) has been extensively disturbed as no intact cultural deposits were found. In 1976, Browne checked for evidence that CA-VEN-3 extends west of Figueroa Street, but no cultural resources were found. Subsurface testing conducted by Greenwood and Associates in 1988 for the Surfers Point Park improvements project also found no evidence that CA-VEN-3 extends westward into Surfers Point Park.
>
> **CA-VEN-842H** is located west of the Ventura River mouth. This site consists of remnants of a World War II defense battery. Visible remnants of the battery include two concrete artillery emplacements for 155 millimeter guns.

The records search also indicated that six properties on the National Register of Historic Places (NRHP), a California Point of Historical Interest (Ortega Adobe), and three California Historic Landmarks are located within 800 meters (½-mile) of the project site, although all ten of the sites are on the north side of U.S. Highway 101. The closest two City of Ventura Landmarks are the Shisholop Village and WWII Gun Emplacements described above (CA-VEN-3 and CA-VEN-842H).

3.9.2 Field Survey

An archaeological survey of the project APE (see Figure 3-7) was conducted by archaeologists Mary Maki and Georganna Hawley on March 24, 2001. For ease of description, the APE is described in two parts (South of Shoreline Drive and North of Shoreline Drive).

South of Shoreline Drive. The survey methodology included close examination of all visible ground surface in the landscaped areas, linear transects spaced no more than five meters (16 feet) apart on the beach, and close inspection of the eroded vertical wall face beneath the bike trail. The beach and dune area consists of sand and cobbles, with scattered clumps of vegetative debris washed down from the Ventura River. The beach/dune area has been disturbed by past storms. Examination of the eroded vertical section of soil beneath the bike path indicates that it is all fill material, based on the mix of different soils interspersed with chunks of concrete and asphalt. The fill material appears to have a depth of approximately 09.-1.2 meters (3-4 feet) along the beach. The soils underlying the existing paved parking lot,



CALTRANS District 07 _____

FHWA Area Engineer _____ **Reviewed by** _____

Prepared by _____

Area of Potential Effects and Archaeological Survey Map
Figure 3-7

portions of which had eroded away, are also fill. Scattered fragments of marine shell were observed, including Protothaca staminea, Mutilus sp. Tivela stultorum, and Chiton sp. All the shell noted was in fill areas and has no depositional context or significance. No evidence of prehistoric artifacts or significant historic materials was noted. This entire portion of the APE, except some of the beach area, was disturbed by construction of existing facilities.North of

Shoreline Drive. The northern half of the APE consists of a fenced dirt parking lot located in the southern portion of the Ventura County Fairgrounds. The survey methodology for this area consisted of walking linear transects spaced no more than five meters (16 feet) apart across the parking lot. Ground surface visibility was excellent throughout the parking lot. A few scattered pieces of marine shell fragments (Protothaca staminea) and some small chunks of asphalt and concrete were observed. The shell, asphalt, and concrete were all in a disturbed context as the parking lot has been graded. The asphalt and concrete fragments are indicative that the ground surface inspected was at least partially covered by fill material, which is consistent with Greenwood and Foster's earlier findings. No evidence of potentially significant historic or prehistoric resources was noted. The parking lot area has been extensively disturbed by grading and historic inundation from river flooding.

3.10 HAZARDOUS WASTE/MATERIALS

Prior to construction of the existing improvements at Surfers Point (Shoreline Drive, parking lot, bike path) in 1989, an investigation of the site vicinity was undertaken to identify any conditions that would pose a constraint to site development. The only identified potential hazard was a 3.8-cubic meter (1,000-gallon) gasoline storage tank located about 90 meters (100 yards) inland and 270 meters (300 yards) west of Figueroa Street. The tank was removed and, upon removal, gasoline contaminated soil was encountered. However, the contaminated soil was removed and transported to the PWI waste facility in Buttonwillow, California. The non-contaminated soils were spread and graded on-site (McClelland Consultants, March 3, 1989).

No other areas of contaminated soil were detected in the site vicinity and the fill material that was used for the 1989 road/parking lot/bike path construction contained no known contaminants. No incidents have occurred at the site since 1989 to suggest that additional soil contamination has taken place. Therefore, the project site is not known to contain any health or safety hazards.

3.11 AESTHETICS

The project site is located at Surfers Point beach in the City of Ventura, immediately south of the Ventura Fairgrounds and east of the Ventura River. The aesthetic appeal of the natural features in the area is relatively high, because of its shoreline location, proximity to the Ventura River, and views of the hillsides above the City of Ventura. Surfers Point is a popular spot for surfers, beachgoers, and other recreational users.

The improvements constructed at Surfers Point in 1989 (Shoreline Drive, shorefront bike path and parking lot) provide access to the site, thus enhancing its availability to area residents and visitors. Although landscaping in the shorefront area is relatively sparse, landscape trees and

View looking northwest at parking lot entrance from shoreline drive.

View looking north along existing undamaged area of bike path.

View looking north at end of shoreline drive.

View looking south at parking lot .

Site Photos

Figure 3-8

View looking south from bike path at northern bike path and parking lot erosion with K-rail barriers.

View looking south from bike path at southern bike path and parking lot erosion with K-rail barriers.

View looking north from bike path at northern bike path and parking lot erosion with K-rail barriers.

View looking north from bike path at southern bike path and parking lot erosion with K-rail barriers.

Site Photos

Figure 3-9

View looking south from end of Shoreline Drive at Ventura County Fairground dirt parking lot.

View looking south from middle of Ventura County Fairground dirt parking lot. Off track horse racing building in background.

View looking north from middle of Ventura County Fairground dirt parking lot. Race track bleachers in background.

Site Photos

Figure 3-10

bushes are planted on both sides of Shoreline Drive and several palm trees are planted within the parking lot area. Figures 3-8 through 3-10 illustrate the general visual character of the area.

As discussed in Section 2.0, erosion has resulted in severe damage to the existing bike path and parking lot (see Figures 3-8 and 3-9). This damage, which has gone without repair since the early 1990s, detracts from the visual quality of the site. The concrete blocks that have been placed in front of erosion-damaged areas further detract from the visual image of the site and restrict beach access in some locations. The damage to the bike path also minimizes the utility of the shorefront bike path, thereby inhibiting the use and enjoyment of the site.

The 3.0-hectare (7.3-acre) dirt parking lot on the Fairgrounds property is completely lacking landscaping and has little visual interest. As illustrated on Figure 3-10, its stark appearance detracts from the overall visual quality of the Fairgrounds.

4.0 ENVIRONMENTAL IMPACT ANALYSIS

This section assesses the potential environmental consequences of the project and recommends measures to mitigate impacts where feasible. A comprehensive environmental checklist was used to identify any physical, biological, social or economic factors that might be affected by the various alternatives under consideration. For many of the environmental issues discussed in this section, the impacts are essentially the same for all of the alternatives other than the "No Project" scenario (Alternative 6). However, when appropriate, a separate discussion of each alternative is provided to illustrate the difference in the level of impact among the alternatives.

The following technical studies were prepared in conjunction with this environmental review.

- Phase I Archaeological Survey (April 13, 2001)
- Traffic and Circulation Study (April 27, 2001)
- Biological Resources Report (May 1, 2001)
- Coastal Engineering Review of the Plan for Managed Shoreline Retreat at Surfers Point (May 2001) and Addendum to Coastal Engineering Review (May 2002)

The complete Phase I Archaeological Survey, Traffic and Circulation Study, and Coastal Engineering Review are attached as Appendices C, D and E. The Biological Resources Report has essentially been included in its entirety in Sections 3.3 and 4.3.

4.1 LAND USE

4.1.1 Impact Analysis

All of the alternatives would retain the current recreational use of the site and therefore would not conflict with the "Fairgrounds/Public Use" City of Ventura Comprehensive Plan land use designation or "Parks" zoning for the site. This includes the bike lane. As no agricultural land is located on or near the site, none of the alternatives would affect agricultural land.

The Land Use Element of the City of Ventura Comprehensive Plan includes several policies that are potentially relevant to the project. The following general statement, included on page III-51 of the Element, applies:

> *The Fair Board shall be encouraged to preserve and enhance present recreational and visitor-serving uses, and make these facilities more accessible to the public throughout the year. New development shall be of a recreational or public use nature.*

Alternatives 1-5 involve the reconstruction of the damaged shorefront bike path and parking lot, and restoration of the beach at Surfers Point. Consequently, any of these alternatives appear to implement this general policy statement as compared to existing conditions. Alternative 6, the "No Project" alternative, would not repair the damaged shorefront bike path and parking lot and therefore would not implement this policy.

The following policies also appear to apply:

1. *No structures, other than those incidental to general public recreational purposes, and public access to the site and along the shore and the Fairgrounds, may be permitted in the oceanfront corridor. Such a corridor shall be at least 250 feet in depth, as measured from the top of the natural embankment, as officially established through a land survey. Public uses and development, including a public roadway, walkways, bikeways, parking, camping, and the like, which do not involve permanent buildings, may be permitted in the oceanfront corridor. The public roadway has been sited to be set back sufficiently to mitigate the need for any shoreline protection device, as determined by a geotechnical study of shoreline and erosion processes, for a minimum 50-year period, as measured from the top of the natural embankment.*

Alternatives 1-5 all involve the reconstruction of the damaged bike path and parking lot on the south side of Shoreline Drive as well as the paving of the existing dirt parking lot on the Fairgrounds property. These public uses are consistent with the allowable uses within the 76-meter (250-foot) oceanfront corridor. Any of the alternatives (1-5) could therefore be considered consistent with this policy, although the buried seawall that would be constructed under Alternatives 1 and 2 is a shoreline protection device intended to prevent damage to the relocated bike path. Alternative 6 does not appear to directly conflict with the policy, though it would not resolve existing shoreline erosion issues at the site.

4. *General public accessibility to the existing parking lot of the Fairgrounds shall be improved in order to enhance access to the surrounding recreation areas, consistent with fragile resource protection.*

Alternatives 1-3 and 5 would all include paving of the existing 600-700 space dirt lot at the Fairgrounds (Alternative 4 could also include paving of the lot although the restoration of the entire 352-space shorefront parking lot under that alternative may make paving of the dirt lot unnecessary); therefore, each of these alternatives would improve access to the beach and other nearby recreation areas in the long-term by replacing the damaged shorefront bike path and parking lot and reducing the potential for future erosion damage to these facilities. Alternatives 1-5 all appear to generally implement this policy. Alternative 6 may not implement this policy since it would not improve access to Surfers Point and may result in the eventual loss of additional parking and the remainder of the bike path due to future erosion.

5. *Adequate ground level parking shall be provided in the oceanfront corridor for present and foreseeable coastal-dependent and coastal-related recreational use. Such parking may be preempted by the annual Ventura County Fair or evening events. All parking oceanward of the public roadway shall be available to the public at all times for day-use activities and evening events. This policy shall not preclude the Fair Board from charging a nominal fee for parking in this area.*

Alternatives 1-3 and 5 would involve the removal of the existing shorefront parking lot with approximately 223 usable surface parking spaces and construction of approximately 244 on-street spaces, including 169 spaces on the seaward side of Shoreline Drive and 75 spaces on the landward side. All 244 spaces, including those landward of Shoreline Drive, would be available to the public at all times. The City does not plan to charge for on-street parking. As such, Alternatives 1-3 and 5 appear to be consistent with this policy. Alternatives 1-3 and 5 would also include paving of the existing 600-700 space dirt lot on the Fairgrounds property to

improve parking availability for Fairgrounds patrons. Alternative 4 would involve repairing the existing shorefront parking lot, presumably to restore it to the original total of 352 surface spaces. It is assumed that the Fair Board would continue to charge the current parking fees in the shorefront lot under Alternative 4, but no conflict with this policy is anticipated. Alternative 4 could also include paving of the dirt lot.

Alternative 6 may be inconsistent with this policy insofar as the failure to take any action at Surfers Point would likely result in further erosion damage to the existing parking lot and subsequent additional loss of parking for coastal recreational use.

4.1.2 Mitigation Measures

No mitigation is required for any alternative, though it should be noted that the No Project alternative (Alternative 6) may conflict with City policies relating to maintenance and enhancement of beach access. Alternatives 1-5 would all require a Coastal Development Permit from the California Coastal Commission.

4.2 SOCIOECONOMIC IMPACTS

4.2.1 Impact Analysis

a. Population and Housing. The project site does not include any existing housing and no housing is proposed as part of the managed shoreline retreat project. None of the project alternatives would induce population growth or displace any existing residences. Therefore, no impacts to population or housing would occur.

b. Public Services. None of the project alternatives would affect fire or police protection, schools, or other public services. Routine maintenance of the beach would remain the responsibility of the property owner. Periodic renourishment of the beach on an as-needed basis is part of Alternatives 2 -5. Alternative 1 does not include a renourishment component and would therefore reduce maintenance costs as compared to the other alternatives; however, failure to renourish the beach as needed may increase the potential for damage to the landward improvements.

None of the project alternatives would be expected to adversely affect the City's ability to maintain other public facilities. Alternative 1 would have the lowest overall maintenance requirements since it includes no beach renourishment program. It is anticipated that Alternatives 3 and 4 would have lower overall maintenance requirements than Alternative 2 since the cobble berm to be constructed under those alternatives is expected to require less frequent renourishment than the cobble mattress/sacrificial dune associated with Alternative 2. On the other hand, the inclusion of the buried seawall in Alternative 2 may make the timing of renourishment less critical since the new bike path and parking area would have the added protection afforded by the buried wall. The cobble berm associated with Alternative 5 would have maintenance requirements similar to Alternatives 3 and 4. However, the need for periodic replenishment of sand and revegetation of dunes under Alternative 5 would be similar to that of Alternative 2, thus increasing the overall maintenance requirements as compared to Alternatives 3 and 4.

4.2.2 Mitigation Measures

Mitigation is not required for any of the project alternatives.

4.3 BIOLOGICAL RESOURCES

The analysis of biological resources was based on a review of previous biological studies prepared for the site and the surrounding area, field surveys conducted for this EIR, and consultation with knowledgeable local biologists and resource protection agencies. Project impacts to biota may be determined to be adverse even if they do not directly affect rare, threatened or endangered species. The California Environmental Quality Act (CEQA), Chapter 1, Section 21001 (c) states that it is the policy of the state of California to "Prevent the elimination of fish and wildlife species due to man's activities, ensure that fish and wildlife populations do not drop below self-perpetuating levels, and preserve for future generations representations of all plant and animal communities."

Impact assessment on marine resources is based on professional opinion regarding biological resources and on established regulatory criteria for water quality parameters. Specifically, any project-related impact to sensitive biota or impacts that would result in a decrease in the habitat required by those taxa are considered adverse. Impacts to non-sensitive biological resources are considered adverse if project-related activities would result in the long-term degradation or loss of rare habitats or in the substantial reduction of existing marine communities. Adverse water quality impacts are those that would result in the degradation of the marine waters exceeding the Ocean Plan water quality objectives through the re-suspension of contaminated sediments, a decrease in the dissolved oxygen concentration below 5.0 parts per million (ppm), or long-term increases in turbidity.

Based on the City of Ventura Initial Study checklist and CEQA procedures, the State *CEQA Guidelines*, and the CEQA Environmental Significance Checklist, adverse impacts to biological resources may occur if a project action would:

- *Cause a loss or disturbance or reduction in the numbers of, or a restriction in the range of, or any other impact to any unique, rare, threatened, or endangered species of animals or plants, or their critical habitat;*
- *Cause a loss or disturbance or reduction in the numbers or diversity of or restriction in the range of any other species of animals or plants or their habitat;*
- *Cause a reduction in the extent, diversity or quality of native or non-native vegetation;*
- *Impact historically designated species (e.g., heritage trees) or locally designated natural communities;*
- *Cause the loss of other healthy specimen trees;*
- *Cause the introduction of any factors that could hinder the normal activities of wildlife or cause a deterioration of their habitat;*
- *Impact wetland or riparian habitat, particularly those under the jurisdiction of Section 404 of the Clean Water Act;*
- *Conflict with local or regional conservation plans or state goals*
- *Involve the use, production or disposal of materials which pose a hazard to animal or plant populations in the area affected;*

- *Have impacts that are individually limited, but cumulatively considerable.*

4.3.1 Impact Analysis

a. Marine Resources.

Alternative 1. Under this alternative, no work would be conducted within the marine environment. The potential for suspended material to enter the intertidal zone would be limited to the possible runoff of eroded sediment from the upland construction zone during parking lot and bike path removal and smooth grading of the retreat zone. However, any such material would be substantially less than that which would be exported from the Ventura River into the nearshore waters of the project site during a rainfall event.

Alternative 2. This alternative would include the placement of an estimated 25,400 tonnes (28,000 tons) of cobble and 8,410 cubic meters (11,000 cubic yards) of sand within the upper intertidal area of the project site over an approximate three week period. This construction would result in potential temporary re-suspension of nearshore sediments. Nearshore and onshore construction could increase sediment input to the water column from stormwater runoff, increasing nearshore turbidity. These impacts are expected to be minor and local in nature and result in no impact to the biota or water quality of the area. It should also be noted that the site is subjected to episodic increases in turbidity from the Ventura River discharge and from waves. The turbidity resulting from the proposed construction would be substantially less than that realized from either of these natural sources. Sediment re-suspension is also expected to have no impact on the cobble and sand habitats that exist within the project site.

The limited sandy areas of the project site are not expected to be a significant grunion spawning area and the emplacement of the cobble mattress is not expected to cause adverse impacts to this species. It is noted that this species is not regulated through any Fisheries Management Plan, but only through California Fish and Game Code, which regulates the method of take (hands only) and the timing of take. No limit on the number of fish taken is imposed during the fishing season.

Alternative 3. This alternative is similar to Alternative 2 in terms of construction impacts to the upper intertidal area. However, development of a more substantial berm (approximately 48,990 tonnes [54,000 tons] of cobble) with a toe below the elevation of MLLW would increase the amount of disturbance within the marine environment. The increased amount of cobble material would be expected to extend the period of cobble emplacement to about four weeks, as compared to the two-week period required for the cobble mattress associated with Alternative 2. Because no sacrificial sand dune is included within this alternative, the size class of potentially suspended material would be less. However, as with Alternative 2, the amount of suspended material that could result during construction of the proposed project or this alternative is substantially less than the volume of material delivered to the nearshore waters during storm events from the Ventura River. Therefore, no impacts are anticipated as a result of this alternative.

Alternative 4. Construction impacts associated with this alternative would be similar to those described for Alternative 3 and are not considered adverse. Again, however, it should be noted that disturbance within the marine environment would be somewhat greater than under Alternative 2.

Alternative 5. As with Alternative 3, this alternative would involve importation of about 48,990 tonnes (54,000 tons) of cobble. Similar to Alternative 2, it would also involve importation of sand for creation of a dune environment in the western end of the site. Although overall temporary disturbance within the marine environment would be incrementally greater than under Alternatives 1-4, adverse impacts to marine biological resources are not anticipated.

Alternative 6. Under this alternative, no work would be conducted within the marine environment, and there would be no change to existing conditions.

b. Essential Fish Habitat. The project involves federal funding that may affect essential fish habitat (EFH); therefore, an assessment has been prepared pursuant to 50 CFR 600.920(g)(2) that addresses the managed fish and invertebrate taxa that have been recorded at the site or could occur at the site within the water depth range of the proposed activities. The National Marine Fisheries Service (NMFS), lists 167 taxa of marine and anadromous fish, and marine invertebrates that are federally managed and are to be assessed in an EFH analysis. In particular, the leopard shark seen in the subtidal area during the marine assessment study is managed under the Pacific Coast Groundfish Fishery Management Plan.

Alternative 1. This alternative would not involve action within the marine environment since it entails no action within the retreat zone; therefore, the potential for impacts to EFH is minimal.

Alternatives 2 -5. Construction within the intertidal zone is expected to occur during low tide periods, a time period when none of the listed taxa would occur within the project site. No Essential Fish Habitat is expected to be adversely affected by the proposed construction or operation of the shoreline improvements because most of the activities would be above the Mean Lower Low Waterline (MLLW). It should be noted, however, that Alternative 2 would involve less construction activity below the MLLW than Alternative 3-5 since it would involve emplacement of less cobble material overall (about 25,400 tonnes [28,000 tons] versus 48,990 tonnes [54,000 tons] for Alternative 3, 4, and 5). Alternative 2 would involve a slightly shorter period of disturbance within the intertidal zone than Alternatives 3 and 5.

No construction within the Ventura River would occur under any of the project alternatives and the project site is not considered critical habitat for any of the managed fish species listed in the Magnuson-Stevens Fishery Conservation and Management Act.

The placement of additional cobble would potentially bury existing cobble that is vegetated with algae species that provide forage for some of the listed species. However, since it is expected that the cobble material would be rapidly revegetated and the area does not contain any critical habitat to the listed species, no adverse effect to EFH is expected to occur under Alternatives 2-5.

Alternative 6. Under this alternative, no work would be conducted within the marine environment, and there would be no change to existing conditions. No impacts to EFH would occur.

c. Sensitive Species and Critical Habitat. No sensitive plant species are known or likely to be present at the project site, as discussed in Section 3.3. Therefore, no impacts to sensitive plant species would be expected under any of the alternatives. The following discusses the potential for impacts to animal species.

Alternatives 1 and 6. These alternatives would not involve any changes to habitats that are currently used or may be used by sensitive species. Changes proposed under these alternatives would not affect the adjacent Ventura River mouth area, and no impacts to sensitive species are expected under either alternative.

Alternatives 2 - 5. Construction within the intertidal area as would occur under these alternatives may result in the crushing, relocation, or exposure to air of near shore marine organisms. For Alternative 2, emplacement of cobble within the intertidal area would be expected to last about two weeks and emplacement of sand for the sacrificial dune would take about one week. For Alternative 3 and 5, such activity is expected to take about four weeks. Such activity would occur on an as needed basis under Alternative 4.

Alternative 3, 4 and 5 would involve construction work within the subtidal area. Construction activity may also result in temporary increases in turbidity that would result from the discharge of small particulate matter present in the deposited material being released into the surf zone. Increased particulate suspension can result in reduced light penetration and subsequent reduction in photosynthesis, primary productivity, feeding ability of fish, reaction with oxygen resulting in oxygen depletion within the water column, and increased availability of toxic metals, pathogens, and viruses. The temporary loss of biological productivity could potentially affect sensitive animal species that use these resources either directly or indirectly through food chain interactions. These species would include the steelhead trout, western snowy plover, California brown pelican, and California least tern.

As previously noted, the project site provides little habitat for these species and use within the site is expected to be substantially limited. If these sensitive organisms were present during the construction period, they are highly mobile and capable of moving away from the potential for injury. Therefore, impacts to sensitive species are not anticipated.

The adjacent Ventura River mouth contains a variety of sensitive biological resources. Based on the coastal processes analysis (see Section 4.7), none of the project alternatives are expected to alter the hydrologic nature of this upstream and up-littoral current area. Consequently, with regard to changes in this area, no impact is anticipated. During construction, noise will be generated by the construction equipment, which may be disturbing to sensitive bird species, such as the brown pelican, which may roost at the river mouth. However, this area is already subject to substantial environmental noise associated with Highway 101, the Union Pacific Railway, and activity at the adjacent Fairgrounds; therefore, with regard to noise associated with construction potentially constraining the use of the area by shorebirds, no impact is expected.

The material imported to the site is expected to be free of potentially toxic materials. The primary source of material is expected to be rock and cobble available from within the Santa Clara and Ventura River watersheds, material that would eventually be moved during storm events into the offshore areas. Therefore, no toxic effects to sensitive species are anticipated to result from the importation of material.

d. Impacts to Dune Remnant.

Alternative 1. Near the middle of the site is a remnant coastal dune that was fenced from the parking lot after construction of the Seaside Park parking lot. The area was initially fenced with temporary construction fencing, followed by the installation of a split rail fence. The purpose of the fencing was to direct pedestrian traffic around the dune area, but the increase in visitor beach access and erosion events during the early 1990s essentially eliminated the coastal dune community in this location (Envicom Corporation 1995; Noble Consultants, December 2000). Currently, the stabilized portion of this remnant dune is predominantly vegetated with non-native weedy species (see Figure 3-4 in Section 3.0, *Affected Environment*).

This alternative would remove all improvements adjacent to the beach, including the bike path and parking lot. Given the lack of native plants present, no impact to sensitive dune vegetation is anticipated. In the long term, episodic waves are expected to further erode the shoreline on both sides of the dune remnant under this alternative (Noble Consultants, December 2000). Additional visitor access through this remnant may occur under this alternative. Future erosion and possible increases in human activity may hinder the restoration of dune habitat as envisioned in the City of Ventura's Dune Restoration Project (October 1991).

Alternatives 2 and 5. These two alternatives would both involve removal of the existing sandy area in the western portion of the site. Because the existing vegetation is no longer considered significant or describable as a native "coastal dune community," this would not adversely affect coastal dune habitat.

As part of Alternatives 2 and 5, a sacrificial sand dune would be created within the retreat zone. Importation of sand material would offer the opportunity to attempt a new dune restoration effort as originally perceived under the City's Dune Restoration Project. According to the Dunes Restoration Project Design Development Report, such activities would include:

- Removal of refuse and invasive non-native plants
- Installation of temporary fence protection around the sand dune
- Installation of a temporary dune irrigation system to help establish new plantings
- Reseeding of the new dunes using seed collected from Emma Wood State Beach and other acceptable sources within a 50-mile radius of the site
- Ongoing maintenance of the dunes (removal of undesirable non-native plants, irrigation as needed until new plants are established)
- Provision of public information kiosks

Importation of sand material to the site would improve the opportunity for successful dune restoration as compared to the other project alternatives. The designated walkways and educational signage associated with Alternative 5 would further improve the potential for

successful restoration by limiting public access to areas with sensitive habitat. It should be noted, however, that experience indicates that such restoration will be difficult under any scenario.

Because the sand dune is considered sacrificial, it would be allowed to erode under adverse conditions and new sand would be brought to the site and deposited within the dune area on an as-needed basis. The frequency of such renourishment is unknown since it is dependent on climatic conditions and the long-term behavior of the cobble mattress with respect to coastal erosion. Given current conditions, this periodic sand replacement would not be expected to adversely affect the weedy dune remnant. However, if dune restoration with native plants proves to be successful, periodic nourishment activities could conflict with implementation of the Dune Restoration Project. At this time, it is too speculative to conclude that dune restoration activity would be successful prior to the need for sand replenishment, and that restoration activities would create a coastal dune community that would be biologically sensitive. If either Alternative 2 or Alternative 5 is approved, potential impacts to the dune community (or lack of same) would need to be re-addressed during each dune replenishment phase.

Alternative 3 and 4. Each of these alternatives would place a cobble berm within the existing dune area. The construction work would essentially eliminate all of the residual vegetation in this area, similar to Alternatives 2 and 5. During construction, the top sand of the dune remnant would be preserved and spread on top of the cobble berm. The sand would then be allowed to revegetate as under Alternatives 2 and 5. Because the existing vegetation is no longer considered significant or describable as a native "coastal dune community", this activity would have no impact to dune habitats. As the top sand of the dune remnant would be spread over the cobble berm under either alternative, either alternative would offer the opportunity to attempt a new dune restoration effort as originally perceived under the Dune Restoration Project (October 1991). However, because Alternatives 3 and 4 do not include the sand dune area that would be created under Alternatives 2 and 5, restoration efforts would likely be less successful than under those alternatives.

Alternative 6. This alternative would have no impact upon the dune remnant, although taking no action at Surfers Point may not provide the opportunities for restoration of dune habitat that could occur under the other alternatives, particularly Alternatives 2 and 5.

e. Landscape Trees and Shrubs.

Alternatives 1, 2, 3 and 5. Reconstruction of Shoreline Drive and removal of the parking lot would remove an estimated 76 New Zealand Christmas trees along the north side of Shoreline Drive and several fan palms in the shorefront parking lot. Although the design of these alternatives is intended to preserve the New Zealand Christmas trees along the south side of Shoreline Drive, some or all of those trees may have to be removed as well to accommodate on-street perpendicular parking and access points to the bike path and beach. None of the landscape trees present qualify as "heritage" trees under the City of San Buenaventura policies and the trees are of limited value as "specimen" trees. Since these trees do not provide any significant biological resource, no impact will result from the loss of these trees. Although

specific landscape plans have not been developed at this point, replacement landscaping would be provided in conjunction with development of any of these alternatives.

Alternatives 4 and 6. Neither of these alternatives would involve removal of existing landscape trees, either in the shorefront parking lot or along Shoreline Drive.

f. Wetlands.

Alternatives 1 and 6. Neither of these alternatives would involve any actions within any area classified as wetlands.

Alternatives 2-5. Alternatives 2-5 would involve the temporary discharge of material into intertidal areas that are regulated as marine wetlands. As discussed above, most of the area affected has no algal vegetation resources and limited animal populations. The material to be used would be similar in nature to the cobble and sand material currently present within the intertidal and subtidal area, and once in place, would be colonized by animals and plants in a similar manner as the current cobble and sand area. The potential loss of biological resources would be temporary, lasting less than one year. Given the depauperate nature of the wetland resources present and the rapid recovery time of any disturbed plant or animal populations, the temporary disturbance associated with construction activity is not considered adverse. None of these project alternatives would result in a net loss of wetland area.

4.3.2 Mitigation Measures

The following measures are recommended for Alternatives 1-5.

BIO-1 Although no impact to the marine biota or habitats is expected, performing construction activity within the tidal zone during winter, daytime low tides would reduce the resuspension of sediments in the lower intertidal areas.

BIO-2 Prior to construction activities and removal of landscape trees and shrubs from the parking lot and the north side of Shoreline Drive, it is recommended that surveys be conducted to determine the presences or absence of nesting birds. In addition, it is recommended that pre-construction surveys be conducted over the entire project impact area to determine the presence or absence of sensitive animal and plant species. If a listed species and/or critical habitat is located in the area of potential impact, early consultation with the CDFG and the USFWS is needed.

4.4 AIR QUALITY

4.4.2 Impact Analysis

None of the project alternatives would generate air pollutant emissions in the long term. Construction activity associated with Alternatives 1-5 would generate a temporary increase in emissions of ozone precursors (nitrogen oxides and reactive organic compounds) due to the use of heavy construction equipment. In addition, grading activity and movement of cobble

material that would occur under Alternatives 1-5 would temporarily increase fugitive dust (which contains fine particulate matter) in the site vicinity.

Worst-case daily construction emissions would be similar for any of the alternatives other than the No Project alternative. The variables with respect to temporary air quality impacts is the length of construction and number of truck trips. For Alternatives 1 and 2, construction activity may occur sporadically over an approximately 8-9 month period. The overall construction period would likely be somewhat shorter for Alternative 3 and 5 (about 5 months) and Alternative 4 (total of about 2 to 3 months, spread out over time as contruction would be on an as-needed basis) since these alternatives would not involve construction of a buried seawall.

Table 4-1 compares estimated total truck trips for Alternatives 1-5. Alternatives 1 and 2 would involve importation of material for construction of the stone toe for the buried seawall, which would require an estimated 296 truck trips (Noble Consultants, 2001). The only difference between these alternatives from the standpoint of construction-related emissions is that Alternative 2 would involve additional truck traffic for the importation of an estimated 25,400 tonnes (28,000 tons) of cobble and 8,410 cubic meters (11,000 cubic yards) of sand. Delivery of these materials would require an estimated 2,133 truck trips. Assuming that sufficient cobble is available to complete the job all at once, importation of this material would take about three weeks (Noble Consultants, 2001 – assumes 120 truck trips per day, 6 days per week).

Table 4-1 Comparison of Construction Truck Trips Alternatives 1-5

Material to be Delivered	Total Truck Trips				
	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Stone Toe for Buried Seawall	296	296	0	0	0
Cobble Mattress or Berm	0	1,400	2,700	2,700	2,700
Sand	0	733	107	0	733
Total	**296**	**2,429**	**2,807**	**2,700**	**3,433**
Estimated Total No. of Days of Truck Deliveries	3	20	23	23	29

Source: Estimates of truck trips provided by Noble Consultants, Inc. For cobble delivery, estimates assume 18 tonnes (20 tons) of material per truck; for toe stone and sand, estimates assume 22 tonnes (24 tons) of material per truck. Time estimates assume 120 truck trips per day (15 truck deliveries per hour over an 8-hour day). Truck trip estimates do not include hauling away of demolition material; all alternatives other than Alternative 4 would involve demolition and removal of the existing bike path and parking lot.

The importation of cobble (about 48,990 tonnes [54,000 tons]) and sand for regrading of the retreat zone (about 1,200 cubic meters, or 1,600 cubic yards) for Alternative 3 would require an estimated 2,807 truck trips (Noble Consultants, 2001). Under Alternative 4, 2,700 trips would be required. Alternative 5 would require the highest number of truck trips – an estimated 3,533 trips – because it would involve importation of the greatest overall amount of cobble and sand.

The Ventura County Air Pollution Control District (APCD) has not adopted impact thresholds for temporary construction-related emissions. Therefore, such impacts are not categorized as adverse. Nevertheless, all construction activity would be required to incorporate Ventura County Air Pollution Control District (APCD) recommended strategies for minimizing construction-related emissions.

4.4.2 Mitigation Measures

The City of Ventura considers the following requirements standard construction conditions that would apply to the project to minimize emissions of ozone precursors and fugitive dust.

AQ-1 During clearing, grading, earth moving, or excavation operation, excessive fugitive dust emissions shall be controlled by regular watering, paving construction roads, or other dust preventive measures using the following procedures:

- All material excavated or graded shall be sufficiently watered to prevent excessive amounts of dust. Watering shall occur at least twice daily with complete coverage, preferably in the late morning and after work is done for the day.
- All clearing, grading, earth moving, or excavation activities shall cease during periods of high winds (i.e., greater than 30 mph averaged over one hour) so as to prevent excessive amounts of dust.
- All material transported off site shall be either sufficiently watered or securely covered to prevent excessive amounts of dust.
- Facemasks shall be used by all employees involved in grading or excavation operations during dry periods to reduce inhalation of dust, which may contain the fungus that causes San Joaquin Valley Fever.
- The area disturbed by clearing, grading, earth moving, or excavation operations shall be minimized so as to prevent excessive amounts of dust.

AQ-2 After clearing, grading, earth moving, or excavation operations, and during construction activities, fugitive dust emissions shall be controlled using the following procedures:

- All active portions of the construction site shall be sufficiently watered to prevent excessive amounts of dust.
- All temporary roads shall be covered with gravel.
- Soil binders shall be spread immediately after seeding.
- The area shall be wet down sufficiently at least twice a day, so as to form a crust on the surface with repeated soaking to maintain a crust and prevent wind erosion.
- Adjacent public thoroughfares and streets shall be swept daily.
- If construction is halted for more than 10 consecutive days, a chemical stabilizer shall be applied to graded portions of the site.

AQ-3 At all times, fugitive dust emissions shall be controlled using the following procedures:

- On-site vehicle speed shall be limited to 15-mph.
- All areas with vehicle traffic shall be watered periodically.
- Streets adjacent to the project site shall be swept as needed to remove silt, which may have accumulated from construction activities so as to prevent excessive amounts of dust.

AQ-4 Construction related emissions shall be controlled using the following procedures:

- Construction equipment shall be maintained and adjusted to minimize emissions.
- Low-sulfur fuel (0.05 percent by weight) shall be used in construction equipment.
- Construction truck trips shall be scheduled during non-peak hours to reduce peak hour emissions.
- Construction activities shall be phased and scheduled to avoid high ozone days.
- Construction shall be discontinued during second-stage smog alerts or conditions of high winds combined with low humidity.

With implementation of these standard conditions, no impact with regard to temporary emissions relating to construction activity is anticipated.

4.5 NOISE

4.5.1 Impact Analysis

In the long-term, none of the alternatives would generate an increase in noise. For Alternatives 1-5, operation of heavy equipment during construction would result in temporary increases in noise in the immediate vicinity of the site. In addition, trucks hauling cobble material during initial construction and periodically over the life of the project for renourishment of the cobble mattress/berm would temporarily increase noise along roadways serving the site, including Shoreline Drive and Figueroa Street.

Average noise levels associated with the use of heavy equipment at construction sites can range from about 78 to 88 dBA at 50 feet from the source, depending upon the types of equipment in operation at any given time and the phase of construction. While increases in ambient noise levels could be perceived, they would be temporary under all alternatives and would be primarily restricted to the immediate project area. The nearest noise-sensitive use is a beachfront apartment building about 300 meters (1,000 feet) east of Figueroa Street. At that distance, noise from construction equipment generally would not be audible under any alternative. As discussed in Section 4.3, *Biological Resources*, noise would be periodically audible to birds and other wildlife at the nearby Ventura River estuary. However, wildlife in the estuary are already exposed to substantial noise from Highway 101, the adjacent rail line, and

activities at the Ventura County Fairgrounds (including auto racing, fireworks shows, etc.); therefore, such species are not expected to be adversely affected by temporary noise associated with construction activity.

Noise related to truck travel on local streets may be audible at some locations, but would be temporary and periodic, and would not cause an exceedance of an established noise standard under any alternative. Maximum noise levels associated with truck travel would be similar for Alternatives 1-5. However, the total truck traffic would vary among Alternatives 1-5. Table 4-1 in Section 4.4, *Air Quality*, compares construction-related truck traffic for these alternatives.

Alternative 1 would involve the least initial truck-related noise during construction since it would not involve any importation of cobble. Delivery of material for construction of the stone toe for the buried seawall would require an estimated 296 truck trips and would take about three days. Alternative 2 would involve a total of about 2,429 truck trips over a total of about 20 days for importation of toe stone, cobble, and sand. Importation of cobble and sand for Alternative 3 would involve an estimated 2,807 truck trips over about 20 days. Alternative 4 would require 2,700 trips for the importation of cobble and Alternative 5 would require and estimated 3,433 trips for cobble and sand importation.

Over the life of the project, Alternatives 3 is and 4 are expected to require somewhat less frequent renourishment than Alternatives 1, 2, or 5. Therefore, they are expected to generate somewhat less frequent periodic truck-related noise over the life of the project.

The City of Ventura Noise Ordinance (No. 87-19) restricts construction activity to between the hours of 7 A.M. and 8 P.M., when people are generally less sensitive to noise. Compliance with Noise Ordinance requirements would reduce the temporary noise impacts to a level considered less than adverse for all alternatives.

4.5.2 Mitigation Measures

Mitigation beyond compliance with standard City requirements is not required for any of the project alternatives.

4.6 WATER RESOURCES

4.6.1 Impact Analysis

a. Hydrology. Paving of the 3.0-hectare (7.3-acre) dirt parking lot on the Fairgrounds property as would occur under Alternatives 1-3 and 5 (and potentially Alternative 4) would alter drainage patterns from the Fairgrounds property to some degree by replacing pervious dirt with an impervious surface. This would reduce percolation within the 3.0-hectare (7.3-acre) area and potentially increase the overall volume of surface runoff.

According to the 1995 Final EIR for the Parking Lot & Storm Drain Improvements Project, the current peak stormwater discharge from the Fairgrounds is 5.5 cubic meters (195 cubic feet) per second (cfs). Of this total, about 3.5 cubic meters per second (122 cfs) drains directly to the Pacific Ocean and the remainder (2.0 cubic meters per second [73 cfs]) drains to the Ventura

River outfall. The current peak discharge from the 3.0-hectare (7.3-acre) dirt parking lot is estimated at 0.74 cubic meters per second (26 cfs).

Table 4-2 compares current (1995) runoff estimates for the 3.0-hectare (7.3-acre) dirt parking lot and the entire Fairgrounds property to conditions anticipated to exist following paving of the lot and implementation of planned drainage system improvements at the Fairgrounds. Paving of the dirt parking lot is expected to increase the peak discharge from the lot to 0.96 cubic meters per second (34 cfs), a 31% increase over the current peak discharge of 0.74 cubic meters per second (26 cfs). However, implementation of planned stormwater system improvements throughout the Fairgrounds study area would reduce the overall peak discharge from the Fairgrounds property (including the dirt lot) from 5.5 cubic meters per second (195 cfs) to 5.0 cubic meters per second (178 cfs) (see Figure 4-1 for storm drain improvements envisioned in the 1995 Final EIR). This is because all runoff would be directed to a pump station in the westerly end of the Fairgrounds, increasing the overall time of concentration of runoff as compared to the three current separate discharge locations (City of Ventura, 1995). In addition, planned storm drain improvements on the Fairgrounds property would involve abandonment of the Ventura River outfall and re-routing of all future discharges directly to the ocean. This would increase the direct discharge to the ocean from 3.5 cubic meters per second (122 cfs) to 5.0 cubic meters per second (178 cfs), but would eliminate disruption of natural hydrologic cycles in the Ventura River estuary. As discussed below under *Water Quality*, re-routing runoff directly to the ocean would also be expected to improve water quality in the estuary.

Table 4-2 Comparison of Pre-Project and Post-Project Runoff Estimates

Area	Current Peak Discharge	Post-Post Peak Discharge
3.0-Hectare (7.3-Acre) Parking Area	0.74 m^3/sec (26 cfs)	0.96 m^3/sec (34 cfs)
Entire Fairgrounds Property	5.5 m^3/sec 195 cfs	5.0 m^3/sec 178 cfs[a]

Source: City of Ventura, Parking Lot & Storm Drain Improvements Project Final EIR, 1995.

[a] *Based on full implementation of planned drainage system improvements at the Fairgrounds.*

b. Floodplain. The project site is within Flood Zone V, an area of 100-year coastal flooding. The proposed facilities (3.6-meter [12-foot] wide bike path, surface parking) are not considered critical facilities that would expose additional people to flood hazards and the project would not change the use of the site.

Alternatives 1-5 would all reduce the potential for flood-related damage as compared to current conditions at the site. Alternatives 1 and 2 would provide a buried seawall along the seaward side of the relocated 3.6-meter (12-foot) wide bike path that would minimize the potential for damage of upland improvements. The cobble mattress associated with Alternative 2 would provide additional protection as compared to the sandy beach associated with Alternative 1, although periodic renourishment of the cobble mattress is expected to be needed to minimize exposure of the seawall. The cobble berm associated with Alternative 3,4 and 5 is expected to require less frequent renourishment than the cobble mattress of Alternative 2. However,

Alternatives 3-5 do not include a buried seawall to protect upland improvements in the event of severe erosion of the berm; therefore, the timing of renourishment may be more critical under these alternatives than under Alternative 2.

Under Alternative 6 (No Project), the potential for flood-related damage would persist at its current level and further erosion-related damage would likely occur during future major storm events.

c. Water Quality.

Construction Impacts. Alternatives 1-5 would all entail construction activity involving grading and the use of heavy equipment. This could temporarily reduce surface water quality in nearshore areas of the Pacific Ocean through increased sedimentation and possible leaks/spills of motor oil, grease, and other contaminants associated with the use of heavy equipment. These temporary impacts would be mitigated through the requirements of the National Pollution Discharge Elimination System (NPDES) general construction permit, which would require the use of Best Management Practices (BMPs) on all construction activity involving an area of one acre or larger. The use of BMPs would minimize any adverse impacts to water quality. A Stormwater Pollution Prevention Plan (SWPPP) would need to be approved by the State Water Quality Control Board prior to demolition/construction activity. The SWPPP would typically include the following types of requirements:

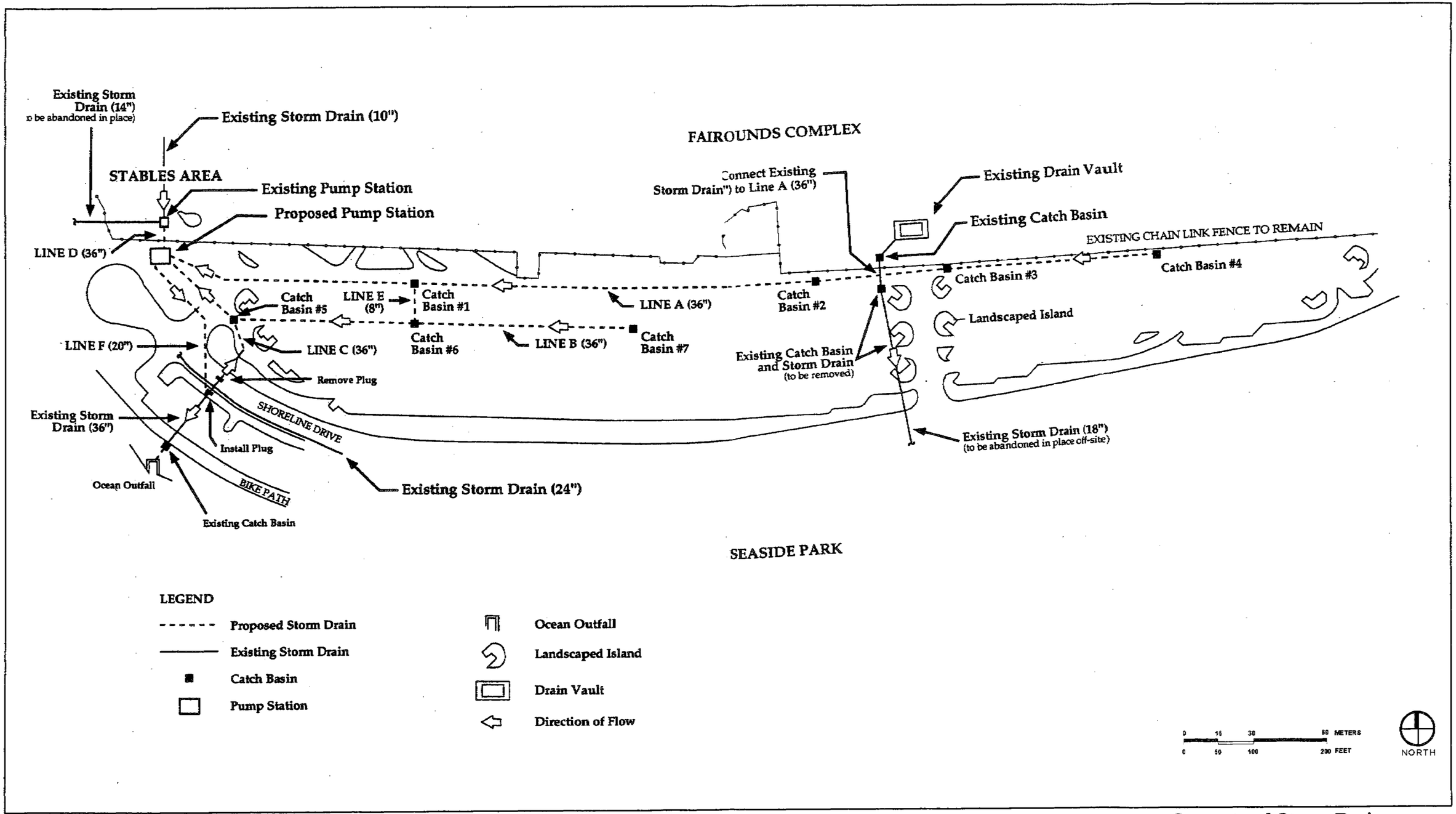
- Maintenance of construction equipment in good working order to minimize oil leakage
- Performance of maintenance requiring the use of petroleum products in areas that can be readily cleaned
- Removal of unnecessary debris and materials at the end of each construction day
- Removal of all debris, litter, leaks, and spills as soon as they occur

Implementation of such measures, in addition to any site-specific requirements imposed by the Board, would minimize temporary construction impacts.

Shoreline Management Impacts. Demolition of the existing bike path and parking lot as would occur under Alternatives 1-3 and 5 and placement of cobble material in the intertidal zone as would occur under Alternatives 2-5 may result in a temporary increase in turbidity in the near-shore areas of the Pacific Ocean. Demolition activity would be expected to take about four months. Emplacement of cobble material would take an estimated two weeks under Alternative 2 and four weeks under Alternatives 3-5.

This temporary impact to near shore ocean water turbidity would not be expected to create a health hazard for swimmers, surfers, or other beach users since such hazards are primarily the result of elevated levels of bacteria, not increased sediment. As discussed in Section 4.3, *Biological Resources*, the temporary increase in ocean water turbidity is not expected to adversely affect any sensitive marine biological resources.

A response to the Notice of Preparation also expressed concern about the possibility that contaminants in the existing fill material (including chemical contaminants and such items as



Source: ASL Consultants, Inc. 1992

Conceptural Storm Drain Improvements

Figure 4-1

asphalt, glass, and rebar) could leak into the ocean if the hard surfaces of the existing bike path and shorefront parking lot are removed and replaced with more permeable cobble material (as would occur under Alternatives 1-3 and 5). However, as discussed further in Section 4.10, chemical contaminants identified at the time of construction of the existing bike path and parking lot were removed prior to construction. There is no evidence to suggest that additional areas of contamination exist within the fill material beneath the existing bike path and parking lot; therefore, removal of these facilities is not expected to create any health hazard. Migration of solid materials such as asphalt, glass, and rebar could occur under Alternative 1, but temporary excavation and screening of fill material beneath the existing bike path and parking lot as would occur under Alternatives 2 , 3 and 5 would minimize the potential for ocean migration of solid materials under those two alternatives. Alternative 5 also includes the removal of non-beach-grade fill material within the retreat zone, thus further reducing the potential for migration of solid materials into surface waters.

Fairgrounds Parking Lot Impacts. Paving of the 3.0-hectare (7.3-acre) dirt parking lot on the Fairgrounds property would reduce direct percolation of motor vehicle related contaminants (oil, grease) into the soil. This would reduce the potential for impacts to the quality of groundwater beneath the site. However, as discussed previously, paving of the existing dirt parking lot as would occur under Alternatives 1-3 and 5 and possibly under Alternative 4 would increase overall runoff from the 3.0-hectare (7.3-acre) area from an estimated 0.74 cubic meters per second (26 cfs) to 0.96 cubic meters per second (34 cfs). This increase in stormwater discharge could potentially wash higher levels of such contaminants into downstream surface waters.

The proposed drainage plan for the Fairgrounds property would involve abandonment of the Ventura River outfall and re-routing of all stormwater discharges directly into the Pacific Ocean. This would reduce potential water quality issues with respect to the Ventura River estuary as compared to current conditions, but could increase the potential for elevated contaminant levels in nearshore areas off the coast at Surfers Point.

The Ventura Countywide Stormwater Quality Urban Impact Mitigation Plan (SQUIMP - Board Order No. 00-108, Permit No. CAS004002) was adopted to address potential water quality issues relating to municipal discharges and comply with the requirements of the NPDES requirements of the Clean Water Act. The SQUIMP requires redevelopment activities involving the addition of 465 square meters (5,000 square feet) or more of impervious surfaces to comply with various best management practices (BMPs). Specific requirements for the design of parking lots include:

- Reduce impervious land coverage of parking areas
- Infiltrate runoff before it reaches the storm drain system
- Treat runoff before it reaches the storm drain system
- Treat to remove oil and petroleum hydrocarbons
- Ensure adequate operation and maintenance of treatment systems, particularly sludge and oil removal, and system fouling/plugging prevention control

Co-permittees (in this case, the City of Ventura), are required to implement the requirements of the SQUIMP in their own jurisdictions. Chapter 8.600, Stormwater Quality Management, of the

City's Municipal Code requires proof of compliance through an approved stormwater pollution control plan prior to or as a condition of approval of a site plan, building permit, or development or improvement plan.

Specific provisions of the required stormwater pollution control plan would be developed prior to issuance of building permits for the parking lot. As discussed above, such requirements would likely involve minimizing the area to be paved to the degree feasible, capture and infiltration of runoff before it enters the off-site storm drain system, and treatment of runoff to remove oil and petroleum hydrocarbons. Implementation of the requirements of an approved stormwater pollution control plan would minimize water quality impacts.

4.6.2 Mitigation Measures

No impact relating to hydrology or flooding is anticipated. Additionally, no impact relating to the removal of the existing shorefront bike path and parking lot as would occur under Alternatives 1-3 and 5 is expected. Measure H-1 in Section 4.10 would further reduce the potential for water quality impacts.

Compliance with the requirements of the NPDES general construction permit and the SQUIMP would reduce water quality impacts associated with paving of the 3.0-hectare (7.3-acre) parking lot on the Fairgrounds property to acceptable levels. Mitigation beyond implementation of standard requirements is not necessary.

4.7 COASTAL GEOLOGY

4.7.1 Impact Analysis

The anticipated general performance of each of the alternative scenarios is described below, followed by specific discussions of possible impacts of each alternative relative to shoreline protection, changes in sedimentation and coastal processes, changes in surf conditions, and consistency with adopted policies relating to shoreline management. Possible impacts relating to onshore recreation are discussed in Section 4.8.

a. General Performance.

Alternative 1. Under Alternative 1, the shoreline at Surfers Point would continue to fluctuate widely in response to the episodic delivery and removal of sediment. During periods of accretion, the beach would behave in a manner analogous to that observed in the past. During periods of erosion, conditions would change in two respects: (1) erosion would progress into the retreat zone, potentially exposing portions of the buried seawall under periods of extreme erosion; and (2) the seawall, if properly designed, would protect the upland improvements from wave damage (unless the design wave conditions are exceeded). When portions of the seawall become exposed, they would remain exposed until the next accretion cycle commences.

Alternative 2. During periods of accretion, when sand accumulates in front of the cobble mattress, the beach would behave in a manner analogous to that observed in the past. During

periods of erosion, the cobble mattress would provide a measure of protection that would reduce the rate at which sediment is lost from the subaerial beach. However, the mattress would be prone to undermining and dispersal due to the absence of a substantial toe that extends below the MLLW, and the presence of the sand dune at the top of the cobble slope (which would exacerbate wave backwash). If the mattress is damaged, erosion could progress into the retreat zone and, under periods of extreme erosion, portions of the buried seawall could become exposed (as discussed under Alternative 1). The seawall, if properly designed, would protect the upland improvements from wave damage (unless the design wave conditions are exceeded).

Because the sacrificial sand dune would be located immediately upslope of the mattress, it would be susceptible to erosion both when the mattress sustains damage and during periods of high wave runup (even if the mattress remains intact). The mattress and sand dune would be replenished on an as-needed basis.

Alternative 3. During periods of accretion, when sand accumulates in front of the cobble berm, the beach would behave in a manner analogous to that observed in the past. During periods of erosion, the cobble berm would stabilize the shoreline seaward of the retreat zone (unless the design wave conditions are exceeded). Most or all wave overtopping would be absorbed by the berm crest before it reaches the parapet wall. Periodic nourishment of the berm would be required to offset the losses resulting from longshore and offshore transport. In the absence of a buried seawall (as in Alternatives 1 and 2), this maintenance work would need to be undertaken promptly whenever the need arises.

Alternative 4. The behavior of the beach under Alternative 4 would be similar to that described above for Alternative 3. The primary difference would occur during periods of erosion, when the berm-stabilized shoreline under Alternative 4 would lie slightly seaward of the berm-stabilized shoreline under Alternative 3 due to the preservation of the existing bike path and parking lot, and the absence of a corresponding retreat zone. As in the case of Alternative 3, periodic nourishment would be required to offset the cobble losses resulting from longshore and offshore transport. To a slightly greater degree than under Alternative 3, the lack of a buried seawall would mean that maintenance work would need to be undertaken promptly whenever the need arises.

Alternative 5. The performance of the beach and cobble berm would be analogous to that described for Alternative 3. During periods of accretion, when sand accumulates in front of the cobble berm, the beach width would fluctuate in a manner similar to that observed in the past. During periods of erosion, the cobble berm would stabilize the shoreline seaward of the bike path and parking lot (unless the design wave conditions are exceeded). Most or all wave overtopping would be absorbed by the berm crest before it reaches the parapet wall. Episodic nourishment of the berm would be required to offset the losses resulting from longshore and offshore transport. As with Alternative 3, the lack of a buried seawall would mean that maintenance work would need to be undertaken promptly whenever the need arises.

The vegetated dunes to be established in the western portion of the project area and to a limited extent in the eastern portion would be susceptible to erosion during storm events. On those occasions when severe storms follow a period of low sand discharge from the Ventura River,

the dunes may be completely lost. In such instances, it may be necessary to replace sand, vegetation, walkways, and signage.

Alternative 6. Under this alternative, the project site would remain in its current condition. Periodic erosion events would continue to occur, with likely additional damage to the existing shorefront bike path and parking lot.

b. Shoreline Protection.

Alternative 1. The relocated bike path and on-street parking to be constructed landward of the designated retreat zone would be less susceptible to wave-induced erosion and wave overtopping than the existing bike path and parking lot due to the presence of the buried seawall at the landward edge of the retreat zone and, to a lesser extent, the increased setback from the existing shoreline. As compared to Alternatives 2-5, however, the relocated upland improvements would be more susceptible to damage from wave runup and overtopping under this alternative during periods of extremely high surf. This susceptibility arises in part from the absence of an energy-absorbing cobble mattress (Alternative 2) or berm (Alternatives 3, 4, and 5), and in part from the fact that waves impacting a vertical wall tend to be redirected upward, after which they can be blown over the wall by a following wind.

Alternative 2. The relocated bike path and on-street parking would be less susceptible to wave-induced erosion and wave overtopping than the existing bike path due to a combination of the following four factors: (1) the presence of the buried seawall at the landward edge of the retreat zone; (2) the presence of the cobble mattress on the beach face; (3) the presence of the sacrificial sand dune within the retreat zone, and (4) the increased setback from the existing shoreline.

The cobble mattress associated with this alternative would reduce the susceptibility of the beach face to episodic erosion as compared to existing conditions. The frequency with which erosion exposes the buried seawall would also be reduced as compared to Alternative 1 and the buried seawall would provide needed protection of upland improvements in the event of a major period of erosion.

It should be recognized that the cobble mattress and sacrificial sand dune as envisioned would be susceptible to undermining and dispersal due to the absence of a substantial toe below the elevation of MLLW. Consequently, relatively frequent maintenance would likely be required as compared to the cobble berm of Alternatives 3, 4, and 5 to replenish the mattress during those periods when shoreline retreat predominates in the project area. On the other hand, the presence of the buried seawall may reduce the potential for damage to upland improvements as compared to Alternatives 3, 4, and 5 (which do not include the buried seawall) in the event that renourishment of the beach cannot be achieved immediately following an event that causes severe erosion (for example, if cobble material is not immediately available following a major erosion episode).

Alternative 3. Based on the long-term stability of the natural cobble berm at Emma Wood State Beach and the promising performance of the cobble berm test section at Surfers Point, it is anticipated that the engineered cobble berm could generally stabilize the shoreline during periods of episodic erosion. The upland improvements to be constructed landward of

the retreat zone would be less susceptible to wave-induced erosion and wave overtopping than the existing bike path and parking lot due the presence of the engineered cobble berm and, to a lesser extent, the increased setback from the existing shoreline.

Losses due to longshore and offshore transport would necessitate periodic maintenance of the cobble berm. However, the maintenance frequency is anticipated to be less than under Alternative 2. On the other hand, the absence of the buried seawall that would be included in Alternatives 1 and 2 may increase the potential for damage to upland improvements in the event that renourishment of the beach cannot be achieved immediately following an event that causes severe erosion.

Alternative 4. Based on the long-term stability of the natural cobble berm at Emma Wood State Beach, and the promising performance of the cobble berm test section at Surfers Point, it is anticipated that the augmented, extended cobble berm would stabilize the shoreline during periods of episodic erosion. Therefore, the existing bike path and parking lot would be less susceptible to wave-induced erosion and wave overtopping than at present due to the as needed augmentation and westward extension of the existing cobble berm.

Losses due to longshore and offshore transport would necessitate periodic maintenance of the cobble berm under this alternative. However, similar to Alternative 3, the anticipated maintenance frequency is expected to be less than under Alternative 2. It should also be noted that, because the maximum and minimum shoreline positions in the project area differed by as much as 265 meters (868 feet) between 1929 and 1999, the 20-meter (64-½ foot) retreat associated with Alternatives 1-3 and 5 would provide only a marginal improvement in shoreline protection as compared to the repair of the bike path and parking lot in their current locations that would occur under this alternative.

The absence of the buried seawall that would be included in Alternatives 1 and 2 may increase the potential for damage to upland improvements in the event that renourishment of the beach cannot be achieved immediately following an event that causes severe erosion. In addition, it should be noted that this alternative would not meet the Surfers Point Work Group objectives of relocated the upland improvements further inland.

Alternative 5. Similar to Alternative 3, it is anticipated that the engineered cobble berm would stabilize the shoreline during periods of episodic erosion. The berm may offer somewhat greater resistance to storm wave erosion than under Alternatives 3 and 4, due to the possible use of additional cobble material to replace artificial fill in the retreat zone.

Alternative 6. This alternative would leave the project site in its current condition. No protection of the existing bike path and parking lot would be provided and it is anticipated that additional erosion-related damage similar to what has occurred in the past at Surfers Point would continue to occur.

c. Sedimentation Impacts.

Alternative 1. Removing the existing bike path and parking lot would allow whatever underlying granular material is present to be dispersed by wave runup. Consequently, the littoral zone would benefit from a one-time addition of sediment under Alternative 1.

However, if the material is found to contain a large percentage of fine-grained material, it is likely that excavation and removal would be required (with no benefit to the littoral zone). In the long term, this alternative generally would not affect sedimentation or coastal processes.

Periodic exposure of portions of the buried seawall following major erosional episodes could temporarily reduce downshore transport of sediment. Such events would occur until the following accretion cycle when the seawall would be re-buried.

Alternative 2. As discussed previously, the sacrificial dune associated with this alternative would be subject to periodic erosion. Whenever the sacrificial dune is eroded by wave runup, sand would be added to the littoral zone, which may incrementally benefit downdrift beaches. The rate of supply would depend upon both the frequency of severe storms and the frequency with which the dune is renourished. The benefit would be small, however, since the volume of the entire dune (about 5,350 cubic meters [7,000 cubic yards]) is nominal compared to the estimated potential net longshore transport of 1 million cubic meters (1.3 million cubic yards) annually.

Installation of a cobble mattress or berm would potentially increase the quantities of cobble that is transported east toward San Buenaventura State Beach. However, the impact of cobble transport is expected to be modest for the following reasons:

- The rate of cobble transport is low (much lower than that of sand);
- Cobble suitable for installation in a mattress would be less susceptible to wave-induced erosion than the mixture of cobble and sand that is currently discharged from the Ventura River mouth; and
- The placement of cobbles on the beach face would be analogous to the episodic delivery of cobbles from the Ventura River during flood years, which has not exerted a significant negative impact to San Buenaventura State Beach.

Alternatives 3 and 4. The cobble berm associated with Alternatives 3 and 4 would not be expected to adversely affect sedimentation or coastal processes since it would not restrict the transport of sediment to downdrift beaches. Impacts associated with possible cobble transport would be similar to those described for Alternative 2 and would not be expected to result in adverse impacts.

Alternative 5. As with Alternative 2, the sacrificial dune associated with this alternative would be subject to periodic erosion. Whenever the sacrificial dune is eroded by wave runup, sand would be added to the littoral zone, which may incrementally benefit downdrift beaches. The cobble berm associated with Alternative 5 would not be expected to adversely affect sedimentation or coastal processes. As the cobble berm would be largely restricted to the backshore area under this alternative, the rate of transport of cobble material to downdrift beaches would likely be somewhat lower than under Alternatives 3 and 4.

Alternative 6. Alternative 6 (No Project) would result in no change from current conditions.

d. Wave/Surf Impacts.

Alternative 1. As long as the seawall remains buried, Alternative 1 would not affect the quality of the surf available for wave-related recreation. As discussed above, however, it is anticipated that portions of the wall could be exposed periodically by a combination of low river sediment discharge and severe storm waves. If the erosion progresses to the point that waves not only reach but also reflect off the wall, the reflected waves could potentially degrade the quality of the surf. As this alternative includes no renourishment of the beach, such conditions would remain until the next period of accretion. This is not considered an adverse environmental impact as compared to existing conditions at the site; however, it is a disadvantage of this alternative relative to Alternatives 2-5.

Alternative 2. As long as the seawall remains buried, Alternative 2 would not exert a negative impact on the quality of the surf available for wave-related recreation. The cobble mattress may, in fact, reduce wave reflection to some degree, with a corresponding improvement in wave conditions due to increased energy dissipation. Portions of the buried seawall could become exposed periodically if storm waves are sufficiently severe to displace the cobble mattress. In the unlikely event that erosion progresses to the point that waves not only reach but also reflect off the wall, the reflected waves could degrade the quality of the surf. However, any possible impacts relating to exposure of the wall would be alleviated with the renourishment of the cobble mattress and sand dune as needed.

Alternatives 3, 4, and 5. As with Alternative 2, the dissipative surface of the cobble berm that would be implemented under Alternative 3 could improve the quality of the surf by reducing wave reflection. This improvement, which is expected to be modest, is less likely to occur when water levels are low and relatively small waves affect the sand-charged toe of the berm.

Alternative 6. The No Project alternative would have no effect on surf conditions, either adverse or beneficial.

e. Coastal Management Policies.

City of Ventura Comprehensive Plan. The City of Ventura Comprehensive Plan includes several policies relating to shoreline management and coastal erosion. These policies are listed below, followed by a discussion of the project's consistency or inconsistency with each policy.

Resources Element

Policy 15.4 – Beach Erosion Policy:

Revetments, breakwater, groins, harbor channels, seawalls, cliff-retaining walls, and other such construction that alters natural shoreline processes may be permitted when required to serve coastal-dependent uses or to protect existing structures or public lands in danger from erosion, and when designed to eliminate or mitigate adverse impacts on local shoreline sand supply. Access to and along the shoreline shall be provided when such structures are constructed. In reviewing any such construction, relevant Coastal Act policies shall be applied.

If a revetment is constructed to protect existing residences in the Pierpont area, the revetment shall be evaluated and designed in a comprehensive manner and include within the design a lateral accessway (such as a bikeway/walkway) a minimum of five feet in width to mitigate the burden on public access caused by the construction of the revetment and the impact on public access along Shore Drive. Similar mitigation measures shall be included if protective devices are developed in front of the Fairgrounds. Lateral access shall remain unimpeded along the beachfront of the Fairgrounds property.

Alternatives 1 and 2 include construction of a buried seawall along the south (seaward) side of the relocated bike path. This wall is not generally expected to affect shoreline processes since it would be buried behind either sand (Alternative 1) or a cobble mattress (Alternative 2) and only about the uppermost 60 centimeters (2 feet) of the proposed seawall would be above the ground surface. A wall of this height would not impede access to the beach. Major storm events could wash away sand and cobble material within the retreat zone, thereby exposing a larger proportion of the wall. If severe erosion does expose the buried wall, renourishment of the beach would be conducted under Alternative 2. Alternative 1 does not envision a renourishment program.

Alternative 3–5 do not include the buried seawall and would not be expected to adversely affect shoreline processes. Although Alternatives 3 and 4 do not include a sandy area, they would not be expected to impede coastal access. Alternative 5 would include a sandy beach area in the western portion of the site, with walkways through the dunes. This would enhance coastal access relative to Alternatives 3 and 4.

In general, Alternatives 1-5 are all expected to improve access to the Surfers Point area as compared to current conditions by either repairing or replacing the existing damaged path and restoring the beach. As such, all of these alternatives could be found to be consistent with this City policy. Alternative 6 (No Project) may conflict with this policy since access to the beachfront may continue to degrade as additional shoreline erosion occurs in the future.

Policy 15.8 – Coastal Conservancy:

The City should continue to request California Coastal Conservancy assistance in possible coastal projects such as agricultural preservation, coastal resource enhancement, public access and coastal restoration.

The Local Coastal Plan contained in this Comprehensive Plan represents the commitment of the City to provide continuing protection and enhancement of its coastal resources. It is recognized that certain resource areas under the City's jurisdiction may require further public attention to ensure their protection and enhancement. Such resource areas include:

- *Degraded or less than pristine wetlands of any size such as the Alessandro Lagoon and the Ventura and Santa Clara River mouth areas;*
- *Lands that have a history or potential for productive agricultural uses, such as the Ventura River area;*
- *Sensitive coastal resource areas which are suffering some form of deterioration or development pressures;*

- *Areas which are appropriate for well-designed visitor and recreation facilities, such as the Fairgrounds; and*
- *Areas where unused and/or subdivided lots require consolidation or redesign to permit appropriate land uses.*

The proposed project is intended to enhance the beach environment at Surfers Point and provide for the managed retreat of the shoreline. As discussed in Section 4.3, none of the project alternatives are expected to adversely affect important biological resources. As discussed in Section 4.6, implementation of appropriate best management practices (BMPs) and the recommended mitigation measures would avoid any potentially adverse impacts to water quality in the Pacific Ocean or Ventura River estuary for any of the alternatives. By restoring the damaged shorefront bike path, Alternatives 1-5 would all generally enhance Surfers Point as a recreational amenity relative to current conditions. As such, each of these alternatives could be found to be consistent with this Comprehensive Plan policy. Alternative 6 (No Project) may conflict with this policy as it would allow for the continued degradation of the existing shorefront bike path and parking lot.

Safety Element

Policy 10.1 *Protection of new shoreline structures shall be provided by increased setbacks from the mean high tide line.*

Alternatives 1-3 and 5 would relocate the existing shorefront bike path and parking lot about 20 meters (64-½ feet) inland to provide additional protection from coastal erosional processes. As such, these alternatives could be found to be consistent with this City policy. Alternative 4 would not relocate the bike path and parking further inland. However, as discussed above, the cobble berm that would be constructed under this alternative would provide protection for the repaired facilities. Thus, although it would not increase the setback of the bike path from the mean high tide line, Alternative 4 could be found to be consistent with the intent of this policy to protect shoreline structures from coastal erosion. Alternative 6 would involve no action at Surfers Point and thus would not implement this policy.

Policy 10.2 *Protection of existing shoreline structures by the construction of beach protection devices shall be consistent with the requirements of this Plan, the Local Coastal Program and their implementing ordinances and permitting processes.*

As discussed throughout this section, Alternatives 1-5 could all be found to be consistent with applicable policies of the City's Comprehensive Plan and Local Coastal Program. Alternative 6 (No Project) does not necessarily conflict with this policy, although it would not implement any means of coastal protection.

Policy 10.4 *Implement specific beach erosion management measures such as construction, restoration, and maintenance of revetments and groins, and periodic beach renourishment, where analysis warrants these measures.*

One of the project's fundamental purposes is to restore the beach at Surfers Point. Alternative 1 would not include as needed beach renourishment, but Alternatives 2-5 all involve a commitment to periodic renourishment of the beach as needed. With the possible exception of

Alternative 1, all of the project alternatives could be found to be consistent with applicable provisions of this City policy. As Alternative 6 involves no action, it does not appear to implement this policy.

Draft Policy on Coastal Erosion Planning and Response. The Resource Agency of the State of California has issued a "Draft Policy on Coastal Erosion Planning and Response" that includes several policy statements relating to shoreline management. These policies are listed below, followed by a discussion of the project's consistency or inconsistency with each policy.

Overarching Principles. The Draft Policy states that the preferred order for addressing development on coastal lands should be:

1. *Hazard avoidance should be the preferred method for addressing coastal erosion in California. State law requires that new coastal development shall minimize risks to life and property in areas of high geologic, flood, and fire hazard. In addition, new development shall assure stability and structural integrity, and neither contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs or cliffs.*
2. *In cases where existing development is threatened, a first priority should be to evaluate the feasibility of relocating such development. A second priority should be to evaluate the use of beach nourishment, if it is feasible and can be used effectively, without significant effects on the environmental, to reduce the threat or risk of erosion to existing development.*
3. *The use of hard structures should be considered only after these and other less environmentally damaging alternatives are evaluated and deemed infeasible.*

The proposed project involves management of the shoreline in an area that is already developed and has undergone extensive transformation from its "natural" condition. Consequently, Priority 1 does not apply.

With respect to Priority 2, Alternatives 1-3 and 5 entail the relocation of existing improvements approximately 20 meters (64–½ feet) further inland in an attempt to avoid coastal erosion problems that have plagued the existing path and parking lot at Surfers Point. Alternatives 2-5 all involve a commitment to periodic renourishment of the beach. Thus, Alternatives 2, 3, and 5 appear to implement both of the policy directives of Priority 2. Alternative 1 would implement the relocation directive, but would not implement the beach nourishment directive. Alternative 4 would implement the beach nourishment directive, but would not relocate the existing improvements further inland to avoid erosion-related damage.

With respect to Priority 3, Alternatives 1 and 2 involve the construction of a buried seawall structure along the seaward side of the relocated bike path to provide protection in the event that a major storm event exposes the buried wall. Under Alternative 2, this structure is proposed as a temporary backup protection that would be exposed only until the City can renourish the beach with additional cobble material (anticipated to be prior to the next rainy season assuming that material is available). Therefore Alternative 2 could be found to be consistent with the intent of Priority 3. Alternative 1 does not include a protective cobble mattress or berm, or beach renourishment. Consequently, Alternative 1 could be considered in

conflict with the intent of Priority 3. Alternative 3-5 would not include the buried seawall component and therefore could be found to be consistent with the intent of Priority 3.

As Alternative 6 involves no action, it does not appear to implement this policy.

Coastal Protection Projects. The Draft Policy includes the following direction with respect to coastal protection projects.

A. *Restoration and nourishment of beaches to protect against coastal erosion and beach loss should be the preferred erosion response measure where at least the following conditions are met:*
   1. *Restoration and nourishment will not have a significant effect on cultural, and paleontological resources and living marine resources of their habitats;*
   2. *Restoration and nourishment will not result in significant effects elsewhere on the coast;*
   3. *Non-structural measures are included to maintain the affected beaches in a nourished state; and*
   4. *Measures are included to encourage regional coordination to maximize the effectiveness of the operation within the coastline area (littoral cell) being restored or nourished.*

B. *Construction of seawalls, revetments, breakwaters, groins, or other artificial rigid structures for coastal erosion control should be discouraged unless each of the following conditions are met:*
   1. *No other non-structural alternative is effective or feasible to reduce erosion risk over the useful life of the protected development;*
   2. *The project is to serve a coastal dependent use or to protect an existing principal development or public beach in danger from erosion;*
   3. *The project is consistent with the erosion solutions presented in the certified local coastal plan or other regional coastal management plan that identifies and comprehensively addresses regional coastal hazard issues;*
   4. *A report by a licensed geologist demonstrates that a primary structure is at imminent risk from coastal erosion. Further, conclusive evidence should be presented in a report by a licensed engineer that a protective device is designed and can be constructed and maintained to withstand the specified design criteria that reflect the range of conditions that exist at the project site, and will successfully mitigate the effects of coastal erosion while minimizing the significant effects of the project on other sections of the shoreline;*
   5. *There will be no net reduction in public access to, and use and enjoyment of, the natural coastal environment, and construction of a protective device will preserve, enhance or provide access to related public recreational lands or facilities;*
   6. *The project will not have significant effects on cultural, and paleontological resources, or living marine resources and habitats; and*
   7. *Measures are included to ensure that the protective structure can and will be maintained through its design life and removed at the expense of the project sponsor if the protective device fails or has an unmitigated effect on other sections of coastline, or is no longer necessary.*

Alternatives 1-5 entail all of the elements listed under Item A in that they are not expected to adversely affect cultural, paleontological, or biological resources, would not adversely affect other areas of the coast, and are part of a citywide program of beach maintenance. The buried

hard structure that would be constructed under Alternatives 1 and 2 would be approximately 64-½ feet landward of the existing damaged bike path, would serve a coastal dependent use that is at risk of erosion, and, as discussed previously, appears to be consistent with coastal management strategies approved in the City of Ventura Comprehensive Plan/Local Coastal Plan. Because the structure would be buried, it would not generally restrict access to the coast and the periodic renourishment envisioned as part of Alternative 2 would be expected to maintain public access to the beach. Alternatives 1-5 could all be found to be consistent with the general intent of this policy. The buried seawall associated with Alternative 1, however, could potentially conflict item B.1 since it would not be accompanied by a renourishment program and since non-structural options for protecting landward improvements are available. As Alternative 6 involves no action, this policy does not apply to that alternative.

Department of Parks and Recreation Policy. Effective December 28, 1999, the California Department of Parks and Recreation has adopted the following policy relating to coastal erosion:

> *The Department of Parks and Recreation shall avoid construction of new structures and coastal facilities in areas subject to ocean wave erosion, seacliff retreat, and unstable cliffs, unless specific determinations have been made that the risk of loss of the facility is clearly offset by the investment and need for the facility. Measures shall be taken to minimize human-induced erosion by reducing concentrated surface runoff from use areas, elevated groundwater levels from irrigation and urbanization, and surface disturbance of blufftop soils. In recognition of California's actively eroding coastline, new structures and facilities located in areas known to be subject to ocean wave erosion, seacliff retreat, or unstable bluffs shall be expendable or movable. Structural protection and re-protection of developments shall be allowed only when the cost of protection is commensurate with the value (physical and intrinsic) of the development to be protected, and when it can be shown that the protection will not negatively affect the beach or the near-shore environment.*

The Surfers Point area is subject to beach erosion; therefore, the relocation of improvements landward as would occur under Alternatives 1, 2, 3, and 5 appears to be consistent with the notion that structures and facilities are "movable." Alternatives 3, 4, and 5 do not include a buried seawall and therefore do not appear to conflict with the provisions relating to structural protection. Alternatives 1 and 2 both include a buried seawall. It is not anticipated that either alternative would negatively affect downshore beaches or the near-shore environment. However, a determination that the cost of providing the seawall is commensurate with the value of the bike path and shorefront parking would be needed in order to make a finding of consistency with this policy for Alternatives 1 and 2.

4.7.2 Mitigation Measures

Alternatives 1-5 would all generally improve conditions with respect to protection of upland improvements as compared to the current situation at Surfers Point. In addition, none of the alternatives would adversely affect coastal processes in the area. Consequently, none of the alternatives would have effects that require mitigation under CEQA. Nevertheless, minor modifications are recommended for Alternatives 1 and 2 to maximize the benefits associated with project implementation.

The following design modification is suggested for Alternative 1 if that alternative is selected.

- Potential beach erosion can be limited to relatively short durations by nourishing the beach with sand and/or cobble on an as-needed basis (i.e., after erosion approaches or exposes the buried seawall). This would also result in a positive secondary effect associated with the additional sediment that is added to the littoral zone.

The following design modifications are suggested for Alternative 2 if that alternative is selected.

- The potential for undermining and dispersal of the cobble mattress can be reduced by the following changes in the design of the mattress:

  - Inclusion of upslope and downslope edges that are inclined at the angle of repose of the native beach sand
  - Elimination of the compound cobble slope in favor of a straight slope
  - Inclusion of a toe below the elevation of the MLLW similar to that included in the cobble berm of Alternative 3

None of these recommended design modifications would create any adverse environmental effects. However, it should be noted that the renourishment program recommended for Alternative 1 would generate periodic truck traffic to and from the site to a level similar to that associated with the other alternatives. In addition, the inclusion of a toe below the elevation of the MLLW for Alternative 2 would increase temporary disturbance of nearshore biological resources to a level similar to that associated with Alternatives 3, 4, and 5.

4.8 PARKING, BEACH ACCESS, AND RECREATION

4.8.1 Impact Analysis

a. Access to the Fairgrounds/Seaside Park. Alternatives 1-3 and 5 would all involve reconstruction of the bike path, parking area, and Shoreline Drive and would therefore require temporary closure of Shoreline Drive during portions of the construction period. Demolition is expected to take about one month, while reconstruction of the bike path and parking areas along Shoreline Drive is expected to take about three months. Construction of the buried seawall for Alternatives 1 and 2 may take and additional 4-½ months. Traffic circulation and access would therefore be affected during this phase of the project, particularly during summer months. Closure of Shoreline Drive and demolition and relocation of the existing bike path would also impact pedestrian and bicycle access during the construction period. Alternative 4 may also require temporary closure of Shoreline Drive, although the duration of such closure would likely be shorter since Alternative 4 does not involve removal or reconstruction of the existing improvements.

Delivery of stone, cobble, and sand for construction of the buried seawall, cobble mattress or dune, and sacrificial dune would not require closure of Shoreline Drive, but would require truck access and staging. For Alternative 1, importation of stone for the toe of the buried seawall would take an estimated three days. Alternative 2 would involve importation of toe

stone, cobble for the cobble mattress, and sand for the sacrificial dune, which would take a combined total of about 20 days. Alternative 3 would involve importation of cobble for the cobble berm and sand for the retreat zone and would take a combined total of about 23 days. Alternative 4 would involve the importation of cobble and is expected to take approximately 1 month. Alternative 5 will require the importation of cobble and sand estimated to take approximately 1-½ months.

This activity would temporarily disrupt access to the beach. It is anticipated that work would occur between the hours of 7:00 AM and 6:00 PM. It should be noted that the above time estimates for emplacement of cobble material assume that sufficient cobble to create the mattress or berm is available when required. If the supply of cobble is insufficient to complete the job all at once, creation of the cobble mattress or berm may need to be completed in phases.

Alternative 6 would not create any impact to beach parking or access. However, it should be noted that the failure to address existing erosion problems at Surfers Point may ultimately result in further damage to the existing bike path and parking lot at Surfers Point, thus creating a long-term loss of access to the shore.

b. Beach Parking. The analysis of parking impacts is based upon a parking and access study conducted by Associated Transportation Engineers and is included in Appendix E. In general, construction activity associated with Alternatives 1-5 would temporarily affect access, circulation and parking in the Seaside Park and Fairgrounds areas. The magnitude of impacts to parking and access would depend upon the level of activities occurring at the Fairgrounds during the construction period, and the level of public use of the Seaside Park beach area.

Alternatives 1-3 and 5. Parking at Seaside Park and the Fairgrounds would be interrupted during the first phase of project construction. The existing 352-space Surfers Point parking lot currently provides 223 usable spaces. The remainder are unusable due to beach erosion. This parking lot would be demolished during the first phase of construction under Alternatives 1-3 and 5. Thus, public parking for the beach area would be temporarily lost during construction. For Alternatives 1 and 2, the temporary loss of parking may last for 8-9 months. For Alternative 3 and 5, the overall construction period and associated loss of beach parking would be somewhat shorter (about 5 months) because no buried seawall would be constructed.

Existing parking would ultimately be replaced with approximately 244 on-street spaces along both sides of Shoreline Drive and a new paved parking area with 600-700 spaces would be constructed on the Fairgrounds site north of Shoreline Drive. These parking resources would more than offset the loss of spaces in the shorefront parking lot. At this time, the City's policy is not to charge for on-street parking.

Alternative 4. This alternative would repair the existing parking lot rather than removing the lot and replacing it with on-street parking. As such, although there would be some temporary disruption of parking availability, the disruption would be less than under Alternatives 1-3 and 5. In the long-term, this alternative would be expected to restore the 352 spaces originally constructed in the existing lot; therefore, it would provide more beach parking in the long term than would Alternatives 1-3 and 5.

Alternative 6. There would be no temporary impact to parking under this alternative because there would be no construction. However, it should be noted that failure to stabilize the shoreline at Surfers Point may result additional damage to the existing parking lot due to future erosion. This may result in the additional loss of beach parking in the long term.

c. Beach Recreation. Alternatives 1-5 would all temporarily limit beach recreation opportunities at Surfers Point during construction (see above discussion under item a, *Access to the Fairgrounds/Seaside Park*). However, all would generally improve recreational opportunities as compared to existing conditions at Surfers Point in the long term by either replacing the damaged shorefront bike path with a new 3.6-meter (12-foot) wide shorefront bike path about 64-½ feet further inland and restoring the beach (Alternatives 1-3 and 5) or repairing the facilities (Alternative 4). However, the changes in recreational conditions would be somewhat different under the various alternatives. The project's impact to surf conditions at Surfers Point is discussed in Section 4.7, *Coastal Geology*. Possible impacts of each alternative relative to onshore recreational opportunities are discussed below.

Alternative 1. The beach at Surfers Point experiences episodic accretion and erosion in response to the provision of sediment by the Ventura River and the removal of sediment by waves. On those occasions when accretion predominates, it is likely that the subaerial beach would consist primarily of sand under this alternative. Recreational opportunities may be greater under these circumstances than if a continuous cobble mattress (Alternative 2) or berm (Alternatives 3 or 4) were present along the entire length of the project. However, it should be noted that this positive attribute would be diminished or lost during anticipated episodes of erosion, when sand would be removed from the subaerial beach.

When accretion predominates, the sandy beach would provide opportunities for beach recreation and unimpeded access to the shore. On the other hand, when severe storm waves follow periods of modest sediment discharge from the Ventura River, beach erosion could expose portions of the buried seawall. If the decrease in beach elevation is substantial, beach access could be impaired by the elevation difference between the bike path and the eroded beach profile. In the absence of a commitment to renourishment, such impairment would remain until the next period when accretion predominates.

Alternatives 2 and 5. The sacrificial sand dune and adjacent sandy area that extend from the cobble mattress to the buried seawall would provide opportunities for beach recreation that would not be available under Alternatives 3 or 4. They would also improve recreational opportunities as compared to existing conditions at Surfers Point. The cobble mattress or berm may be less desirable for beach recreation than the sandy beach conditions that are anticipated to occur during periods of beach accretion under Alternative 1. On the other hand, the enhanced dune environment would enhance opportunities for habitat creation and associated recreational activities, particularly under Alternative 5.

If winter storm waves are sufficiently severe to displace the cobble mattress associated with Alternative 2, the ensuing beach erosion could potentially expose portions of the buried seawall. If the decrease in beach elevation is substantial, beach access could be impaired by the elevation difference between the bike path and the eroded beach profile. Any impairment to beach access would be temporary since this alternative includes a commitment to renourishment of the

beach with sand and/or cobble as necessary. As Alternative 5 does not include a buried seawall, this potential impairment would not occur under that alternative.

Alternative 3 and 4. Access to the shore would remain unimpeded even under erosive conditions under either of these alternatives since there would be no buried seawall. However, although the presence of a continuous cobble mattress that stretches along the entire length of the project would allow access to the shore, it may be less desirable from a recreational standpoint than the sandy beach conditions that would occur under Alternative 1 or the sacrificial dune included in Alternative 2.

Alternative 6. No change to existing conditions would occur under this alternative. As such, existing impediments to shoreline access would remain and would likely worsen over time.

d. Policies Relating to Parking, Access, and Recreation.

City of Ventura Comprehensive Plan Policies. The City of Ventura Comprehensive Plan includes several policies relating to shorefront parking, access, and recreation that apply to the proposed project. These are discussed below.

Resources Element Objective 7 – Parks and Recreation Areas

Policy 7.4 *Work with the State Department of Parks and Recreation, State Coastal Conservancy, Ventura Port District and Ventura County Fair Board to ensure continued public access to and beautification of the City's beach areas which contribute toward meeting City park needs.*

The "cobble mattress with sacrificial dune" concept (Alternative 2) was developed as part of a cooperative planning effort by the City, State Parks Department, County Fair Board, California Coastal Commission, and local interest groups. The specific intent of the project is to beautify and improve access to the beach at Surfers Point by replacing damaged public improvements and restoring an approximately 64-½ foot wide stretch of beach. The project would generally improve access to the beach by replacing the existing parking lot and replacing the damaged shorefront bike path. For these reasons, Alternative 2 appears to implement Policy 7.4 of the Resources Element.

Alternatives 1, 3 and 5 are variations on Alternative 2. They would also generally fulfill the objective of improving access to and beautifying the beach. Alternative 4, which was developed during the preparation of this EIR, would improve beach access by repairing the damaged bike path and parking lot. It would also be expected to generally improve the aesthetic character of the area as compared to current conditions by repairing the damaged structures; however, it may have somewhat less aesthetic benefit than Alternatives 1-3 and 5 insofar as it would not restore the 20-meter (64-½ foot) swath of beach. In addition, it should again be noted that Alternative 4 would not meet the Surfers Point Working Group objective of relocating the bike path and parking area further inland. Alternative 6 (No Project) would not directly conflict with Policy 7.4 since it involves no action at the site; however, it would not meet the policy's objectives. In addition, if no action is taken to stabilize the beach at Surfers Point, access to the

beach via the bike path and parking lot may continue to decline as those structures incur additional erosion-related damage in the future.

Recreation Element Policy 6.1

Accessibility, maintenance and quality development along the seven-mile coastal strip that forms the western boundary of the City is a high priority. Cooperative working relationships and agreements with the State Department of Parks and Recreation, the Ventura Port District, and the 31st Agricultural District, to ensure a pleasing, comfortable environment, are encouraged.

The proposed project involves a cooperative agreement between the City and the 31st Agricultural District to improve accessibility to the shoreline at Surfers Point by stabilizing the beach and reconstructing or repairing the damaged shorefront bike path and parking area. As discussed above, Alternative 2 was developed as part of a cooperative agreement among various parties, including the Department of Parks and Recreation and the 31st Agricultural District. Alternatives 3 and 5 are variations on Alternative 2. As such, Alternatives 2, 3, and 5 could all be found to be consistent with this City policy. Alternative 1 is also a variation on Alternative 2, but includes no commitment to renourishment or maintenance. Alternative 4 would generally maintain accessibility to the coast, but is not part of the cooperative efforts of the affected agencies. Alternative 6 (No Project) may be considered inconsistent since taking no action to stabilize the beach may result in further erosion and subsequent damage to the shorefront bike path and parking lot.

Recreation Element Policy 6.2

Stabilization and/or preservation of resources and facilities in the coastal area is critical. Amenities along the coast catering to both residents and visitors experience heavy usage on a year-round basis. In recent years, these amenities have experienced significant impacts from natural forces. The city should employ necessary stabilization and/or preservation measures to ensure that such parks and associated improvements do not suffer significant losses.

The project is specifically intended to allow for the management of the shoreline at Surfers Point and to allow the reconstruction and preservation of the coastal bike path, parking facilities, and Shoreline Drive. Consequently, Alternatives 1-5 all appear to implement this City policy. Alternative 6 (No Project) does not appear to implement this policy.

California Coastal Act Policies. Sections 30210, 30211, 30212 and 30212.5 of the California Coastal Act relate to shoreline access. The Surfers Point Managed Shoreline Retreat Project is intended to support the goals and policies of the Coastal Act. During the construction period, temporary interruptions of pedestrian and bicycle access to the shoreline in this area may occur. However, access to the shoreline east and west of the project area would not be affected. Mitigation measures recommended below would ensure public access during the construction period. After the project is completed, access for pedestrians, bicyclists and motorists in the project area would be enhanced under any of the project alternatives. Under Alternatives 1-3 and 5, the available parking supply would increase from the 223 existing usable spaces to approximately 244 usable spaces after the project is completed. Under Alternative 4, the beachfront parking lot would be restored to its original capacity of 352 spaces.

Article 3 – Recreation

Section 30235 *Revetments, breakwaters, groins, harbor channels, seawalls, cliff retaining walls, and other such construction that alters natural shoreline processes shall be permitted when required to serve coastal-dependent uses or to protect existing structures or public beaches in danger from erosion, and when designed to eliminate or mitigate adverse impacts on shoreline sand supply. Existing marine structures causing water stagnation contributing to pollution problems and fish kills should be phased out or upgraded where feasible.*

As discussed in Section 4.7, none of the alternatives (1-5) are expected to adversely alter natural shoreline processes. Alternatives 1 and 2 would include a buried wall along the seaward side of the relocated bike path. This structure would be approximately 20 meters (64-½ feet) landward of the existing path and would be outside the tidal zone. It is intended to serve only as a backup protection device for landward improvements (path, parking areas, Shoreline Drive) in the unlikely event that the entire cobble mattress erodes away. Consequently, it would generally have little if any effect on shoreline processes. If the entire cobble mattress erodes way and the wall is exposed, the exposure would be only temporary under Alternative 2 as the cobble mattress would be renourished as needed to maintain the beach profile. Consequently, Alternative 2 does not appear to conflict with this policy. Alternative 1 does not include renourishment. As such, it may not mitigate adverse impacts on shoreline sand supply and could therefore be found to be inconsistent with this policy.

It should be noted that although Alternative 4 does not include construction that would alter shoreline processes, Coastal Commission staff have stated the position in previous correspondence (December 3, 1992 letter to the City) that protection of the bike path and parking lot in their current location where there are feasible alternatives such as "relocation of the structures" would be in conflict with Coastal Act policy. Therefore, it is anticipated that obtaining necessary coastal development permits may be difficult with that alternative.

Article 2 – Public Access

Section 30211 *Development shall not interfere with the public's right of access to the sea where acquired through use of legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation.*

The Managed Shoreline Retreat project is specifically intended to enhance public access to the shoreline at Surfers Point by restoring the beach, replacing or repairing the damaged shorefront bike path, and repairing or replacing the damaged parking lot. Any of the project alternatives (1-5) would involve temporary disruption of access to the beach during the development of the cobble mattress/berm and repair or reconstruction of the path and parking area. However, this loss would be temporary and would be minimized through implementation of appropriate traffic control and parking management plans.

In the long term, the usability of the Surfers Point area for recreational purposes would be improved under any of the alternatives through reconstruction of the shorefront bike path and parking area. The buried protective wall that would be constructed along the seaward side of

the relocated bike path under Alternatives 1 and 2 would be no more than two feet in height above the ground surface level. Although severe storm events and related erosion could expose portions of the buried wall from time to time, it is anticipated that renourishment of the beach to re-bury the wall would occur prior to the next rainy season under Alternative 2. Although Alternative 1 does not include renourishment, this EIR recommends a commitment to periodic renourishment for that alternative as well. Alternatives 3 and 4 would not include a sandy beach, but also would not require a buried seawall for protection of the bike path. Alternative 5 provides is the only alternative that provides a sandy beach environment (in the western half of the site) without a buried seawall. Each of the alternatives has certain relative advantages and disadvantages as discussed through this EIR (and in detail in Appendix C); however, none of the alternatives appear to conflict with this policy.

4.8.2 Mitigation Measures

The following mitigation measure is recommended for Alternatives 1-5 to reduce temporary impacts to parking and access associated with project construction.

PAR-1 The project contractor and the City shall develop a Traffic Control Plan to control construction traffic and circulation within the Shoreline Drive corridor during the construction period. An access plan shall also be developed for the area addressing vehicular access, pedestrian access, and bicycle access during the Phase I construction period. A construction schedule shall also be developed to avoid significant construction during peak activity periods at the Fairgrounds.

Details of the required Traffic Control Plan are outlined in the *Traffic and Circulation Study* (ATE, 2001) in Appendix E, beginning on page 6. With the recommended measure, impacts relating to beach parking and access are anticipated to be reduced to a level of non-significance.

The following measure is recommended for Alternatives 1-5 to mitigate the temporary loss of beach parking.

PAR-2 A Parking Management Plan shall be developed by the Fairgrounds to provide temporary parking for public beach users during the period when the beach parking lots are removed/repaired and the replacement parking has not been finished. The plan shall also identify parking areas for construction workers and equipment.

Details of the proposed Parking Management Plan are outlined in the *Traffic and Circulation Study* (ATE, 2001)in Appendix E, beginning on page 11. With the recommended measure, impacts relating to the temporary loss of beach parking are anticipated to be reduced to a level of non-significance.

Adverse impacts relating to recreation have not been identified for any of the project alternatives; therefore, mitigation is not required. Nevertheless, a commitment to renourishment as needed under Alternative 1, as discussed in Section 4.7, would maximize the recreational benefits of that alternative.

In addition, the following minor design modification is suggested for Alternative 3 to maximize the long-term recreational benefits of that alternative:

- Provision of a sandy area that extends from the berm crest to the parapet wall would provide opportunities for beach recreation under Alternative 3. Depending upon the anticipated use, the surface could consist of either sand or grass. A geotextile should be installed under the recreational area to reduce the potential for sand displacement into the cobble berm in response to foot traffic and wave overwash. This recommended modification to Alternative 3 is illustrated in Figure 4-2.

The following modification is recommended for Alternative 4 if that alternative is chosen.

- A sandy surface for beach recreation between the berm crest and the bike path may be provided if the cobble berm is extended to the west before erosion reaches the vicinity of the bike path. It should be noted, however, that the sandy surface will exist only in the western portion of the project area, and only if the berm is extended in a timely manner.

4.9 ARCHAEOLOGICAL RESOURCES

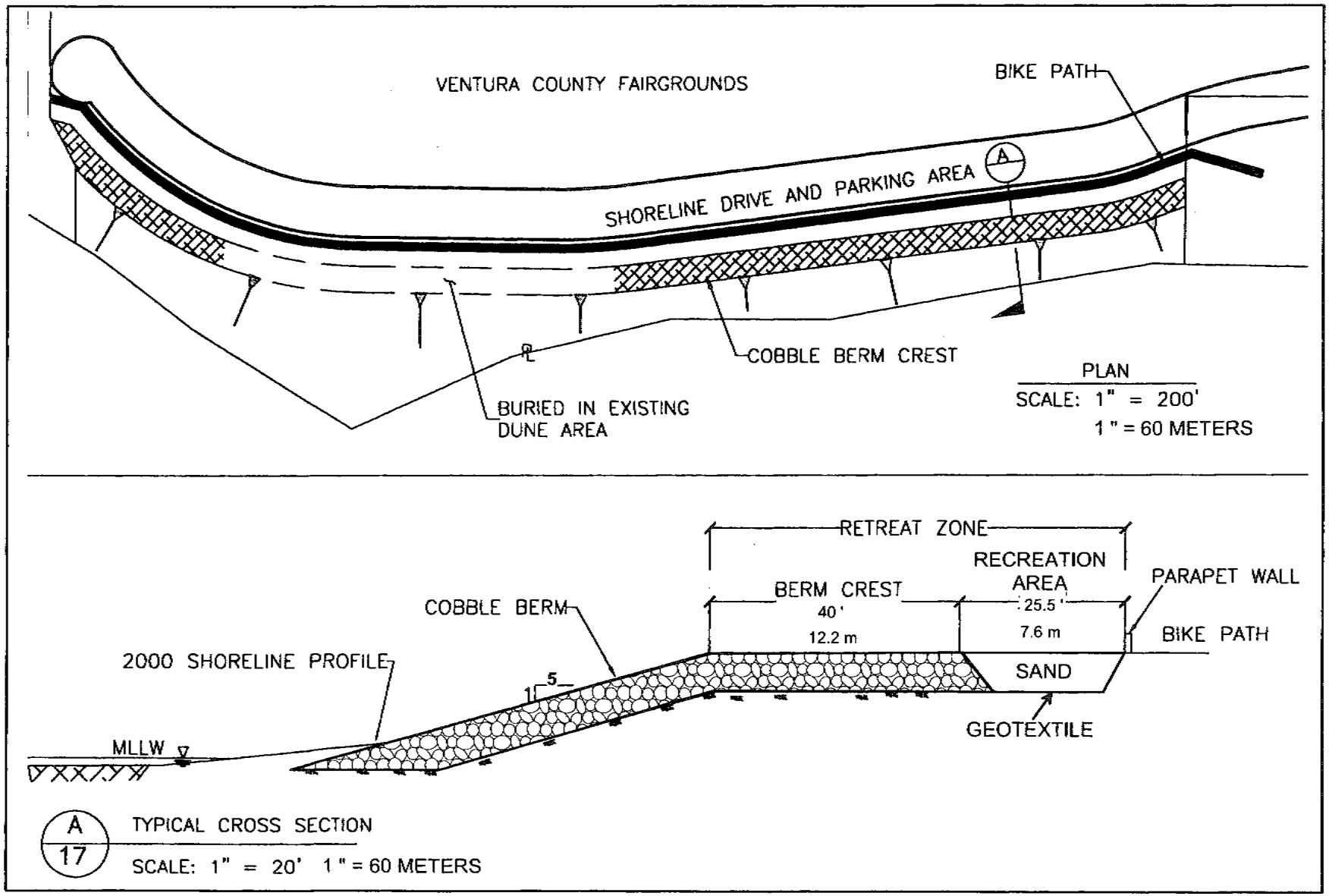
4.9.1 Impact Analysis

The project site is located within a general area of moderate archaeological sensitivity as noted by the presence of twelve recorded archeological sites within an 800-meter (0.5-mile) radius of the project's area of potential effect (APE), including one large village site (CA-VEN-3) located approximately 300 meters (1,000 feet) to the east. However, the extent of past disturbance reduces the likelihood of significant cultural deposits occurring within the APE. Based on the results of record research, background research, field survey and the extent of previous ground disturbance within the project APE, in combination with the expectation that most project earth disturbance will be limited to fill soils, Alternatives 1-5 would not disturb any known significant archaeological resources. Though unlikely given the nature of the site, it is possible that any of these alternatives could disturb as yet unknown buried resources. This is a potentially adverse impact. No impacts to archaeological resources would occur under Alternative 6.

4.9.2 Mitigation Measures

The following measures are recommended to alleviate possible impacts to any undiscovered archaeological resources that may be present on-site.

AR-1 A professional archaeologist shall be retained to monitor ground disturbance if excavation extends below existing fill into native soils. The archeologist shall have the power to temporarily halt or redirect project construction in the event that potentially significant cultural resources are exposed. A monitoring report shall be prepared upon completion of construction if an archaeologist is needed.



Source: Noble Consultants Inc., December 2000

Modified Alternative 3: Cobble Berm with Retreat Zone

Figure 4-2

AR-2 In the event that archaeological resources are unearthed during project construction, all earth disturbing work within the vicinity of the find must be temporarily suspended or redirected until an archeologist has evaluated the nature of the find. After the find has been appropriately mitigated, work in the area may resume. A Chumash representative shall be retained to monitor any mitigation work associated with Native American cultural material.

AR-3 If human remains are unearthed, State Health and Safety Code Section 7050.5 requires that no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to Public Resources Code Section 5097.98. If the remains are determined to be of Native American descent, the coroner has 24 hours to notify the Native American Heritage Commission.

Implementation of the recommended measures would reduce potential impacts to any as yet undiscovered archaeological resources to a level of non-significance.

4.10 HAZARDOUS WASTE/MATERIALS

4.10.1 Impact Analysis

A response to the Notice of Preparation (NOP) of this EIR (Surfrider Foundation, March 12, 2001) suggested that removal of the existing improvements within the 20-meter (64-½ foot) retreat zone for Alternatives 1-3 and 5 could increase migration of surface water through the soil and toward the beach by removing the existing impervious parking lot and bike path. It was speculated that this could adversely affect ocean water quality by allowing any contaminants in existing fill material to enter the water.

Removal of the shorefront parking lot and bike path as would occur under Alternatives 1-3 and 5 would replace these impervious surfaces with sand and cobble material, which would allow for increased percolation of water into the soil and water table. However, as discussed in Section 3.10, the only source of known contamination in the area (a 3.8-cubic meter [1,000-gallon] gasoline storage tank) and contaminated soils associated with that source were removed in 1989. The fill material that was used for the 1989 construction of the existing improvements at Surfers Point was determined at that time not to be contaminated and no known incidents have occurred since 1989 to suggest that contamination of the fill material has occurred. Therefore, no impact relating to the migration of hazardous chemicals is anticipated.

The same NOP response also speculated that such items as asphalt, glass, and rebar may be present in the fill material beneath the existing bike path and parking lot and may migrate into open waters if the fill material is not removed. It is not known at this time whether such items are in the fill material and there is no feasible way to test for these types of materials. However, as discussed in Section 2.0, *Project Description*, about 1.5 meters (5 feet) of subsurface soil below the existing fill layer (an estimated 14,530 cubic meters [19,000 cubic yards] of material) would be temporarily excavated and screened for debris in conjunction with removal of the existing bike path and parking lot under Alternatives 2 and 3. Clean material would be used as backfill to restore the pre-existing grade, supplemented as necessary with cobble and/or sand. This would alleviate any potential impacts associated with either of these alternatives. Alternative 5

calls for the replacement of non-beach-grade material and thus would alleviate concerns about migration of solid materials in surface waters to an even greater degree.

It is possible that solids such as glass, concrete, and rebar could migrate into open waters under Alternative 1 if they are present in existing fill material. Although this is not considered a significant health hazard, the failure to remove any such materials that may be present is a disadvantage of Alternative 1 relative to Alternatives 2, 3, and 5.

Alternative 4 would not remove the existing parking lot or bike path; therefore, this issue would not apply to this alternative. It should be noted, however, that as erosion of the shoreline continues to occur under this alternative, any materials that may be present in the fill material beneath the bike path and parking lot could continue to migrate into the ocean.

4.10.2 Mitigation Measures

The following measure is recommended for Alternatives 1-3 and 5 to ensure that contamination of nearshore ocean waters does not occur.

H-1 If potentially contaminated soil is encountered during removal of the existing shorefront bike path and parking lot, demolition/construction activities shall halt until an assessment of the soil is conducted by a qualified individual. If contamination exceeding regulatory action levels is discovered, the contamination shall be remediated in accordance with applicable regulatory requirements prior to commencing with demolition and construction.

4.11 AESTHETICS

4.11.1 Impact Analysis

In a general sense, Alternatives 1-5 would all improve visual conditions in the area by either repairing or replacing the damaged shorefront bike path and parking lot, restoring eroded portions of beach, and replacing an existing 3.0-hectare (7.3-acre) dirt parking lot with a paved lot that includes new landscaping and lighting. However, as discussed below, the various alternatives could involve removal of some existing landscaping and minor changes to views from public vantage points.

a. Landscaping. Alternatives 1-3 and 5 would remove existing landscape trees and shrubs along the north side of Shoreline Drive and could require removal of some or all of the landscape trees along the south side of Shoreline Drive. This would have a temporary negative aesthetic effect. However, based on the landscape plan for the 3.0-hectare (7.3-acre) dirt parking lot shown in the Parking Lot & Storm Drain Improvements Project Final EIR (City of Ventura, 1995, see Figure 4-3), new landscaping (trees and groundcover) would be provided along the north side of Shoreline Drive in conjunction with paving of the Fairgrounds parking lot. Implementation of this landscaping plan or current City of Ventura landscaping requirements would alleviate impacts associated with the loss of landscaping on the north side of Shoreline Drive in the long term.

Alternative 4 would involve no changes to the profile of Shoreline Drive, the bike path, or the shorefront parking lot. Alternative 6 would involve no change from present conditions. As such, neither would affect existing landscaping. The improvements to landscaping in the dirt parking lot would also probably be implemented in conjunction with Alternative 4, but no such improvements would occur under Alternative 6. Taking no action at the project site may also result in additional long-term impacts to existing landscaping as erosion of the bike path and parking lot continue in the future.

b. Views from Bike Path/Shoreline Drive. Alternatives 1-5 would all generally improve views and view access along the shoreline at Surfers Point by replacing or repairing the damaged bike path and parking lot and restoring the beach. It should be noted that the sacrificial sand dune associated with Alternative 2 and the comprehensive dune area associated with Alternative 5 could partially obscure ocean views from both the relocated bike path and Shoreline Drive. This potentially negative aspect of these alternatives is expected to more than offset the improvements associated with the alternatives given the overall enhancement to the beach and landward improvements. In addition, some viewers may find the appearance of the dune area aesthetically pleasing. Nevertheless, this is a change to the visual condition at Surfers Point that would not occur with the other alternatives.

4.11.2 Mitigation Measures

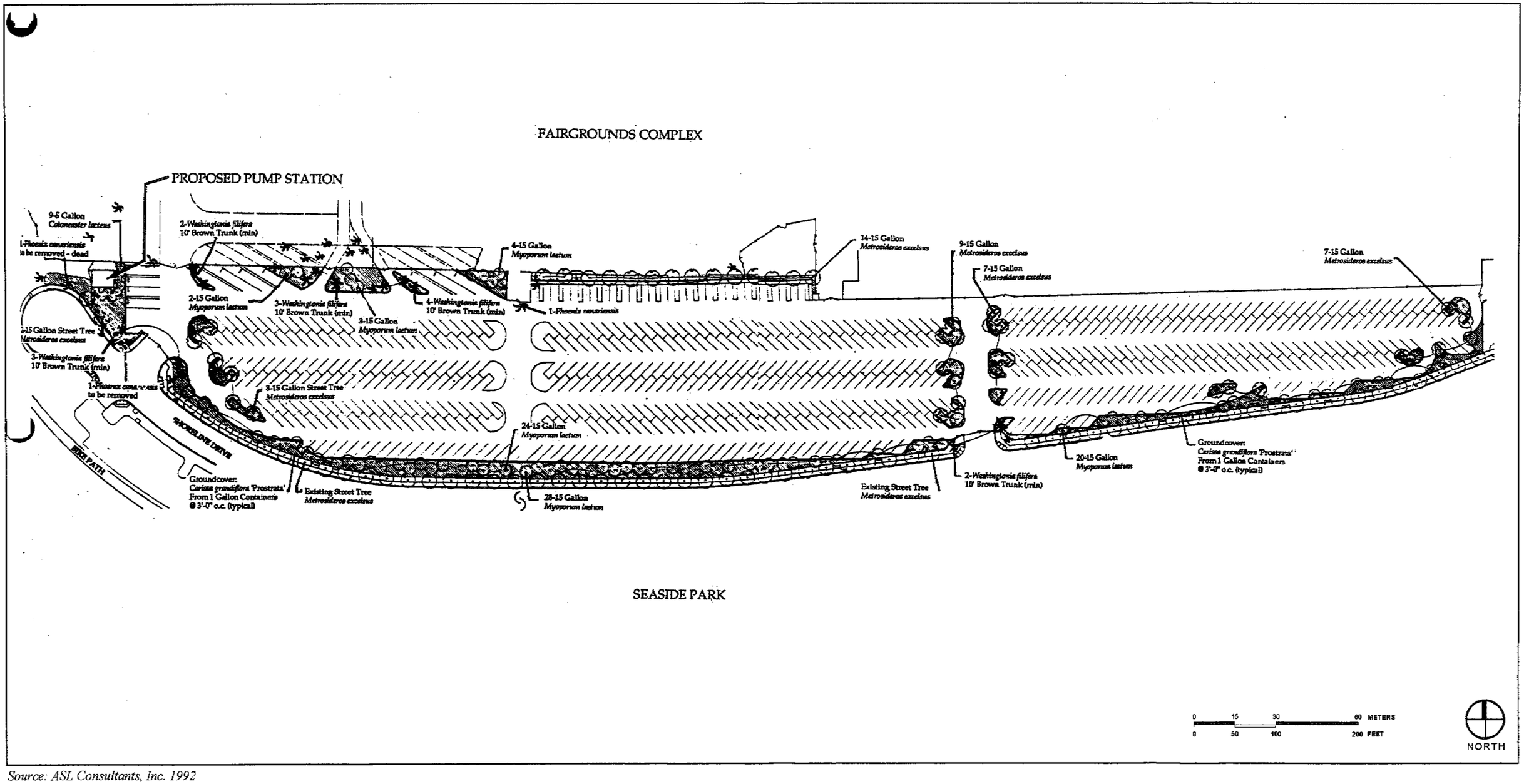
The following measure is recommended for Alternatives 1-3 and 5 to ensure that the removal of landscaping along Shoreline Drive does not create a permanent negative effect.

AES-1 For Alternatives 1-3 and 5, landscape trees and shrubs along the Shoreline Drive during construction should be replaced with appropriate landscaping as part of the final project design. For the north side of Shoreline Drive, the landscape plan should be similar in concept to that shown on Figure 4-3. For the south side of Shoreline Drive, landscaping should consist of groundcovers, shrubs, and/or tree species that would not hinder automobile parking along the south side of the street or restrict views from Shoreline Drive or access to the beach or bike path.

Additionally, although not needed as mitigation, possible loss of ocean views from the bike path associated with Alternatives 2 and 5 could be minimized by using a maximum dune elevation comparable to the elevation of the bike path.

4.12 GROWTH-INDUCING IMPACTS

Section 15126.2(d) of the *CEQA Guidelines* requires that EIRs discuss the potential for projects to induce population or economic growth, either directly or indirectly. CEQA also requires a discussion of ways in which a project may remove obstacles to growth, as well as ways in which a project may set a precedent for future growth. The following discussion applies to Alternatives 1-5. Alternative 6 would have no growth-inducing effects as there would be no change from current conditions.



Source: ASL Consultants, Inc. 1992

Conceptual Landscape Plan for Fairgrounds Parking Lot Figure 4-3

4.12.1 Population and Economic Growth

The proposed project involves efforts to restore the beach at Surfers Point through a managed shoreline retreat program and re-construction of public improvements that have been damaged in the past by shoreline erosion. By its nature, the project would not directly or indirectly generate population growth.

Beach restoration and re-construction of the public improvements in the area would directly generate temporary employment opportunities. In the long term, project implementation may increase visitor use of the Surfers Point beach, which may generate an incremental increase in economic activity at nearby commercial establishments along the beach promenade.

Improvements to the beach environment at Surfers Point may also make the area more attractive to beach-oriented commercial developers. The presence of the Ventura County Fairgrounds limits development opportunities in the immediate area, although properties south of the Fairgrounds on the south side of Figueroa Street may have development potential. It would be speculative to say whether the proposed project may induce growth in that area and, in the event that development does occur, what form it might take. As such, the environmental effects of any future growth in the area would be addressed in a separate environmental review analyzing specific future development proposals.

4.12.2 Removal of Obstacles to Growth

The proposed project involves re-construction of public improvements (bike/pedestrian path and parking lot) that have been damaged by shoreline erosion. In this way, it would remove an obstacle to the use of the Surfers Point beach and associated recreational opportunities. By improving recreational opportunities in the area, the project could potentially contribute to the pressure for increased development of beach-serving commercial facilities in the area. However, as discussed above, any physical effects associated with possible future development in the area would depend upon the nature, size, and location of such development. Environmental impacts associated with future development that may be indirectly accommodated by the proposed project would be addressed in a separate environmental review of the specific proposal.

4.12.3 Precedent Setting Potential

The proposed project involves management of the shoreline at Surfers Point and re-construction of a public bike/pedestrian path and parking facilities. The project is proposed because of the unique nature of the interface between the coast and existing developed areas at Surfers Point. Therefore, it would not set a precedent for action elsewhere in the City, although it is the City's desire that the project will set a precedent for creative approaches to shoreline management in other similar locations throughout the region.

4.13 CUMULATIVE IMPACTS

Cumulative development in the City of Ventura is described in subsection 2.8, Status of other Projects in the Area, (beginning on page 2-23) and summarized in Table 2-4. The proposed Surfers Point Managed Shoreline Retreat project is not a development per se, but rather is a

project specifically intended to improve and enhance conditions at Surfers Point by replacing an existing erosion-damaged bike path and parking lot and restoring an eroded and biologically degraded section of beach to a more natural condition. The proposed action would not generate any permanent increase in vehicle traffic, noise, or air pollution, and is anticipated to result in long-term benefits to the viability of the shorefront bike trail and to the health and desirability of the beach at Surfers Point. The only permanent physical changes associated with the proposed project are improvements to the appearance and biological and recreational functionality of Surfers Point and a possible minor increase in the deposition of sand and cobble on downdrift beaches. As such, the project is not expected to contribute to any significant negative cumulative impacts. Similarly, planning and pending developments in the City of Ventura are all infill projects that would have little or no cumulative effect on coastal processes. In combination with the future increased sediment loads associated with the possible future removal of Matilija Dam on the Ventura River, the project may contribute to the cumulative enhancement of area beaches.

5.0 DISTRIBUTION LIST AND DOCUMENT AVAILABILITY

5.1 DISTRIBUTION LIST

This section provides a list of public officials, agencies, and organizations that will receive a copy of the Notice of Availability of the Draft Environmental Impact Report (DEIR/EA).

5.1.1 Federal

National Marine Fisheries Service
Attn: Steve Meyer
650 Capitol Mall, Suite 8-300
Sacramento, CA 95814

U.S. Army Corps of Engineers
2151 Alessandro Dr. #225
Ventura, CA 93001

U.S. Fish & Wildlife Service
2493 Portola Road, Suite A
Ventura, CA 93003

5.1.2 State

CA Coastal Commission
South Central Coast Area Office
89 S. California Street
Ventura, CA 93001

CA Coastal Commission
45 Freemont Street, Suite 2000
San Francisco, CA 94105-2219

CA Dept. of Fish & Game
1933 Cliff Drive, Suite #9
Santa Barbara, CA 93109

California Regional Water
Quality Control Board
320 West 4th #200
Los Angeles, CA 90013

Governor's Office of Planning
and Research
State Clearinghouse
1400 10th Street, Room 222
Sacramento, CA 95814

State Department of Parks &
Recreation
1933 Cliff Drive, Suite 27
Santa Barbara, CA 93109

5.1.3 Regional/Special Districts

Casitas Municipal Water District
1055 Ventura Avenue
Oak View, CA 93022

5.1.4 County

County of Ventura
Resource Management Agency
800 S. Victoria Avenue
Ventura, CA 93009

Ventura County Flood Control District
800 S. Victoria Avenue
Ventura, CA 93009

5.1.5 Private Groups/Citizens

Audubon Society
P.O. Box 24198
Ventura, CA 93002

California Trout
870 Market Street, Suite 1185
San Francisco, CA 94102

Calendaria American Indian Council
1650 Palma Drive #101
Ventura, CA 93003

Downtown Community Council
Doug Halter, President
1188 Buena Vista
Ventura, CA 93001

Environmental Coalition
P.O. Box 68
Ventura, CA 93002

Environmental Defense Center
2021 Sperry Avenue
Ventura, CA 93003

Friends of the Ventura River
63 S. Olive Street
Ventura, CA 93001

Midtown Community Council
Dan Long, Chair
P.O. Box 24315
Ventura, CA 93002

Owl Clan Consultants
48825 Sapaque Road
Bradley, CA 93426-9684

Pierpont Community Council
Tim Barry, Chair
1124 Bangor Lane
Ventura, CA 93001

Surfrider Foundation
239 W. Main Street
Ventura, CA 93001

Ventura County Archaeological Society
1789 Regent Street
Camarillo, CA 93010

Ventureno Canaliano Chumash
c/o Santa Ynez Tribal Elders
345 Valley View
Santa Maria, CA 93455

Westside Community Council
Margaret Merryman
67 Carr Drive
Ventura, CA 93003

Ventura County Archaeological Society
P.O. Box 4172
Thousand Oaks, CA 91359

5.2 DOCUMENT AVAILABILITY

The Surfers Point Managed Shoreline Retreat EIR is available for public review at the following locations:

Avenue Library
606 N. Ventura Avenue
Ventura, CA 93001

H.P. Wright Library
57 Day Road
Ventura, CA 93003

E.P. Foster Library
651 E. Main St.
Ventura, California 93001

6.0 COMMENTS AND COORDINATION

6.1 NOTICE OF PREPARATION

An Initial Study prepared for the proposed project determined that the proposed Surfers Point Managed Shoreline Retreat project could result in substantial adverse effects on the environment. Therefore, this EIR has been prepared to identify and, when feasible, mitigate potentially significant impacts.

The Notice of Preparation (NOP)/Initial Study was circulated on January 30, 2001 for a public comment period that ended March 6, 2001. A public Scoping Meeting was also held on March 6, 2001 at the Ventura County Fairgrounds. This meeting was advertised in both the Ventura County Star and the Ventura County Reporter. The NOP/Initial Study and comments on the NOP are contained in Appendix A. The following issues were identified by the Initial Study and EIR scoping process as having potentially significant impacts:

- *Geophysical (coastal geology)*
- *Biological Resources*
- *Land Use/Planning*
- *Aesthetics*
- *Cultural Resources*
- *Transportation/Circulation*
- *Water*

The NOP was intended to solicit public input into the environmental document preparation process. Responses to the NOP are included in Appendix A. Table 6-1 lists the respondents and indicates where each respondent's comments are addressed in the EIR.

Table 6-1 NOP Comments Received

Respondent	Key Comments	Where Comments are Addressed in Document
Governor's Office of Planning and Research	Received the NOP on January 31, 2001 and notified reviewing agencies that they should respond within 30 days of receipt of the notice.	No response needed.
Full Sail Windsurfing Club	Requested clarification of several components of the project	Addressed in Section 2.0, *Description of Project Alternatives*
California Department of Transportation	Transportation of heavy construction equipment on state highways requires a Caltrans transportation permit; recommends that truck trips be limited to offpeak hours	Construction-related traffic impacts addressed in Section 4.8, *Parking, Beach Access, and Recreation*
County of Ventura, Resource Management Agency and Public Works Agency	No comments	
Native American Heritage Commission	Recommends preparation of a report on archaeological resources, including records search, field inventory, contract with the Native American Heritage Commission, and provisions for the discovery of archaeological resources and human remains	Addressed in Section 4.9, Archaeological Resources, and in Appendix D.
Surfrider Foundation	1. Aesthetic, biological, and geophysical impacts to the remnant dune in the western portion of the site need to be addressed	1. Addressed in Sections 4.11, *Aesthetics*, 4.3, *Biological Resources*, and 4.7, *Coastal*

Table 6-1 NOP Comments Received

Respondent	Key Comments	Where Comments are Addressed in Document
	2. Impacts relating to surface runoff, flooding, and possible surface water contamination need to be addressed 3. Impacts to recreation, including changes in surf conditions and exposure of the buried seawall, need to be addressed 4. Additional design details need to be included in the project description, including design lifespan, removal of existing fill, sources of sand and cobble, and the need for a buried seawall	*Geology*. Geophysical issues also addressed in Appendix C. 2. Addressed in Section 4.6, *Water Resources.* 3. Addressed in Sections 4.7, *Coastal Geology*, and 4.8, *Parking, Beach Access, and Recreation* 4. Addressed in Section 2.0, *Description of Project Alternatives*

Coordination with federal, state, and local agencies has occurred throughout the preparation of this document. Coordination has been established with the U.S. Army Corps of Engineers, National Marine Fisheries Service, California Coastal Commission, and California Parks Department.

6.2 NOTICE AND CIRCULATION OF DRAFT ENVIRONMENTAL DOCUMENT

A Notice of Availability (NOA) of a Draft EIR will be sent to all parties listed in Section 5.1, *Distribution List*. Copies of the Draft EIR will be distributed to those parties designated in Section 5.1, *Distribution List*, which include Federal, State, and local agencies, and political representatives. Copies of the environmental document will be made available at the City of Ventura and at local libraries, as identified in Section 5.2, *Document Availability*.

A public hearing will be held for the Surfers Point Managed Shoreline Retreat EIR. This hearing will be noticed in local newspapers and also through distribution of the NOA. After receipt of public, private, and governmental comments during the 45-day public review period on the Draft EIR, a Final Environmental Impact Report (EIR) will be prepared.

7.0 REFERENCES AND PREPARERS

7.1 REFERENCES

7.1.1 Written References

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7.1.2 Persons Contacted

Chamberlain, Ryan, California Department of Transportation
Cordero, J., National Marine Fisheries Service, Long Beach
Everts, Craig, President, Everts Coastal
Gray, Shana, California Coastal Commission
Hale, Melanie, California Coastal Commission
Hauge, R., Environmental Health Specialist, Ventura County Environmental Health Division
Helvey, Mark, National Marine Fisheries Service, Long Beach
McNeal, Spencer, U.S. Army Corps of Engineers
Moore, Jon, Noble Consultants, Inc.

7.2 EIR PREPARERS

This EIR was prepared by the City of Ventura, with the assistance of Rincon Consultants, Inc. Richard Parsons was the project manager for the City. Rincon and subconsultant staff involved in the preparation of the EIR are listed below.

Rincon Consultants, Inc.

Joe Power, AICP, Planning Manager
Duane Vander Pluym, D.ESE, Principal Biologist
Joanne Dramko, MESM, Environmental Scientist
Monica Hood, Associate
Amara Bessa, Graphics Manager

Coastal Frontiers, Inc. (Coastal Engineering issues)

Craig Leidersdorf, Principal
Dr. William McDougal, Principal
Greg Hearon, Coastal Engineer
Rick Hollar, Coastal Engineer
Laurie Ross, Office Manager

Inman and Masters Consultants (Coastal Geology issues)

Dr. Douglas Inman
Dr. Patricia Masters

Associated Transportation Engineers (Parking issues)

Scott Schell, AICP, Principal
Daryl Nelson, Engineer

Other Subconsultants

LeRay de Wit (Marine Biology issues)
Mary Maki, Conejo Archaeological Consultants (Cultural Resource issues)

Appendix A

Notice of Preparation/Initial Study, NOP Responses,
Scoping Meeting Summary

CITY OF SAN BUENAVENTURA
INITIAL STUDY/ENVIRONMENTAL ASSESSMENT

I. BACKGROUND

A. Case No.: EIR-2352

B. Lead Agency Name/Address: City of San Buenaventura
P.O. Box 99
Ventura, CA 93002

Project Manager/Telephone Number: Richard Parsons
(805) 649-9759

C. Project Applicant Name/Address: City of San Buenaventura

D. Summary/Recommendation: Based on the information contained in this Initial Study/Environmental Assessment, staff has concluded that the project may have a significant effect on the environment, and preparation of a focused **Environmental Impact Report** is recommended.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors highlighted in **bold** below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

- Aesthetics
- Agriculture Resources
- Air Quality
- **Biological Resources**
- **Cultural Resources**
- Energy/Mineral Resources
- **Geophysical**
- Hazards
- **Land Use/City, Regional Plans**
- Noise
- Population/Housing
- Public Services
- Utilities/Service Systems
- **Transportation/Circulation**
- **Water**

E. Project Scope:

1. **Location:** The project site is located at Seaside Park in the City of San Buenaventura, County of Ventura, California. The park is located along the south (seaward) side of Shoreline Drive, between Figueroa Street and the Ventura River (see Figure 1). The site consists of about 2,100 linear feet of rocky beach and various beachfront facilities, including a beachfront bicycle/pedestrian path and a surface parking lot with a total of 352 parking spaces. The bicycle/pedestrian path has been severely damaged by erosion associated with winter storms.

2. **Assessor's Parcel Number(s):** 0730231010, 0730231030

3. **Land Use Characteristics and Adjacent Land Use:** The site consists of 2,100 linear feet of rocky beachfront land and beach-oriented facilities, including a beachfront bicycle/pedestrian path and a surface parking lot with 352 parking spaces. The beachfront bicycle/pedestrian path and other improvements in the area have been severely damaged by coastal erosion.

   Immediately across Shoreline Drive from the project site are the Ventura County Fairgrounds, a multi-purpose activity center that hosts a variety of events, including the annual Ventura County Fair. To the east along the east side of Figueroa Street is Promenade Park. Further east are several multi-family residential buildings, the Seaside Promenade, and various commercial facilities, including the Holiday Inn.

   The site and surrounding area are shown on Figure 2.

4. **Comprehensive Plan Land Use Designation:** The site is designated "Fairgrounds/Public Use" under the Land Use Plan of the City of Ventura Comprehensive Plan.

5. **Current Zone or Proposed Zoning:** The site is zoned "Parks."

6. **Project Description:** The Surfers Point Managed Shoreline Retreat project would involve the removal of the existing bicycle/pedestrian path and 352-space parking lot along an approximately 2,100 long stretch of the shoreline at Surfers Point in the City of Ventura. The existing bicycle/pedestrian path would be relocated approximately 64 feet to the north (away from the ocean) and the parking lot would be replaced with approximately 169 perpendicular on-street spaces along the south side of Shoreline Drive and 75 on-street parallel parking on the north side of Shoreline Drive.

   The beach profile is proposed to be stabilized with a cobble/sand mattress. This would involve placement of imported cobble on the foreshore slope to provide a more erosion resistant beach face and establishment of a low height artificial sand dune behind the cobble mattress. Because this approach to shoreline management is experimental, a buried cutoff wall (seawall) would be constructed seaward of the bicycle/pedestrian path to guarantee protection of the path and parking areas. The cutoff wall would be roughly 20 feet in vertical height, although all but about the uppermost 3 feet would be buried beneath the cobble/sand mattress.

The project would also involve a commitment to periodic re-nourishment of cobble and sand on an as needed basis. The frequency of re-nourishment would depend upon the rate of loss of cobble and sand.

The current and post-project profiles of the beachfront area, bicycle/pedestrian path, parking areas, and Shoreline Drive are shown on Figure 3. In conjunction with the project, an approximately 300,000-square foot (6.9-acre) area of the Ventura County Fairgrounds (see Figure 2) would be paved and striped for surface parking to offset the net loss of parking associated with the removal of the existing parking lot on the south side of Shoreline Drive. Stormwater retention and filtration infrastructure would be installed to minimize the project's effect on drainage patterns.

The objectives for the project are:

- To develop a more natural approach to solving erosion problems at Surfers Point by mimicking naturally occurring coastal processes
- To maintain and improve beach access at Surfers Point
- To rebuild the coastal bicycle/pedestrian path at Surfers Point in a manner and location that will avoid future erosion-related damage without adversely affect operations at the Ventura County Fairgrounds
- To continue to provide adequate parking at Surfers Point to serve both beach users and the Fairgrounds

7. **Discretionary Permits Required:** Coastal Development Permit

8. **Approvals required by other public agencies:** (e.g., permits, financing approval, or participation agreement.)

    - Coastal Commission approval
    - Federal Highway Administration funding approval (for bicycle/pedestrian path component)
    - U.S. Army Corps of Engineers Section 404 Permit
    - Los Angeles Regional Water Quality Control Board Section 401 Permit

EVALUATION OF ENVIRONMENTAL IMPACTS:

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2) All answers must take account of the whole action involved, including offsite as well as onsite, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than

significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4) Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level.

5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063 (c)(3)(D). In this case, a brief discussion identifies the following:

   a) The earlier analysis used and where it is available for review.
   b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
   c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures, which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) The explanation of each issue should identify: a) The significance criteria or threshold, if any, used to evaluate each question; and b) the mitigation measure identified, if any, to reduce the impact to less than significant.

This Initial Study has been prepared in accordance with the CEQA Guidelines and relevant provisions of the California Environmental Act (CEQA) of 1970, as amended. Section 15063(c) of the CEQA Guidelines defines an Initial Study as the proper preliminary method of analyzing the potential environmental consequences of a project. Among the purposes of an Initial Study are:

1) To provide the Lead Agency (the City of San Buenaventura) with the necessary information to decide whether to prepare an Environmental Impact Report (EIR) or a Negative Declaration;

2) To enable the Lead Agency to modify a project, mitigating adverse impacts, thus avoiding the need to prepare an EIR (if possible); and

3) Assist in the preparation of an EIR, if one is required.

II. CONCLUSION AND ACTION TAKEN BY ENVIRONMENTAL IMPACT REPORT COMMITTEE:

On the basis of the information contained in this Initial Study/Environmental Assessment, the Environmental Impact Report Committee finds that:

____ The proposed project is EXEMPT from further CEQA review under Section ____ of the state CEQA Guidelines.

____ The project, as proposed, WOULD NOT have a significant effect on the environment, and a PROPOSED NEGATIVE DECLARATION will be prepared and forwarded to the City Council for approval of a FINAL NEGATIVE DECLARATION.

____ Although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because the attached mitigation measures and monitoring program have been added to the project. A PROPOSED MITIGATED NEGATIVE DECLARATION will be prepared and forwarded to the City Council for approval of a FINAL MITIGATED NEGATIVE DECLARATION.

____ The proposed project MAY have a significant effect on the environment and an EXPANDED INITIAL STUDY/ENVIRONMENTAL ASSESSMENT will be prepared to address:

__X__ The proposed project MAY have a significant effect on the environment and an ENVIRONMENTAL IMPACT REPORT should be prepared.

____ The proposed project is a SUBSEQUENT USE of a previously prepared EIR and any environmental impacts have been addressed in EIR-_____.

____ On the basis of the information contained in the Initial Study, and on the record as a whole, a finding has been made that there is no evidence that there will be an adverse effect on fish or wildlife habitats or resources pursuant to Section 3 of EIRC Resolution No. 93-5.

____ (Other)

Based on the information contained in this Initial Study/Environmental Assessment and the record as a whole, the Environmental Impact Report Committee took the actions noted in Section IV above on:

1-19-01
Date

Ronald J Calhoun
Environmental Impact Report
Committee Chair

This Initial Study will be used in the public review and decision-making process for the Stanley Avenue Widening Project.

Date Prepared: December 19, 2000

III. ENVIRONMENTAL IMPACT EVALUATION:

(References used to respond to the topic areas in this Section III include those that are identified by capital letters in Section VI of this Initial Study/Environmental Assessment. If emphasis is placed on a particular reference, the capital letter corresponding to that reference may be noted in parenthesis beneath each topic area heading.)

	Potentially Significant Impact	Potentially Significant Unless Mitigated	Less Than Significant Impact	No Impact
A. Aesthetics:				
Would the project:				
1. Affect a scenic route or approach or vista open to public view?	____	____	X	____
2. Create new light or glare or block access to sunlight?	____	____	____	X
3. Result in an aesthetically offensive site or condition open to public view?	____	____	____	X

Impact Discussion:

1,3. The proposed project involves restoration of an approximately 2,100 foot stretch of beach. Specifically, the project would move the existing improvements at Surfers Point, including the damaged bicycle/pedestrian path and surface parking lots, about 64 feet to the north and restore the remaining beach area to a more natural condition. The project may involve removal of existing landscape trees along Shoreline Drive. However, by replacing damaged infrastructure improvements and restoring the beach, the project would be expected to generally improve the visual condition of Surfers Point, a widely used public beach. Periodic nourishment of the beach as needed with imported cobble would be expected to maintain the improved visual condition at the site.

2. The project involves restoration of an existing beach and replacement of infrastructure that has been damaged by storm-related erosional activity. As such, it would not affect light or glare conditions in the vicinity.

Residual Impacts:

Based on the discussion, no significant impacts relating to aesthetic resources were identified for project buildout.

	Potentially Significant Impact	Potentially Significant Unless Mitigated	Less Than Significant Impact	No Impac
B. Agricultural Resources:				
Would the project:				
1. Convert prime, unique or Statewide importance farmland, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resource Agency, or involve other changes to non-agricultural use?	_____	_____	_____	X
2. Conflict with an existing agricultural zone or Williamson Act contract?	_____	_____	_____	X
3. Involve other changes to the existing environment which, due to their location or nature, could result in a conversion of farmland to non-agricultural use?	_____	_____	_____	X

Impact Discussion:

1-3. The project site is an approximately 2,100 foot stretch of beach. It does not contain any agricultural activity and is not classified as prime, unique, or statewide importance farmland by the State of California Department of Conservation. The proposed project would not conflict with any Williamson Act Contract. No impact to agricultural resources would occur.

Residual Impacts:

Based on the discussion, no significant impacts to agricultural resources were identified.

	Potentially Significant Impact	Potentially Significant Unless Mitigated	Less Than Significant Impact	No Impact
C. Air Quality:				
1. Air emissions from project: (Threshold of significance greater than 25 pounds per day [5 pounds in Ojai Airshed])	_____	_____	X	_____

a. **Threshold of significance:** 25 lbs/day

b. **Analysis Year:** 2000

c. **Land Use Category:** N/A

d. **Emission Rate ROC:** (see table below)
e. **Emission Rate NOx:** (see table below)

f. **ROC per day:** N/A

g. **NOx per day:** N/A

2. **Would the project create objectionable odors affecting a substantial number of people?**	_____	_____	X	_____
3. **Would the project expose sensitive receptors to substantial pollutant concentrations?**	_____	_____	_____	X

Impact Discussion:

1. The proposed project involves the relocation of existing infrastructure improvements and restoration of a 2,100 square foot section of beach. As such, it would not generate any increase in air pollutant emissions in the long term.

Construction activity associated with the project would generate a temporary increase in air emissions due to the use of heavy construction equipment and grading activity. However, all construction activity would be required to incorporate Ventura County Air Pollution Control District (APCD) requirements pertaining to minimizing construction-related emissions. Relevant requirements are outlined below, and are considered standard construction conditions by the City of Ventura.

- During clearing, grading, earth moving, or excavation operation, excessive fugitive dust emissions shall be controlled by regular watering, paving construction roads, or other dust preventive measures using the following procedures:

    1) *All material excavated or graded shall be sufficiently watered to prevent excessive amounts of dust. Watering shall occur at least twice daily with complete coverage, preferably in the late morning and after work is done for the day.*
    2) *All clearing, grading, earth moving, or excavation activities shall cease during periods of high winds (i.e., greater than 30 mph averaged over one hour) so as to prevent excessive amounts of dust.*
    3) *All material transported off site shall be either sufficiently watered or securely covered to prevent excessive amounts of dust.*
    4) *Facemasks shall be used by all employees involved in grading or excavation operations during dry periods to reduce inhalation of dust, which may contain the fungus that causes San Joaquin Valley Fever.*

5) *The area disturbed by clearing, grading, earth moving, or excavation operations shall be minimized so as to prevent excessive amounts of dust.*

- After clearing, grading, earth moving, or excavation operations, and during construction activities, fugitive dust emissions shall be controlled using the following procedures:

  1) *All active portions of the construction site shall be sufficiently watered to prevent excessive amounts of dust.*
  2) *All temporary roads shall be covered with gravel*
  3) *Soil binders shall be spread immediately after seeding.*
  4) *The area shall be wet down sufficiently at least twice a day, so as to form a crust on the surface with repeated soaking to maintain a crust and prevent wind erosion.*
  5) *Adjacent public thoroughfares and streets shall be swept daily.*
  6) *If construction is halted for more than 10 consecutive days, a chemical stabilizer shall be applied to graded portions of the site.*

- At all times, fugitive dust emissions shall be controlled using the following procedures:

  1) *On-site vehicle speed shall be limited to 15-mph.*
  2) *All areas with vehicle traffic shall be watered periodically.*
  3) *Use of petroleum-based dust pallatives shall meet the road oil requirements of Ventura County APCD Rule 74.4, Cutback Asphalt.*
  4) *Streets adjacent to the project site shall be swept as needed to remove silt, which may have accumulated from construction activities so as to prevent excessive amounts of dust.*

- Construction related emissions shall be controlled using the following procedures:

  1) *Construction equipment shall be maintained and adjusted to minimize emissions.*
  2) *Low-sulfur fuel (0.05 percent by weight) shall be used in construction equipment.*
  3) *Construction truck trips shall be scheduled during non-peak hours to reduce peak hour emissions.*
  4) *Construction activities shall be phased and scheduled to avoid high ozone days.*
  5) *Construction shall be discontinued during second-stage smog alerts or conditions of high winds combined with low humidity.*

b. Construction activity may generate temporary odors due to the operation of diesel equipment. However, odors would not exceed any established threshold or affect any sensitive receptors. The proposed project would not generate odors in the long-term.

c. The sensitive receptors located nearest the project site are multi-family residences located to the east along the beachfront promenade. The project would not generate emissions in the long-term, nor would it increase concentrations of pollutants in the site vicinity. Therefore, impacts to sensitive receptors are not anticipated.

Residual Impacts:

Based on the discussion, no significant impacts to air quality were identified.

	Potentially Significant Impact	Potentially Significant Unless Mitigated	Less Than Significant Impact	No Impact
D. Biological Resources:				
Would the proposal result in:				
1. A loss or disturbance to, or reduction in the numbers of, or a restriction in the range of, or any other impact to any unique, rare, threatened, or endangered species of animals, or plants, or their critical habitat?	X			
2. A loss or disturbance to, or reduction in the numbers or diversity of, or restriction in the range of any other species of animals or plants or their habitat?	X			
3. A reduction in the extent, diversity, or quality of native or non-native vegetation (including brush removal for flood control improvements)?			X	
4. Impacts to historically designated species (e. g., heritage trees) or locally designated natural communities (e.g., Sensitive Habitat)?				X
5. The loss of other healthy specimen trees?				X
6. Introduction of any factors (light, noise, human presence and/or domestic animals) which could hinder the normal activities of wildlife or cause a deterioration of their habitat?			X	
7. Impacts to wetland or riparian habitat?	X			

Impact Discussion:

1-3. Biological habitats at the project site include onshore disturbed lands, sand and cobble beach, and offshore waters. The terrestrial onshore environment consists of the paved parking lot and bikepath, landscaping planters, and limited exposed eroded dirt at the edge of the bikepath. At the location of the undermined bikepath, a stand of the noxious weed giant reed (*Arundo donax*) and tree tobacco (*Nicotiana glauca*) has become established. Other weedy species seen in this area include Russian thistle and tumbleweed (*Salsola tragus* and *Amaranthus albus*), castor bean (*Ricinus communis*), stork'sbill (*Erodium* sp.), and bermudagrass (*Cynodon dactylon*). The sandy to cobbly shore is mostly barren with some scattered native plants, including individuals of sea rocket (*Cakile maritima*), sand verbena (*Abronia maritima*), silver beachweed (*Ambrosia chamissonis*), beach primrose (*Camissonia cheiranthifolia*), and saltgrass (*Distichlis spicata*). Non-native exotics are also present in scattered locations. No sensitive plant species are known from the immediate project area, nor given the level of disturbance, are any expected.

Limited numbers of animals were observed at the site (field observations, December 1, 2000), in part due to the large number of people surfing in the water. Mammal signs included ground squirrel and pocket gopher holes in the soil areas adjacent to the bikepath. This stretch of beach is not known as a haul-out area for pinnipeds, and given the level of human disturbance, none would be expected. No reptiles were observed, though western fence lizard (*Sceloporus occidentalis*) and side-blotched lizard (*Uta stansburiana*) would be expected. Birds seen at the project site included urban-related species in the parking lot (Brewer's blackbird, common pigeon, European starling, common crow, and house sparrow) and shore species (western gull, ring-billed gull, Bonaparte's gull, Heermann's gull, and whimbrel).

The inter- and shallow subtidal habitats constitute the primary biological resources at the site. The intertidal area is used by mole crabs, clams, and polychaete worms that bury themselves in the sand and feed on particles brought in on the waves. These species in turn are fed on by shorebirds during low tide and fish during high tide. Because the project site is extensively used by humans, the ability of land-based species to feed along the shore is limited to those times when people are not present in large numbers. In addition, the mixture of sand and cobble and the strong wave energy at this site create a harsh environment that limits the numbers of animals and species. Nonetheless, the project site has the potential to provide important foraging habitat for several sensitive species, including the western snowy plover and California least tern. In addition, the adjacent rivermouth and the offshore waters may contain southern steelhead (federally listed endangered). The potential for impacts to these species will be addressed more fully in an EIR.

The coastal environment provides food resources for migratory shorebirds. These resources are important due to the high energy costs of long distance migration and the subsequent need for plentiful food. The site will be evaluated for its contribution to local migratory bird species and the possible significance of the change in coastal habitat types associated with the project.

The project site also contains food resources for fish that feed in the intertidal zone during high tide. The area has been designated as Essential Fish Habitat (EFH) by the National Marine Fisheries Service and at least four species included in the Coastal Pelagics Fishery Management Plan are expected to occur in the off-shore waters. These include (but are not necessarily limited to) northern anchovy (*Engraulis mordax*), Pacific sardine (*Sardinops sagax*), Pacific mackerel (*Scomber japonicus*), and jack mackerel (*Trachurus symmetricus*). These are all forage fishes that provide food for commercial fish species and for pelagic and

near-shore bird species, including the endangered brown pelican and endangered least tern. Further analysis of this issue will be conducted in an EIR.

The project site is an open beach environment that poses no restrictions to the movement of animals. The proposed project would result in a similar environment and no impact related to the movement of organisms is anticipated.

4,5. Small landscaping trees along the parking lot would be removed during reconstruction of the road and bike path. These trees are not native, nor are they considered specimen trees. The project plans include re-landscaping the area.

6. The project would not involve the introduction of any new human disturbance that does not already exist at the site. As noted above, the project site is a heavily used beach area with substantial human activity.

7. The project is intended to reduce shoreward erosion through the creation of a cobble shore. This would include the placement of material within the intertidal wetland environment of the beach. This may alter the characteristics of the existing beach environment and could also potentially alter the physical dynamics of the adjacent Ventura River mouth, which could affect the sensitive estuarine resources located there. This effect will be determined based on an analysis of the coastal shoreline erosion processes to be studied in an EIR.

Residual Impacts:

Based on the discussion, potentially significant impacts to biological resources could occur. Therefore, this issue will be studied in an EIR.

	Potentially Significant Impact	Potentially Significant Unless Mitigated	Less Than Significant Impact	No Impact
E. Cultural Resources:				
Would the project:				
1. Cause a substantial adverse change in or destroy or disturb important significant or unique historical, archaeological or paleontological resources, including human remains interred outside formal cemeteries?	X			
2. Affect existing religious or sacred uses within the project area?				X

Impact Discussion:

1. The project site is located in an area of high archaeological sensitivity as it borders the recorded location of archaeological site CA-VEN-3, the historic Chumash village of *Shisholop*. A city landmark, *Shisholop* is believed by some historians to be one of the Chumash villages noted in the diaries of Juan Rodriguez Cabrillo's 1542 voyage. *Shisholop* played an important role in the siting of the San Buenaventura Mission, which was originally built just north of the village site.

The proposed project would not directly affect site CA-VEN-3. However, because of the project's proximity to the archaeological site, additional analysis of the project's potential for indirect impacts will be discussed in an EIR.

2. The proposed project would not affect any known religious or sacred uses.

Residual Impacts:

Although significant impacts to cultural resources are not anticipated, the project site is in close proximity to a known archaeological site. Therefore, the potential for indirect impacts to this site will be studied further in the EIR.

	Potentially Significant Impact	Potentially Significant Unless Mitigated	Less Than Significant Impact	No Impacts
F. Energy and Mineral Resources:				
Would the project:				
1. Result in the loss of availability of known mineral resource value to the region?	_____	_____	_____	X
2. Result in the loss of availability of locally important designated mineral resource recovery site?	_____	_____	_____	X

Impact Discussion:

1,2. There are no known mineral resources on the property, as delineated on the *Ventura County General Plan Resource Protection Map* (December 1996). In addition, all project development would be required to comply with all adopted energy conservation standards, including but not limited to the Uniform Building Code, City Ordinance Code, and State regulations. Consequently, the project would not adversely affect energy or mineral resources.

Residual Impacts:

Based on the discussion, no impacts relating to energy or mineral resources were identified.

	Potentially Significant Impact	Potentially Significant Unless Mitigated	Less Than Significant Impact	No Impacts
G. Geophysical:				
1. Is the project in proximity to a known or conjectured fault?	____	____	X	____
2. Would the project result in or expose people or structures to potential impacts involving:				
a. Strong seismic ground shaking?	____	____	X	____
b. Seismic related liquefaction or other ground failure?	____	____	X	____
c. Subsidence/landslide?	____	____	X	____
d. Tsunami or seiche?	____	____	X	____
e. Expansive Soils?	____	____	X	____
3. Substantial grading or change in natural features, topography or other ground surface relief features?	____	____	X	____
a. Cubic yards of grading proposed:	*Information not available at this time.*			
4. Destruction, covering or modification of any unique geologic or physical features?	X	____	____	____
5. Removal or disturbance of beach sands?	X	____	____	____
6. Siltation, deposition or erosion which may modify the channel of a river or a stream or the bed of the ocean?	X	____	____	____

Impact Discussion:

1. Several active and potentially active faults occur in the Ventura region. However, no known faults cross through the project site and the site is not within an Alquist-Priolo Fault Studies Zone. Therefore, although the site could be exposed to moderate to strong groundshaking in the event of an earthquake, the potential for impacts due to fault rupture is considered low.

2a-e. The project site could be exposed to moderate to strong groundshaking in the event of an earthquake on any of several faults in the region. The site has a high potential for

liquefaction and low to moderate shrink-swell potential (City of Ventura, Final Master EIR, 1989). The project site is not in a hillside area and therefore is not subject to landslide hazards. As with any coastal site, the project area is susceptible to tsunamis.

The project involves restoration of a 2,100-foot stretch of beach and replacement of an existing bicycle/pedestrian path and parking lot. By its nature, the project is not a critical facility that would be subject to special siting or construction requirements because of hazards relating to seismic activity. Moreover, the nature of the project is such that it would not increase exposure to hazards relating to seismic events.

2b. According to the City's Seismic Safety Element, the site has a high potential for liquefaction. However, the project involves restoration of a 2,100-foot stretch of beach and replacement of existing infrastructure that has been damaged by erosional activity. By its nature, the project would not increase exposure to hazards relating to groundshaking.

3. The project would involve the removal of existing infrastructure and earth within an approximately 54-64 foot wide area between Shoreline Drive and the Pacific Ocean, and filling of the area with cobble material. The intent of the project is to return the beach area to a condition that will allow coastal processes to function naturally without damaging the new bicycle/pedestrian path and other infrastructure improvements. The overall effect associated with the proposed modifications is expected to be beneficial.

4-6. The project would involve the restoration of a 54-64 foot wide beachfront area to a more natural condition through removal of existing infrastructure and landscaped areas and the addition of cobble fill material. This action will modify the ocean bed in the site vicinity by creating a more natural beachfront environment that removes the current impediments to normal coastal geologic processes. By moving infrastructure improvements farther from the ocean's edge, the project would be expected to reduce the effects of coastal erosion. The project is generally expected to have a beneficial effect with respect to coastal geology as compared to existing conditions at the site. Nevertheless, the potential effects of the project on coastal geologic processes and the ability of the cobble fill material to prevent future damage to relocated infrastructure will be studied in an EIR.

Residual Impacts: Based on the discussion and required project conditions, geophysical issues relating to coastal geologic processes will be studied in an EIR.

	Potentially Significant Impact	Potentially Significant Unless Mitigated	Less Than Significant Impact	No Impact
H. Hazards:				
Would the proposal:				
1. Create a significant hazard to the public or the environment through use of, potential release of, or routine transport of hazardous materials; risk of upset or accidental	_____	_____	_____	X

explosion, or other potential health or safety hazards?				
2. **Be located in or adjacent to a fire hazard area with flammable grass, brush or trees?**	____	____	____	X

Impact Discussion:

1,2. The proposed project involves removal of existing infrastructure and beach restoration in an approximately 2,100 foot beachfront area at Surfers Point. The site is not known to contain any health or safety hazards or to have been affected by any past release of hazardous materials. No impact with respect to hazards is anticipated.

Residual Impacts: Based on the analysis, no significant impacts relating to hazards were identified.

	Potentially Significant Impact	Potentially Significant Unless Mitigated	Less Than Significant Impact	No Impact
I. **Land Use/City and Regional Plans.**				
Would the project be consistent with the following (if applicable):				
1. **City's Comprehensive Plan?**	X	____	____	____
2. **Existing zoning?**	____	____	____	X
3. **Industrial Performance Standards?**	____	____	____	X
4. **Hillside Management Program?**	____	____	____	X
5. **An adopted Specific Plan?**	____	____	____	X
6. **County or Regional Plans (North Avenue Plan, Saticoy Plan, etc.)?**	X	____	____	____

Impact Discussion:

1. The project site is designated "Fairgrounds/Public Use" under the Land Use Plan of the City of Ventura Comprehensive Plan. The proposed action would not conflict with this use.

The Resource Element and Safety Element of the Comprehensive Plan contain several policies that are potentially applicable to the proposed project. Policy 15.4 of the Resources Element and Policies 10.1 through 10.4 of the Safety Element specifically relate to management of shorelines resources. Consistency with these and other

applicable City Comprehensive Plan policies, including policies relating to the provision and maintenance of recreational facilities, will be addressed in an EIR.

2. The project site is zoned "Parks." The proposed managed shoreline retreat would not conflict with this zoning classification.

3-5. The project site is not in an area subject to the City's Industrial Performance Standards or Hillside Management Program and is not subject to the requirements of an adopted Specific Plan.

6. The project site is entirely within the Coastal Zone. As such, the project is subject to policy considerations of the Coastal Act and adopted policies of the California Coastal Commission. Consistency with applicable Coastal Act and Coastal Commission policies, including policies relating to shoreline management techniques and maintenance of beach access, will be discussed in an EIR.

Residual Impacts:

A discussion of consistency with applicable City Comprehensive Plan and Coastal Act policies will be included in an EIR.

	Potentially Significant Impact	Potentially Significant Unless Mitigated	Less Than Significant Impact	No Impact
J. Noise:				
Would the project result in:				
1. A substantial temporary, periodic or permanent increase in ambient noise level?			X	
2. Exposure of people to noise levels in excess of the established standards?				X
3. Exposure of people to excessive ground borne vibration or noise levels?				X

Impact Discussion:

1-3. Operation of heavy equipment during construction would result in temporary increases in noise in the immediate vicinity of the site. In addition, trucks hauling cobble material would temporarily increase noise along roadways serving the site, including Shoreline Drive and Figueroa Street.

Average noise levels associated with the use of heavy equipment at construction sites can range from about 78 to 88 dBA at 50 feet from the source, depending upon the types of

equipment in operation at any given time and the phase of construction. While increases in ambient noise levels could be perceived, they would be short-term and infrequent and primarily restricted to the immediate project area. Since construction-related noise would be temporary in nature and would not directly affect any sensitive noise receptors, its impact is not considered significant.

In the long-term, the proposed managed shoreline retreat would not generate any increase in noise.

Residual Impacts:

Based on discussion, no significant short-term or long-term noise impacts were identified.

	Potentially Significant Impact	Potentially Significant Unless Mitigated	Less Than Significant Impact	No Impact
K. Population and Housing:				
Would the project:				
1. Induce substantial growth or concentration of population?	_____	_____	_____	X
2. Displace existing housing, especially affordable housing?	_____	_____	_____	X

Impact Discussion:

1. The proposed project involves the restoration of an approximately 2,100 foot stretch of beach at Surfers Point and replacement of an existing bicycle/pedestrian path and parking lot. By its nature, it would not induce population growth

2. The project would not displace any existing housing.

Residual Impacts:

Based on the discussion, no significant impacts to population and housing would occur.

	Potentially Significant Impact	Potentially Significant Unless Mitigated	Less Than Significant Impact	No Impac
L. Public Services:				
Would the project have an effect on or result in a need for new or altered government services in any of the following areas?				
1. Fire protection:	____	____	____	X
2. Police protection:	____	____	____	X
3. Schools?	____	____	____	X
4. Maintenance of public facilities including roads?	____	____	X	____
5. Neighborhood or regional parks or other recreational facilities?	____	____	X	____
6. Other governmental services?	____	____	____	X

Impact Discussion:

1-3, 6. The proposed project involves the restoration of an approximately 2,100-foot stretch of beach at Surfers Point and replacement of an existing bicycle/pedestrian path and parking lot. By its nature, the project would not affect fire or police protection, schools, or other public services.

4. The proposed project would not affect road maintenance. It is expected to require periodic re-nourishment of the beach at Surfers Point. However, maintenance of the beach is part of an existing City beach maintenance program that would not be expected to adversely affect the City's ability to maintain other public facilities.

5. The proposed project would temporarily disrupt access to the beach at Surfers Point. However, in the long-term it would have a beneficial impact to recreational opportunities in the City by restoring a 2,100-foot stretch of beach and replacing the existing damaged beachfront bicycle/pedestrian path.

Residual Impacts:

Based on the discussion, no significant impacts to public services are expected.

	Potentially Significant Impact	Potentially Significant Unless Mitigated	Less Than Significant Impact	No Impact
M. Utilities and Service Systems:				
Would the project result in a need for new systems or substantial alterations to the following utilities:				
1. Power or natural gas?				X
2. Communication systems?				X
3. Local or regional water treatment or distribution facilities?				X
4. Sewer or septic systems?				X
5. Storm water drainage?			X	
6. Solid waste disposal?				X

Impact Discussion:

1-6. The proposed project is the restoration of about 2,100 linear feet of beach and reconstruction of an existing damaged bicycle/pedestrian path, and various improvements to Shoreline Drive and Ventura County Fairgrounds parking facilities. By its nature, the project would not affect power, natural gas, communications, water/sewer, or solid waste services. The elimination of paved parking areas south of Shoreline Drive and addition of paved parking areas north of Shoreline Drive on the Fairgrounds property would result in minor changes to drainage patterns in the area. However, any potential increase in runoff associated with the addition of impervious surface area at the Fairgrounds would be offset through the use of on-site retention facilities.

Residual Impacts:

Based on the discussion, significant impacts to utilities and service systems are not expected.

	Potentially Significant Impact	Potentially Significant Unless Mitigated	Less Than Significant Impact	No Impact
N. Transportation/Circulation:				
1. Generation of vehicle trips:				
ADT: N/A P.M. Peak: N/A	_____	_____	_____	X
2. Would the project further the goals of the Circulation Element, complete needed street improvements, etc.?	_____	_____	_____	X
Would the project result in:				
3. Significant on- or off-site traffic congestion?	_____	_____	_____	X
4. Impacts on or conflicts with existing air, rail, bus, bicycle, pedestrian or water transportation systems?	_____	_____	_____	X
5. Inadequate provision of required parking or impact existing parking?	_____	X	_____	_____

Impact Discussion:

1, 3. The proposed project would generate truck trips for unloading of cobble material in the short-term. However, this effect would be temporary and would not significantly affect operation of the local circulation system. In the long-term, the project would not generate vehicle trips, nor would it create any additional traffic congestion in the site vicinity.

2. The proposed project would restore a segment of the beachfront bicycle/pedestrian path that has been damaged by shoreline erosion. Because this path is identified in the bike path network in the City's Comprehensive Plan, the project would serve to further the goals of the Circulation Element.

4. The proposed project would not affect air, rail, bus, or water transportation systems. Reconstruction of the beachfront bicycle/pedestrian path would improve bike and pedestrian transportation systems and would restore a bikeway specifically identified in the City's Comprehensive Plan.

5. The project would involve the removal of 320 existing parking spaces in a surface parking lot on the south side of Shoreline Drive. These spaces would be replaced by approximately 169 perpendicular spaces on the south side of Shoreline Drive and 75 parallel on-street spaces along the north side of Shoreline Drive. In addition, an approximately 6.9-acre area on the Ventura County Fairgrounds site would be paved and used for additional parking that could serve both the Fairgrounds and beachgoers. Nevertheless, parking and beach access would

be restricted in the short-term during reconstruction of parking facilities. This temporary impact and potential measures to minimize the disruption of beach access in the area will be discussed in an EIR.

Residual Impacts:

Based on the discussion, an analysis of temporary impacts to parking and beach access will be included in an EIR.

	Potentially Significant Impact	Potentially Significant Unless Mitigated	Less Than Significant Impact	No Impact
O. Water:				
Would the project:				
1. Change absorption rates, drainage patterns or the rate and amount of surface runoff?			X	
2. Be in a flood hazard area, based on the FIRM maps?			X	
3. Cause a discharge into surface waters or alter surface water quality (e.g., temperature, turbidity)?	X			
4. Change the amount of surface water in any water body?				X
5. Change currents or the course or direction of water movements?	X			
6. Change the quantity of ground waters, either through direct additions or withdrawals or through interception of an aquifer by cuts or excavations?				X
7. Alter direction or rate of flow of groundwater?				X
8. Impact groundwater quality?				X
9. Impact the amount of water otherwise available for public supplies?				X

Impact Discussion:

1. The project would incrementally alter drainage patterns in the area by removing a paved surface parking lot on the south side of Shoreline Drive and potentially adding paved surface parking on the Ventura County Fairgrounds on the north side of Shoreline Drive. On balance, no increase in surface runoff in the area is anticipated. Any potential increase in surface flow from the Fairgrounds site would be offset through use of on-site retention facilities.

2. The project site is within flood zone V, an area of 100-year coastal flooding. However, the proposed (bicycle/pedestrian path, surface parking) are not considered critical facilities that would expose additional people to flood hazards. Moreover, by moving the bicycle/pedestrian path further from the shoreline, the potential for flood-related damage would be reduced as compared to existing conditions.

3. The proposed project would not be expected to have any adverse long-term impact to surface water quality. However, dumping of cobble material and bike path and parking lot demolition and construction could result in a temporary increase in turbidity in the near-shore areas of the Pacific Ocean. The potential temporary effects on turbidity will be discussed in the coastal geology impacts section of an EIR while the potential impacts of increased turbidity on marine biology will be discussed in the biological resources section of an EIR.

4, 6-9. The proposed project would not involve any excavation or other activity that would encroach into an aquifer. Consequently, it would not be expected to alter groundwater flow or quality. The project would not affect any public water supplies.

5. The proposed project would involve the introduction of cobble material into the Surfers Point shoreline area. The intent is to allow for a "managed shoreline retreat" that would allow coastal processes to function in a more natural manner. As such, one of the specific objectives of the project is to alter the flow of coastal waters and their effect on the beach at Surfers Point. This issue will be discussed in the coastal geology section of an EIR.

Residual Impacts:

Based on the discussion, both temporary and long-term impacts relating to alteration of surface water currents will be discussed in an EIR.

	Potentially Significant Impact	Potentially Significant Unless Mitigated	Less Than Significant Impact	No Impact
P. Mandatory Findings of Significance:				
1. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to	X			

eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

Finding Discussion:

Based on the information in this Initial Study, the proposed project could result in temporary adverse impacts to ocean water quality, with associated impacts to marine biological resources. In addition, although the project would not be expected to directly affect examples of major periods of California history or prehistory, it could have indirect effects to an identified archaeological resource located immediately east of the project site. Potential impacts to water quality and associated biological resources and potential impacts to archaeological resources will be studied in an EIR.

	Potentially Significant Impact	Potentially Significant Unless Mitigated	Less Than Significant Impact	No Impact
2. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	X			

Finding Discussion:

The proposed project involves restoration of an approximately 2,100 foot stretch of beach, reconstruction of a damaged bicycle/pedestrian path, and replacement of surface parking to be removed as part of the beach restoration. By its nature, the project is intended to improve recreational facilities in the project area and allow for better management of the shoreline in the Surfers Point vicinity. Consequently, it is not expected to contribute to any potentially significant cumulative impacts. Nevertheless, cumulative impacts will be discussed in an EIR.

Potentially Significant Impact	Potentially Significant Unless Mitigated	Less Than Significant Impact	No Impact

3. **Does the project have environmental impacts which will cause substantial adverse effects on human beings, either directly or indirectly?**	_____	X	_____	_____

Finding Discussion:

Based on the information contained in this Initial Study, the project is not expected to adversely affect human beings, either directly or indirectly. Restoration of the Surfers Point beach and reconstruction of the damaged shoreline bicycle/pedestrian path would improve recreational opportunities in the City.

IV. CIRCULATE TO THE FOLLOWING AGENCIES/PERSONS:

VENTURA COUNTY

Agricultural Commissioner	[X]	Clerk of the Board of Supervisors* (no documents)	[X]
Ventura County Flood Control District*	[X]	Local Agency Formation Commission (LAFCO)	[ ]
County of Ventura Resource Management Agency (3 copies)*	[X]	Ventura County Transportation Commission* (VCTC)	[X]

ADJACENT COUNTIES

Kern County Dept. of Planning & Development Services	[ ]	County of Santa Barbara Planning Division	[ ]
County of Los Angeles Dept. of Regional Planning Impact Analysis Section	[ ]		

ADJACENT CITIES

City of Oxnard	[ ]	City of Ojai	[ ]
City of Port Hueneme	[ ]	City of Santa Paula	[ ]
City of Camarillo	[ ]		

WATER AGENCIES

Casitas Municipal Water District	[X]	Santa Paula Basin Pumpers Association	[ ]
United Water Conservation District	[ ]	Fox Canyon GMA	[ ]

OTHER PUBLIC AGENCIES

Air Pollution Control District*	[ ]	Ventura County Organization of Governments (VCOG)	[ ]
Montalvo Municipal Improvement District	[ ]	South Coast Area Transit (SCAT)	[ ]
Solid Waste Management Dept.	[ ]	Ventura Regional Sanitation District*	[ ]
Southern Pacific Transportation Commission	[ ]	Ventura Unified School District	[ ]

LIBRARIES

Avenue Branch Library*	[X]	H.P. Wright Branch Library*	[X]
E.P. Foster Branch Library*	[X]		

STATE AGENCIES

California Coastal Commission South Central Coast Area Office	[X]	California Coastal Commission	[X]
California Dept. of Fish & Game (Santa Barbara)	[X]	Caltrans District 7 Environmental Section	[X]
Los Angeles Regional Water Quality Control Board	[X]	State Department of Parks & Recreation and Recreation	[X]
California Integrated Waste Management Board, Permits Section	[ ]	31st District Agricultural Association	[X]
Southern California Association of Government (SCAG) (3 copies)*	[ ]	State Clearinghouse (16 copies)	[X]

FEDERAL AGENCIES

U.S. Army Corps of Engineers	[X]	U.S. Fish & Wildlife Service	[X]

CITIZENS GROUPS

Audubon Society	[X]	Sierra Club	[ ]
Building Industry Association Greater Los Angeles/Ventura Region of Southern California, Inc.	[ ]	California Trout	[X]
		Surfriders Foundation	[X]
Environmental Coalition	[X]	Friends of the Ventura River	[X]
Candelaria American Indian Council	[X]	Environmental Defense Center	[X]
Ventura County Archaeological Society	[X]	Montalvo Property Owners Association	[ ]
Westside Community Council	[ ]	Foothill Road Homeowners Association	[ ]
Downtown Community Council	[X]	East Ventura Community Council	[ ]
Pierpont Community Council	[X]	Midtown Community Council	[ ]

***THESE AGENCIES ALWAYS RECEIVE MAILOUT ITEMS**

V. LIST OF REFERENCES:

These references, and those previously cited within the text of this Initial Study/Environmental Assessment, are intended to provide a list of Supporting Information Sources and/or evidence staff has relied upon in completing this document and in reaching the conclusions contained herein. In addition, the materials that were submitted by the applicant have also been used in completing this document.

If any person or entity reviewing this Initial Study/Environmental Assessment has a question regarding the supporting information source and/or evidence, they may contact the staff planner at the address and telephone number noted on the front page of this document during the public review period.

A. *Comprehensive Plan, including all technical appendices, maps, and the Environmental Impact Report (EIR-1895) - City of San Buenaventura, 1989.*

B. *Initial Study Assessment Guidelines – Ventura County, 1992.*

C. *Joe Power, Rincon Consultants, Site visit. December 2000.*

D. *Zoning Ordinance, including all maps and the Negative Declaration (EIR-2010) - City of San Buenaventura, 1992.*

E. *County-wide Solid Waste Management Plan - Ventura County Solid Waste Management District, 1985.*

F. *Air Quality Mitigation Program - City of San Buenaventura, 1993.*

G. *Noise Ordinance - City of San Buenaventura.*

H. *Federal Emergency Management Agency (FEMA) MAPS, 1987.*

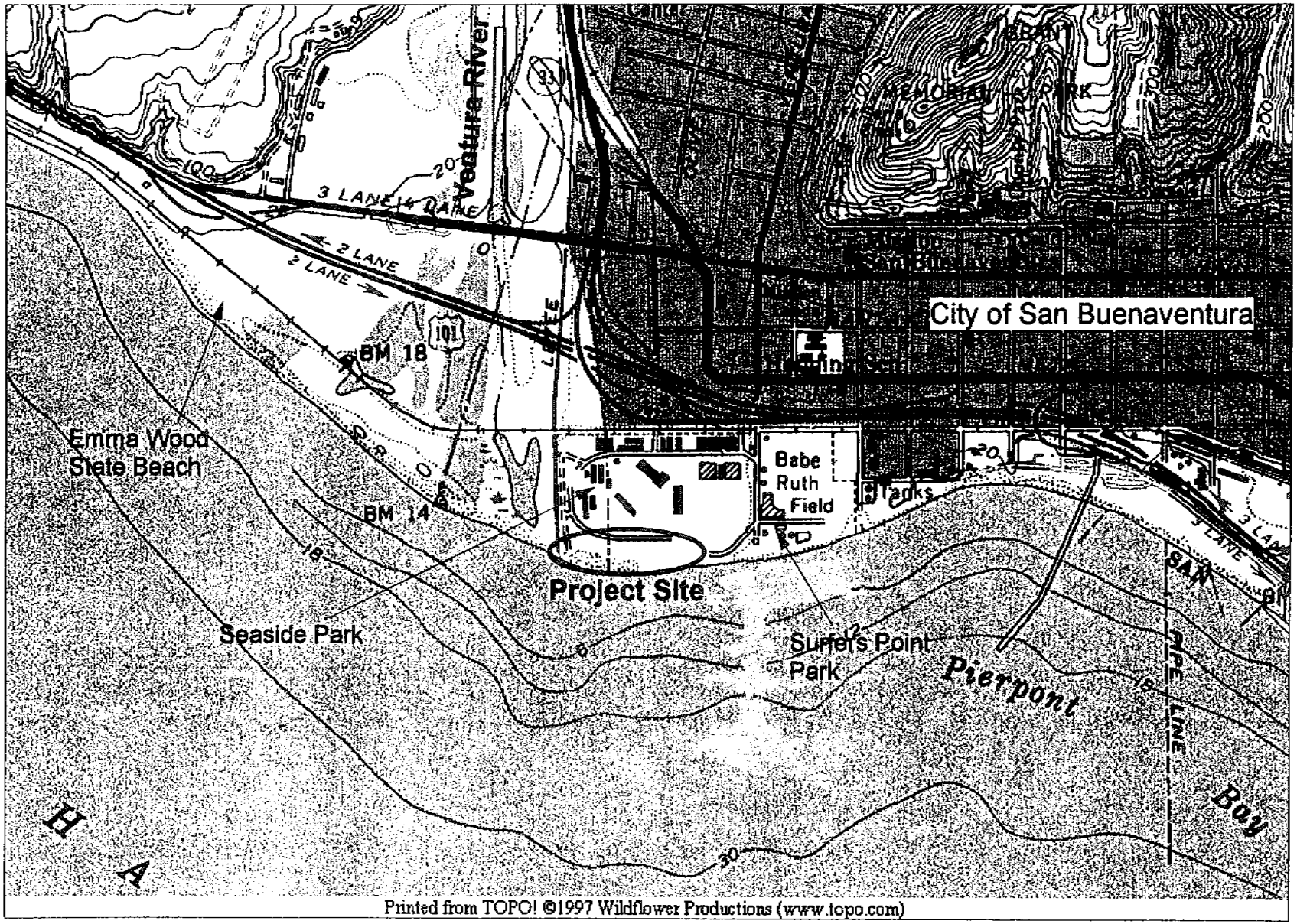
I. *City of Ventura Grading Ordinance 95-25.*

J. *Uniform Building Code*

K. *Noble Consultants, Inc., Surfers Point Park Managed Plan for Shoreline Retreat, December 2000.*

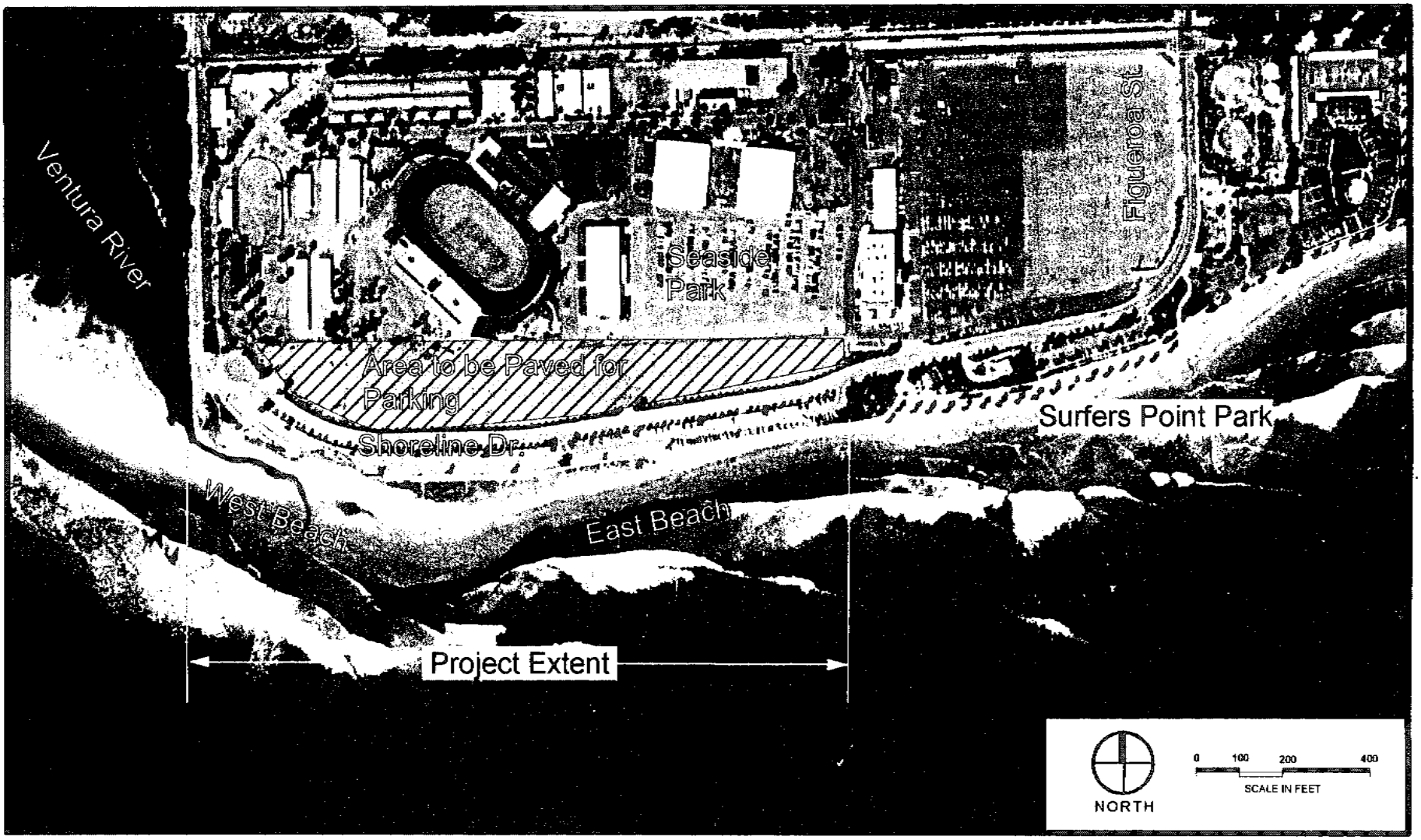
VI. PERSONS AND/OR AGENCIES CONSULTED DURING PREPARATION OF THIS INITIAL STUDY/ENVIRONMENTAL ASSESSMENT:

Person	Agency	Date
Spencer MacNeal	U.S. Army Corps of Engineers	12/00
Maurice Zarbi	California Department of Transportation	12/00



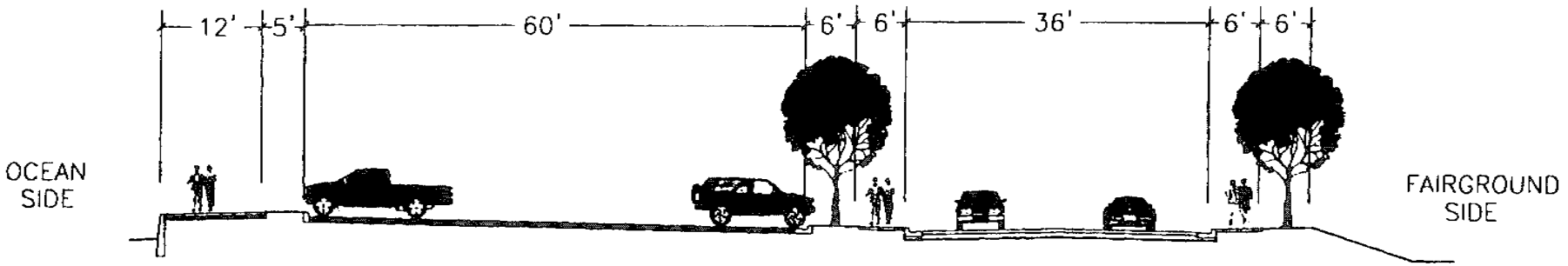
Surfers Point and Vicinity

Figure 1

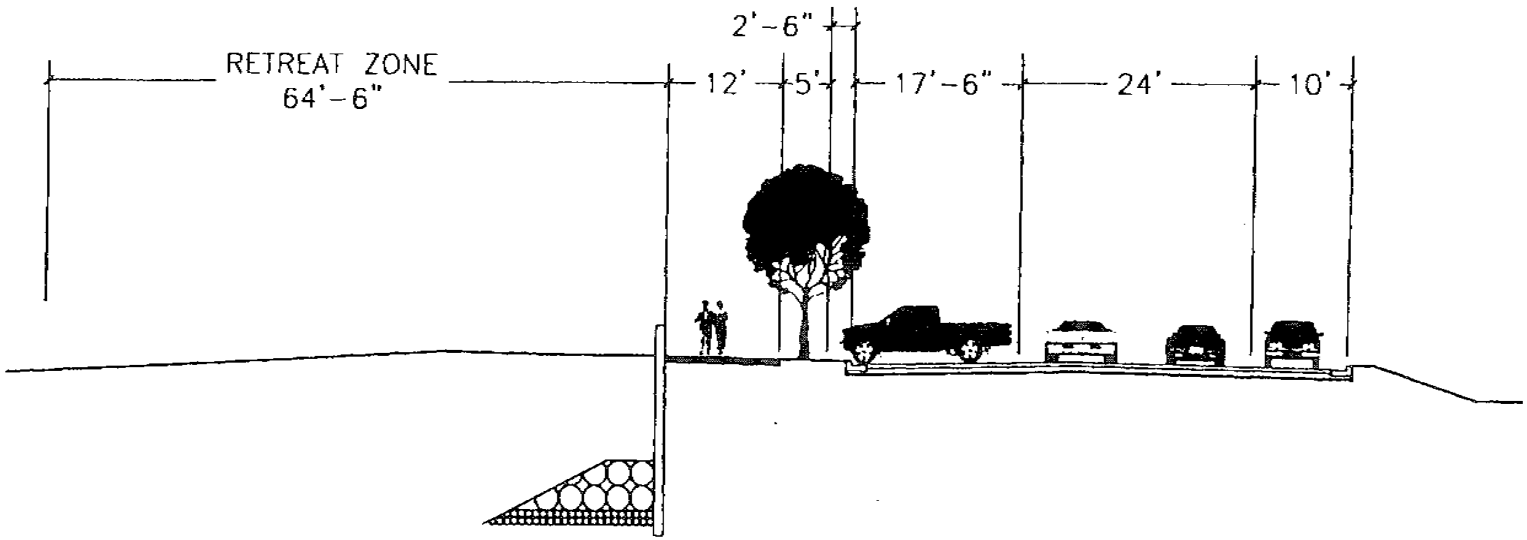


Aerial View of Surfers Point

Figure 2



EXISTING CONDITIONS



REVISED SEASIDE PARK PLAN

Source: Noble Consultants Inc., December 2000

Existing & Proposed Profile of Public Improvements

Figure 3

Rng

STATE OF CALIFORNIA

Governor's Office of Planning and Research

State Clearinghouse

Gray Davis
GOVERNOR

Steve Nissen
ACTING DIRECTOR

Notice of Preparation

RECEIVED
FEB 06 2001
PLANNING DIV.

January 31, 2001

To: Reviewing Agencies

Re: Surfers Point Managed Shoreline Retreat
SCH# 2001011129

Attached for your review and comment is the Notice of Preparation (NOP) for the Surfers Point Managed Shoreline Retreat 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:

Richard Parsons
City of San Buenaventura
P.O. Box 99
San Buenaventura, CA 93002-0099

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
Project Analyst, State Clearinghouse

Attachments
cc: Lead Agency

Document Details Report
State Clearinghouse Data Base

SCH#	2001011129
Project Title	Surfers Point Managed Shoreline Retreat
Lead Agency	San Buenaventura, City of
Type	NOP Notice of Preparation
Description	The Surfers Point Managed Shoreline Retreat project would involve the removal of the existing bicycle/pedestrian path and 352-space parking lot along an approximately 2,100 long stretch of the Shoreline at Surfers Point in the City of Ventura. The existing bicycle/pedestrian path would be relocated approximately 64 feet to the north (away from the ocean) and the parking lot would be replaced with approximately 169 perpendicular on-street spaces along the south side of Shoreline Drive and 75 on-street parallel parking on the north side of Shoreline Drive.

Lead Agency Contact

Name	Richard Parsons		
Agency	City of San Buenaventura		
Phone	805 649-9759	**Fax**	
email			
Address	P.O. Box 99		
City	San Buenaventura	**State** CA **Zip**	93002-0099

Project Location

County	Ventura		
City			
Region			
Cross Streets	Shoreline Drive, Figueroa Street		
Parcel No.	0730231010,0730231030		
Township	**Range**	**Section**	**Base**

Proximity to:

Highways	
Airports	
Railways	
Waterways	Ventura River
Schools	
Land Use	The site is designated "Fairgrounds/Public Use" under the Land Plan of the City of Ventura Comprehensive Plan.

Project Issues Other Issues; Agricultural Land; Geologic/Seismic; Landuse; Traffic/Circulation; Water Quality

Reviewing Agencies Resources Agency; Department of Boating and Waterways; California Coastal Commission; Department of Conservation; Office of Historic Preservation; Department of Parks and Recreation; Department of Fish and Game, Region 5; Department of Fish and Game, Marine Region; Native American Heritage Commission; State Lands Commission; Caltrans, District 7; California Highway Patrol; Regional Water Quality Control Board, Region 4

Date Received 01/31/2001 **Start of Review** 01/31/2001 **End of Review** 03/01/2001

Note: Blanks in data fields result from insufficient information provided by lead agency.

FULL SAIL WINDSURFING CLUB

2/5/01

Richard Parsons (Project Manager)
City of San Buenaventura
501 Poli Street
P.O. Box 99
Ventura, CA 93002-0099

response to Initial Study/Environmental Assessment for Surfers Point Managed Shoreline Retreat

The Initial Study/Environmental Assessment for Surfers Point Managed Shoreline Retreat, dated January, 2001, looks promising.

Please address the following concerns we have with respect to the report.

1.) On page 2, item #6 **Project Description**, paragraph two; there is no description of the "buried cutoff wall (seawall)". Is it a straight wall, curved, step... ? All it says is that it "...would be roughly 20 feet in vertical height,..."

2.) On page 21, under **Impact Discussion**, item #5; isn't all the parking going to be perpendicular on the "north side" of Shoreline Drive?

3.) Figures 1 and 2 need to show the project extending South to Figuroa.

4.) Figure 3 needs to show shape(s) of proposed buried cutoff wall (seawall).

Derek Turner (President)
Full Sail Windsurfing Club

Full Sail Windsurfing Club (FSWC) 367 Meredith Avenue, Ventura, California, 93003 Voice- (805) 642-4422 Fax- (805) 642-4422
E-mail fswc@iwindsurf.com
Homepage- http://www.fullsailwindsurfingclub.org

STATE OF CALIFORNIA -- BUSINESS AND TRANSPORTATION AGENCY GRAY DAVIS, Governor

DEPARTMENT OF TRANSPORTATION
OFFICE OF ADVANCE PLANNING
DISTRICT 7, IGR OFFICE 1-10C
120 SOUTH SPRING STREET
LOS ANGELES, CA 90012
TEL: (213) 897-6536 ATSS: 8-647-6536
FAX: (213) 897-8906

Mr. Richard Parsons
City of San Buenaventura
P.O.Box 99
San Buenaventura, CA. 93002-0099

RE: IGR/CEQA No. 010225NY
Surfers Point Managed
Shoreline Retreat
Vic. VEN./ 101/30.91
SCH# 2001011129

February 26, 2001

Dear Mr. Parsons:

Thank you for including the California Department of Transportation (Caltrans) in the environmental review process for the proposed development of Surfers Point Managed Shoreline Retreat in the City Of San Buenaventura.

We would like to remind you that any transportation of heavy construction equipment and/or materials which requires the use of oversized-transport vehicles on State highways will require a Caltrans transportation permit. We recommend that large size truck trips be limited to off-peak commute periods.

If you have any questions regarding this response, you can reach me at (213) 897-4429 and refer to IGR/CEQA No. 010225NY.

Sincerely,

STEPHEN J. BUSWELL
IGR/CEQA Program Manager
Transportation Planning Office
Caltrans, District 7

RESOURCE MANAGEMENT AGENCY

county of ventura

Planning Division

Keith A. Turner
Director

March 1, 2001

Richard Parsons
San Buenaventura, CA

FAX #: 654-7800

Subject: Surfers Point Managed Shoreline Retreat

Thank you for the opportunity to review and comment on the subject document. Attached are the comments that we have received resulting from intra-county review of the subject document.

Your proposed responses to these comments should be sent directly to the commentator, with a copy to Joseph Eisenhut, Ventura County Planning Division, L#1740, 800 S. Victoria Avenue, Ventura, CA 93009.

If you have any questions regarding any of the comments, please contact the appropriate respondent. Overall questions may be directed to Joseph Eisenhut at (805) 654-2464.

Sincerely,

Brian Smith, FOR

Keith Turner
County Planning Director

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Attachment

County RMA Reference Number 01-007

PUBLIC WORKS AGENCY
TRANSPORTATION DEPARTMENT
Traffic and Planning & Administration

MEMORANDUM
February 16, 2001

TO: Resource Management Agency, Planning Division
Attention: Joseph Eisenhut

FROM: Nazir Lalani, Principal Engineer NL

SUBJECT: Review of Document 01-007
Initial Study and Notice of Preparation of an Environmental Impact Report()
for Surfers Point Managed Shoreline Retreat
Lead Agency: The City of San Buenaventura

The Transportation Department has completed the review of the subject Initial Study and Notice of Preparation of an Environmental Impact Report. The proposed project involves solving erosion problems at Surfers Point, maintain and improve beach access, rebuild the coastal bicycle/pedestrian path and provide adequate parking. The project is located at the Seaside Park in the City of San Buenaventura.

We do not have any comments at this time. However we would like to review the EIR when it becomes available.

Please call me at 654-2080 if you have questions.

c: Jim Myers

NL-RH-BB-AB:kw
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STATE OF CALIFORNIA Gray Davis, Governor

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-4082
(916) 657-5390 - Fax

February 8, 2001

Richard Parsons
City of San Buenaventura
P.O. Box 99
San Buenaventura, CA 93002-009

RE: SCH# 2001011129 – Surfers Point Managed Shoreline Retreat

Dear Mr. Parsons:

The Native American Heritage Commission has reviewed the above mentioned NOP. To adequately assess the project-related impact on archaeological resources, the Commission recommends the following action be required:

- ✓ Contact the appropriate Information Center for a records search. The record search will determine:
  - Whether a part or all of the project area has been previously surveyed for cultural resources.
  - Whether any known cultural resources have already been recorded on or adjacent to the project area.
  - Whether the probability is low, moderate, or high that cultural resources are located within the project area.
  - Whether a survey is required to determine whether previously unrecorded cultural resources are present.
- ✓ If an archaeological inventory survey is required, the final stage of is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
  - Required the report containing site significance and mitigation be submitted immediately to the planning department.
  - Required site forms and final written report be submitted within 3 months after work has been completed to the Information Center.
- ✓ Contact the Native American Heritage Commission for:
  - A Sacred Lands File Check.
  - A list of appropriate Native American Contacts for consultation concerning the project site and assist in the mitigation measures.
- ✓ Provisions for accidental discovery of archeological resources:
  - Lack of surface evidence of archeological resources does not preclude the existence of archeological resources. Lead agencies should include provisions for accidentally discovered archeological resources during construction per California Environmental Quality Act (CEQA) §15064.5 (f).
- ✓ Provisions for discovery of Native American human remains
  - Health and Safety Code §7050.5, CEQA §15064.5 (e), and Public Resources Code §5097.98 mandates the process to be followed in the event of an accidental discovery of any human remains in a location other than a dedicated cemetery and should be included in all environmental documents.

If you have any questions, please contact me at (916) 653-4040.

Sincerely,

Rob Wood

Rob Wood
Associate Governmental Program Analyst

CC: State Clearinghouse

Surfrider Foundation

March 12, 2001

Richard Parsons, Project manager
City of San Buenaventura
P.O Box 99
Ventura, CA 93002

RE: Surfers Point Managed Shoreline Retreat – Initial Study/Environmental Assessment

Dear Mr. Parsons,

Thank you for the opportunity to review and comment on the Surfers Point Initial Study. As you know, the Ventura County Chapter of the Surfrider Foundation has been a member of the "Surfers Point Working Group" since its inception. This beach is the most popular recreational area in the city, and deserves the best restoration effort possible. We are proud of the progress made to date, and we commend the working group for its successful consensus on this project.

We would like to express our enthusiastic support for the "Managed Retreat" concept. We look forward to this long-term solution to the problems at Surfers Point. Relocating the bike path and infrastructure landward will solve the principle cause of the erosion problem and allow the dynamic littoral zone to function unhindered. This high profile project reflects a precedent setting approach to shoreline erosion. If well designed, the restored Surfers Point will undoubtedly serve as an example for other beach communities worldwide.

However, the project proposal as currently presented lacks many details that could have a significant influence on the ultimate success of the project. In fact, it will be difficult to provide an accurate evaluation of the environmental impacts without a final design. Recognizing the role of the EIR in addressing all potential environmental impacts from this project, we encourage an iterative process whereby the design details are worked out in conjunction with the EIR to reach a final design.

While many of the potentially significant environmental impacts of this project have been identified in the Initial Study, we would like to point out some additional areas of concern that should be addressed in the EIR:

1. **Remnant dunes near the rivermouth:** The City of Ventura, the State Fairgrounds, the Coastal Conservancy, the State Department of Parks, and the Ventura Chapter of the Surfrider Foundation made an informal agreement that this area in the vicinity of the rivermouth was "Sensitive Habitat". A grant from the Coastal Conservancy was obtained to protect the dune area and to educate the public about the ecological significance and importance of this rare Southern California river-ocean-dune habitat. For more than 8 years,

the signage indicating sensitive habitat and fences to minimize pedestrian impacts have been diligently maintained by Surfrider Foundation volunteers.

This dune area is a prominent feature of the Ventura rivermouth, and remains in existence despite several severe winter storms over the past decade. The proposed "cobble mattress" and regrading in this vicinity could have potentially significant impacts to these dunes, the beach, and the existing cobble substrate that makes up the delta near the rivermouth. This is not reflected in the Initial Study, and findings of potentially significant impacts should be considered as follows:

A. Aesthetics –1,3- This portion of the rivermouth area has significant aesthetic appeal to beach users, and the proposed imported cobble berm could adversely affect the naturally sandy beach and dunes.

D. Biological Resources – 4 – Although the Initial Study references the high use of this area, it has been designated "Sensitive Habitat". Although the project has the potential to enhance the habitat benefits of this area, the potential for significant impacts does exist as mentioned above.

G. Geophysical – 3 - Substantial grading or change in the natural features of this remnant dune area has potentially significant impacts to the geophysical processes in this area. Impacts from the proposed buried seawall and the potential for its exposure in the future should also be addressed. The effects of the levee extension, which essentially acts as a jetty with associated downdrift impacts, also needs to be considered in the overall design.

2. **Surface Runoff:** The Initial Study implies that the net increase in paved area is insignificant. Although a significant area of pavement will be removed with the project, the area to be paved within the Fairgrounds is larger and has very different geographical characteristics than the existing parking lot near the beach. The potential impacts to surface water are significant:

O. Water - 1, 2, 3, 5 - The parking lot to be removed is essentially the backshore of the beach, with runoff currently being directed toward storm drains on Shoreline Drive. The project will result in a more natural cobble and sand surface, so that future runoff will migrate through the soil toward the beach. In the past, large quantities of fill material were deposited in this area, much of it with possible contaminants. The EIR should address the presence of this material to ensure adequate mitigation measures.
The parking lot planned for the Fairgrounds area also has potentially significant impacts. Because of its low-lying location in historical wetlands, this area is prone to chronic flooding. The change in absorption rate upon paving this site will increase the flood hazard and affect coastal water quality with discharges of this water into the coastal zone unless mitigated.

3. **Recreational resources:** The initial study does not mention the recreational resources of Surfers Point. This regional park provides the most popular and utilized recreational resources within the City of Ventura. In addition to the bike path, which also serves walkers and runners, the beach itself provides the most popular surfing and windsurfing resource in Ventura County:

   L. Public Services – 5 –Potential impacts to the quality of the surfing wave and access to the waters edge may occur with the creation of an artificial cobble berm. Similarly, the proposed buried seawall would have a significant impact should it become exposed in the future. This recreational resource should be considered in the EIR.

   G. Geophysical – 3 - Substantial grading or change in the natural features of the shoreline has potentially significant impacts to the recreational resource. The surfing wave, a recreational resource for which Surfers Point is named, could potentially suffer if the dynamics that create the bottom contours are affected by regrading/removing the existing sand and cobble beach and dunes. Impacts from the potential exposure of the buried seawall should also be addressed.

In addition, the following details should also be considered in the final project design:

1. **Future Renourishment:** The project description includes a "sacrificial dune field" and "a commitment to periodic renourishment". This implies the potential for future erosion, possibly back to the "buried seawall". This brings up several issues that the coastal studies and final design should address:

   a) Design lifespan – The projected lifespan and justification of design parameters for the cobble and dune features should be defined.

   b) Existing fill – The existing parking lot is constructed upon approximately 4 feet of artificial fill. This material consists of a variety of soils and debris that is not suitable for beach replenishment (i.e. glass, steel, soils from oil fields, etc). The artificial beach near the bathrooms serves as a clear example of shoreline recession exposing inappropriate fill. It would be prudent to excavate the entire area beneath the parking lot. Filling this void with cobble and sand will ensure that any future erosion will feed beach quality material into the littoral zone.

   c) Sources of sand and cobble – The recent cobble project in this area illustrates the potential for this type of renourishment using native materials from the Ventura River watershed. Similar native sources of sand and cobble should be used for this project. One potential could be the sediments trapped behind Matilija Dam.

      Another consideration when selecting source material should be grain size. For instance, cobble is technically defined as less than 8" in diameter, but the recent

cobble project included boulders up to 2 feet in diameter. At what point does a "cobble berm" become a "revetment"?

d) Buried seawall – We understand the concept of the buried seawall as a "silent sentinal", but why a wall and not an alternative such as a boulder-cobble core or a geotube core that provides greater permeability? What are the design parameters for this structure? And if this structure becomes exposed in the future, what is the fiscal and jurisdictional mechanism to ensure a "commitment to future replenishment"?

2) Other Design Details:

a) Backshore Design – The ultimate functional and aesthetic appeal of the entire project will rely upon the landscape design for the area between the bike path and the high water line. The drawings presented provide no indication of what will occur in this area other than the small dune field. Neither the horizontal area 25.5' wide, nor the vertical cross section beneath the parking lot has yet been defined.

The opportunity to create a functional and aesthetically appealing landscape should not be neglected. The dunes should be vegetated with native dune plants, walkways should be established to funnel pedestrian traffic, and this should all be integrated with the natural contours of the beach and the constructed contours of the bike path.

b) Removal of submerged infrastructure – To the extent possible, all nonfunctioning infrastructure should be removed from the nearshore area. This should include all outfall pipes that present a current and future hazard to recreation in shallow waters.

The Surfrider Foundation is proud to be a part of this project. Careful consideration of the issues outlined above will ensure that residents and visitors to Ventura will have a beautiful, safe recreational beach for generations to come.

Thank you for this opportunity, and we hope these comments are helpful during the scoping phase of the EIR.

Sincerely,

A. Paul Jenkin
M.S. Ocean Engineering
Chair, Surfrider Foundation, Ventura County Chapter

Cc: Joe Power (Rincon Consultants Inc.)

Surfers Point Managed Shoreline Retreat
EIR Scoping Meeting

March 6, 2001, 6:00 PM

Meeting Summary

The City of San Buenaventura (Ventura) held an Environmental Impact Report (EIR) Scoping Meeting at 6 PM on March 6, 2001 for the Surfers Point Managed Shoreline Retreat project. The meeting was held in the Derby Club Director's Room at the Ventura County Fairgrounds, 10 W. Harbor Boulevard in the City of Ventura.

The meeting was attended by twelve individuals plus City staff and consultants. Meeting attendees included a representative of Senator Jack O'Connell's office, a representative of the local Surfriders Foundation chapter, a City Parks Department representative, two representatives of the 31st Agricultural District (County Fairgrounds), and several community members. The primary purpose of the meeting was to explain the concept for the project to the community and receive comments on the proposed scope of the EIR.

The EIR consultant gave an approximately 15-minute presentation explaining the California Environmental Quality Act (CEQA) environmental review process, the nature of the project being proposed, the issues to be analyzed in the EIR, and the tentative environmental review schedule (a copy of the presentation is attached). Issues planned for further analysis in the EIR include: (1) coastal processes and erosion; (2) biological resources; (3) parking and beach access; (4) archaeological resources; and (5) consistency with City and Coastal Commission shoreline management policies.

Following the consultant presentation, meeting attendees asked several questions and offered several comments on the project and EIR. The major points potentially relating to the EIR analysis are summarized below.

- A commentor asked whether the parking lot on the Fairgrounds property would be available to beach users. A 31st Agricultural District representative explained that parking would be primarily for Fairgrounds users but that beachgoers paying the parking fee could use the lot.
- A commentor suggested that making Fairgrounds parking available to beach users could increase impacts to sensitive biological habitats because of increased human activity.
- A commentor asked whether the City would charge for proposed on-street parking. The City's project manager explained that there is no plan to charge for parking.
- A commentor asked what is proposed in a 25.5 foot area between the proposed sand dunes and seawall. The EIR consultant explained that the area in question is presumed to be covered with sand, but that this point will be verified and clarified in the Draft EIR.
- A commentor suggested that the shape of the seawall should be something other than a straight, vertical wall for aesthetic purposes. It was explained that all but about the top two feet of the wall would be buried beneath the cobble mattress and sand.

- A commentor stated an opinion that beach access needs to be maintained. It was explained that the intent is to maintain access and that, in the event that a major storm exposes large portions of the wall, it is the City's intent to renourish the area with additional cobble and sand as soon as feasible.
- A commentor asked whether removal of Matilija Dam would be considered in the analysis. The coastal engineer for the EIR team explained that dam removal would likely increase the flow of sand and cobble material to Surfers Point, the timing of dam removal is uncertain at this point; therefore, the potentially beneficial effect of removing the dam will not be presumed in the EIR analysis.
- A commentor suggested that adequate space to get in and out of cars needs to be maintained on the north side of Shoreline Drive. It was explained that, although the sidewalk on the north side of the street is planned to be removed, space for loading and unloading of cars will be maintained.
- A commentor noted that Matilija Dam is a possible source of cobble. It was explained that the City will consider several sources for cobble including Matilija Dam.
- A commentor asked what quality of sand will be used to create the dune habitat. The project manager for the City explained that beach sand, not construction sand, would be used.
- A commentor asked whether details about the treatment at either end of the project would be available in the Draft EIR (how the project would tie into the beach profile at the eastern end of the site, for example). It was explained that any additional details available at the time of EIR publication will be included in the document. It was also explained that some of the design details would likely be finalized at a later date, but that the EIR would provide design recommendations to avoid environmental effects.
- A commentor asked whether erosional and biological impacts associated with project construction would be considered in the EIR. The EIR consultant explained that the document would address construction-related impacts.
- A commentor asked what will be done with existing fill material to be removed, noting that oil field drill mud and clay fines exist in the area. It was explained that the method of disposal of fill material will depend upon the nature of the material removed. Any material encountered with the potential to pose a hazard would be removed prior to placement of cobble.
- A commentor suggested that water quality impacts associated with runoff from the road and the new parking lot should be addressed in the EIR. The EIR consultant noted that the EIR will address these issues.

The meeting last approximately 1-1/2 hours and adjourned at approximately 7:30.

Appendix B

List of Bird Species

Appendix A. Bird Species Observed in Project Vicinity, December 2000

Common Name	Scientific Name	Audubon Winter (Christmas) Count December 30, 2000 *			Project Site 12/01/00 **
		River Mouth & Beach	Offshore	Adjacent Upland Habitats	
Red-Throated Loon	*Gavia stellata*		x		
Pacific Loon	*Gavia pacifica*		x		
Pied-Billed Grebe	*Podilymbus podiceps*	x			
Western/Clark's Grebe	*Aechmophorus occidentalis/Clarkii*		x		
Brown Pelican	*Pelecanus occidentalis*		x		
Double-Crested Cormorant	*Phalacrocorax auritus*	x	x		
Brandt's Cormorant	*Phalacrocorax penicillatus*		x		
Pelagic Cormorant	*Phalacrocorax pelagicus*		x		
Great Blue Heron	*Ardea herodias*	x			
Great Egret	*Ardea alba*	x			
Snowy Egret	*Egretta thula*	x			
Brant	*Branta bernicla*	x			
Mallard	*Anas platyrhynchos*	x			
Gadwall	*Anas strepera*	x			
Redhead	*Aythya americana*	x			
Lesser Scaup	*Aythya affinis*	x			
Common Goldeneye	*Bucephala clangula*	x			
Red-Breasted Merganser	*Mergus serrator*	x			
Ruddy Duck	*Oxyura jamaicensis*	x			
White-Tailed Kite	*Elanus leucurus*			x	
Cooper's Hawk	*Accipiter cooperii*			x	
-Shouldered Hawk	*Buteo lineatus*			x	
Red-Tailed Hawk	*Buteo jamaicensis*			x	
Sora	*Porzana carolina*	x			
American Coot	*Fulica americana*	x			
Black-Bellied Plover	*Pluvialis squatarola*	x			
Killdeer	*Charadrius vociferus*	x			
Willet	*Catoptrophorus semipalmatus*	x			
Spotted Sandpiper	*Actitis macularia*	x			
Whimbrel	*Numenius phaeopus*	x			x
Marbled Godwit	*Limosa fedoa*	x			
Ruddy Turnstone	*Arenaria interpres*	x			
Black Turnstone	*Arenaria melanocephala*	x			
Surfbird	*Aphriza virgata*	x			
Sanderling	*Calidris alba*	x			
Least Sandpiper	*Calidris minutilla*	x			
Long-Billed Dowitcher	*Limnodromus scolopaceus*	x			
Bonaparte's Gull	*Larus philadelphia*				x
Heermann's Gull	*Larus heermanni*	x	x		x
Ring-Billed Gull	*Larus delawarensis*	x	x	x	x
California Gull	*Larus californicus*	x	x	x	
Herring Gull	*Larus argentatus*	x			
Western Gull	*Larus occidentalis*	x	x		x
Glaucous-Winged Gull	*Larus glaucescens*	x			
Elegant Tern	*Sterna elegans*		x		
k Dove	*Columba livia*			x	x
a's Hummingbird	*Calypte anna*			x	
Downy Woodpecker	*Picoides pubescens*			x	
Black Phoebe	*Sayornis nigricans*	x		x	

Appendix A. Bird Species Observed in Project Vicinity, December 2000

Common Name	Scientific Name	Audubon Winter (Christmas) Count December 30, 2000 *			Project Site 12/01/00 **
		River Mouth & Beach	Offshore	Adjacent Upland Habitats	
Say's Phoebe	*Sayornis saya*			x	
Western Scrub-Jay	*Aphelocoma californica*			x	
American Crow	*Corvus brachyrhynchos*	x		x	x
Bushtit	*Psaltriparus minimus*			x	
Bewick's Wren	*Thryomanes bewickii*			x	
House Wren	*Troglodytes aedon*			x	
Ruby-Crowned Kinglet	*Regulus calendula*			x	
Blue-Gray Gnatcatcher	*Polioptila caerulea*			x	
Hermit Thrush	*Catharus guttatus*			x	
Wrentit	*Chamaea fasciata*			x	
California Thrasher	*Toxostoma redivivum*			x	
American Pipit	*Anthus rubescens*	x		x	
European Starling	*Sturnus vulgaris*			x	x
Orange-Crowned Warbler	*Vermivora celata*			x	
Yellow-Rumped Warbler	*Dendroica coronata*			x	
Townsend's Warbler	*Dendroica townsendi*			x	
Common Yellowthroat	*Geothlypis trichas*			x	
Spotted Towhee	*Pipilo maculatus*			x	
California Towhee	*Pipilo crissalis*			x	
Savannah Sparrow	*Passerculus sandwichensis*			x	
Song Sparrow	*Melospiza melodia*	x		x	
Lincoln's Sparrow	*Melospiza lincolnii*			x	
White-Crowned Sparrow	*Zonotrichia leucophrys*			x	
Red-Winged Blackbird	*Agelaius phoeniceus*	x		x	
Brewer's Blackbird	*Euphagus cyanocephalus*	x		x	x
House Finch	*Carpodacus mexicanus*	x		x	
Lesser Goldfinch	*Carduelis psaltria*			x	
American Goldfinch	*Carduelis tristis*			x	
House Sparrow	*Passer domesticus*				x

* Observers: Duane Vander Pluym and David Vander Pluym

** Observer: Duane Vander Pluym

Appendix C

Coastal Engineering Review

COASTAL FRONTIERS | *Inman and Masters Consultants*

Surfers Point Cobble Test Section on December 1, 2000

COASTAL ENGINEERING REVIEW OF THE PLAN FOR MANAGED SHORELINE RETREAT AT SURFERS POINT

Prepared for:

Rincon Consultants, Inc.
Ventura, California

Coastal Frontiers Corporation
9420 Topanga Canyon Blvd, Suite 101
Chatsworth, CA 91311-5759
(818) 341-8133 Fax (818) 341-4498

Surfers Point Cobble Test Section on December 1, 2000

COASTAL ENGINEERING REVIEW OF THE PLAN FOR MANAGED SHORELINE RETREAT AT SURFERS POINT

Prepared for:

Rincon Consultants, Inc.
Ventura, California

Coastal Frontiers Corporation
9420 Topanga Canyon Blvd, Suite 101
Chatsworth, CA 91311-5759
(818) 341-8133 Fax (818) 341-4498

CFC-474-00

COASTAL ENGINEERING REVIEW OF THE PLAN FOR MANAGED SHORELINE RETREAT AT SURFERS POINT

Prepared for:

Rincon Consultants, Inc.
Ventura, California

Prepared by:

Craig B. Leidersdorf
Coastal Frontiers Corporation
Chatsworth, California

Dr. Douglas L. Inman
Dr. Patricia M. Masters
Inman and Masters Consultants
La Jolla, California

May 2001

EXECUTIVE SUMMARY

This report presents a coastal engineering review of the Plan for Managed Shoreline Retreat at Surfers Point in the City of San Buenaventura. The work was undertaken for Rincon Consultants, Inc., to provide technical support for the preparation of an Environmental Impact Report (EIR).

In 1995, the "Surfers Point Working Group" was convened to develop a long-term plan for shoreline preservation at the project site. The findings of this body were utilized by Noble Consultants (2000) to develop three conceptual design alternatives that are presented in "Surfers Point Park Managed Plan for Shoreline Retreat". To accomplish the objectives developed by the Working Group, the three conceptual design alternatives all include demolishing an existing bike path and parking lot to create a 64½-foot "retreat zone", constructing a new bike path and parking facilities landward of the retreat zone, and installing shore protection to prevent erosion from damaging the new improvements. Differences are confined to the method of shore protection, which consists of a buried seawall under Alternative 1, a buried seawall plus cobble mattress under Alternative 2, and an engineered cobble berm under Alternative 3.

In the course of analyzing the potential impacts of Alternatives 1 through 3, we identified a fourth approach warranting consideration. This approach, termed Alternative 4, consists of reinforcing an existing cobble berm test section and extending it to the west on an as-needed basis to protect the existing bike path and parking lot.

The principal findings of our analysis are summarized below:

1. ***Shoreline Position***: The shoreline at Surfers Point fluctuates widely with the episodic transport of sand from the Ventura River. Flood years bring more sand than the waves can transport, forming an accretionary bulge that is moved easterly along Surfers Point in the form of a traveling accretion wave. During dry years, the beach often disappears. Thus, there is no single, natural position for the shoreline at Surfers Point. Rather, a shoreline that fluctuates episodically within a broad range constitutes the natural condition.

2. ***Project Objective***: The wide fluctuation in historical shoreline positions at the project site implies that a managed retreat of 64½ ft serves little practical purpose. We therefore recommend that primary emphasis be placed on other objectives, such

as protecting the upland improvements during episodes of erosion, rather than on establishing a narrow retreat zone of arbitrary size.

3. ***Cobble Berm Test Section:*** A cobble berm test section was constructed at Surfers Point in Fall 2000. That portion of the berm with a slope of 5(H):1(V) remained stable under the moderate wave conditions that prevailed during the 2000-01 winter storm season. Although the ability of the test section to withstand more extreme wave conditions remains to be demonstrated, the long-term stability of a natural cobble berm at Emma Wood State Beach suggests that the experimental berm, if supplemented in deficient areas and properly nourished, will provide effective shore protection. Continued monitoring is strongly recommended to document the performance of the berm under a variety of winter and summer wave conditions.

4. ***Evaluation of Alternatives:*** Each of the four conceptual alternatives under consideration for the Surfers Point project area, if implemented in accordance with the mitigation measures recommended in this report, will protect the upland improvements without exerting significant negative impacts on coastal processes. Based solely on coastal engineering considerations, Alternative 4 (As-Needed Extension of Existing Cobble Berm) represents the best option because it results in minimum disturbance of the existing shorefront and minimum cost. Alternative 1 (Buried Seawall behind Retreat Zone) and a slightly modified version of Alternative 3 (Cobble Berm) will create greater disturbance due to the relocation of the existing bike path and parking lot, but offer opportunities for recreation on a sandy beach surface. Alternative 2 (Cobble Mattress with Sacrificial Dune) represents the least suitable option because the disturbance and cost associated with installing a cobble mattress and sacrificial dune in addition to a substantial buried seawall are not warranted by the anticipated benefits.

5. ***Prerequisites for Design:*** For this CEQA/NEPA environmental review, the alternatives under consideration were conceptual in nature. Prior to finalizing the design for any of the four alternatives, the following issues should be addressed:

    - *Design Life*
    - *Design Water Level*
    - *Design Wave Conditions*
    - *Budget of Sediment*

6. ***Cobble Berm Material:*** If a cobble berm or mattress is installed at the project site, material of relatively uniform size will provide greater stability than material composed of a wide range of sizes. Uniform size leads to greater porosity and permeability, resulting in reduced wave runup and backwash. Silt and sand can be tolerated in limited quantities, because they will be removed from the berm by wave impact. Gravel and small cobble sizes less than about 4 inches in diameter should be excluded, however, to avoid clogging the berm void spaces and to minimize the tendency toward ballistic behavior under storm conditions.

7. ***Project Boundaries:*** Regardless of the alternative selected for final design and implementation, particular care should be exercised to insure that continuous, appropriate shore protection extends beyond the east and west project boundaries. At the western end, the shore protection system should tie into the river jetty. It should be recognized that if the jetty foundation is insubstantial, this structure could be undermined during episodes of severe erosion. At the arbitrary boundary that constitutes the eastern end of the project area, the shore protection system should be extended to the east to prevent degradation from flanking erosion.

TABLE OF CONTENTS

EXECUTIVE SUMMARY i
TABLE OF CONTENTS iv
LIST OF TABLES v
LIST OF FIGURES vi
LIST OF PLATES vii

1. INTRODUCTION 1

2. COASTAL PROCESSES 5
   - 2.1 Coastal Setting 5
   - 2.2 Tidal Datums and Sea Level Change 7
   - 2.3 Wave Climate 8
   - 2.4 Streamflow and Sediment Flux 8
   - 2.5 Budget of Sediment 9

3. COBBLE BERMS 14
   - 3.1 Natural Cobble Berms 14
   - 3.2 Engineered Cobble Berms 17
   - 3.3 Surfers Point Test Section 21

4. EVALUATION OF ALTERNATIVES 27
   - 4.1 Alternative 1: Buried Seawall behind Retreat Zone 27
   - 4.2 Alternative 2: Cobble Mattress with Sacrificial Dune 31
   - 4.3 Alternative 3: Cobble Berm 36
   - 4.4 Alternative 4: As-Needed Extension of Existing Cobble Berm 40
   - 4.5 Comparative Evaluation 44

5. CONCLUSIONS AND RECOMMENDATIONS 47
6. REFERENCES 50

APPENDIX A Comments on Cobble Berm Design Guidelines

APPENDIX B: Profiles through Surfers Point Cobble Berm Test Section

LIST OF TABLES

Title		Page No.
Table 1.	Streamflow and Sediment Flux for the Ventura River, 1969-1995	10
Table 2.	Annotated Bibliography of Studies Pertaining to Natural and Engineered Gravel-Pebble-Cobble Berms	18

LIST OF FIGURES

Title		Page No.
Figure 1.	Project Location Map	2
Figure 2.	Aerial View of Surfers Point Project Area	3
Figure 3.	Estimated Budget of Sand for Surfers Point for Dry and Flood Years of the Ventura River	12
Figure 4.	Winter Profiles of Cobble Berm with Summer Changes Associated with Onshore Migration of Sand Blanket	15
Figure 5.	Comparison of Historical Beach Profiles through Emma Wood State Beach Natural Cobble Berm	17
Figure 6.	Alternative 1: Buried Seawall behind Retreat Zone	28
Figure 7.	Comparison of Existing and Proposed Improvements under Alternatives 1 through 3	29
Figure 8.	Alternative 2: Cobble Mattress with Sacrificial Dune	32
Figure 9.	Alternative 3: Cobble Berm	37
Figure 10.	Modified Alternative 3: Cobble Berm	41
Figure 11.	Alternative 4: Extension of Existing Cobble Berm	42

LIST OF PLATES

Title		Page No.
Cover	Surfers Point Cobble Test Section on December 1, 2000	
Plate 1.	Accretion Wave of River Sediment Extending Easterly from the Ventura River Jetty on May 4, 2001	6
Plate 2.	Details of the Cobble Berm Fronting the Spit Shown in Plate 1	6
Plate 3.	Natural Cobble Berm at Emma Wood State Beach on December 1, 2000	16
Plate 4.	Surfers Point Cobble Berm Test Section on December 1, 2000	22
Plate 5.	Surfers Point Cobble Berm Test Section on March 6, 2001	22
Plate 6.	Surfers Point Cobble Berm Test Section on May 4, 2001	23
Plate 7.	Fines to 18-Inch Material above Limit of Frequent Wave Runup on Cobble Test Section at Station 18+50	24
Plate 8.	2-Inch to 12-Inch Material in Wave-Washed Portion of Cobble Test Section at Station 18+50	24

COASTAL ENGINEERING REVIEW OF THE PLAN FOR MANAGED SHORELINE RETREAT AT SURFERS POINT

1. INTRODUCTION

This report presents a coastal engineering review of the Plan for Managed Shoreline Retreat at Surfers Point in the City of San Buenaventura. The work was undertaken for Rincon Consultants, Inc., to provide technical support for the preparation of an Environmental Impact Report (EIR).

As illustrated in Figure 1, the project site is located on the east side of a coastal promontory created by the Ventura River Delta. It is bounded by the river on the west, Surfers Point Park on the east, and Seaside Park (also known as the Ventura County Fairgrounds) on the north. The site extends approximately 1,800 ft along the coast, and contains beachfront improvements that include a bicycle/pedestrian path ("bike path") and a surface parking lot. Farther inland, the site encompasses Shoreline Drive (a city street) and approximately 7.3-acres of unpaved parking area in the Ventura County Fairgrounds. The locations of these features are shown in Figure 2, which also displays the eastern boundary of the project site (Station 21+50), and the two coastal segments known as East and West Beach.

The bike path, parking lot, and Shoreline Drive were constructed in 1989 as part of the Fairgrounds Master Plan. Soon thereafter, storm waves began eroding the adjacent beach. This erosional trend ceased in 1995 with the arrival of a large quantity of sediment from the Ventura River, but not before nearly 400 lineal ft of the bike path had been undermined (Figure 2).

In 1995, the "Surfers Point Working Group" was convened to develop a long-term plan for shoreline preservation. The findings of this body were utilized by Noble Consultants (2000) to develop three conceptual design alternatives that are presented in "Surfers Point Park Managed Plan for Shoreline Retreat". The report, hereafter referred to as the "Noble Report", serves as the point-of-beginning for the analysis presented herein.

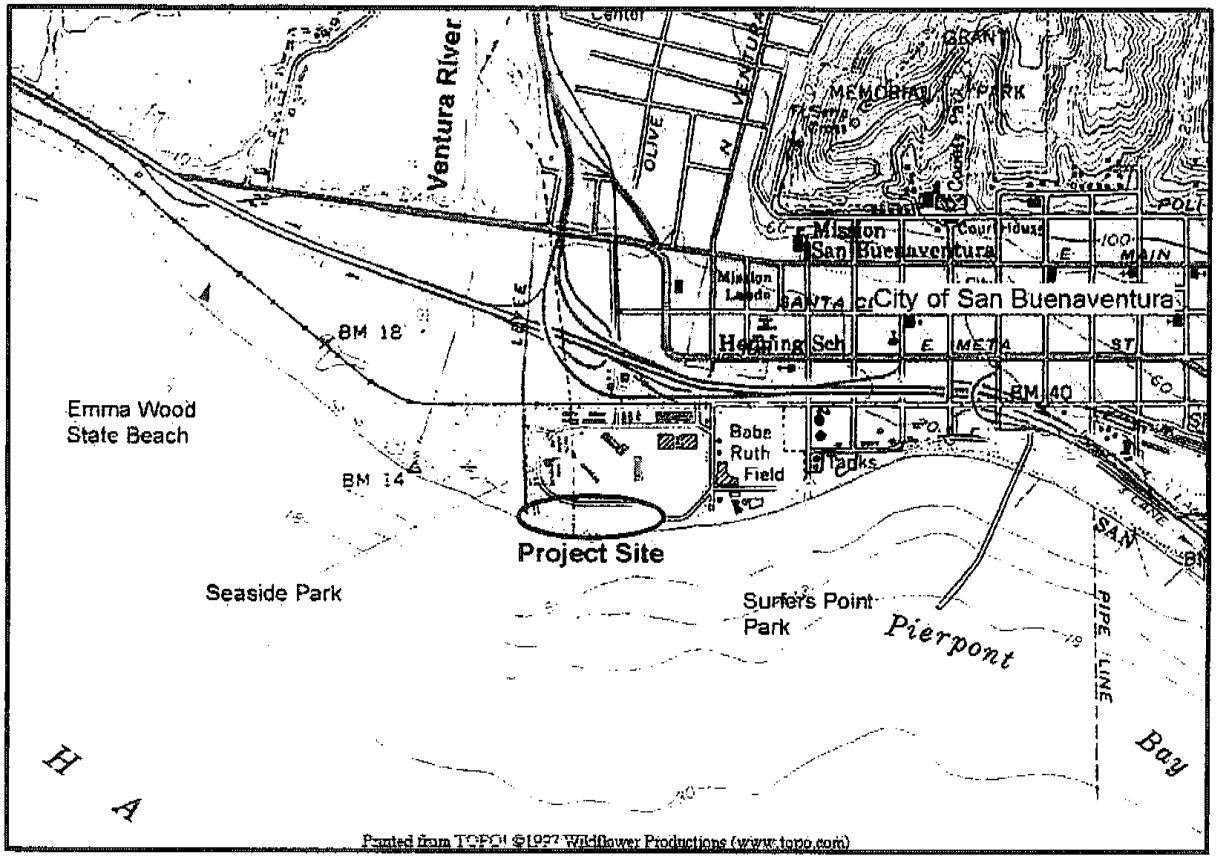


Figure 1. Project Location Map

As discussed in the Noble Report, the Working Group established four objectives for improving the project area:

1. Relocating the bike path and parking lot farther inland;
2. Preserving public access via Shoreline Drive;
3. Restoring the lands seaward of Shoreline Drive to a more natural beach habitat;
4. Providing permanent protection for Seaside Park and all improvements landward of Shoreline Drive.

In keeping with these objectives, the three conceptual design alternatives all include demolishing the existing bike path and parking lot to create a 64½-foot "retreat zone", constructing a new bike path and parking facilities landward of the retreat zone, and installing shore protection to prevent erosion from damaging the new improvements. Differences are confined to the method of shore protection, which consists of a buried seawall under Alternative 1, a buried seawall plus cobble mattress under Alternative 2, and an engineered cobble berm under Alternative 3. Additional details are provided in the Noble Report.

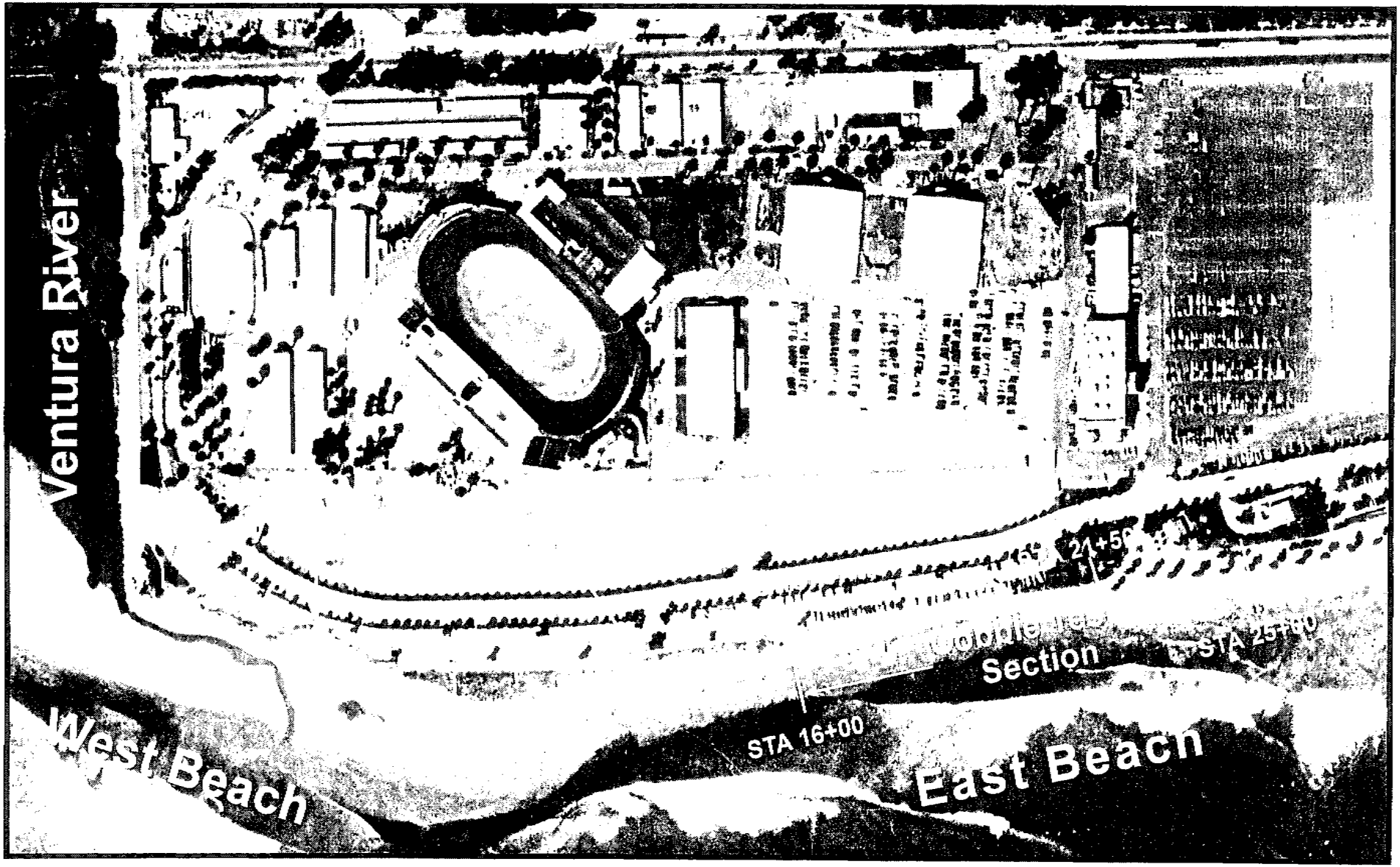


Figure 2. Aerial View of Surfers Point Project Area

In the course of analyzing the potential impacts of Alternatives 1 through 3, we identified a fourth approach warranting consideration. This approach, termed Alternative 4, consists of reinforcing an existing cobble berm test section and extending it to the west on an as-needed basis to protect the existing bike path and parking lot.

This report provides background information on the coastal environment at the Surfers Point project site and an evaluation of the four conceptual design alternatives. Section 2 presents an overview of the relevant coastal processes, and Section 3 discusses natural cobble berms, engineered cobble berms, and the Surfers Point Cobble Berm Test Section. The positive and negative impacts of the four conceptual design alternatives are assessed in Section 4, followed by conclusions and recommendations in Section 5. References are listed in Section 6. It should be noted that the analysis presented here is limited solely to coastal engineering considerations. No attempt has been made to evaluate the adequacy of upland improvements such as the bike path and parking facilities, or to address the social, political, and economic considerations that are critical to the development of a successful project.

2. COASTAL PROCESSES

2.1 Coastal Setting

Surfers Point is a south-facing beach on the eastern protrusion of the delta of the Ventura River. It is situated in the central portion of the Santa Barbara Littoral Cell, where a littoral cell is a coastal compartment that contains a complete cycle of sediment including sources, transport paths, and sinks. The Santa Barbara Littoral Cell extends from Point Conception to Point Mugu, a distance of 96 miles. This is the longest cell in southern California and includes a variety of coastal type and shoreline orientation. The State of California (1977) *Assessment and Atlas of Shoreline Erosion* lists Surfers Point as having cobble beaches partially protected by concrete rubble fronting shoreline facilities subject to damage from wave action.

The physiography of the Santa Barbara Littoral Cell suggests that it contains at least two subcells with different beach conditions: one west of the Ventura pier and the other continuing to the southeast of the pier. The western subcell is cliffed and contains pocket beaches with natural downcoast control points where small headlands act much like groins. The sediment in this coastal section is supply limited, as evidenced by the presence of areas where the sand cover is thin to absent, particularly downcoast of the headlands. The prevailing waves traveling easterly down the "slot" between the mainland and the Channel Islands cause the sand transport to be strongly to the east, with few reversals. The occasional reversal in wave direction moves sand adjacent to the downcoast point of each pocket beach to a temporary position upcoast of that point. This is likely the reason for the wide beach just east of Coal Oil Point (Isla Vista) that appeared in 1965 and was gone by 1967.

The west subcell, including Surfers Point, is a region of active accretion/erosion waves caused by episodic deposition at stream deltas and sporadic erosion and sand accretion at coastal structures (Inman, 1987). Photos show that the accretion wave from the February 1969 flood deposit off the Ventura River had reached Ventura Pier by May 1969, and its maximum effect was centered at the pier by November 1969. The erosion shown by the beach profiles obtained at the Ventura Pier, beginning in the winter of 1983, appears to be the gradual attenuation of the sand accretion waves that followed the heavy rainfall year of 1982-83 (Noble, 1989, Figure 7-3).

Plates 1 and 2 display an accretion wave that is currently moving eastward along the project site. Formed during the winter of 2000-01 in response to moderate rainstorms, the wave is recognizable as a spit that extends east from the river jetty. As seen in Plate 2, the spit is composed of gravel and cobble material as well as sand.

Plate 1. Accretion Wave of River Sediment Extending Easterly from the Ventura River Jetty (foreground) on May 4, 2001. Spit extension and coalescence with the beach has trapped ponded water

Plate 2. Details of the Cobble Berm Fronting the Spit Shown in Plate 1.

Impressive shoreline changes are known to have occurred within the historic past along the coastal zone from Ventura Pier to Oxnard Shores. For example, the U.S. Army Corps of Engineers, Los Angeles District (USACE LAD, 1961) reported that "a sea cliff, about 75 ft high and about one-half mile inland from the shoreline marks the limit of shore retreat during recent time. The backshore area, which was relatively narrow in 1855, became exceptionally wide after the floods of 1914 and 1916. The widened area was subdivided as the Pierpont Bay development in 1926." Comparative surveys show that the shoreline at a point which is now the south jetty of Ventura Marina was 650 ft seaward of its 1855 position in 1938. Following the 1939 floods, the shoreline accreted and was still 1,000 ft seaward of the 1855 position in 1948. The survey of 1959-61 shows it to have been 650 ft seaward of the 1855 shoreline.

2.2 Tidal Datums and Sea Level Change

All wave driven coastal processes operate relative to the basic datum of mean sea level (MSL), with variations about this datum governed by the astronomical tide and by water level anomalies resulting from storm surge and phases of the El Niño/Southern Oscillation (ENSO). Tide gage records at Santa Barbara, Rincon Island, and Ventura have been intermittent in recent years. Consequently, the tidal datum for Surfers Point (Ventura) was determined by comparison of 13 years of overlapping data between Rincon Island and Los Angeles Outer Harbor, obtained from the NOAA web site (NOAA, 1998; Flick, *et al.*, 1999; R.E. Flick and S.A. Jenkins, personal communication).

The diurnal tidal range, the difference between mean higher high water (MHHW) and mean lower low water (MLLW), is about 5.4 ft (1.65 m) at Ventura. During strong El Niño events as in 1983, warm surface water increases sea level by about 0.6 ft (0.2 m), while strong onshore winds may increase water level about 0.5 ft (0.15 m). The maximum observed sea level measured at La Jolla, California, in August 1983 was 2.4 ft (0.7 m) above MHHW, where the diurnal range is also 5.4 ft (1.65 m). These water level fluctuations are superposed on a general sea level rise of 0.75 ft (0.23 m)/century based on tide gage records from 1925-1999 taken at the ocean pier at La Jolla, California. The last 20 years of the record show an increase of about 1 ft (0.3 m)/century (Flick, *et al.*, 1999). On the other hand, the limited records for Ventura and Santa Barbara suggest that coastal uplift is about equal to sea level rise in the Santa Barbara Channel region, which is part of the tectonically active Transverse Ranges province (Inman and Jenkins, 1999; Pinter, *et al.*, 2001). Hence, while tectonic activity raises concerns about seismic activity, it also appears to remove sea level rise as a major design consideration for the Surfers Point project area.

Coastal construction is often related to the National Geodetic Vertical Datum (NGVD) of 1929, a fixed datum relative to land-based benchmarks. In the Ventura area, NGVD is about 0.1 ft (3 cm) above MSL.

2.3 Wave Climate

Definitive studies of wave climate, sediment transport, and the budget of sediment at Surfers Point are required before proceeding with the design of remedial measures for controlling coastal erosion. In the absence of these essential studies, a summary of the available literature, and inferences made from basic principles, are presented below.

A wave climate study for Surfers Point should be based on deep-water wave statistics obtained from a detailed database such as the Coastal Data Information Project (CDIP, 1995; 2001). When these deep-water waves are shoaled over the bathymetry of the Santa Barbara Channel (e.g., CSLC, 1979) using refraction/diffraction programs (e.g., Dalrymple, *et al.*, 1984), a wave climate applicable to Surfers Point is obtained. To acquire a first order understanding of wave conditions at the project site, we identified several typical wave conditions from the CDIP database and processed them using the above procedure. The bathymetry of the Santa Barbara Basin trends approximately 100°- 280° True. It was found that deep-water waves with periods of 12 seconds and heights of 6.6 ft (2 m) traveling from 280°T refract around the bulge of the Ventura River delta and approach the beach at Surfers Point from 230°T with breaker heights of about 8.2 ft (2.5 m). These waves break at Surfers Point, where the shoreline trends about 85°-275° T, with breaker angles of about 45-55°, transporting large volumes of sand along the shore and providing the good rides that surfers prefer.

The potential longshore sand transport rate for 8.2 ft (2.5 m) high waves breaking with an angle of 45° to the shore is about 209,000 yd^3 (160,000 m^3) per day on a sand beach where the supply of sand is unlimited. Where the supply of sand is limited, as along beaches underlain by cobbles, the transport cannot exceed the available supply of sand. These 8.2-ft waves typically last about one day and waves of similar intensity occur a number of times during the winter, suggesting that a rough estimate of the potential net longshore transport at Surfers Point may be about 1.3 million yd^3/yr (one million m^3/yr) to the east.

2.4 Streamflow and Sediment Flux

The streamflow and sediment flux patterns of small California rivers are linked to the El Niño/Southern Oscillation (ENSO) cycle, which recurs every 3 to 7 years. The El Niño intensity has increased during the last 30 years, producing a wet climate in comparison to the previous 30 years of relatively dry climate. These climate changes are in general agreement

with the Pacific/North American (PNA) decadal climate pattern in central and southern California: a dry climate extending from about 1944 to about 1968 and a wet climate extending from about 1969 to the present. The dry period is characterized by consistently low annual river sediment flux. The wet period has a mean annual sediment flux about five times greater, caused by strong El Niño events (Inman and Jenkins, 1999).

The maximum sediment flux from the Ventura River in the 56-year period 1940-1995 occurred during the El Niño flood of 1969, when 5.6 million yd^3 (4.3 million m^3)[1] of sediment was brought to the sea (Table 1). The seven El Niño years in the 27-year period 1969-1995 brought a total of 20.0 million yd^3 (15.3 million m^3) to the sea, an average of 2.9 million yd^3/yr (2.2 million m^3/yr). In comparison, the 20 drier years brought a total of 1.1 million yd^3 (850,000 m^3), or an average of 56,000 yd^3/yr (43,000 m^3/yr). Therefore, within this "wet" period, the average El Niño year provided 52 times more sediment than the average drier (La Niña) year.

In summary, the Ventura River carries significant amounts of sediment to the sea during El Niño flood years that recur about every 4-5 years. Excluding the maximum, 100-year flood of 1969, the average for the six wet years between 1970 and 1995 is 2.4 million yd^3/yr (1.8 million m^3/yr). In contrast, the average river borne sediment flux during dry years is about 56,000 yd^3/yr (43,000 m^3/yr). The streamflow and sediment flux of the Ventura River is listed for the 27-year period between 1969 and 1995 in Table 1.

In addition to the sandy sediment flux described above, the Ventura River is a significant supplier of cobble sized material (Plate 2). The supply rate for cobbles is not known, but it has been sufficient over time to build the pronounced cobble delta that is present today, extending well below sea level.

2.5 Budget of Sediment

In the absence of a budget of sediment for Surfers Point, an approximation can be made using published transport estimates and data from the annual sediment fluxes from the Ventura River (Table 1). Previous studies of the sediment budget in areas near Surfers Point include Bowen and Inman (1966), Intersea Research (1981), Bailard/Jenkins (1982), BEACON (Noble, 1989), and a coastal processes data summary (Inman, *et al.*, 1986).

Waves approaching the vicinity of Surfers Point through the west window (~280°True) account for the majority of the longshore transport of sand. Occasional waves

[1] 1 metric ton = 1.1 U.S. (short) ton ~ 0.93 yd^3 of sediment with (dry) bulk density of 1.4 metric ton/m^3.

Table 1. Streamflow and Sediment Flux for the Ventura River, 1969-1995.[1]

Water [2] Year	Streamflow 10^6 m^3/yr	Sediment Flux [3] 10^6 ton/yr	Sediment Flux > 10% of 1969 Flux %
1969	308	***6.03***[4]	100
1970	12.3	***0.0297***	-
1971	13.9	***0.0338***	-
1972	3.66	***0.00344***	-
1973	58.2	***0.446***	-
1974	16.7	***0.0425***	-
1975	16.5	***0.0324***	-
1976	1.70	***0.00146***	-
1977	0.982	***0.000868***	-
1978	293	***3.19***	53
1979	38.4	***0.0333***	-
1980	161	***1.60***	27
1981	9.64	***0.00421***	-
1982	4.73	0.00601	-
1983	265	2.95	49
1984	34.6	0.129	-
1985	3.48	0.00375	-
1986	55.6	***0.736***	12
1987	3.48	0.00375	-
1988	5.54	0.00766	-
1989	1.79	0.00134	-
1990	0.447	0.000159	-
1991	23.6	0.0712	-
1992	64.2	0.333	-
1993	246	2.63	44
1994	7.41	0.0120	-
1995	342	4.37	72

Notes:

[1] Data from Inman, *et. al.* (1998).

[2] Water year extends from 1 October of the preceding calendar year to 30 September of the water year.

[3] 1 metric ton = 1.1 U.S. (Short) ton ≅ 0.93 yd^3 of sediment having (dry) bulk density of 1.4 metric ton/m^3.

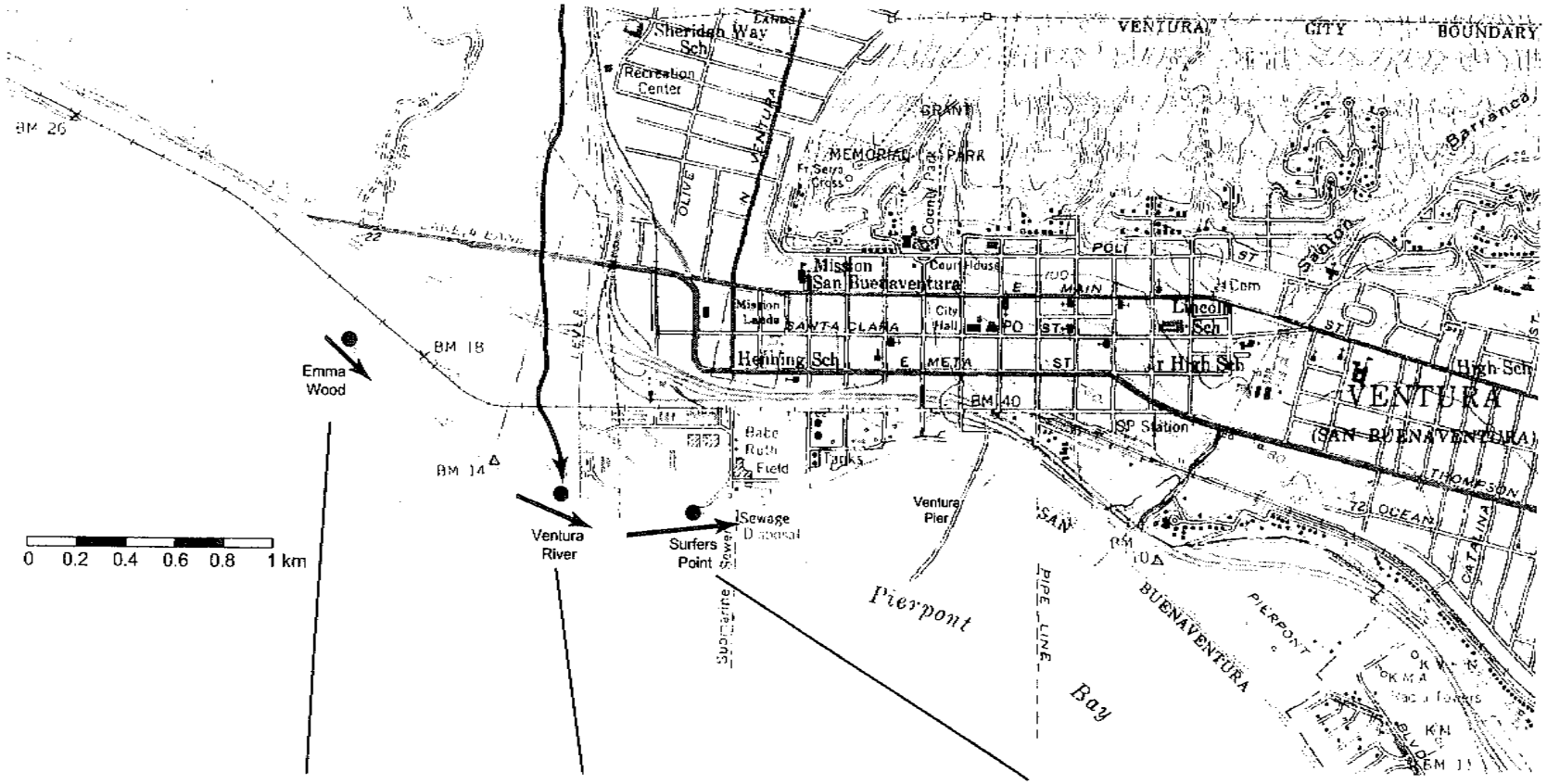
[4] Bold italicized values from USGS monitoring program; other values from sediment rating curves.

from tropical storms approaching from the south through the opening between Anacapa Island and Point Mugu may cause short term reversals, but when they do occur, their intensity can result in severe beach erosion. Calculation of wave-driven littoral sand transport rates at Carpinteria, 15 miles west of the Ventura River delta, show that the easterly transport is about 314,000 yd^3/yr (240,000 m^3/yr) in contrast to an upcoast (westerly) transport of 45,000 yd^3/yr (34,000 m^3/yr) (Bailard/Jenkins Consultants, 1982). The net annual transport is 269,000 yd^3/yr (206,000 m^3/yr) to the east, which compares favorably with the value of 250,000 yd^3/yr (191,000 m^3/yr) calculated from the long-term budget of sediment at Carpinteria (Noble, 1989). At Emma Wood State Beach, the long-term net easterly littoral transport of sand was estimated to be 216,000 yd^3/yr (165,000 m^3/yr) (Noble, 1989).

In Section 2.4, it was shown that the flux of sediment from the Ventura River is episodic, averaging 2.4 million yd^3/yr (1.8 million m^3/yr) for the six flood years between 1970 and 1995 (excluding the largest flood year, which was 1969), and 56,000 yd^3/yr (43,000 m^3/yr) for the 20 dry years between 1970 and 1995. Thus every 4 to 5 years, a flood occurs that transports an average of 42 times more sand than during the dry years.

A rough estimate of the budget of sediment for Surfers Point can be made by assuming that episodicity between flood and dry years governs the river flux of sediment, while the wave climate produces a more uniform net annual longshore drift of sand (e.g., Hicks and Inman, 1987). Under these circumstances, about 216,000 yd^3/yr (165,000 m^3/yr) is transported easterly along the coast past Emma Wood toward Surfers Point. During dry years, an additional 56,000 yd^3/yr (43,000 m^3/yr) becomes available from the Ventura River for a dry year total of 272,000 yd^3/yr (208,000 m^3/yr) (Figure 3). During the episodic floods, the combined longshore sand transport and river borne material provide a total sand supply of 2.6 million yd^3/yr (2.0 million m^3/yr), about 10 times more sand than is available for transport during dry years. For a year or two following floods, there is sand available for the beach at Surfers Point. During the following dry years, there is little sand available, compared to an estimated potential transport by waves of about 1.3 million yd^3/yr (1.0 million m^3/yr). Therefore during these dry years, sand is present at Surfers Point only a few months following each year's modest winter discharge from the Ventura River.

The above analysis, supported by observation, shows that the shoreline at Surfers Point fluctuates widely with the episodic flood transport of sand from the Ventura River. Flood years bring more sand than the waves can transport, forming an accretionary bulge that is moved easterly across the delta and along Surfers Point in the form of a traveling accretion wave (Inman, 1987). The sand wave begins soon after the flood, producing a seaward bulge in the coast that gradually moves easterly along Surfers Point, widening the shorezone. Within a year or two, the flood supply of sand moves beyond Surfers Point, and during



Emma Wood		Ventura River		Surfers Point				
Littoral Drift of Sand m^3 / yr	+	Sand Flux m^3 / yr	=	Sand Input m^3 / yr	−	Potential Littoral Drift of Sand m^3 / yr	=	Sand on Beach m^3 / yr
Flood Year 165,000		1,800,000		1,965,000		1,000,000		965,000
Dry Year 165,000		43,000		208,000		1,000,000		0

Figure 3. Estimated budget of sand for Surfers Point for dry and flood years of the Ventura River, referenced to the USGS Ventura 15' Quadrangle, 1967.

subsequent dry years, the beach disappears most of the time, leaving a protective cobble berm. Thus there is no single, natural position for the shoreline at Surfers Point. Rather, a shoreline that fluctuates episodically within a broad range constitutes the natural condition.

3. COBBLE BERMS

3.1 Natural Cobble Berms

Cobble berms are common to mountainous coasts with narrow shelves and seacliffs where fast flowing streams and cliff erosion provide a source of cobbles. Typical areas include the west coasts of the Americas, parts of the Mediterranean Sea, the island arcs of the Pacific Ocean, New Zealand, and the west coast of Australia (Inman and Nordstrom, 1971). River borne cobbles are a bedload phenomenon that move during maximum stress. They are usually deposited at or below sea level on the deltas of fast flowing streams such as the Ventura River, and remain in place when covered with sand. When the more mobile sand is removed, storm waves act on the exposed cobbles and move them shoreward to eventually form cobble berms. For example, during years of severe storms such as the El Niño year of 1982-83, beaches in southern California that were distant from river sources of sediment were denuded of sand, with only the basal cobble conglomerate remaining on the wave-cut platform. Waves forced cobbles onshore, forming cobble beaches and berms, until sand transported along the beach from river sources covered them (Inman, 1985). Similarly, beaches downdrift of breakwaters are denuded of sand, exposing the basal cobble conglomerate to wave action and the formation of cobble berms (e.g., Inman, 1976, Figure 6.7)

Beaches along these coasts are often thin (~6 ft) deposits over wave-cut platforms in country rock. When the shelf is narrow, the increased slope of the platform may constitute a boundary condition that determines the nature of the sedimentary material that can repose on the beach during seasonal summer/winter changes in profile. A common bedform response to deposition over steep platforms, where both sand and cobbles are available, is for the foreshore to consist primarily of sand while the backshore is mainly cobble. Under lower summer waves, sandy sediments move onshore, often forming a low sand beach face against the cobbles. Under higher winter waves, the sand is moved offshore and the waves work directly on the cobble berm. Cobbles are the primary basal material deposited over a wave-cut platform (Pinter *et al.*, 2001). When cobbles become exposed, high waves move them onshore to form cobble berms. These berms provide effective protection against seacliff erosion. They are also the key to seasonal beach adjustments to winter waves. Cobbles decrease wave reflection, permitting sand to repose closer to the shore than otherwise would be possible with the more intense reflection common to wave-cut seacliffs and vertical seawalls.

The seaward face of the cobble berm undergoes minor seasonal changes. Everts (2000b) described such changes at Carlsbad and Batiquitos. We offer an explanation of these changes based on observations of the cobble berm test section at Surfers Point (Figure 4a, b).

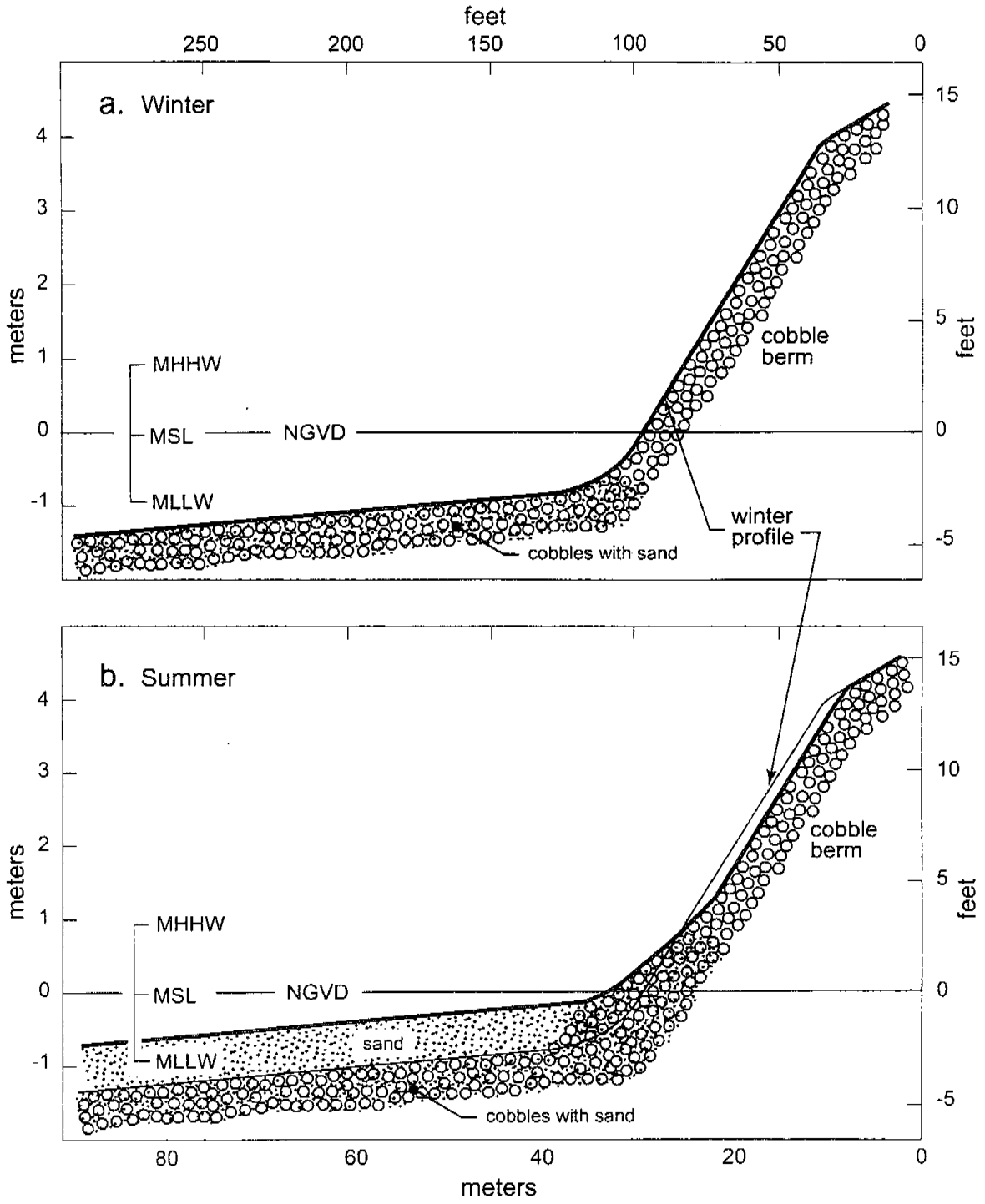


Figure 4. (a) Winter profiles of cobble berm with (b) summer changes associated with onshore migration of sand blanket. Datum is NGVD (1929) with MSL and diurnal tide ranges inserted. Winter profile is average of Surfers Point profiles 17+00 through 20+00 for the period 29 October 2000 - 7 March 2001.

01.9-1

It was observed there that during winter, the overall berm face was slightly steeper, while during summer, the toe of the cobble face may move seaward causing a slight decrease in overall slope. These seasonal fluctuations appear to be associated with the change in permeability and void space of the cobble formation and the resulting differential between wave uprush and backwash over the porous cobble surface. Maximum uprush with minimum backwash occurs in winter when the cobble voids are free of sand. The uprush achieves maximum penetration into the cobble berm, the backwash decreases relative to the uprush, and the slope of the cobble beach face increases. During the summer, a blanket of sand covers the foreshore and the toe of the cobble berm. This blanket reduces the permeability and increases the backwash, resulting in a flatter slope near the toe of the berm. Cobbles from above roll downslope, causing a seaward fill of cobbles at the beach toe and an overall decrease in slope. The extent of this seasonal change should depend upon the cobble size, the wave characteristics, and the amount of sand build-up at the cobble berm.

As discussed in the Noble Report, a natural cobble berm exists on the west side of the Ventura River Delta, at Emma Wood State Beach (Figure 1). Comprised of a mixture of gravel, cobbles, and boulders, the berm extends from a low-tide terrace near the elevation of MLLW to a top elevation of about +13 ft MLLW. The berm face is inclined at a slope of 5(V):1(H), while the berm crest exceeds 50 ft in width. A representative view is presented in Plate 3.

Plate 3. Natural Cobble Berm at Emma Wood State Beach on December 1, 2000

Based on an analysis of aerial photographs, Appendix B of the Noble Report indicates that the shoreline in the area of the Emma Wood berm has remained stable for the past 70 years (Everts, 2000b). Additional confirmation of the berm stability was obtained from a comparison of historical profiles contained in a feasibility study for a man-made surfing reef (Coastal Frontiers, 1988). An example is provided in Figure 5, in which it can be seen that the berm (from 0 to +13 ft MLLW), experienced only minor changes between 1964 and 1988. An additional finding of the surfing reef study was a predominance of cobbles and boulders on the sea bottom extending well offshore of the cobble berm, to depths exceeding 20 ft MLLW.

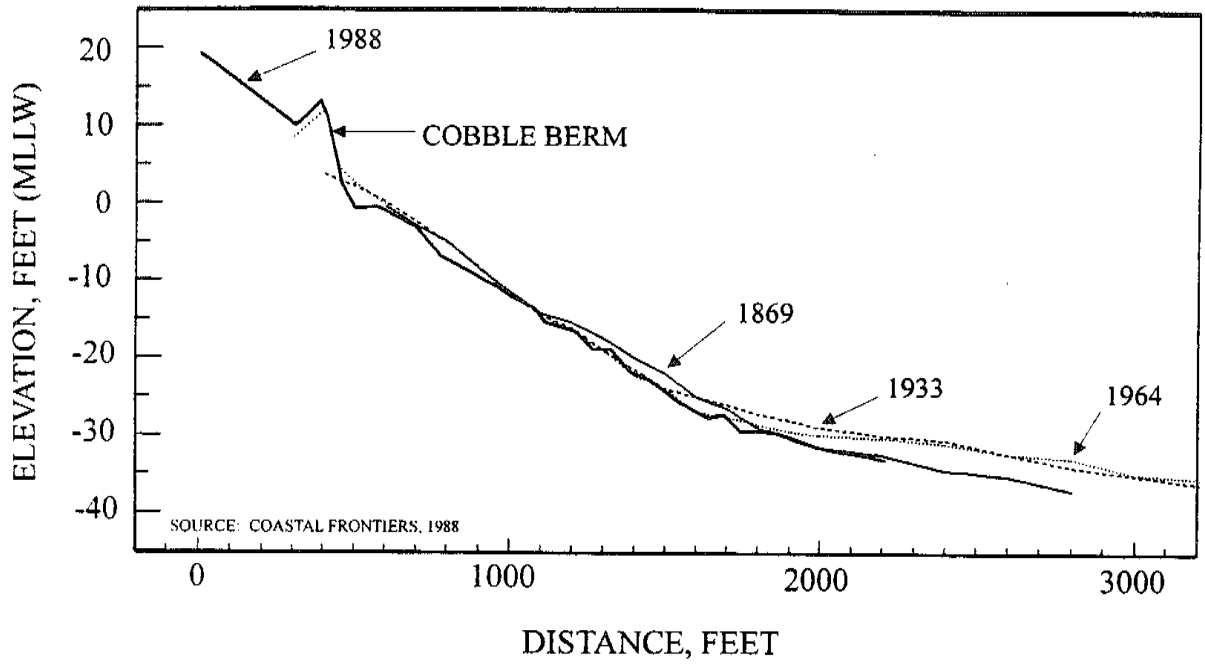


Figure 5. Comparison of Historical Profiles through Emma Wood State Beach Natural Cobble Berm

3.2 Engineered Cobble Berms

Beaches with a sandy foreshore and cobble berm are common natural adaptations to high energy environments with limited sand supply. During the low waves of summer, sand covers the foreshore and forms a sand beach face and low berm against the higher cobble storm berm. During winter, the sand is mostly gone and the waves work the cobble berm, which provides effective natural protection for the coast. Conceptually, it is not a major step to proceed from natural cobble berms to the idea of placing an artificial cobble berm as an aid to shore protection.

An engineered cobble berm, where the cobbles may move up and down the berm face with the runup and backwash of storm waves, is a natural extension of the traditional rubble mound breakwater that is designed to remain stationary. During the past two decades, the concept has been discussed in engineering journals under the titles of rubble beaches (Johnson, 1987), berm breakwaters (Willis *et al.*, 1988), sacrificial beaches (Leidersdorf, *et al.*, 1990), and dynamic revetments (Ahrens, 1990). Studies of berm breakwaters and of natural cobble/boulder beaches and their potential engineering uses are cited in Table 2. Inspection of the literature shows that the engineering studies mainly address stationary, angular, rubble breakwaters in hydraulic models with little attention to the nearly insurmountable problems of model-prototype similitude. The beach process studies were not made with shore protection in mind, and they address gravel, pebble, and small cobble berms with no studies of the dynamics of large cobble and boulder berms comparable to those under consideration for Surfers Point.

Table 2. Annotated Bibliography of Studies Pertaining to Natural and Engineered Gravel-Pebble-Cobble Berms

Author(s)	Subject
Ahrens, 1990	discussion of beach protection by revetments with movable material
Ahrens, 1996	wave runup on natural and laboratory gravel beaches
Baird, *et al.*, 1996	possible fluidization mechanisms on beaches
Bascom, 1951	sand sorting and slope on natural beaches, size $\leq$ 1 mm
Carr, 1969	sorting on natural pebble beaches, size 1-6 cm
Carr, 1974	tracer experiments of transport on natural pebble beaches, size $\leq$ 6 cm
Damgaard and Soulsby, 1996	derivation of transport relation for large material (e.g., pebble and cobble) that require a threshold of motion term; compare with Rance and Soulsby, 1968
Deguchi, 1996	laboratory runup over 2-4 cm pebble beach compared with that on engineered beach of 4-10 cm cobbles
Everts, 2000	seasonal beach profiles at Cardiff, CA, pebble (1-2 in, 2.5-5 cm) berm and Batiquitos cobble (2-5 in, 5-13 cm) berm
Guza, *et al.*, 1984	wave runup on natural sand beaches
Inman, 1976	development of cobble berm following construction of breakwater at Oceanside, CA
Inman and Jenkins, 1989	observations vs. calculations of runup and overtopping of natural beach with rubble seawall by 6 m breaking waves

Table 2. Annotated Bibliography of Studies Pertaining to Natural and Engineered Gravel-Pebble-Cobble Berms (continued)

Author(s)	Subject
Jensen and Sorensen, 1988	discussion of prototype experience vs. model results on rubble revetments
Johnson, 1987	comparison of rubble beaches vs. rubble revetments
Jolliffe, 1964	field experiments with transport of shingle, size 1/4-4 in
Kirk, 1975	runup on natural gravel beaches, size $\leq$ 1 cm
Leidersdorf, *et al.*, 1990	field study of wave and ice loads on "sacrificial beaches" of river gravel (D_{50} 4-8 mm, D_{max} 80 mm) compared with geotextile bags and concrete mats
Matthews, 1980	differential transport of material on natural mixed granular-pebble-cobble beaches
McLean, 1970	sorting by longshore transport on natural sand/gravel beaches
Nicholls and Webber, 1988	observations of runup and longshore transport on natural sand/shingle (0.6-4.5 cm) beaches of New Zealand
Nordstrom and Jackson, 1993	field study of dispersion of injected pebbles (0.6-2.0 cm) on sandy low energy ($H_b \sim$ ½ m) beach
Rance and Warren, 1968	threshold of motion on laboratory beaches for material $\leq$ 2.5 cm diameter, compare Damgaard and Soulsby, 1996
Semmens, 1998	description of natural 2-3 m high cobble (~10 cm median diameter with 1.5 m clasts) berm fronting a stream delta
van der Meer, *et al.*, 1996	runup vs rock shape on model rubble mound breakwater
van der Meer and Pilarczyk, 1986	program for the design of stable rock slopes on beaches based on laboratory data
van Hijum, 1976	hydraulic model study of equilibrium slope conditions, material size $\leq$ 1.3 cm
Willis, *et al.*, 1988	collection of papers on berm breakwaters, based primarily on laboratory studies of rubble

Note: Complete citations are listed in Section 6 (References).

The engineering studies of angular, multi-sized rubble cannot be applied directly to cobble berms composed of rounded material because of the differences in the dynamic behavior of angular and rounded materials. The angular material locks in place, attenuating wave energy by fluid resistance and porosity. The rounded material rolls and slides, attenuating wave energy by fluid resistance, porosity, and the work performed in moving cobble mass up and down the berm face. Also, it is well known (e.g., Inman, 1949) that

natural beach material is subject to intense hydrodynamic sorting, producing a berm whose residual material is well sorted (i.e., strongly unimodal in size).

The importance of the slope of rubble breakwaters was demonstrated by the failure of the breakwater at Plymouth, England. The hurricane of 1817 modified the 3(H):1(V) constructed slope to 5:1, and despite continuing attempts to rebuild the 3:1 slope, subsequent storms made it evident that nature required a slope of 5:1 to withstand storms. Plymouth Breakwater was the first major coastal structure to use a design configuration determined by nature. Later study showed that the 5:1 slope was the correct equilibrium slope for that size rubble under storm conditions (Inman and Masters, 1994). While the principle of natural determination of slope will apply to engineered cobble berms, the dynamic slopes for rounded cobble-boulder berms will be different than those calculated from experiments on angular rubble. In the case of engineered cobble/boulder berms, it is also important that the berm have sufficient thickness to allow for the natural slope adjustments from summer waves to storm waves.

The movable cobble berm is a very efficient wave absorber, with minimal wave reflection. This is because of the high permeability of the large void spaces and the energy expended in moving the cobble mass up and down the berm face. Further, the cobble berm will adjust its slope in the event of storm waves with little loss of effectiveness.

It should be noted that pebbles and small cobbles less than about 4 inch (10 cm) diameter have been known to become ballistic during the runup of storm waves over cobble-boulder berms composed primarily of larger-sized material. This phenomenon is related to poor sorting within the mix of material. Smaller clasts moved by the waves become ballistic when they strike larger objects that are slower moving or stationary. Following formation of cobble-boulder berms due to severe beach erosion downdrift from the Oceanside Harbor in the 1970's and 1980's, ballistic pebbles and cobbles traveled about 30 ft (10 m) past the berm crest and broke car windows and storefront windows along Front Street (Inman, 1976; Inman and Masters, 1991).

In summary, there are few established engineering criteria that apply to rounded cobble berms, while the process studies of natural cobble berms are few and were not made with shore protection in mind. As a consequence, it is necessary to synthesize principles gained from engineering and process studies and apply them judiciously as "conceptual guides" for shore protection measures at Surfers Point. Guidelines of this nature pertaining to the Surfers Point project site are provided in Table C-7 of Everts (2000c) in the Noble Report. Our specific comments on these guidelines follow in Appendix A.

3.3 Surfers Point Test Section

To investigate the functional effectiveness of an engineered cobble berm at Surfers Point, a prototype test section was installed at the east end of the project area in Fall, 2000. The location of the test section is illustrated in Figure 2, while the survey stationing adopted for the test section is displayed in Appendix B. The test section particulars are as follows:

- The experimental berm commences at Station 16+00 and ends at Station 25+00.
- An estimated 8,000 yd^3 of material ranging in size from fines to boulders was installed between Stations 16+00 and 21+50 on September 11-15, 2000. The berm face was inclined at 5(H):1(V).
- An estimated 1,000 yd^3 of material was installed between Stations 21+50 and 25+00 on September 18-19 and October 24-26, 2000. Although the material ranged from fines to boulders, the fines content was higher than in the case of the 8,000 yd^3 placed on September 11-15. It was necessary to utilize a steeper berm face, inclined at approximately 3:1, due to a limited supply of suitable fill material.
- The fill material was derived from two construction sites on the Ventura River located approximately 9 miles upstream of the coast.
- To monitor the performance of the test section, a survey program was initiated on August 31, 2000 and continued on a monthly basis through April 4, 2001. Data acquisition, which was undertaken by Benner and Carpenter (J. Moore, personal communication), consisted of measuring the location and elevation of randomly-spaced points, from which synthetic shore-perpendicular profiles could be derived through the use of a triangular irregular network ("TIN") model.

Gross changes in the test section that occurred between December 1 and May 4 are illustrated in Plates 4 through 6. On December 1, prior to the onset of winter storms, a substantial quantity of sand and silt remained on the upper portion of the slope (Plate 4). By March 6, this material had been removed by wave impact, leaving a relatively smooth slope composed of gravel, cobbles, and boulders (Plate 5). On May 4, a mildly-sloping sand beach was observed fronting the cobble test section (Plate 6). The sand intersected the cobble berm approximately 4 ft above MSL, and extended several feet below MSL. The material was of fluvial origin, having debouched from the Ventura River in response to substantial winter rainstorms and moved to the east via longshore transport.

Plate 4. Surfers Point Cobble Berm Test Section on December 1, 2000. Sand and silt cover the upper portion of the berm.

Plate 5. Surfers Point Cobble Berm Test Section on March 6, 2001. Sand and silt have been removed from all but the top of the berm by wave action.

Plate 6. Surfers Point Cobble Berm Test Section on May 4, 2001. The sandy foreshore resulted from river discharge during the winter months.

To estimate the extent to which the berm material had been sorted by waves, a visual appraisal of sediment size was conducted at Station 18+50 on May 4, 2001. On the upper berm face at an approximate elevation of +8 ft MSL, the berm consisted of all sizes of material from fines to those with a maximum dimension of 18 inches (Plate 7). Wave runup had been infrequent or nonexistent at this elevation, as evidenced by the fact that it was located above the debris line. The material apparently represented the "as placed" distribution of sizes. Farther down the berm face at an approximate elevation of +4 ft MSL, where the material had been washed repeatedly by waves, the maximum dimensions of the clasts ranged from 2 to 12 inches (Plate 8). Here, the sand, silt, and small gravel had been removed, leaving a better-sorted, more permeable berm of cobble-sized material. A comparison of the photographs shows that on the upper berm (Plate 7), the spaces between clasts are filled with fine material; on the lower berm (Plate 8), the spaces between clasts are open and porous, providing greater penetration and dissipation of wave runup.

Additional insight into the performance of the test section was obtained from an analysis of the monthly survey data. To quantify the changes that occurred during the winter of 2000-01, synthetic profiles were created at 100-ft intervals using the survey data from

Plate 7. Fines to 18-Inch Material above Limit of Frequent Wave Runup on Cobble Test Section at Station 18+50 (May 4, 2001).

Plate 8. 2-Inch to 12-Inch Material in Wave-Washed Portion of Cobble Test Section at Station 18+50 (May 4, 2001).

August, October, and December 2000, and March and April 2001. The resulting plots, shown in Appendix B, encompass not only the test section itself but also the adjacent beach areas to the east and west. Seasonal changes in the test section profiles are summarized in Figure 4.

Between Stations 16+00 and 20+00, where the test section was installed at a slope of 5:1, the profiles obtained on April 2 were virtually identical to those obtained on October 29 with the exception of a slight modification at the toe of the berm as illustrated in Figure 4. The obvious conclusion is that the cobble berm in this area remained stable throughout the winter season. Farther to the east, between Stations 21+00 and 24+00, the profiles suggest that material was eroded from the upper portion of the berm and deposited on the lower portion. We conclude that the 3:1 slopes were unable to withstand the wave conditions without readjustment to a flatter, more stable inclination. The profiles at Station 25+00 differ from the others in the test section, in that they reflect the occurrence of accretion on the upper slope between December 2000 and March 2001. A possible explanation is the easterly transport and subsequent deposition of sediment eroded from the updrift portion of the test section. It is also possible, however, that the apparent change resulted from the survey methodology rather than from natural causes (i.e., different representations of the edge of the test section resulted from interpolating between widely-spaced points to create synthetic profiles).

Although the western (5:1) portion of the cobble berm proved to be stable, the profiles on either side of the test section suggest that wave conditions were unexceptional during the 2000-01 winter season. To the west, the upper portions of the profiles evidenced little change at Stations 10+00 and 11+00, cut-and-fill reshaping at Stations 13+00 and 14+00, and erosion at Stations 12+00 and 15+00. The large accumulation of sediment that occurred below +5 ft between the March and April surveys is attributable to the aforementioned influx of river sediment. This material did not reach the cobble test section until after the April 2 survey, but was clearly evident on May 4 (Plate 6).

To the east of the test section, the upper portions of the profiles at Stations 26+00 through 30+00 were stable to slightly accretive during the winter season. The lack of significant erosion in this area may be attributed in part to the absence of severe storm waves, but also in part to the incidental nourishment provided by sediment eroded from the test section.

In conclusion, that portion of the cobble berm test section with an as-built slope of 5:1 remained stable under the moderate wave conditions that prevailed during the 2000-01 winter storm season. The ability of the test section to withstand more extreme wave conditions remains to be demonstrated, although the long-term stability of the natural cobble berm at Emma Wood State Beach bodes well in this regard. That portion of the test section with an

as-built slope of 3:1 was reshaped to a flatter configuration, indicating that the original slope was too steep to remain stable. Continued monitoring is recommended to document the long-term performance of the cobble berm under a variety of winter and summer wave conditions.

4. EVALUATION OF ALTERNATIVES

As indicated in Section 1, four conceptual design alternatives are under consideration for the Surfers Point project site. The subsections that follow provide an individual assessment of each alternative, followed by a comparative evaluation of the four approaches. In keeping with the focus of this report, consideration is limited to the coastal engineering aspects of the alternatives.

4.1 Alternative 1. Buried Seawall Behind Retreat Zone

Coastal Design Features

Alternative 1, which is displayed schematically in Figure 6, includes the following three coastal design features:

Retreat Zone: A 64½-foot wide retreat zone will be created by demolishing all improvements seaward of the existing location of Shoreline Drive. The underlying sediment will be re-graded to a smooth slope. No attempt will be made to renourish the beach on those occasions when it is eroded by storm waves.

New Improvements: A new bike path and new parking facilities will be constructed landward of the retreat zone (Figure 7).

Buried Seawall: A buried seawall will be installed at the landward edge of the retreat zone to protect the new bike path and parking lot from wave attack on those occasions when the beach is depleted by erosion.

To insure that the relocated improvements are not subject to frequent storm damage, the buried seawall must be founded either on a firm foundation or at an elevation less than the anticipated maximum scour depth associated with the design storm. In addition, quarrystone toe protection must be provided both to prevent undermining of the wall and to reduce wave overtopping (which could damage the bike path and parking lot). In consequence, substantial excavation will be required to construct the wall and associated toe protection.

Anticipated Performance

Under Alternative 1, the shoreline at Surfers Point will continue to fluctuate widely in response to the episodic delivery and removal of sediment described in Section 2. During periods of accretion, the beach will behave in a manner analogous to that observed in the past. During periods of erosion, the status quo will change in two respects: (1) erosion will progress into the retreat zone, exposing portions of the buried seawall, and (2) the seawall, if properly designed, will protect the upland improvements from wave damage (unless the design wave

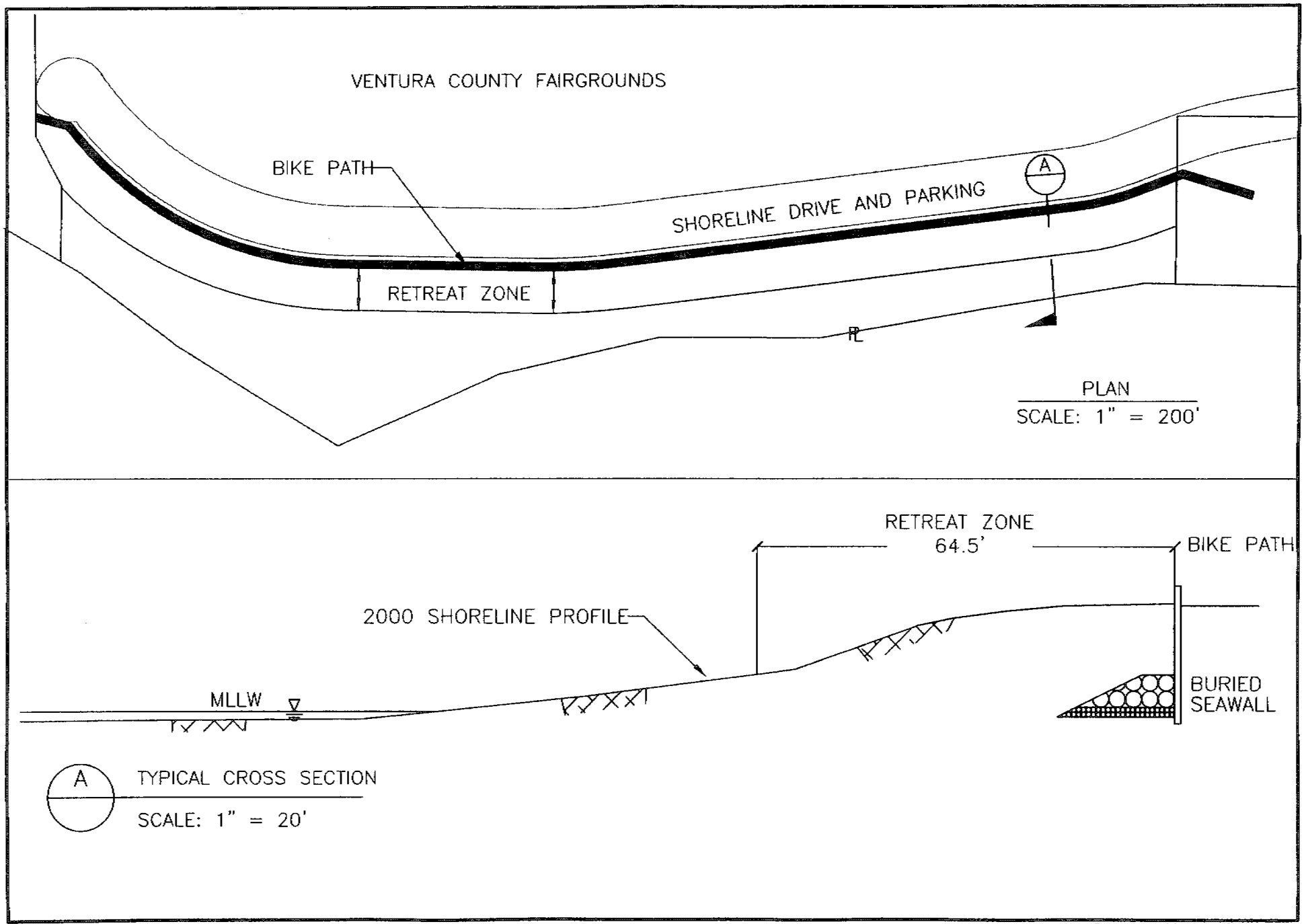


Figure 6. Alternative 1: Buried Seawall behind Retreat Zone

Source: Noble Consultants, 2000

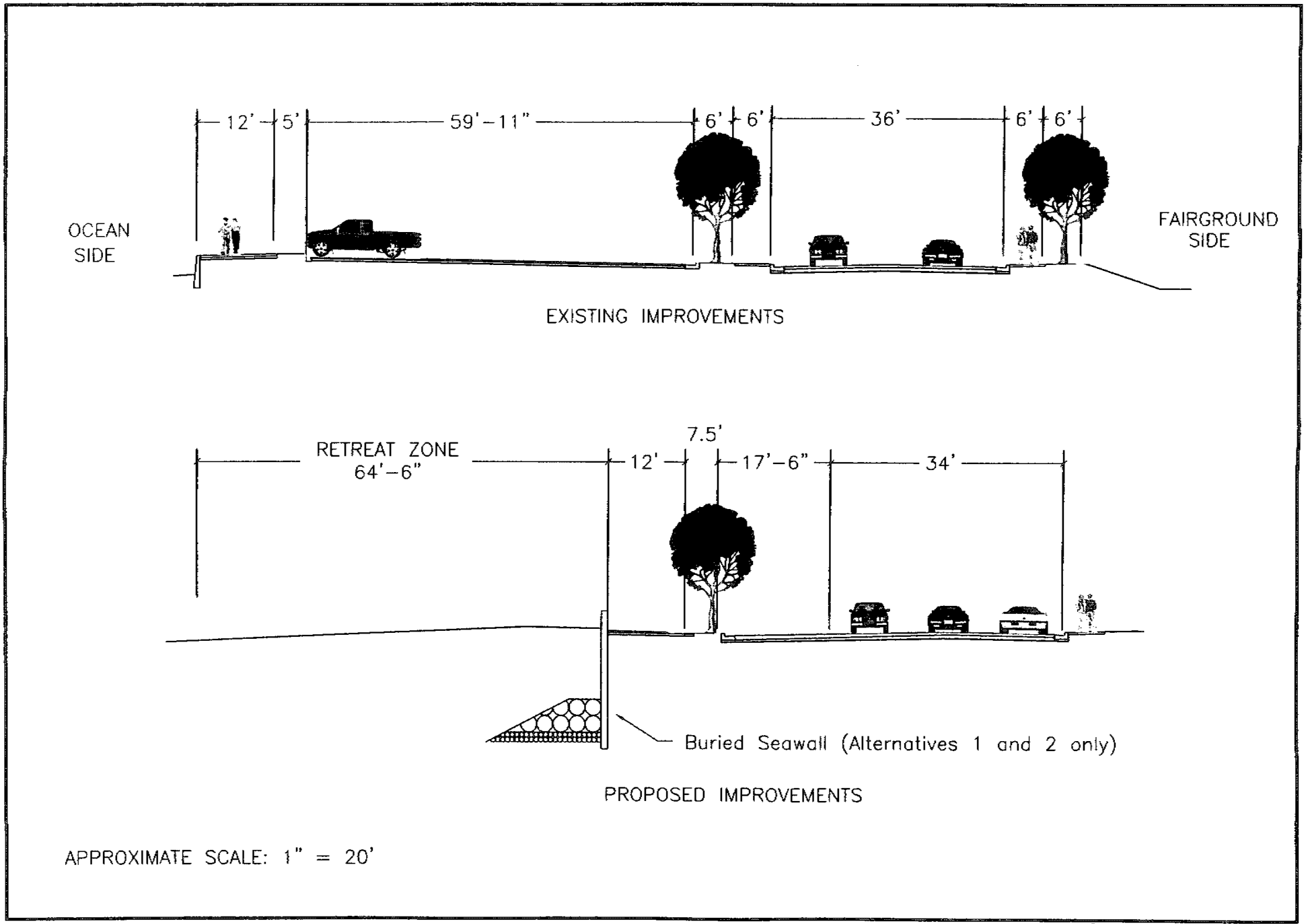


Figure 7. Comparison of Existing and Proposed Improvements under Alternatives 1-3

Source: Noble Consultants, 2000

conditions are exceeded). When portions of the seawall become exposed, they will remain so until the next accretion cycle commences.

Positive Impacts

1. ***Upland Protection***: The upland improvements to be constructed landward of the designated retreat zone will be less susceptible to wave-induced erosion and wave overtopping than the existing bike path and parking lot due to the presence of the buried seawall at the landward edge of the retreat zone and, to a lesser extent, the increased setback from the existing shoreline.
2. ***Sediment Contribution***: Removing the existing bike path and parking lot in the retreat zone will allow whatever underlying granular material is present to be dispersed by wave runup. In consequence, the littoral zone will benefit from a one-time addition of sediment. However, if the material is found to contain a large percentage of fines, there will be no significant benefit to the littoral zone.
3. ***Ocean View***: An unobstructed view of ocean will be available from the relocated bike path and road.
4. ***Shoreline Access***: As explained in Section 2, the beach at Surfers Point experiences episodic accretion and erosion in response to the provision of sediment by the Ventura River and the removal of sediment by waves. On those occasions when accretion predominates, it is likely that the subaerial beach will consist primarily of sand. Access to the shoreline will be considerably easier under these circumstances than if a continuous cobble mattress (Alternative 2) or berm (Alternatives 3 and 4) were present along the entire length of the project. This positive attribute will be diminished or lost during anticipated episodes of erosion, when the sand is removed from the subaerial beach.
5. ***Beach Recreation:*** On those occasions when accretion predominates, the sandy beach will provide opportunities for beach recreation.

Negative Impacts

1. ***Temporary Demolition Impacts***: Demolition of the existing improvements in the retreat zone (particularly the bike path and parking lot) will result in increased truck traffic, and a significant volume of solid waste for disposal. In addition, beach access will be impaired during the demolition period.
2. ***Temporary Construction Impacts***: Substantial excavation will be required to construct the buried seawall and associated toe protection. While this construction work is underway, access to the beach will be impaired.

3. ***Beach Access***: On those occasions when severe storm waves follow periods of modest sediment discharge from the Ventura River, it is likely that beach erosion will expose portions of the buried seawall. If the decrease in beach elevation is substantial, beach access will be impaired by the elevation difference between the bike path and the eroded beach profile.

4. ***Wave-Related Recreation***: As long as the seawall remains buried, Alternative 1 will not impact on the quality of the surf available for wave-related recreation. As discussed above, however, it is anticipated that portions of the wall will be exposed periodically by a combination of low river sediment discharge and severe storm waves. If the erosion progresses to the point that waves not only reach but also reflect off the wall, the reflected waves will degrade the quality of the surf.

5. ***Wave Overtopping***: The upland improvements will be more susceptible to damage from wave runup and overtopping under Alternative 1 than under the other three alternatives. This susceptibility arises in part from the absence of an energy-absorbing cobble mattress (Alternative 2) or berm (Alternatives 3 and 4), and in part from the fact that waves impacting a vertical wall tend to be redirected upward, after which they can be blown over the wall by a following wind.

Recommended Modifications

Three of the five negative impacts, consisting of impaired beach access, degraded surf conditions, and susceptibility to wave overtopping, can be limited to relatively short durations by nourishing the beach on an as-needed basis (i.e., after erosion approaches or exposes the buried seawall). If such nourishment is provided, a negative impact will result from the truck traffic needed to import the material, but a positive impact will result from the additional sediment that is added to the littoral zone.

4.2 Alternative 2. Cobble Mattress with Sacrificial Dune

Coastal Design Features

Alternative 2, represented graphically in Figure 8, consists of the following seven coastal design features:

Retreat Zone: A 64½-foot wide retreat zone will be created by demolishing all improvements seaward of the existing location of Shoreline Drive. The underlying sediment will be re-graded to a flat surface.

New Improvements: A new bike path and new parking facilities will be constructed landward of the retreat zone (Figure 7).

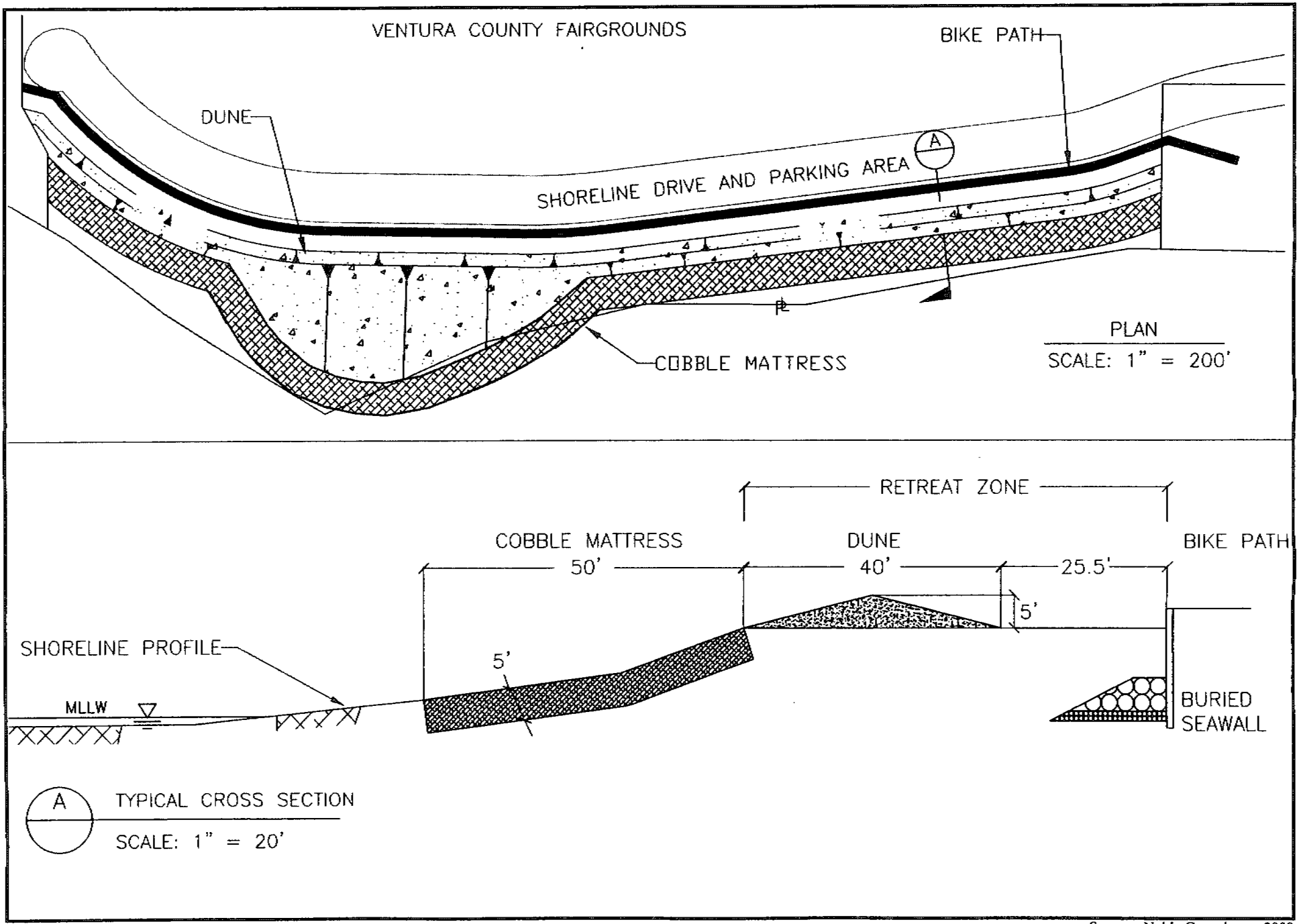


Figure 8. Alternative 2: Cobble Mattress with Sacrificial Dune

Source: Noble Consultants, 2000

Cobble Mattress: A 50-ft wide, 5-ft thick cobble mattress will be installed on the beach face immediately seaward of the retreat zone. The mattress will extend from approximately +2 ft to +12 ft MSL, and is intended to provide increased resistance to erosion.

Salient: The cobble mattress will protrude seaward at the location of the existing salient between East and West Beaches (Figure 2) to create a permanent salient.

Sacrificial Sand Dune: A 5-ft high sacrificial sand dune with a minimum width of 40 ft will be created in the seaward portion of the retreat zone, immediately upslope of the cobble mattress. The dune is intended to provide limited protection for the new improvements during storm events.

Buried Seawall: A buried seawall will be installed at the landward edge of the retreat zone to protect the new bike path and parking lot from wave impact on those occasions when the beach, cobble mattress, and sacrificial dune are depleted by erosion.

Beach Renourishment: The cobble mattress and sacrificial sand dune will be replenished whenever they are depleted by erosion.

As in the case of Alternative 1, the buried seawall in Alternative 2 must be provided with a sound foundation and substantial toe protection to fulfill its intended function as a last line of defense. Accordingly, its construction will entail a significant amount of excavation in the retreat zone.

Although of relatively minor importance at this stage of the project, it is worth noting that the cobble mattress cannot be constructed exactly as shown in the conceptual design drawing provided in the Noble Report (reproduced here as Figure 8). Our specific concern is that the mattress cross-section cannot be rectangular, but instead must include upslope and downslope edges that are inclined at the angle of repose of the native beach sand. Hence, the quantities of sand excavation and cobble fill will exceed those implied by Figure 8. We also recommend eliminating the compound cobble slope shown in the figure in favor of a straight slope. This change will facilitate construction and result in a lower project cost.

Anticipated Performance

During periods of accretion, when sand accumulates in front of the cobble mattress, the beach will behave in a manner analogous to that observed in the past. During periods of erosion, the cobble mattress will provide a measure of protection that will reduce the rate at which sediment is lost from the subaerial beach. Nevertheless, the mattress will be prone to

undermining and dispersal due to the absence of a substantial toe that extends below MLLW, and the presence of the sand dune at the top of the cobble slope (which will exacerbate wave backwash). Once the mattress is damaged, erosion will progress into the retreat zone and could expose portions of the buried seawall (as discussed under Alternative 1). The seawall, if properly designed, will protect the upland improvements from wave damage (unless the design wave conditions are exceeded).

Because the sacrificial sand dune is located immediately upslope of the mattress, it will be susceptible to erosion not only when the mattress sustains damage, but also during periods of high wave runup (even if the mattress remains intact). The mattress and sand dune will be replenished on an as-needed basis.

Positive Impacts

1. ***Upland Protection***: The upland improvements to be constructed landward of the retreat zone will be less susceptible to wave-induced erosion and wave overtopping than the existing bike path and parking lot due to a combination of the following four factors: (1) the presence of the buried seawall at the landward edge of the retreat zone, (2) the presence of the cobble mattress on the beach face, (3) the presence of the sacrificial sand dune in the retreat zone, and (4) the increased setback from the existing shoreline.

2. ***Shore Protection***: The cobble mattress will reduce the susceptibility of the beach face to episodic erosion. In consequence, the frequency with which erosion exposes the buried seawall will be reduced relative to Alternative 1.

3. ***Sediment Contribution:*** Whenever the sacrificial dune is eroded by wave runup, sand will be added to the littoral zone. The rate of supply will depend upon both the frequency of severe storms and the frequency with which the dune is renourished. The benefit will be extremely small, however, because the volume of the entire dune (about 7,000 yd^3) is miniscule compared to the estimated potential net longshore transport of 1.3 million yd^3/yr.

4. ***Beach Recreation:*** The sacrificial sand dune and adjacent sandy area that extend from the cobble mattress to the buried seawall will provide opportunities for beach recreation while they exist.

Negative Impacts

1. ***Temporary Demolition Impacts:*** Demolition of the existing improvements in the retreat zone will result in increased truck traffic, and a significant volume of solid

waste for disposal. In addition, beach access will be impaired during the demolition period.

2. ***Temporary Construction Impacts:*** Substantial excavation will be required to construct the buried seawall. While this work is underway, access to the beach will be impaired. Additional construction impacts will result from the truck traffic required to import material for the cobble mattress and sacrificial sand dune.

3. ***Periodic Maintenance Impact:*** As explained above, the cobble mattress and sacrificial sand dune will be susceptible to undermining and dispersal. In consequence, frequent maintenance will be required to replenish the mattress and dune during those periods when shoreline retreat predominates in the project area. The most noteworthy impact will be truck traffic.

4. ***Beach Access:*** On those occasions when storm waves are sufficiently severe to displace the cobble mattress, it is likely that the ensuing beach erosion will expose portions of the buried seawall. If the decrease in beach elevation is substantial, beach access will be impaired by the elevation difference between the bike path and the eroded beach profile.

5. ***Shoreline Access:*** The presence of a continuous cobble mattress that stretches along the entire length of the project will impede access to the shoreline relative to the sandy beach conditions that are anticipated to occur under Alternative 1 during periods of accretion.

6. ***Wave-Related Recreation:*** As discussed above, it is anticipated that portions of the buried seawall will become exposed when storm waves are sufficiently severe to displace the cobble mattress. If the erosion progresses to the point that waves not only reach but also reflect off the wall, the reflected waves will degrade the quality of the surf. On the other hand, as long as the wall remains buried, Alternative 2 will not exert a negative impact on the quality of the surf available for wave-related recreation. The cobble mattress may, in fact, effect a slight reduction in wave reflection and a corresponding improvement in wave conditions due to increased energy dissipation.

7. ***Ocean View:*** The sacrificial sand dune will partially obstruct the view of the ocean available from the relocated bike path and road.

8. ***Wind-Blown (Aeolian) Transport:*** The predominantly onshore winds at the project site will transport sand from the sacrificial dune toward the bike path. It is likely that sand will accumulate on the path during strong wind events.

9. ***Sediment Sequestration:*** To the extent that the cobble mattress creates a prominent salient between West and East Beaches, the sediment that lies behind the protrusion

will remain sequestered from the littoral zone. This negative impact will cease when the mattress is displaced, thereby allowing the impounded material to return to the littoral stream.

10. ***Longshore Transport***: During periods of shoreline retreat, the prominent salient between East and West Beaches will cause longshore sediment transport to be deflected offshore. In addition, the prevailing drift will build small spits to the east of the protrusion, further isolating the downdrift beaches (Plates 1 and 2). Although the material will migrate back onshore as it moves downdrift, the beach immediately to the east of the salient will be susceptible to accelerated erosion.

Recommended Modifications

Of the ten negative impacts associated with Alternative 2, three (periodic maintenance, beach access, and wave-related recreation) can be significantly reduced by replacing the cobble mattress with a more erosion-resistant engineered cobble berm analogous to that proposed under Alternative 3. The impacts associated with obstructing the ocean view and promoting unwanted aeolian transport can be minimized if the sand dune is replaced with a horizontal or near-horizontal sand surface that lies at least several feet below the top of the buried seawall. Finally, the impacts that result from sequestering sediment and deflecting longshore transport away from the downdrift beach can be eliminated by installing the cobble mattress in a smooth curve with minimal seaward protrusion between East and West Beaches.

4.3 Alternative 3. Cobble Berm

Coastal Design Features

The five coastal design features of Alternative 3 are described below and portrayed graphically in Figure 9:

Retreat Zone: A 64½-foot wide retreat zone will be created by demolishing all improvements seaward of the existing location of Shoreline Drive. The underlying sediment will be re-graded to a flat surface. That portion of the retreat zone not occupied by the cobble berm (described below) will consist of sand.

New Improvements: A new bike path and new parking facilities will be constructed landward of the retreat zone (Figure 7).

Cobble Berm: An engineered cobble berm will be installed on the beach face to provide increased resistance to erosion. The berm face will lie immediately seaward

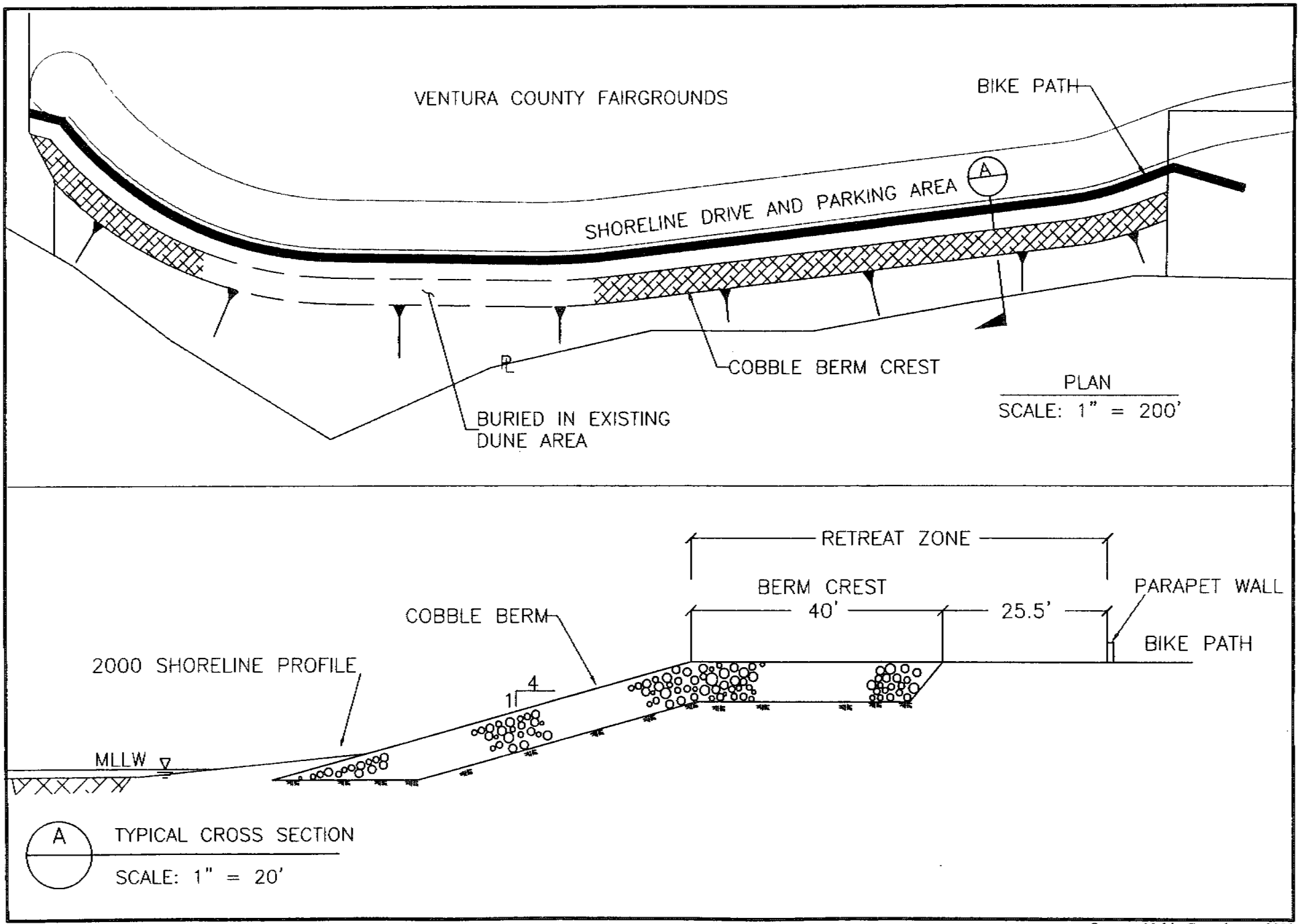


Figure 9. Alternative 3: Cobble Berm

Source: Noble Consultants, 2000

of the retreat zone, while the near-horizontal berm crest will extend into the retreat zone.

Parapet Wall: A low, non-structural wall will be provided at the landward edge of the retreat zone to reduce the frequency with which cobbles are displaced onto the bike path by large storm waves or human disturbance.

Beach Renourishment: The cobble berm will be replenished whenever it is depleted by erosion.

In contrast to the modest cobble mattress of Alternative 2, which is backed by a buried seawall, the cobble berm of Alternative 3 is intended to serve as the primary means of protection for the upland improvements. Patterned after the natural cobble berm at Emma Wood State Beach (Section 3.1; Plate 3), the engineered berm will incorporate a substantial toe below the elevation of MLLW to resist undermining, and a substantial crest to absorb wave runup and reduce wave backwash.

In the conceptual design drawing provided in the Noble Report (reproduced here as Figure 9), a width of 40 ft is indicated for the berm crest. We believe that this dimension cannot be specified until wave conditions and overtopping rates are quantified. Accordingly, we recommend that the berm width should be adjusted during the design process to accommodate the overtopping associated with the design storm event. We also recommend that the 4(H):1(V) slope specified for the berm face be flattened to 5:1, based on the insights acquired from the Emma Wood berm and Surfers Point test section (and assuming that comparably-sized material is employed for the engineered cobble berm). In the discussion of positive and negative impacts that follows, it is assumed that both of these recommendations have been incorporated into the conceptual design.

Anticipated Performance

During periods of accretion, when sand accumulates in front of the cobble berm, the beach will behave in a manner analogous to that observed in the past. During periods of erosion, the cobble berm will stabilize the shoreline seaward of the retreat zone (unless the design wave conditions are exceeded). Most or all wave overtopping will be absorbed by the berm crest before it reaches the parapet wall. Periodic nourishment of the berm will be required to offset the losses resulting from longshore and offshore transport.

Positive Impacts

1. ***Upland Protection***: The upland improvements to be constructed landward of the retreat zone will be less susceptible to wave-induced erosion and wave overtopping

than the existing bike path and parking lot due the presence of the engineered cobble berm and, to a lesser extent, the increased setback from the existing shoreline.

2. ***Shore Protection***: Based on the long-term stability of the natural cobble berm at Emma Wood State Beach, and the promising performance of the cobble berm test section at Surfers Point, it is anticipated that the engineered cobble berm will stabilize the shoreline during periods of episodic erosion.
3. ***Ocean View:*** An unobstructed view of ocean will be available from the relocated bike path and road.
4. ***Wave-Related Recreation***: Under many combinations of wave and water level conditions, the dissipative surface of the cobble berm could improve the quality of the surf by reducing wave reflection. This improvement, which is expected to be modest, is less likely to occur when water levels are low and relatively small waves impact the sand-charged toe of the berm.
5. ***Beach Recreation:*** The sandy area that extends from the berm crest to the parapet wall will provide opportunities for beach recreation.

Negative Impacts

1. ***Temporary Demolition Impacts***: Demolition of the existing improvements in the retreat zone will result in increased truck traffic, and a significant volume of solid waste for disposal. In addition, beach access will be impaired during the demolition period.
2. ***Temporary Construction Impacts***: Temporary construction impacts will be less pronounced than under Alternatives 1 and 2 due to the absence of a buried seawall. Nevertheless, truck traffic will result from the need to import material for the cobble berm.
3. ***Periodic Maintenance Impact:*** Losses due to longshore and offshore transport will necessitate periodic maintenance of the cobble berm, resulting in truck traffic. It should be noted, however, that the anticipated maintenance frequency is estimated to be substantially lower than under Alternative 2.
4. ***Shoreline Access:*** The presence of a continuous cobble berm that stretches along the entire length of the project will impede access to the shoreline relative to sandy beach conditions (Alternative 1).

Recommended Modifications

As indicated above, the sandy area that extends from the berm crest to the parapet wall will provide opportunities for beach recreation. Depending upon the anticipated use, the surface can consist of either sand or grass. We recommend installing a geotextile under the recreational area to reduce the potential for sand displacement into the cobble berm in response to foot traffic and wave overwash. This slight modification to Alternative 3, along with the changes discussed above (5:1 berm face and berm crest of unspecified width), are illustrated in Figure 10.

4.4 Alternative 4. As-Needed Extension of Existing Cobble Berm

Coastal Design Features

Alternative 4 employs many of the same concepts as Alternative 3, but differs in that the existing bike path and parking lot are retained, and the existing cobble berm test section is extended to the west on an as-needed basis to protect these upland improvements. The four coastal design features are described below and illustrated in Figure 11:

Repaired Improvements: Those portions of the existing bike path and parking lot that have been undermined by erosion (Figure 2) will be restored to their original configuration.

Cobble Berm: The existing cobble berm test section will be supplemented with additional material to create a substantial toe below MLLW. The berm will have a 5(H):1(V) face and a flat crest capable of accommodating wave overtopping from the design storm event. The berm will be extended to the west of Station 16+00 on an as-needed basis (i.e., when episodic erosion begins to threaten the bike path and parking lot).

Parapet Wall: A low, non-structural wall will be provided at the landward edge of the retreat zone to reduce the frequency with which cobbles are displaced onto the bike path by large storm waves or human disturbance.

Beach Renourishment: The cobble berm will be replenished whenever it is depleted by erosion.

The cobble berm of Alternative 4, like that of Alternative 3, is intended to serve as the primary means of protection for the upland improvements. To this end, the existing test section will be supplemented with additional material as described above. It will be extended

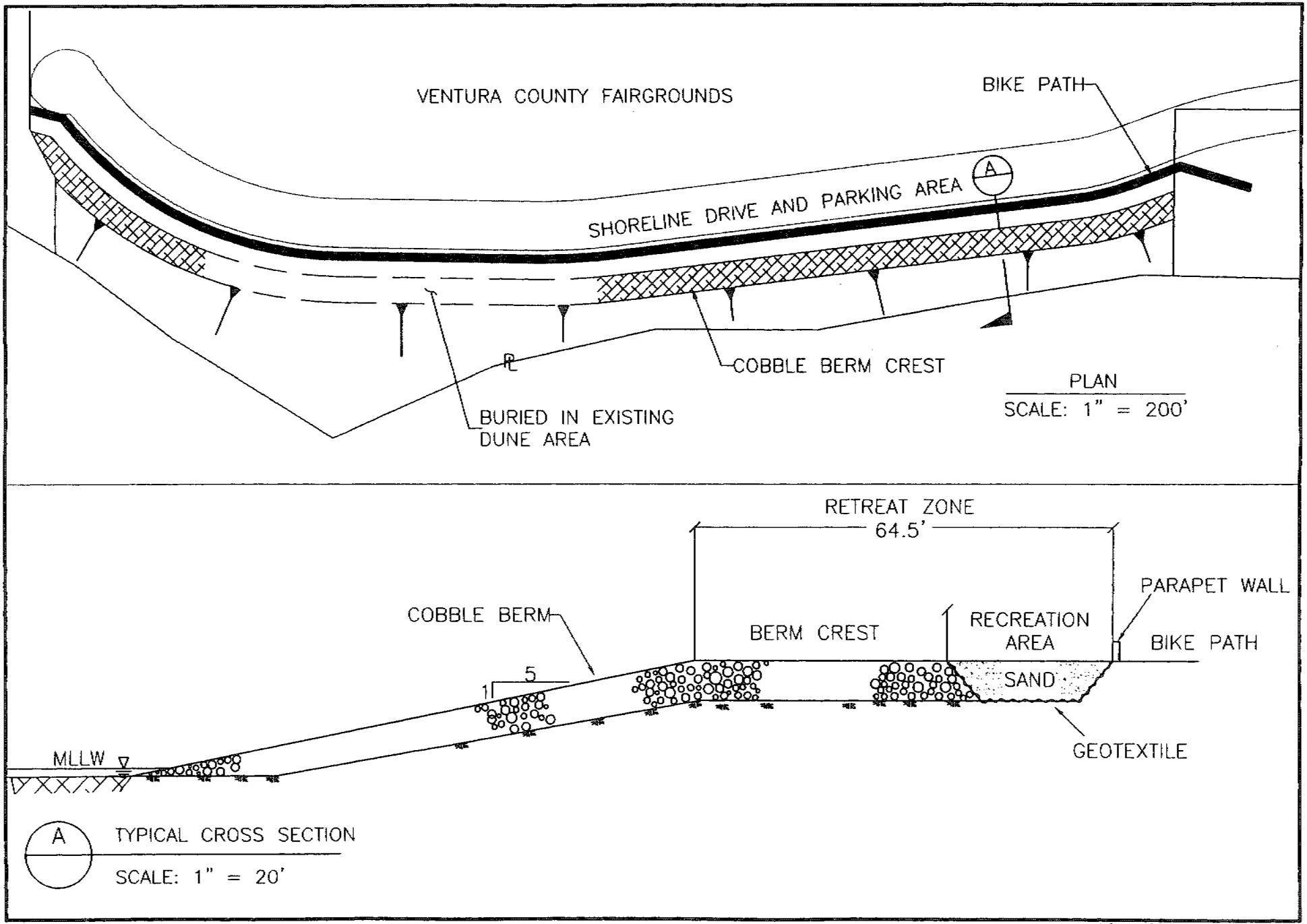


Figure 10. Modified Alternative 3: Cobble Berm

After Noble Consultants, 2000

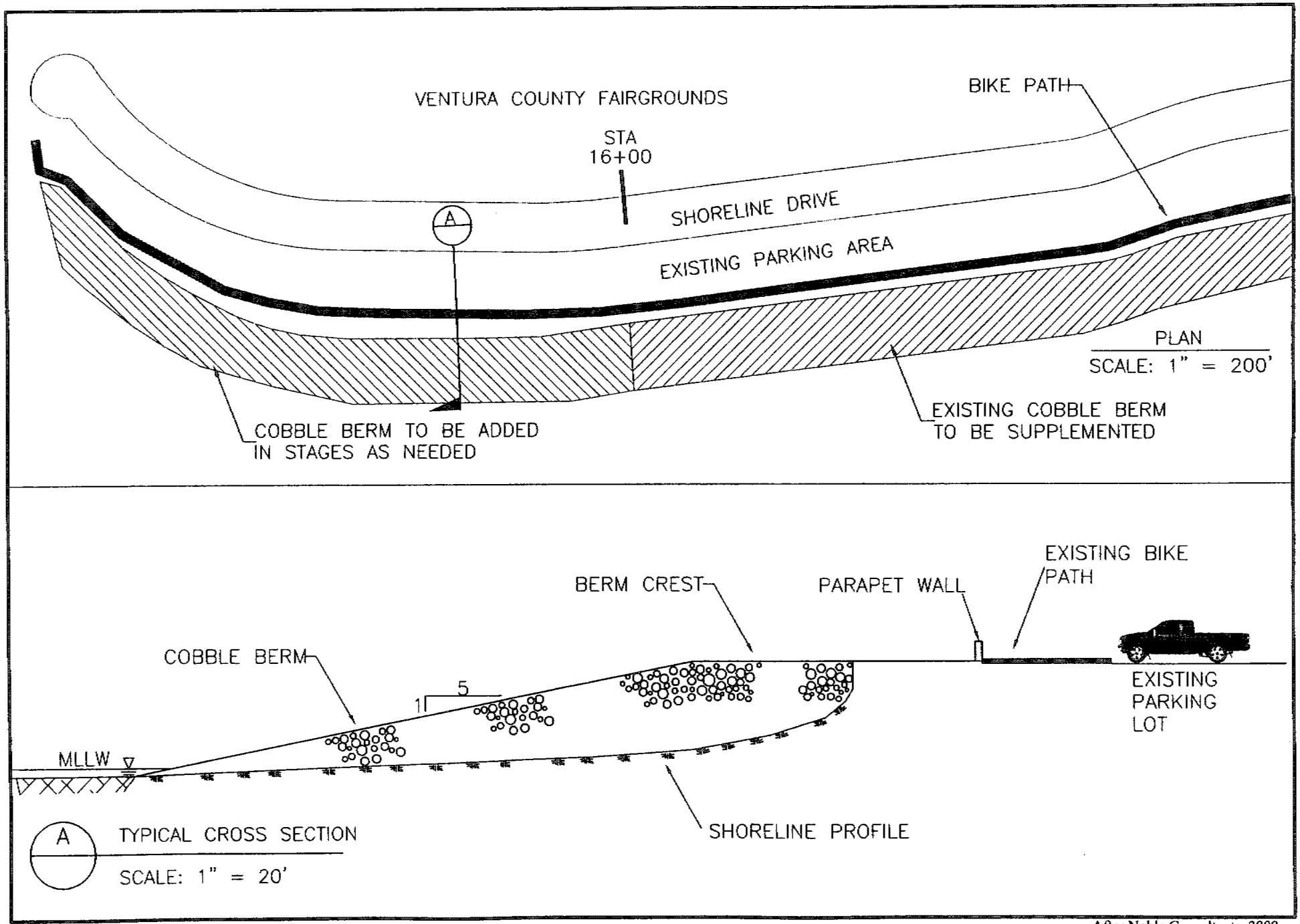
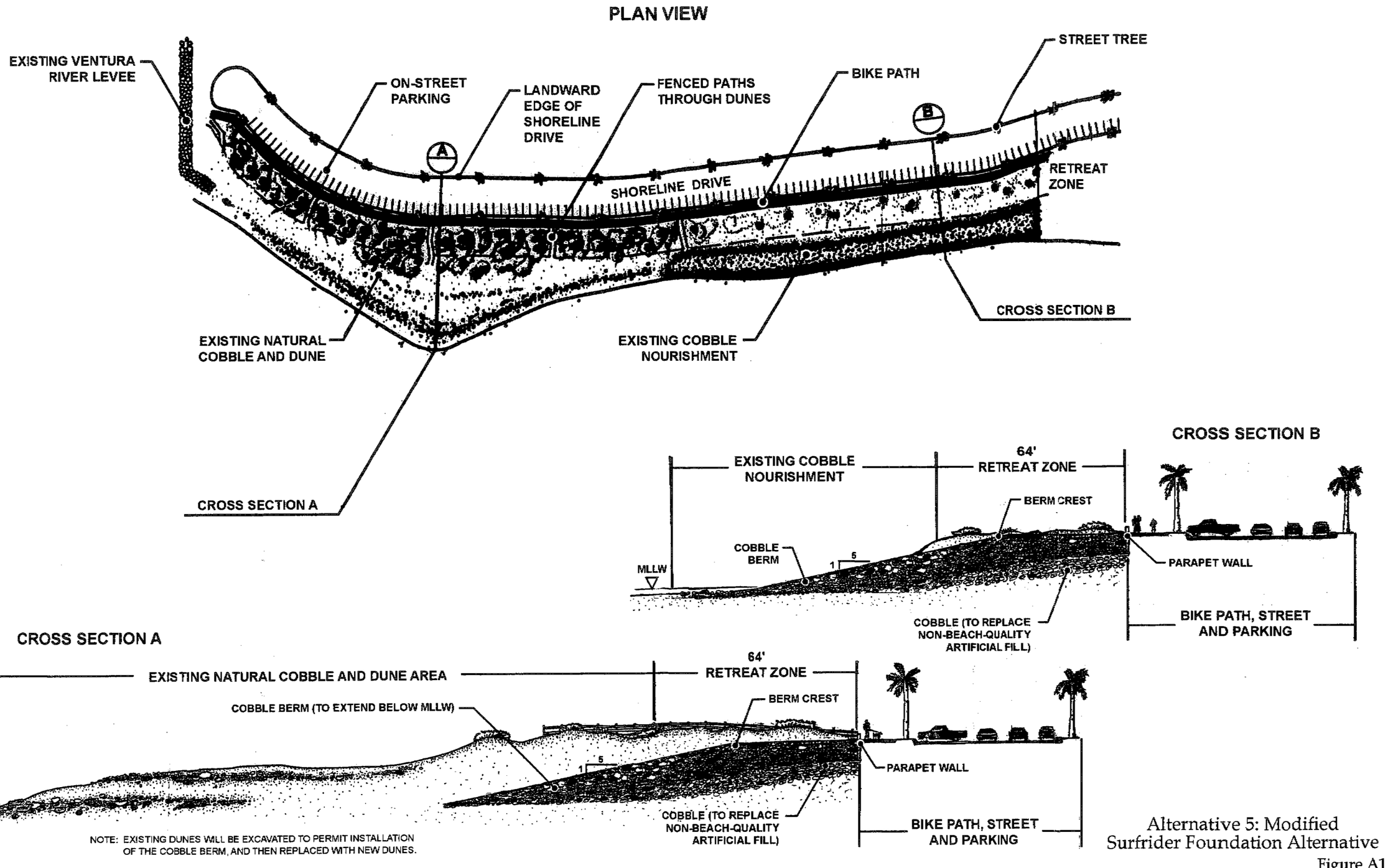


Figure 11. Alternative 4: Extension of Existing Cobble Berm

After Noble Consultants, 2000



Alternative 5: Modified Surfrider Foundation Alternative

Figure A1

Source: Paul Jenkin and Coastal Frontiers Corporation

to the west only when the existing beach in this area becomes depleted. Hence, depending upon the severity and timing of future episodes of erosion, the extension could be carried out in intermittent phases over a protracted period of time.

Anticipated Performance

The behavior of the beach under Alternative 4 will be similar to that described above for Alternative 3. The primary difference will occur during periods of erosion, when the berm-stabilized shoreline under Alternative 4 will lie slightly seaward of the berm-stabilized shoreline under Alternative 3 due to the preservation of the existing bike path and parking lot, and the absence of a corresponding retreat zone. As in the case of Alternative 3, periodic nourishment will be required to offset the cobble losses resulting from longshore and offshore transport. In the absence of a retreat zone, this maintenance work must be undertaken promptly whenever the need becomes apparent.

Positive Impacts

1. ***Upland Protection***: The existing bike path and parking lot will be less susceptible to wave-induced erosion and wave overtopping than at present due to the augmentation and westward extension of the existing cobble berm.
2. ***Shore Protection***: Based on the long-term stability of the natural cobble berm at Emma Wood State Beach, and the promising performance of the cobble berm test section at Surfers Point, it is anticipated that the augmented, extended cobble berm will stabilize the shoreline during periods of episodic erosion.
3. ***Minimum Disturbance***: Extending the existing cobble berm on an as-needed basis will result in a substantially smaller disturbance to the existing shorefront than would occur under the other three alternatives. This minimum disturbance will accrue both from the preservation of the existing improvements, and from the phased manner in which the berm will be extended.
4. ***Ocean View:*** An unobstructed view of the ocean will be available from the existing bike path, parking lot, and road.
5. ***Wave-Related Recreation***: Under many combinations of wave and water level conditions, the dissipative surface of the cobble berm could improve the quality of the surf by reducing wave reflection. This improvement, which is expected to be modest, is less likely to occur when water levels are low and relatively small waves impact the sand-charged toe of the berm.

Negative Impacts

1. ***Temporary Construction Impacts***: Truck traffic will result from the need to import material to supplement and extend the existing cobble berm. However, the temporary construction impacts will be less pronounced than under Alternatives 1 and 2 due to the absence of a buried seawall. The impacts also will be of relatively short duration, due to the phased nature of the construction.
2. ***Periodic Maintenance Impact:*** Losses due to longshore and offshore transport will necessitate periodic maintenance of the cobble berm, resulting in truck traffic. As in the case of Alternative 3, the anticipated maintenance frequency is estimated to be substantially lower than under Alternative 2.
3. ***Shoreline Access:*** The presence of a continuous cobble berm that stretches along the entire length of the project will impede access to the shoreline relative to sandy beach conditions (Alternative 1). The impact will be reduced relative to Alternatives 2 and 3, however, because the existing berm will be extended only on an as-needed basis rather than all at one time.
4. ***Beach Recreation:*** Opportunities for beach recreation will be diminished by the absence of a sandy surface seaward of the bike path.

Recommended Modifications

If the cobble berm is extended to the west before erosion reaches the vicinity of the bike path, it will be possible to provide a sandy surface for beach recreation between the berm crest and the bike path. This situation is depicted conceptually in the cross-section view of Figure 11. It should be noted, however, that the sandy surface will exist only in the western portion of the project area, and only if the berm is extended in a timely manner.

4.5 Comparative Evaluation

We believe that the natural variability of the Surfers Point shoreline (Section 2.5) is of central importance in evaluating the relative merits of the four alternatives. Based on the data presented in Appendix A of the Noble Report (Everts, 1999a, Table A-1), the maximum and minimum shoreline positions in the project area differed by as much as 868 ft between 1929 and 1999. This enormous range suggests that a managed retreat of 64½ ft, although perhaps of symbolic value, serves little practical purpose. We therefore recommend that primary emphasis be placed on other objectives, such as protecting the upland improvements during episodes of erosion, rather than on establishing a narrow retreat zone of arbitrary size.

As indicated in Sections 4.1 through 4.4, each of the four alternatives can be implemented in a manner that will protect the upland improvements without exerting

significant negative impacts on coastal processes. The most deleterious potential impact, offshore deflection of longshore transport under Alternative 2, can be mitigated by removing the pronounced seaward bulge in the cobble mattress at the existing salient between East and West Beaches. If we assume that Alternative 2 is modified in this manner, ranking the alternatives becomes a matter of evaluating the secondary impacts related to issues like construction, maintenance, and beach access.

Our highest ranking is afforded to Alternative 4 (As-Needed Extension of Existing Cobble Berm; Figure 11). The most compelling argument in favor of this approach is the limited disruption of the shorefront that results from preserving the existing bike path and parking lot, preserving the existing cobble test section, and eliminating the need for a substantial buried seawall. Additional benefits include reduced construction disturbance due to the phased nature of the berm extension, a relatively low cost due to the absence of demolition requirements, a neutral to slightly positive impact on surf conditions, and modest maintenance requirements. The primary disadvantages are the lack of prior experience with engineered cobble berms, and the lack of an extensive sandy beach surface for recreation and shoreline access.

The modified version of Alternative 3 (Cobble Berm; Figure 10) is our second-ranked alternative. Although similar to Alternative 4 in its use of an engineered cobble berm, the modified version of Alternative 3 is less desirable due to the disruption and cost associated with relocating the existing improvements and cobble test section. A particular advantage of Alternative 3 is the inclusion of a dedicated recreation area behind the cobble berm crest.

We rank Alternative 1 (Buried Seawall behind Retreat Zone; Figure 6) on an equal footing with Alternative 3 provided that as-needed beach nourishment is incorporated into the concept plan. The use of a seawall to protect upland facilities is a relatively common practice in Southern California, for which substantial design guidance exists. Although the impact of seawalls on coastal processes remains a matter of debate, the principal concerns regarding their use are the interruption of longshore transport, the loss of an upland sand source, and the loss of sand locally in the area fronting the seawall due to wave reflection. The first concern is not applicable to the Surfers Point project site, while the second will be addressed by the provision of beach nourishment material. The loss of sand fronting the seawall will be minimized by providing porous toe protection at the base of the vertical wall. The most noteworthy advantage of Alternative 1 is that during periods of accretion, a natural sandy beach will be available for recreation and shoreline access without an intervening cobble mattress or berm. On some occasions, however, a natural cobble berm analogous to that shown in Plate 2 may separate the sandy foreshore from the upland area. Disadvantages include the disruption and cost associated with relocating the existing improvements and

removing the cobble test section, and the negative impact on surfing conditions that will result when waves reflect off the seawall.

Even if the seaward bulge in the cobble mattress is removed, we regard Alternative 2 (Cobble Mattress with Sacrificial Dune; Figure 8) as the least desirable of the four design alternatives. Because the proposed mattress is both insubstantial and untested, primary reliance must be placed on a buried seawall similar to that envisioned under Alternative 1. The incremental disturbance and cost associated with constructing and maintaining the mattress therefore seem unwarranted. Additional disadvantages include those cited above for Alternative 1: the disturbance and cost associated with relocating the existing improvements and removing the cobble test section, and the negative impact on surfing conditions that will result when waves reflect off the seawall. Although the sacrificial dune and adjacent flat sand area will facilitate beach recreation, we believe that the dune will be eroded by even moderate storms, and will require frequent replenishment.

5. CONCLUSIONS AND RECOMMENDATIONS

1. ***Shoreline Position***: The shoreline at Surfers Point fluctuates widely with the episodic transport of sand from the Ventura River. Flood years bring more sand than the waves can transport, forming an accretionary bulge that is moved easterly along Surfers Point in the form of a traveling accretion wave. During dry years, the beach often disappears. Thus, there is no single, natural position for the shoreline at Surfers Point. Rather, a shoreline that fluctuates episodically within a broad range constitutes the natural condition.

2. ***Project Objective***: The wide fluctuation in historical shoreline positions at the project site implies that a managed retreat of 64½ ft serves little practical purpose. We therefore recommend that primary emphasis be placed on other objectives, such as protecting the upland improvements during episodes of erosion, rather than on establishing a narrow retreat zone of arbitrary size.

3. ***Cobble Berm Test Section:*** That portion of the cobble berm test section that was constructed at Surfers Point in Fall 2000 with a slope of 5(H):1(V) remained stable under the moderate wave conditions that prevailed during the 2000-01 winter storm season. Although the ability of the test section to withstand more extreme wave conditions remains to be demonstrated, the long-term stability of the natural cobble berm at Emma Wood State Beach suggests that the experimental berm, if supplemented in deficient areas and properly nourished, will provide effective shore protection. Continued monitoring is strongly recommended to document the performance of the berm under a variety of winter and summer wave conditions.

4. ***Evaluation of Alternatives:*** Each of the four conceptual alternatives under consideration for the Surfers Point project area, if implemented in accordance with the mitigation measures recommended in this report, will protect the upland improvements without exerting significant negative impacts on coastal processes. Based solely on coastal engineering considerations, Alternative 4 (As-Needed Extension of Existing Cobble Berm) represents the best option because it results in minimum disturbance of the existing shorefront and minimum cost. Alternative 1 (Buried Seawall behind Retreat Zone) and a slightly modified version of Alternative 3 (Cobble Berm) will create greater disturbance due to the relocation of the existing bike path and parking lot, but offer opportunities for recreation on a sandy beach surface. Alternative 2 (Cobble Mattress with Sacrificial Dune) represents the least suitable option because the disturbance and cost associated with installing a cobble mattress and sacrificial dune in addition to a substantial buried seawall are not warranted by the anticipated benefits.

5. ***Prerequisites for Design:*** For this CEQA/NEPA environmental review, the alternatives under consideration were conceptual in nature. Prior to finalizing the design for any of the four alternatives, the following issues should be addressed:

   - *Design Life*: A realistic design life, such as 20 or 25 years, should be established for the project. Once this step is taken, it will be possible to select appropriate design storm conditions and to estimate total costs (capital and maintenance) over the life of the project.

   - *Design Water Level*: An extreme water level should be established on the basis of the design storm. This water level will be required to predict wave runup and overtopping, which in turn will be required to optimize the configuration of the cobble berm crest or the height of the buried seawall.

   - *Design Wave Conditions*: Detailed information regarding the normal wave climate and wave shoaling (refraction/diffraction) at Surfers Point will be required to determine sand transport rates, the slopes and configuration of the sand beach or cobble berm under summer and storm conditions, and the likely impact of the project on surfing conditions. An analysis of extreme wave conditions also will be required, for use in establishing an appropriate toe depth, material thickness, and crest configuration for the cobble berm, or an appropriate toe protection design and height for the buried seawall.

   - *Budget of Sediment:* A budget of sediment will be necessary to estimate the stability of the beach foreshore fronting Surfers Point, and the resulting effect on the proposed cobble berm or seawall. The budget is a key factor in the design of a managed shoreline plan and the potential structures associated with it.

6. ***Cobble Berm Material:*** If a cobble berm or mattress is installed at the project site, material of relatively uniform size will provide greater stability than material composed of a wide range of sizes. Uniform size leads to greater porosity and permeability, resulting in reduced wave runup and backwash. Silt and sand can be tolerated in limited quantities, because they will be removed from the berm by wave impact. Gravel and small cobble sizes less than about 4 inches in diameter should be excluded, however, to avoid clogging the berm void spaces and to minimize the tendency toward ballistic behavior under storm conditions.

7. ***Project Boundaries:*** Regardless of the alternative selected for final design and implementation, particular care should be exercised to insure that continuous, appropriate shore protection extends beyond the east and west project boundaries. At

the western end, the shore protection system should tie into the river jetty. It should be recognized that if the jetty foundation is insubstantial, this structure could be undermined during episodes of severe erosion. At the eastern end (Station 21+50; Figure 2), the shore protection system should be extended to the east to prevent degradation from flanking erosion.

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APPENDIX A

COMMENTS ON COBBLE BERM DESIGN GUIDELINES

COMMENTS ON COBBLE BERM DESIGN GUIDELINES

Table C-7 of the Noble Report (Noble, 2000) provides a list of design guidelines for a gravel-cobble-boulder berm at Surfers Point. Our first overall observation is that a cobble-boulder berm is a dynamic structure, and its design should reflect this condition. Our second comment is to caution against the use of gravel in the construction of the berm.

The following comments pertain specifically to the design guidelines set forth in Table C-7:

1. Sediment Size: We agree that bigger materials are better. Sand and fine gravel, however, should not pose a problem as wave action will remove these clasts from the cobble voids. Gravel and pebbles, because of their size, will lock into the voids of a cobble-boulder berm.

2. Size Distribution: We concur that a more uniform size distribution is preferable over a wide range of clast sizes, but believe that sand will not pose a problem for a cobble-boulder berm because waves will remove the sand from the voids.

3. Sediment Angularity: There should not be a mix of angular and rounded material, as the berm face will be dynamic and angularity will interfere (lock).

4. Berm Porosity: As indicated above, gravel and pebbles should not be included in a cobble-boulder mix. Sand is acceptable, because it will be removed easily by wave impact. At the toe of the cobble berm, sand charging will occur naturally when the summer beach covers the toe. This will happen regardless of the amount of sand included in the original fill.

5. Berm Volume: Qualitatively, we agree with the statement that a larger volume is better to provide a cushion against losses. The volume required at Surfers Point remains to be determined, however, based on the wave conditions and sediment sizes adopted for the final design.

6. Crest Elevation of Berm: No comment.

7. Base Elevation of Berm: No comment.

8. Toe Protection: The recommendation for a scour apron at the toe applies to a cobble-boulder berm constructed on a sand substrate. At present, we do not know the composition of the subsurface at Surfers Point. It is possible, for example, that the berm will be founded on pre-existing cobbles or solid rock.

9. Berm Slope: There are no data to show how wave climate affects the slope of cobble size materials. Based on the stability of the natural cobble berm at Emma Wood State Beach, we believe that a slope on the order of 5(H):1(V) will be appropriate for Surfers Point (if similarly-sized material is used).

10. Berm Alignment: In the absence of wave climate data and longshore transport rates for Surfers Point, it would be difficult to select a berm alignment to minimize longshore transport. From what we know, it is not possible to have a zero longshore component as the prevailing waves are strongly from the west.

11. Alongshore Boundary of Berm: We believe that designating a single, stationary boundary between East and West Beaches is not relevant to the design of a cobble berm. In reality, accretion/erosion waves propagate along the shore, and the bulge (point) moves with time. Fortifying the bulge (as opposed to the low bluff at the landward edge of the beach) could serve to deflect littoral material away from the nearshore area.

12. Need for GCB Retention Device(s): As indicated above, we recommend against attempting to stabilize the location of a migrating point

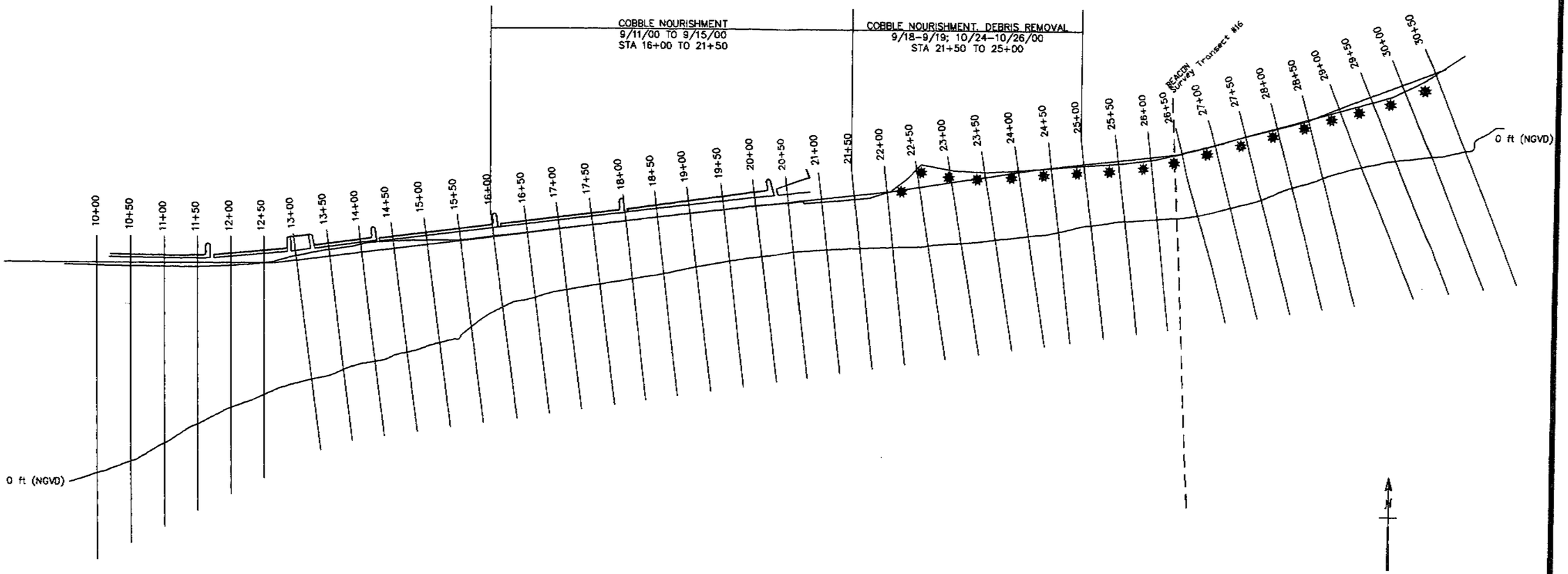
13. GCB Berm Maintenance: We agree that a maintenance plan should be prepared and implemented.

14. Artificial Berm Compatibility with Sand Replenishment: As indicated above, we do not perceive a problem with sand placement atop a cobble-boulder berm. Sand will be removed by wave action. Gravel and pebbles would pose a problem.

15. Monitoring: We agree that post-construction monitoring is essential following any coastal installation affected by wave action and sediment transport. Monitoring is an integral part of a maintenance plan. Unfortunately, it is often neglected until major problems become apparent.

APPENDIX B

PROFILES THROUGH SURFERS POINT COBBLE BERM TEST SECTION

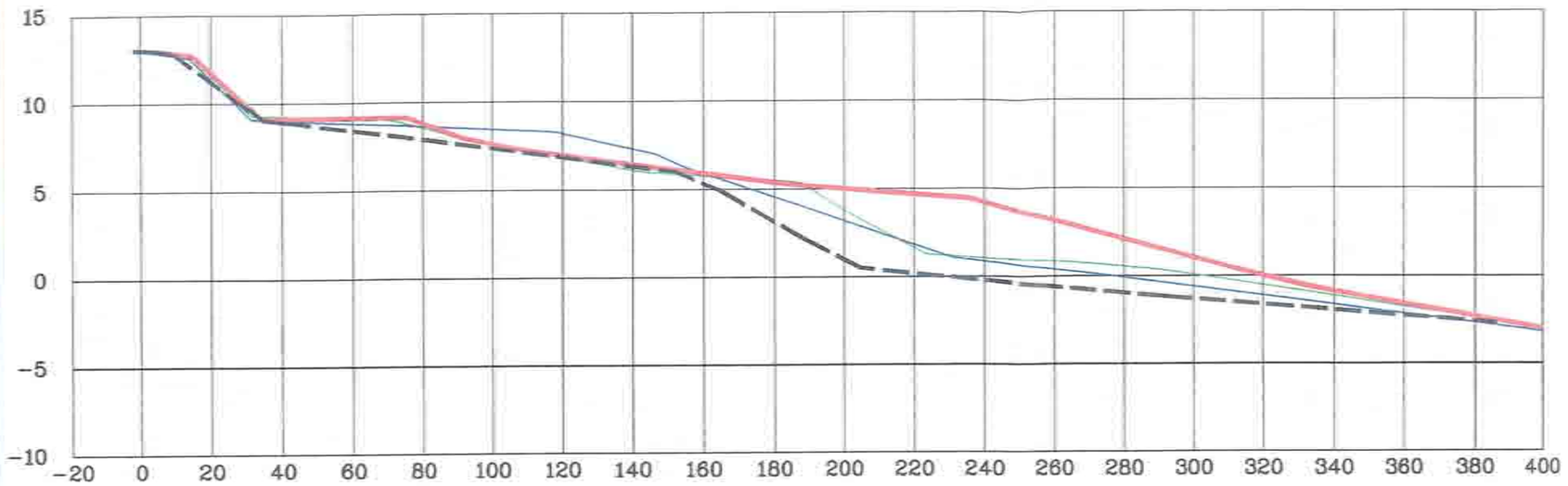


NOTE

1. Profile locations and information regarding cobble nourishment program provided by Benner and Carpenter.

SURFER'S POINT
PROFILE LOCATION MAP

Scale: As noted	Checked by: CBL	Drawn by: GEH
Date: 1 May 2001	Sheet: 1 of 1	Revised:
Prepared for: CITY OF SAN BUENAVENTURA		
Prepared by: COASTAL FRONTIERS CORPORATION		Drawing No.: CFC-474-01-001



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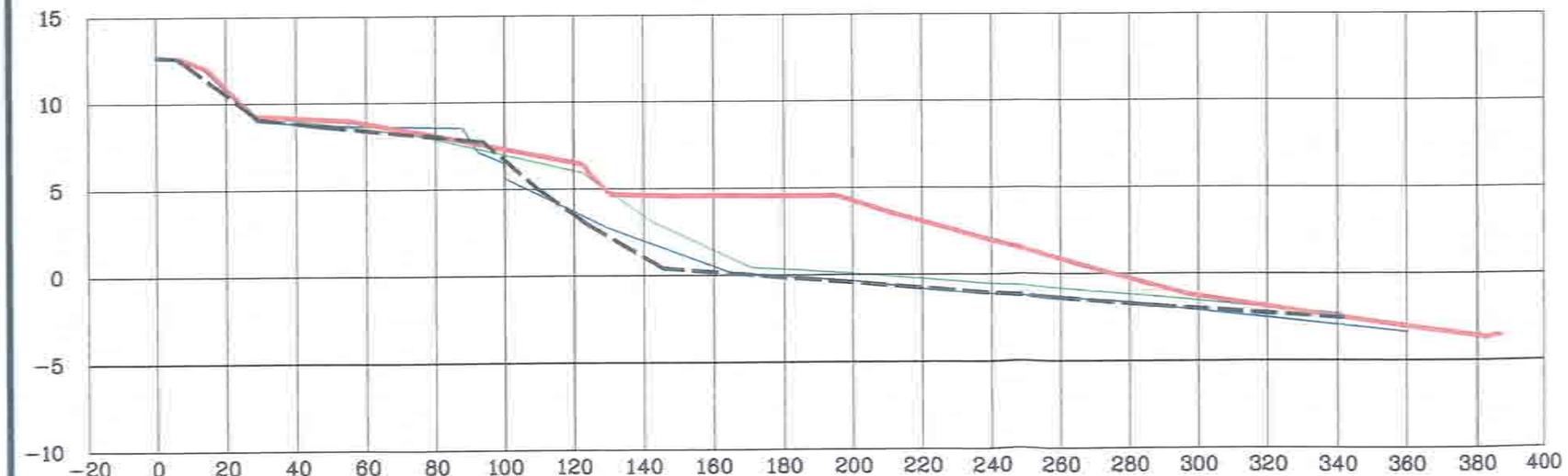


Station 11+00

NOTES

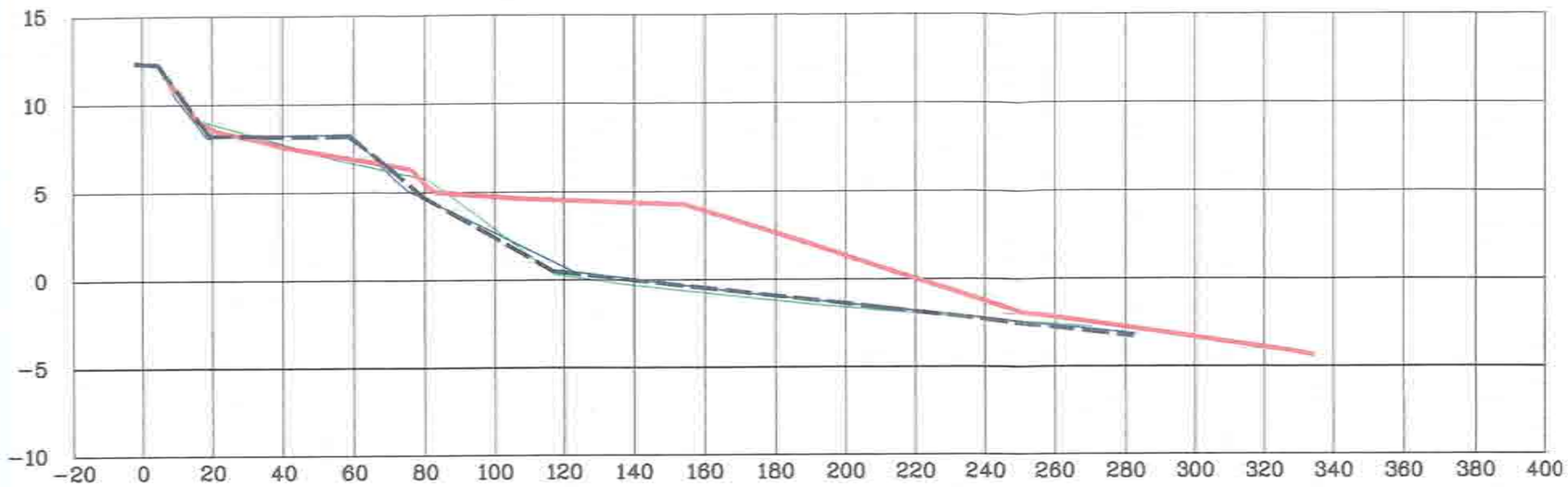
1. Surveys were performed by Benner and Carpenter.
2. Profile locations are shown in Drawing CFC-474-01-001.
3. Profiles were interpolated from TIN Model, and therefore should be regarded as approximate.
4. Elevations are in feet, and are referenced to NGVD29.
5. Ranges are in feet, and are referenced to a "Survey Control Line".

LEGEND

- 31 August 2000
- 29 October 2000 (No Data)
- 13 December 2000
- 7 March 2001
- 2 April 2001

SURFER'S POINT
BEACH PROFILES

Scale: As noted	Checked by: CSL	Drawn by: GEH
Date: 1 May 2001	Sheet: 1 of 11	Revised:
Prepared for: CITY OF SAN BUENAVENTURA		
Prepared by: COASTAL FRONTIERS CORPORATION		Drawing No.: CFC-474-02-001



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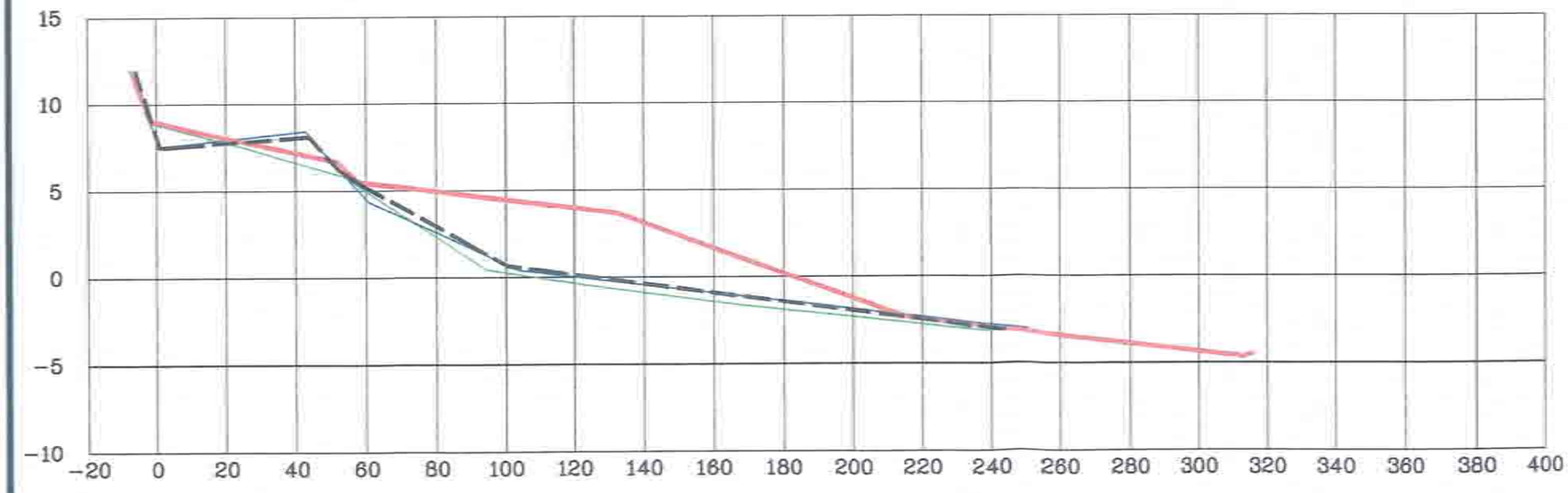

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NOTES

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LEGEND

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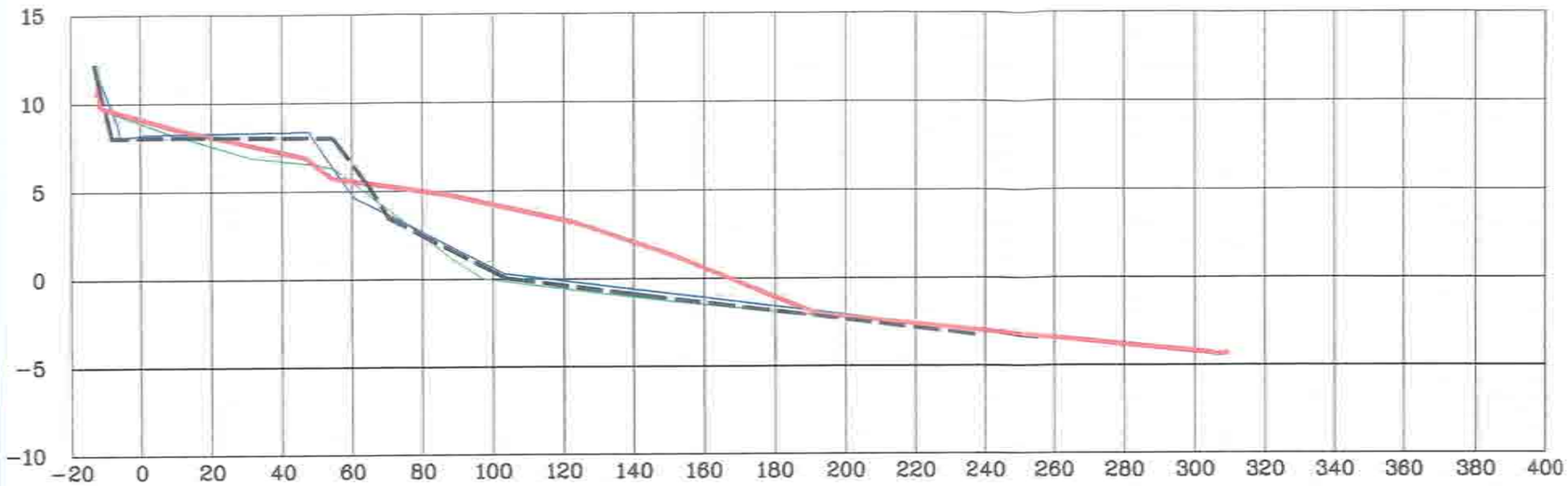
- 13 December 2000
- 7 March 2001
- 2 April 2001

SURFER'S POINT
BEACH PROFILES

Scale: As noted	Checked by: CSH	Drawn by: GEH
Date: 1 May 2001	Sheet: 2 of 11	Revised:
Prepared for: CITY OF SAN BUENAVENTURA		
Prepared by: COASTAL FRONTIERS CORPORATION		Drawing No.: CFC-474-02-001



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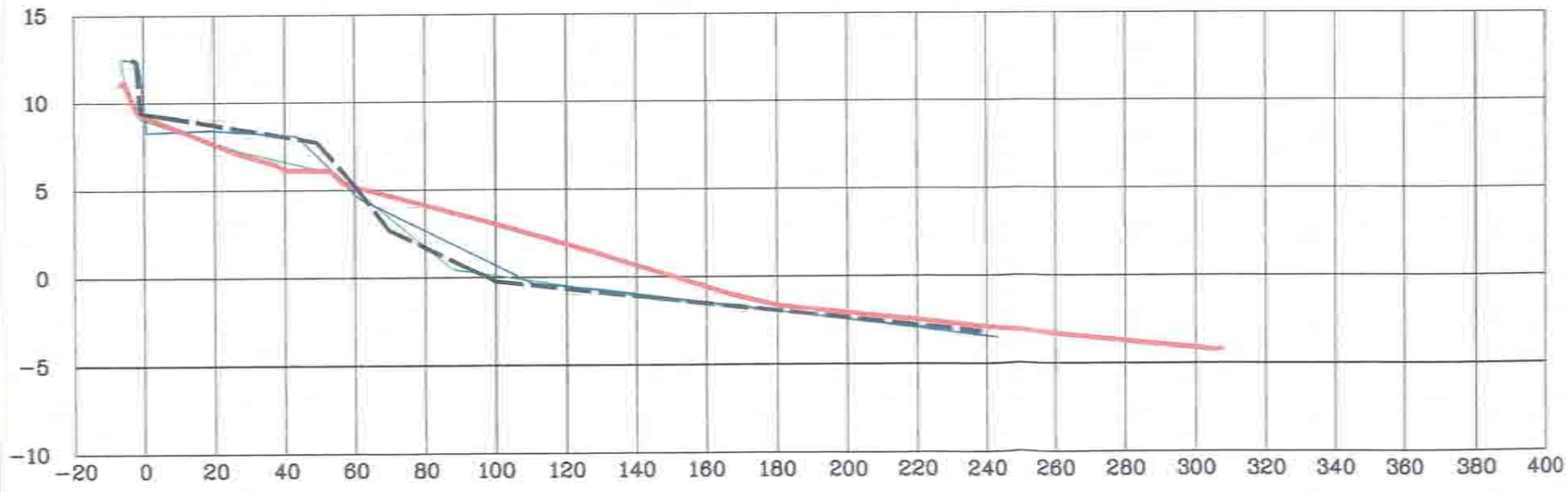

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NOTES

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LEGEND

- 31 August 2000
- 29 October 2000 (No Data)
- 13 December 2000
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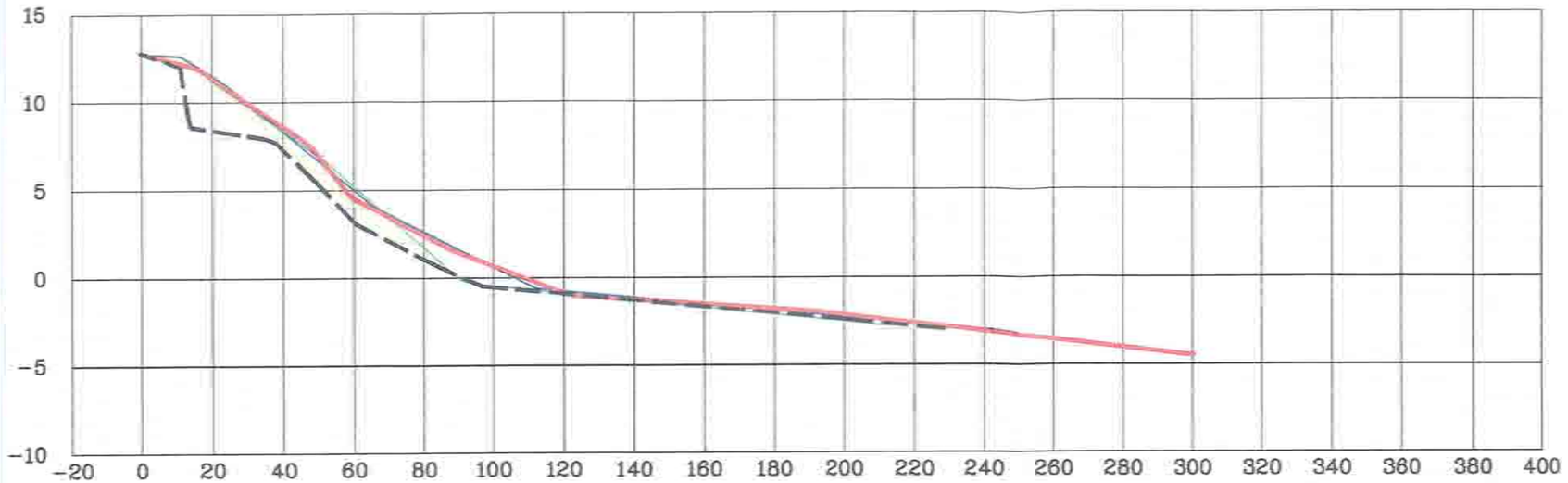
- 2 April 2001

SURFER'S POINT
BEACH PROFILES

Scale: As noted	Checked by: CHL	Drawn by: GEH
Date: 1 May 2001	Sheet: 3 of 11	Revised:
Prepared for: CITY OF SAN BUENAVENTURA		
Prepared by: COASTAL FRONTIERS CORPORATION		Drawing No.: CFC-474-02-001



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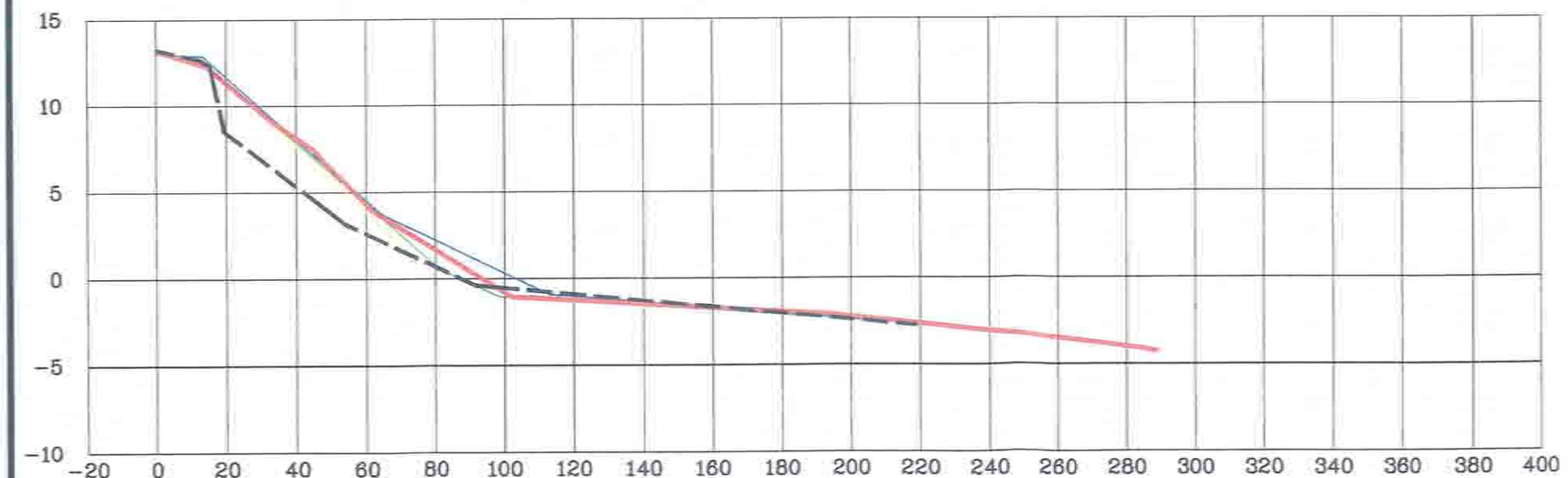

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NOTES

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LEGEND

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- 2 April 2001

SURFER'S POINT
BEACH PROFILES

Scale: As noted	Checked by: CBL	Drawn by: GEH
Date: 1 May 2001	Sheet: 4 of 11	Revised:
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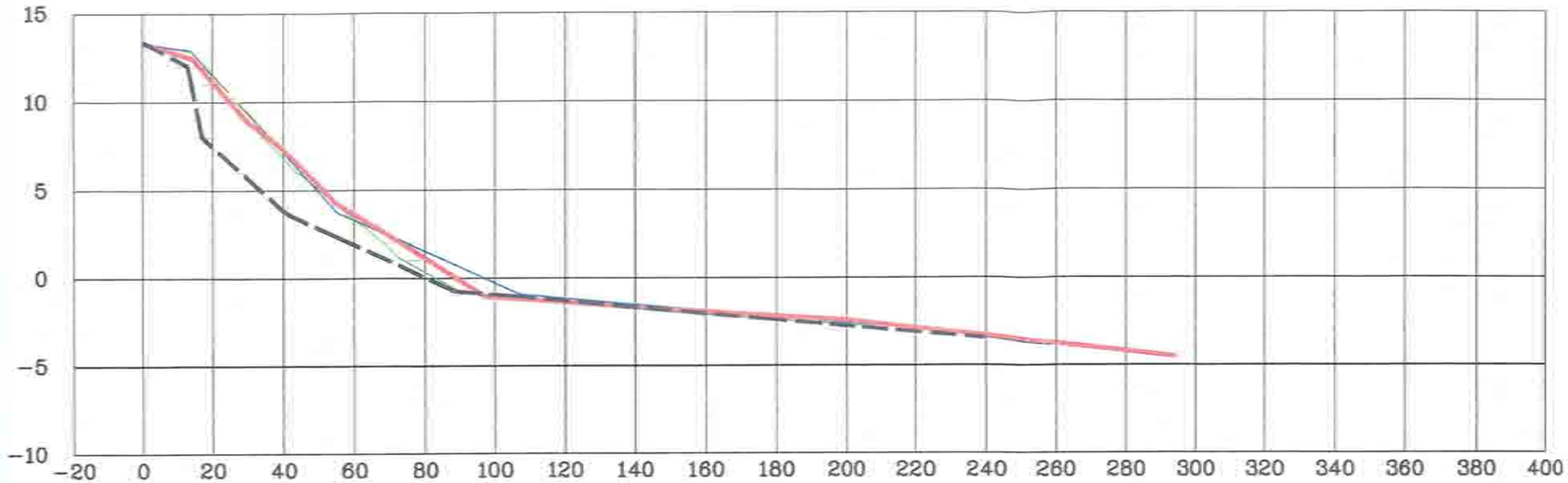
Prepared by: COASTAL FRONTIERS CORPORATION		Drawing No.: CFC-474-02-001



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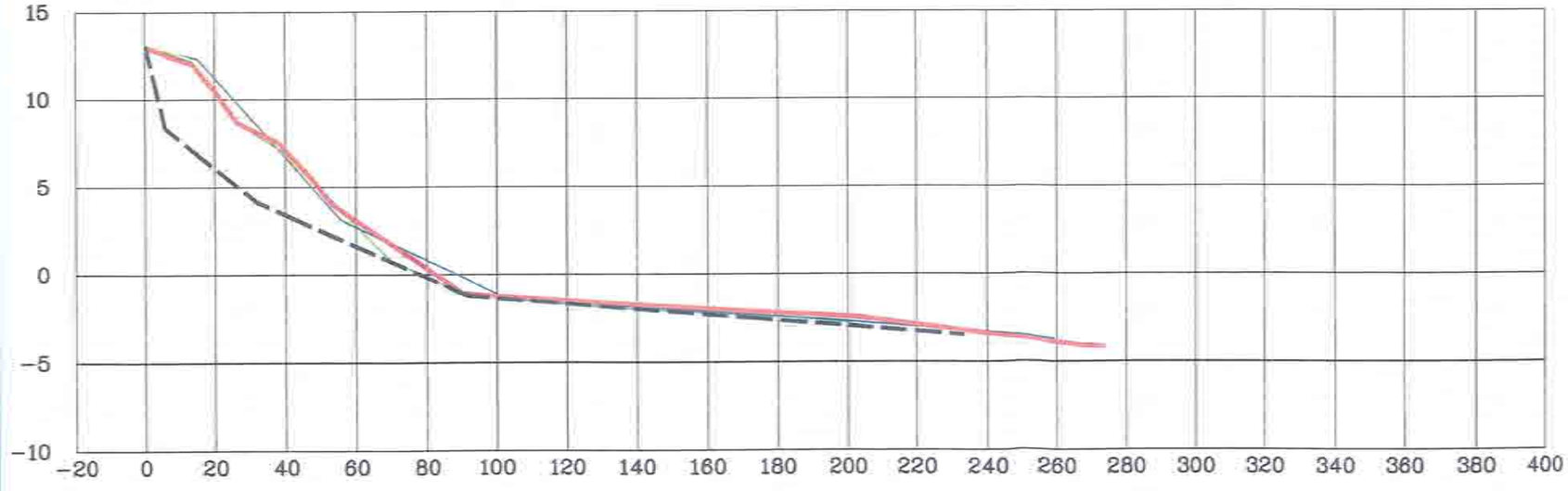

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LEGEND

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- 29 October 2000
- 13 December 2000
- 7 March 2001
- 2 April 2001

SURFER'S POINT
BEACH PROFILES

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Date: 1 May 2001	Sheet: 5 of 11	Revised:
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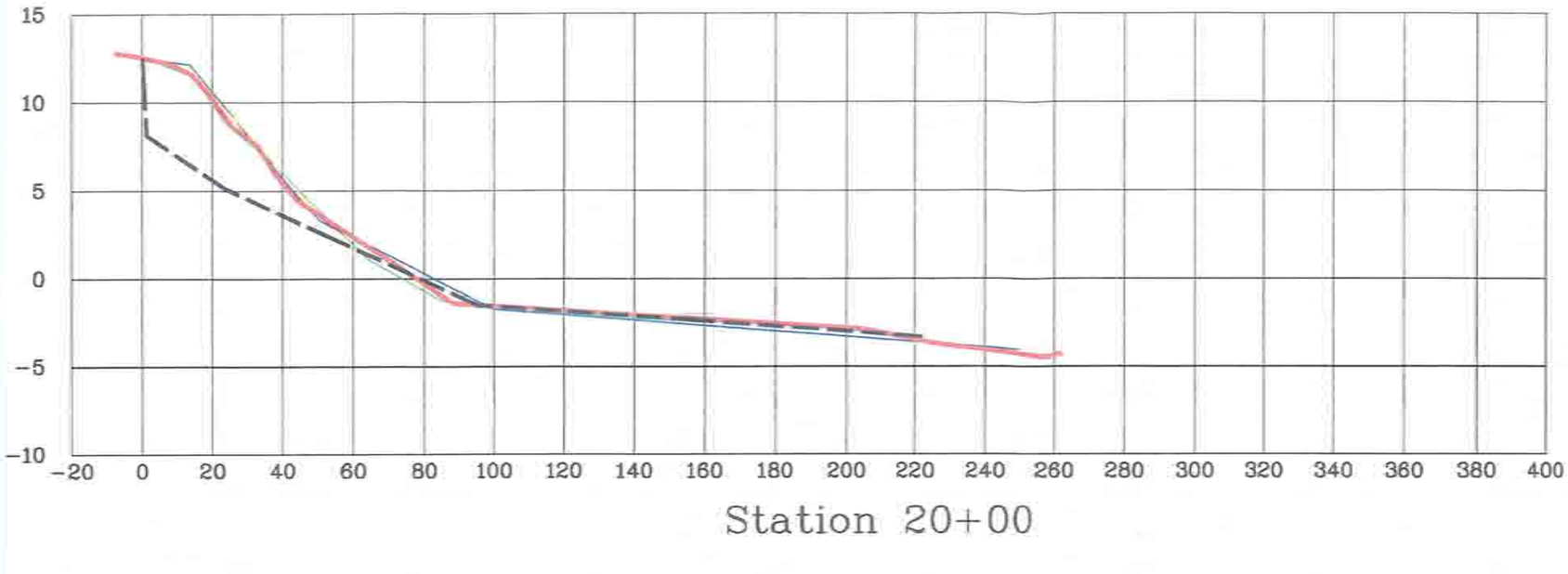
Prepared by: COASTAL FRONTIERS CORPORATION		Drawing No.: CFC-474-02-001



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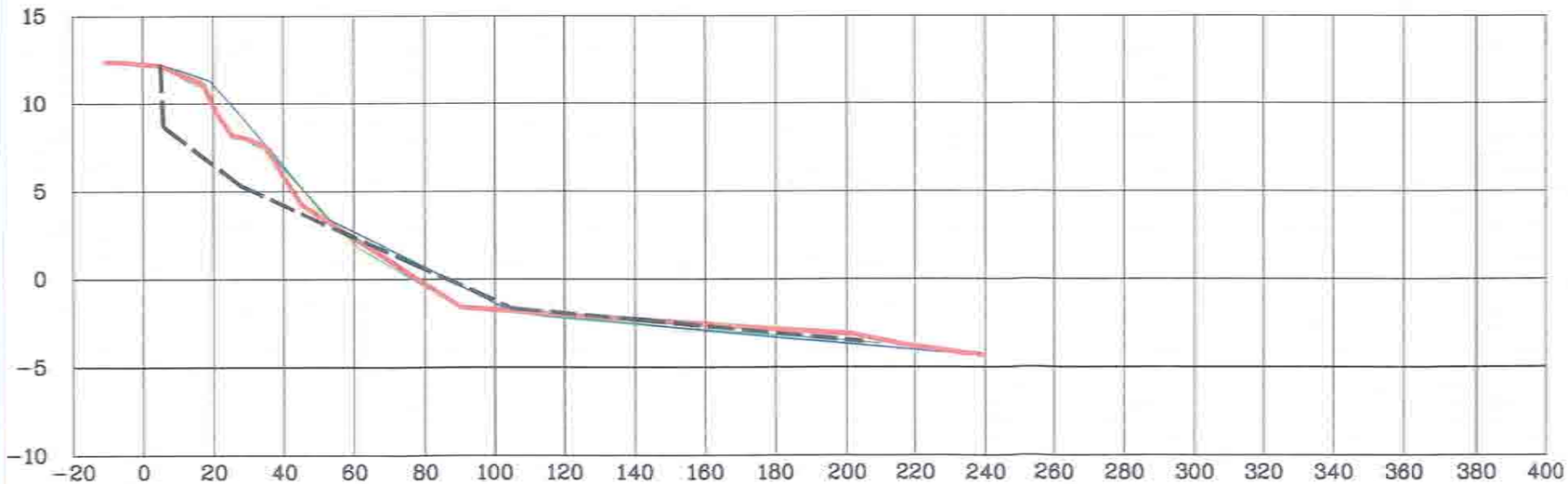

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NOTES

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LEGEND

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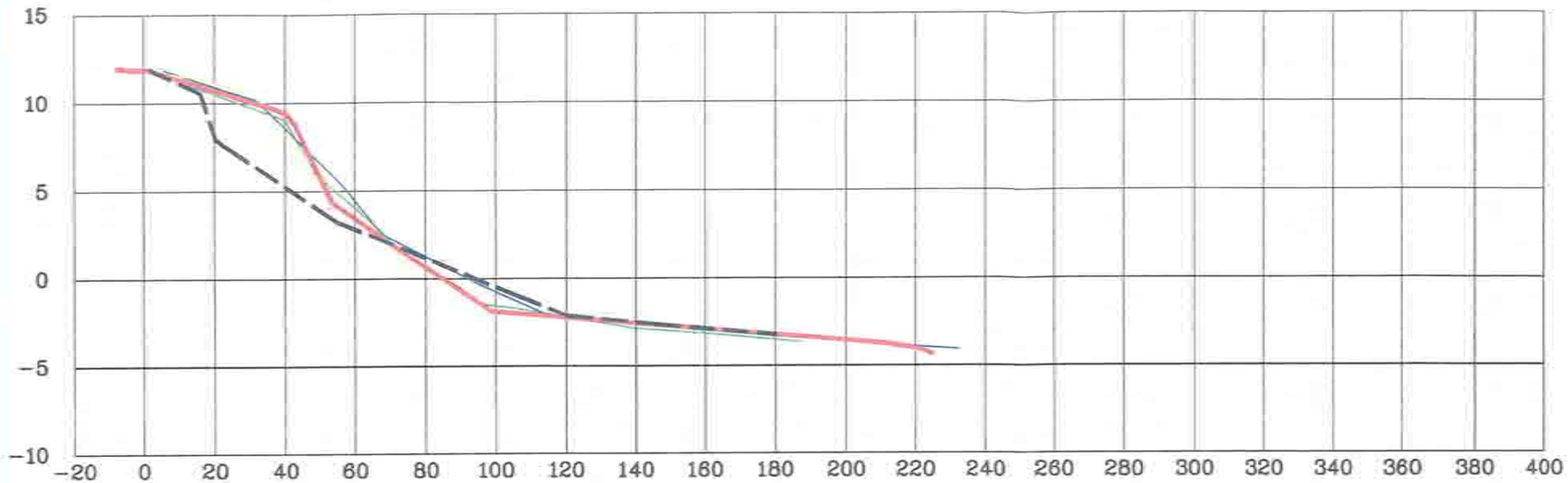
SURFER'S POINT
BEACH PROFILES

Scale: As noted	Checked by: CBL	Drawn by: GEH
Date: 1 May 2001	Sheet: 6 of 11	Revised:
Prepared for: CITY OF SAN BUENAVENTURA		
Prepared by: COASTAL FRONTIERS CORPORATION		Drawing No.: CFC-474-02-001



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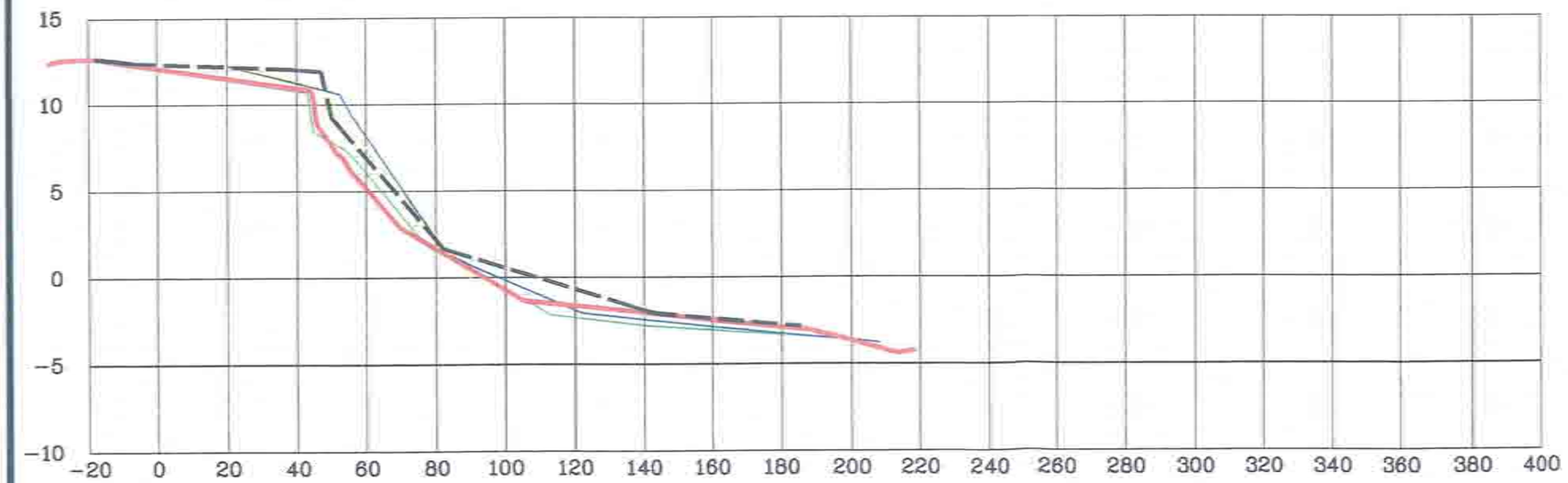

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BEACH PROFILES

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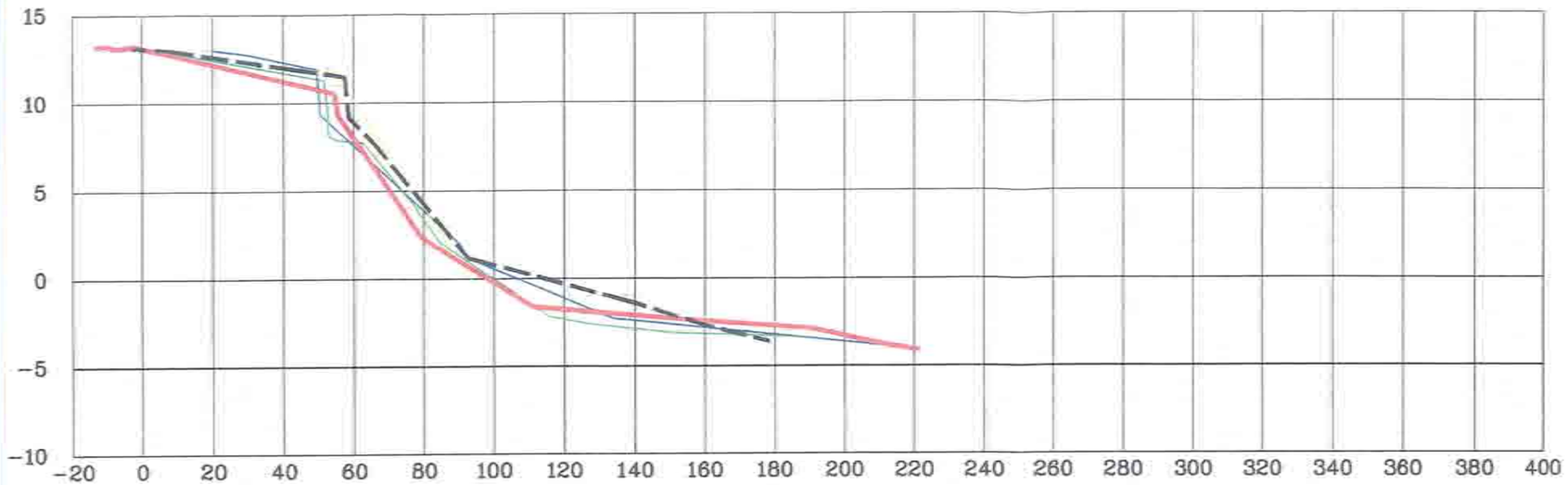

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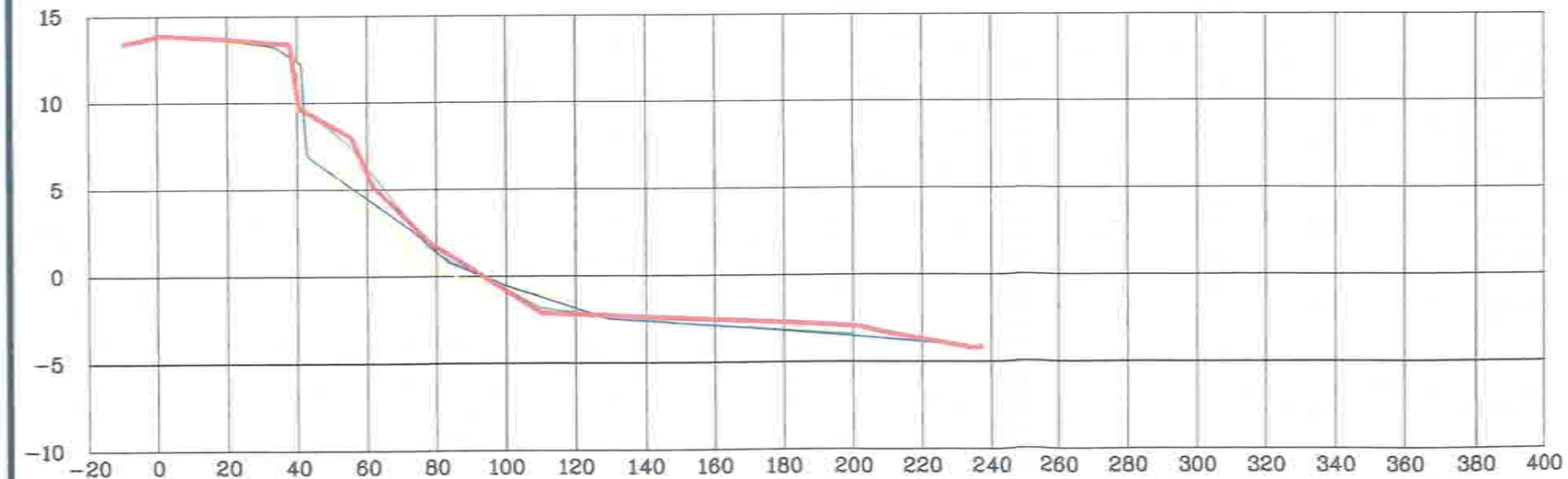

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NOTES

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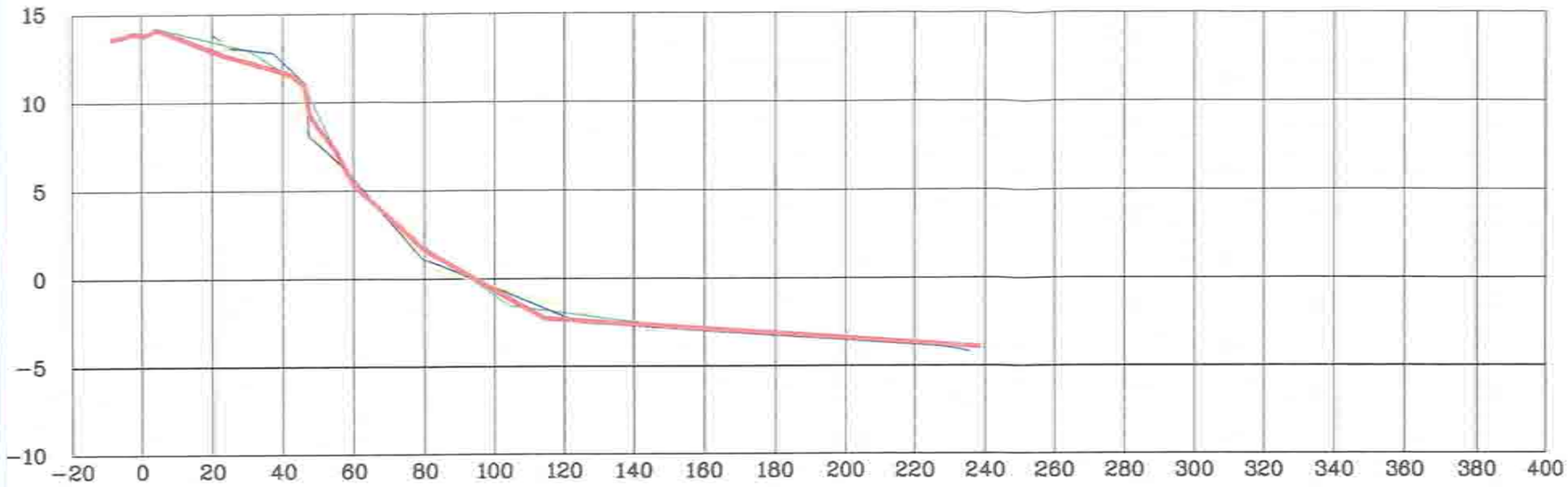
SURFER'S POINT
BEACH PROFILES

Scale: As noted	Checked by: CSL	Drawn by: GEH
Date: 1 May 2001	Sheet: 8 of 11	Revised:
Prepared for: CITY OF SAN BUENAVENTURA		
Prepared by: COASTAL FRONTIERS CORPORATION		Drawing No.: CFC-474-02-001



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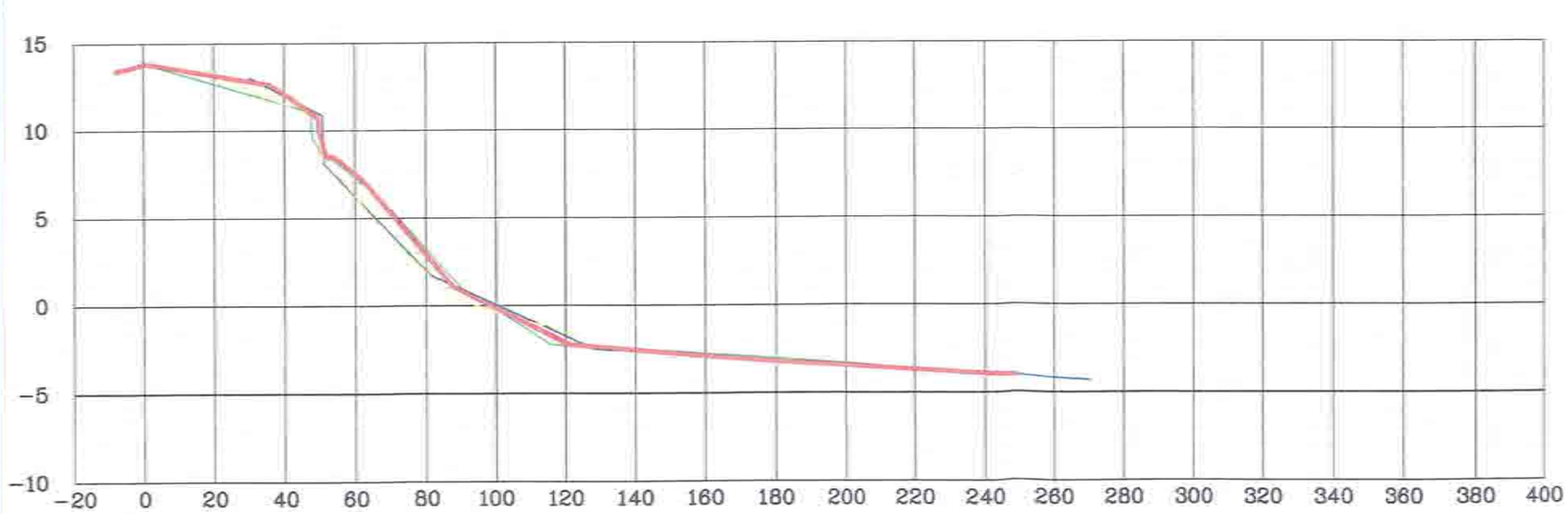

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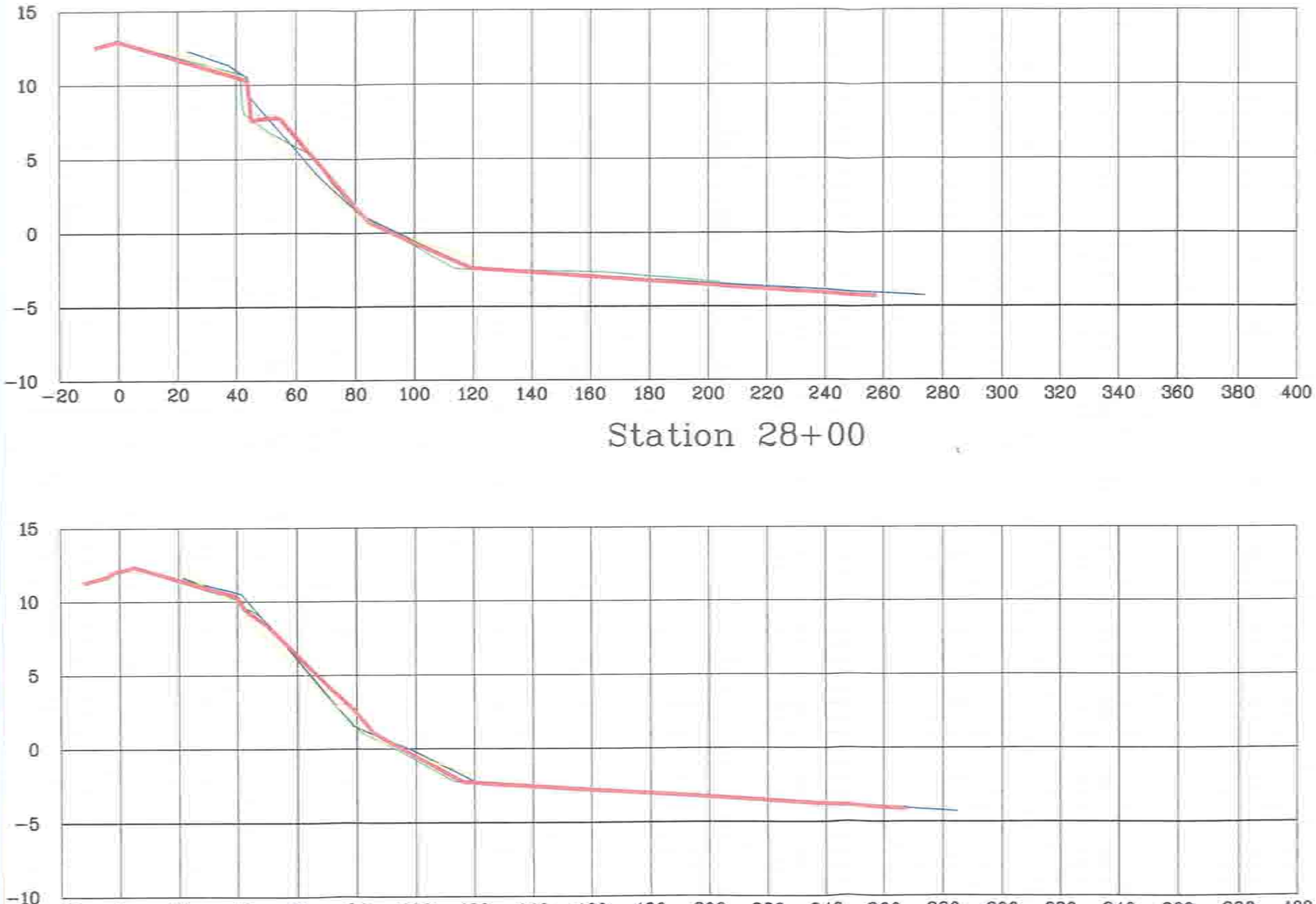
SURFER'S POINT
BEACH PROFILES

Scale: As noted	Checked by: CHL	Drawn by: GEH
Date: 1 May 2001	Sheet: 9 of 11	Revised:
Prepared for: CITY OF SAN BUENAVENTURA		
Prepared by: COASTAL FRONTIERS CORPORATION		Drawing No.: CFC-474-02-001



NOTES

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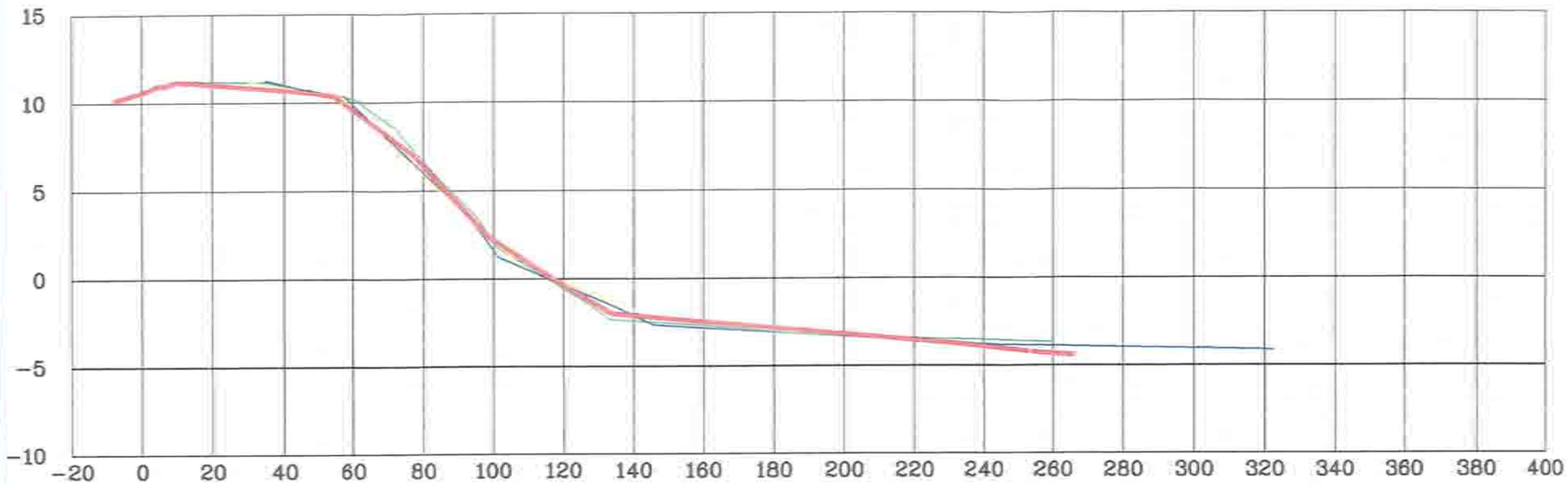
SURFER'S POINT
BEACH PROFILES

Scale: As noted	Checked by: CAL	Drawn by: GEH
Date: 1 May 2001	Sheet: 10 of 11	Revised:
Prepared for: CITY OF SAN BUENAVENTURA		
Prepared by: COASTAL FRONTIERS CORPORATION		Drawing No.: CFC-474-02-001



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SURFER'S POINT
BEACH PROFILES

Scale: As noted	Checked by: CRL	Drawn by: GEH
Date: 1 May 2001	Sheet: 11 of 11	Revised:
Prepared for: CITY OF SAN BUENAVENTURA		
Prepared by: COASTAL FRONTIERS CORPORATION		Drawing No.: CFC-474-02-001

CFC-474-00

COASTAL ENGINEERING REVIEW OF THE PLAN FOR MANAGED SHORELINE RETREAT AT SURFERS POINT

ADDENDUM
MODIFIED SURFRIDER FOUNDATION ALTERNATIVE

Prepared for:

Rincon Consultants, Inc.
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Prepared by:

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Coastal Frontiers Corporation
Chatsworth, California

Dr. Douglas L. Inman
Dr. Patricia M. Masters
Inman and Masters Consultants
La Jolla, California

June 2002

COASTAL ENGINEERING REVIEW OF THE PLAN FOR MANAGED SHORELINE RETREAT AT SURFERS POINT

ADDENDUM
MODIFIED SURFRIDER FOUNDATION ALTERNATIVE

A1. INTRODUCTION

In "Coastal Engineering Review of the Plan for Managed Shoreline Retreat at Surfers Point" (the "Original Report"; Leidersdorf, *et al.*, 2001), the following four conceptual alternatives for shoreline preservation were evaluated:

Alternative 1. Buried Seawall behind Retreat Zone;

Alternative 2. Cobble Mattress with Sacrificial Dune;

Alternative 3. Cobble Berm;

Alternative 4. As-Needed Extension of Existing Cobble Berm.

This Addendum to the Original Report evaluates a fifth concept, termed "Alternative 5: "Modified Surfrider Foundation Alternative". Initially proposed by Paul Jenkin of the Surfrider Foundation, Alternative 5 was refined by Craig Leidersdorf (Coastal Frontiers) and Drs. Douglas Inman and Patricia Masters (Inman and Masters, Consultants) under contract to the City of Ventura. The primary change from the original Surfrider Foundation concept was to replace a proposed cobble mattress in the retreat zone with a more substantial engineered cobble berm, thereby providing increased protection for the upland improvements.

The sections that follow provide a detailed assessment of Alternative 5, and a comparative evaluation relative to the other four alternatives. To distinguish the section and figure numbers in this Addendum from those in the Original Report, they are preceded by the letter "A" (e.g., Figure A1). As in the case of the Original Report, the analysis presented here is limited solely to coastal engineering considerations. No attempt has been made to evaluate the adequacy of upland improvements such as the bike path and parking facilities, or to

address the social, political, and economic considerations that are critical to the successful implementation of the project.

A2. ALTERNATIVE 5: MODIFIED SURFRIDER ALTERNATIVE

Coastal Design Features

Alternative 5 is derived from Alternative 3 (Cobble Berm), but differs with respect to the treatment of the existing artificial fill within the planned retreat zone and the creation of vegetated dunes. The key coastal design features are described below and portrayed graphically in Figure A1:

Retreat Zone: A 64-foot wide retreat zone will be created by demolishing all improvements seaward of the existing location of Shoreline Drive. Non-beach-grade fill material within the retreat zone will be removed to the extent practical. The excavated material will be replaced with cobble and beach-quality sand.

New Improvements: A new bike path and new parking facilities will be constructed landward of the retreat zone, as shown in Figure 7 of the Original Report.

Cobble Berm: An engineered cobble berm will be installed to provide increased resistance to erosion. The berm will have a 5(H):1(V) face and a flat crest capable of accommodating wave overtopping from the design storm event. In the western portion of the project area (west of Station 16+00, as shown in Figure 2 of the Original Report), the berm will be constructed in the backshore area (landward of the existing shoreline) and then buried beneath beach-quality sand. In the eastern portion, the berm will be constructed by re-shaping and augmenting the existing cobble test section to create the desired 5(H):1(V) slope and a substantial toe below MLLW.

Vegetated Dunes: Dunes will be established over the buried cobble berm in the western portion of the project area, and, to a limited extent, over buried portions of the cobble berm in the eastern portion. The dunes in the western portion will be vegetated with native plants, and will include walkways for beach access and interpretive signage to educate beach users. The maximum elevation of the western dunes will exceed the elevation of the bike path (Jenkin, 2002).

Parapet Wall: A low, non-structural wall will be provided at the landward edge of the retreat zone to reduce the frequency with which sand and cobbles are displaced onto the bike path by large storm waves, winds, and human disturbance.

Beach and Dune Renourishment: The cobble berm and vegetated dunes will be replenished episodically when they are depleted by erosion.

As in the case of Alternatives 3 and 4, Alternative 5 relies on an engineered cobble berm as the primary means of protection for the upland improvements. The berm will be more substantial under Alternative 5, however, due to the use of additional cobble to replace the non-beach-grade artificial fill in the retreat zone. It is anticipated that the berm crest will lie within the retreat zone (Figure A1), and that the berm composition will be comparable to that of the natural berm at Emma Wood State Beach (with a mean size of about 1 foot; Everts, 2000). The exact elevation and width of the berm, along with its composition, will be specified during the final design process.

Anticipated Performance

The performance of the beach and cobble berm will be analogous to that described for Alternative 3. During periods of accretion, when sand accumulates in front of the cobble berm, the beach width will fluctuate in a manner similar to that observed in the past. During periods of episodic erosion, the cobble berm will tend to stabilize the shoreline seaward of the bike path and parking lot. Most wave overtopping will be absorbed by the cobble berm before it reaches the parapet wall. Episodic nourishment of the berm will be required to offset the losses resulting from longshore and offshore transport.

The vegetated dunes to be established in the western portion of the project area and to a limited extent in the eastern portion will be susceptible to erosion during storm events. On those occasions when severe storms follow a period of low sand discharge from the Ventura River, the dunes may be completely lost. It then will be necessary to replace not only the sand, but also the vegetation, walkways, and signage. The maintenance requirements may be substantial during episodic periods of prolonged shoreline retreat.

Positive Impacts

1. ***Upland Protection:*** The upland improvements to be constructed landward of the retreat zone will be less susceptible to wave-induced erosion and wave overtopping than the existing bike path and parking lot due the presence of the engineered cobble berm, the vegetated dunes, and the increased setback from the existing shoreline.
2. ***Shore Protection:*** Based on the long-term stability of the natural cobble berm at Emma Wood State Beach, and the promising performance of the cobble berm test section at Surfers Point, it is anticipated that the engineered cobble berm will stabilize the shoreline during periods of episodic erosion. The berm will offer greater resistance to storm wave attack than under Alternatives 3 and 4, due to the use of additional cobble material to replace artificial fill in the retreat zone.

3. ***Wave-Related Recreation:*** Under many combinations of wave and water level conditions, the dissipative surface of the cobble berm could improve the quality of the surf by reducing wave reflection. This improvement, which is expected to be modest, is less likely to occur when water levels are low and relatively small waves impact the sand-charged toe of the berm.

4. ***Sediment Contribution:*** Whenever the dunes are eroded by storm waves, the sand will be added to the littoral zone. The rate of supply will depend on both the frequency of severe storms and the frequency with which the dunes are replenished. The contribution will be modest, however, compared to the estimated potential net longshore transport of 1.3 million yd^3/yr.

5. ***Dune Enhancement:*** The combination of native vegetation and walkways to be installed in the western dunes will create an enhanced dune environment relative to that which currently exists. An additional benefit of the vegetation is a reduction in the rate at which onshore winds will transport sand onto the bike path.

6. ***Removal of Non-Beach-Grade Fill Material:*** Excavating the artificial fill in the retreat zone that is not of beach quality will remove a source of undesirable material that otherwise could be exposed during severe storm events.

Negative Impacts

1. ***Temporary Demolition Impacts:*** Demolition of the existing improvements and excavation of non-beach-grade artificial fill in the retreat zone will cause a temporary increase in truck traffic, and generate a substantial volume of solid waste for disposal. Furthermore, beach access will be impaired during the demolition period.

2. ***Temporary Construction Impacts:*** Temporary construction impacts will be less pronounced than under Alternatives 1 and 2 due to the absence of a buried seawall. Nevertheless, truck traffic will result from the need to import material for the cobble berm and dunes. In addition, the partially-vegetated dunes that currently exist in the western portion of the project area will be removed to permit construction of the buried cobble berm.

3. ***Episodic Maintenance Impacts:*** Losses due to longshore and offshore transport will necessitate episodic maintenance of the cobble berm and dunes, resulting in truck traffic. The maintenance requirements could be substantial when shoreline retreat in the project area causes partial or total loss of the dune sand.

4. ***Shoreline Access:*** The presence of a continuous cobble berm in the eastern portion of the project area and vegetated dunes in the western portion will impede access to the shoreline relative to sandy beach conditions (Alternative 1). This impact will be reduced by the provision of walkways through the dunes.

5. ***Beach Recreation:*** Opportunities for beach recreation will be less than those available under Alternative 1 due to the presence of a cobble-dominated surface seaward of the bike path in the eastern portion of the project area, and a vegetated dune surface with restricted access in the western portion.

6. ***Ocean View:*** The vegetated dunes in the western portion of the project area will partially obstruct the ocean view available from the relocated bike path and road (because the maximum elevation of the dunes will exceed the elevation of the bike path).

7. ***Wind-Blown (Aeolian) Transport:*** The predominantly onshore winds at the project site will transport sand from the vegetated dunes toward the bike path. Despite the stabilizing influence of the vegetation, it is likely that sand will accumulate on the bike path during strong wind events.

Recommended Modifications

To defer capital expenditures and reduce the severity of temporary demolition and construction impacts, it may prove advantageous to implement Alternative 5 in stages (such as in the manner proposed for Alternative 4).

The episodic maintenance impacts associated with dune replenishment can be reduced by deferring the replenishment until shoreline retreat in the project area is replaced by shoreline advance. As explained in Section 2.5 of the Original Report, shoreline advance tends to correlate with periods of high sediment discharge from the Ventura River.

The project's potentially negative impacts on the ocean view and wind-blown sand transport can be reduced by using a maximum dune elevation comparable to the elevation of the bike path.

)MPARATIVE EVALUATION

; in the case of the other four conceptual alternatives, the Modified Surfrider n Alternative can be implemented in a manner that will protect the upland ients without exerting significant negative impacts on coastal processes. This nplies that the City's selection of a preferred alternative can be based on social, and economic considerations as well as the secondary coastal impacts related to ı as construction, maintenance, and beach access.

the Original Report, Alternative 4 (As-Needed Extension of Existing Cobble Berm) l as the most desirable option from the standpoint of coastal engineering :ions because it results in minimum disturbance of the existing shorefront and cost. It does not fulfill the Surfers Point Working Group's objective of ting a retreat zone, however. Among the remaining three original approaches, 'es 1 (Buried Seawall behind Retreat Zone) and 3 (Cobble Berm) are ranked ately equal. Both offer the advantage of recreational opportunities on a sandy beach Alternative 2 (Cobble Mattress with Sacrificial Dune) is ranked lowest, because the :e and cost associated with installing a cobble mattress and sacrificial dune in ɔ a substantial buried seawall are not warranted by the anticipated benefits.

ke Alternatives 3 (Cobble Berm) and 4 (As-Needed Extension of Existing Cobble lternative 5 provides substantial protection for the upland improvements without the buried seawall, and without degrading the surf conditions. Its unique advantage om the removal of non-beach-grade fill material in the 64-foot retreat zone. This will not only eliminate a source of potential contaminants, but also produce a more erm due to the replacement of the artificial fill with beach-compatible cobbles. 'e 5 offers the additional benefit of an enhanced dune environment through the of native vegetation and walkways (to eliminate foot traffic in the planted areas).

ıe negative aspects of Alternative 5 are exhibited in varying degrees by the other ɔns. Temporary demolition impacts result from the creation of a retreat zone, while / construction impacts result from the need to install a cobble berm as the primary shore protection. The maintenance impacts associated with dune replenishment are dable consequence of establishing the dunes in an area subject to episodic erosion. impacts on shoreline access, the ocean view, and wind-blown sand transport can be ɔy the use of dune walkways and an appropriate dune elevation, as discussed in .2. The limited opportunity for beach recreation that arises from the lack of a sandy djacent to the bike path represents a trade-off against the creation of an enhanced ronment with native vegetation.

Based on the foregoing coastal engineering considerations, we rank Alternative 5 as comparable to Alternatives 1 and 3. If the City wishes to implement a retreat zone, and places particular importance on removing non-beach-grade fill material and providing an enhanced dune environment, Alternative 5 represents the most desirable approach. Conversely, if minimum maintenance cost is afforded the highest priority, Alternative 5 becomes less attractive than Alternatives 1 and 3.

A4. PREREQUISITES FOR DESIGN

Section 5 of the Original Report includes a recommendation to establish the following conditions prior to proceeding with the design of any alternative: the project design life, design water level conditions, design wave conditions, and the budget of sediment for the project area. Subsequent to the preparation of the Original Report, the City commissioned Noble Consultants, Inc., to develop these prerequisites for design. Their results are presented in "Preliminary Coastal Engineering Design Criteria (Moore, 2002).

A5. REFERENCES

Everts, C., 2000, "Protective Gravel, Cobble, and Boulder Berms in Southern California", Appendix B in Noble Consultants, Inc., "Surfers Point Park Managed Plan for Shoreline Retreat", prepared for City of San Buenaventura, Irvine, CA, 16 pp. + Appen.

Jenkin, P., 2002, personal communication, Surfrider Foundation, Ventura, CA.

Moore, J., 2002, "Preliminary Coastal Engineering Design Criteria", Memorandum prepared for Mr. Rick Raives, Noble Consultants, Inc., Irvine, CA, 8 pp. + Attachments.

Leidersdorf, C.B., D. L. Inman and P.M. Masters, 2001, "Coastal Engineering Review of the Plan for Managed Shoreline Retreat at Surfers Point," prepared for Rincon Consultants, Inc., Ventura, CA, by Coastal Frontiers Corporation, Chatsworth, CA, 54 pp. + Appen.

Appendix D

Phase I Archaeological Survey

PHASE I ARCHAEOLOGICAL SURVEY OF APPROXIMATELY 16 ACRES FOR THE SURFERS POINT MANAGED SHORELINE RETREAT PROJECT CITY OF SAN BUENAVENTURA, VENTURA COUNTY, CALIFORNIA (USGS 7.5' Ventura Quadrangle)

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April 13, 2001

CONTENTS

Page

1.0 INTRODUCTION 1

2.0 PROJECT LOCATION AND DESCRIPTION 1

3.0 SOURCES CONSULTED 5

4.0 ENVIRONMENTAL SETTING 9
4.1 Regional Setting 9
4.2 Site Specific Setting 10

5.0 CULTURAL SETTING 11
5.1 Ethnography 11
5.2 Archaeology 12
5.3 History 12

6.0 FIELD METHODS & RESULTS 14

6.0 FINDINGS AND CONCLUSIONS 17
6.1 Findings 17
6.2 Recommendations 17

7.0 SOURCES CITED 19

Exhibits

1. Project Vicinity Map 2
2. Project APE Map 3,4
3. Cultural Resources Survey Area 15
4. General Photographs of Project APE 16

APPENDIXES

A. South Central Coastal Information Center Record Search
B. Native American Heritage Commission Sacred Lands File Check

1.0 INTRODUCTION

This report was prepared at the request of Joe Power of Rincon Consultants. It presents the results of a Phase I archaeological investigation conducted by Conejo Archaeological Consultants (Conejo) for the Surfers Point Manager Shoreline Retreat prcject in the City of San Buenaventura (Ventura), Ventura County, California (Exhibit 1). The study was conducted in accordance with CEQA compliance procedures and Section 106 of the National Historic Preservation Act (NHPA) as set forth in 36 CFR 800. This study also meets the cultural resource guidelines, policies and procedures as established by Caltrans and the City of San Buenaventura.

This study was conducted by Mary Maki, M.A. who meets the *Standards and Guidelines for Archaeology and Historic Preservation* (National Park Service 1983). The Phase I survey was conducted on March 24, 2001. Ms. Maki is certified by the Register of Professional Archaeologists (RPA) and has over fourteen years' archaeological experience working within historic Chumash territory.

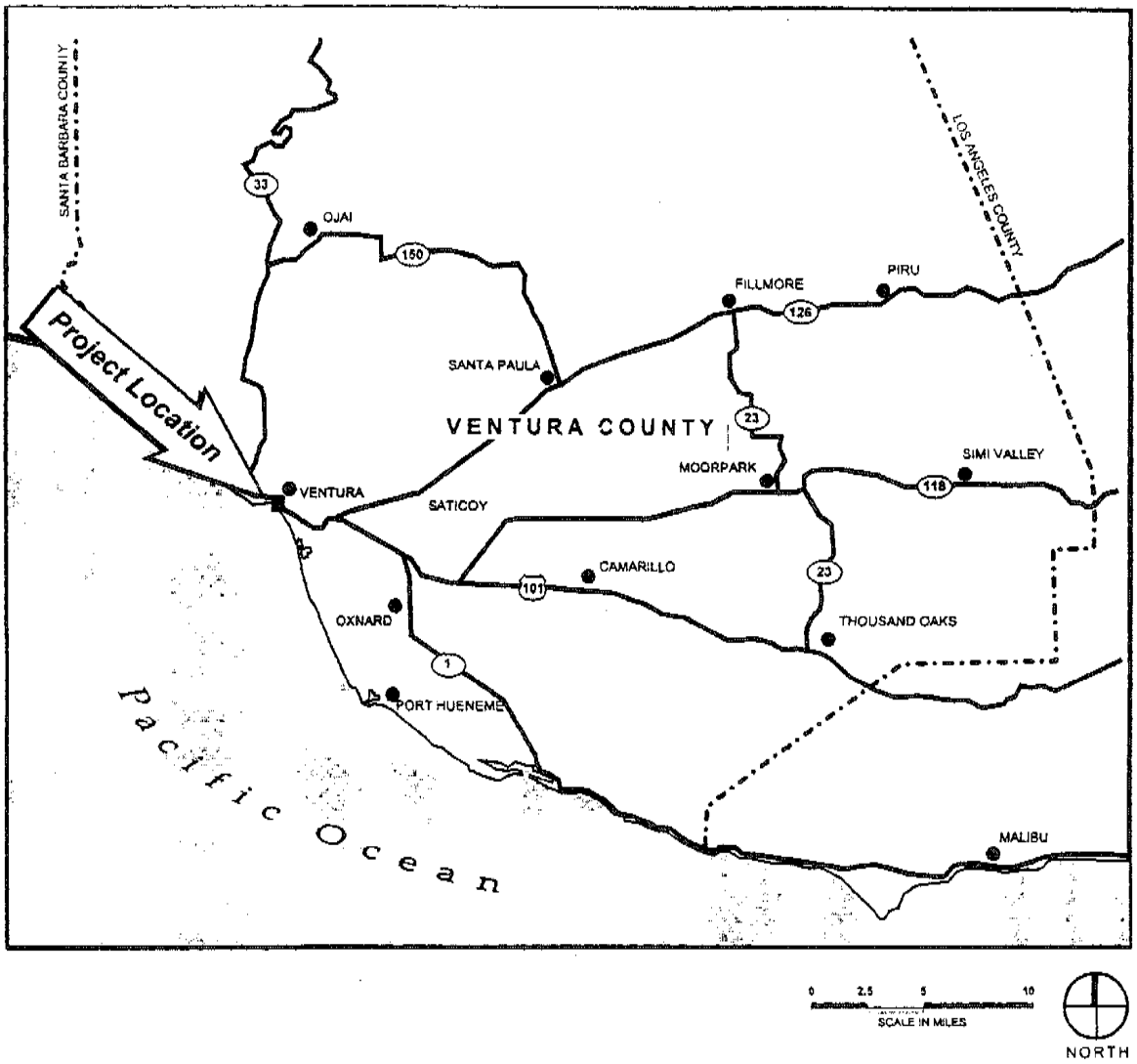
2.0 PROJECT LOCATION AND DESCRIPTION

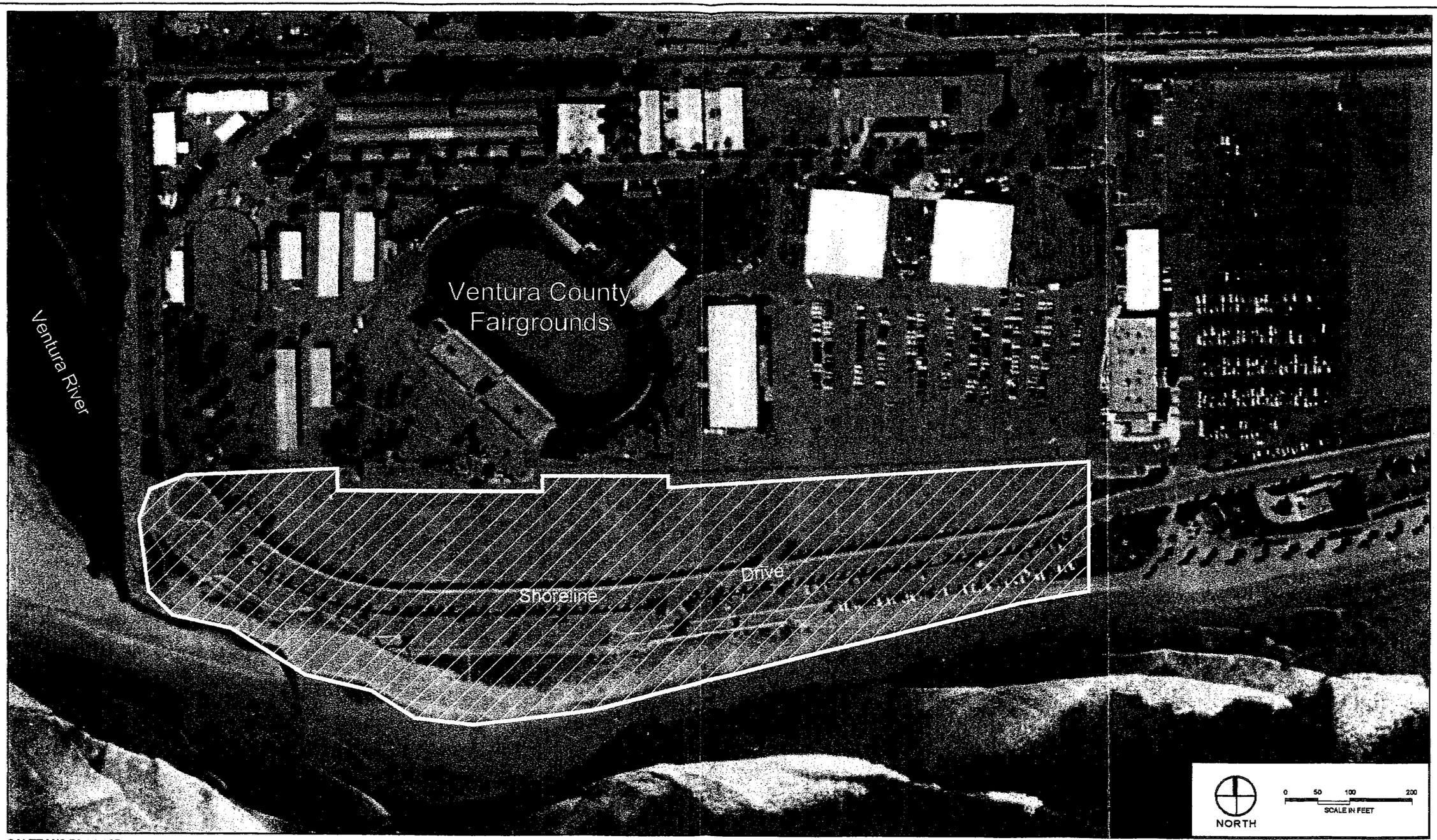
The project site is located within Surfers Point Park and Seaside Park in Ventura, Ventura County, California. Surfers Point Park is located along the south (seaward) side of Shoreline Drive between Figueroa Street and the Ventura River. Seaside Park, also known as the Ventura County Fairgrounds, is located on the north side of Shoreline Drive between Figueroa Street and the Ventura River.

The project's area of potential effect (APE) consists of about 2,100 linear feet of rocky beach and various beachfront facilities, including a beachfront bicycle/pedestrian path and a 352-space parking lot. The bicycle/pedestrian path has been severely damaged by erosion associated with winter storms. The APE also includes a 6.9-acre dirt parking lot within the Ventura County Fairgrounds, which will be paved to provide additional parking for fairground and beach users.

The Surfers Point Managed Shoreline Retreat project requires the removal of the existing bicycle/pedestrian path and 352-space parking lot along an approximately 2,100 ft. long stretch of the shoreline of Surfers Point Park. The existing bicycle/pedestrian path would be relocated to the north (away from the ocean) and the parking lot would be replaced with on street parking along Shoreline Drive. To supplement lost parking spots, a Ventura County Fairgrounds dirt parking lot located immediately north of Shoreline Drive would be paved. Exhibit 2 shows the project APE.

EXHIBIT 1
PROJECT VICINITY MAP
SURFERS POINT MANAGED SHORELINE RETREAT PROJECT
Source: Rincon Consultants





CALTRANS District 07 _____

FHWA Area Engineer _____ Reviewed by _____

Prepared by _____

Area of Potential Effects and Archaeological Survey Map
Surfers Point Managed Shoreline Retreat Project
City of San Buenaventura, Ventura County, California Exhibit 2

3.0 SOURCES CONSULTED

South Central Coastal Information Center

A record search was conducted at the South Central Coast Information Center (SCCIC) housed at California State University Fullerton on November 20, 2000 (Appendix A). The SCCIC records search identified no archaeological sites within or immediately adjacent to the project site. Twelve archaeological sites are located within a 0.5-mile radius of the project APE. Only two of the twelve archaeological sites are located south of Highway 101 and within a 0.25-mile radius of the project APE. These two archaeological sites, CA-VEN-3 and CA-VEN-842H, are described below.

CA-VEN-3 represents the historic Chumash village of *Shisholop*, which is located approximately 300 meters (1,000 ft.) east of the project site's eastern boundary. Historical accounts of *Shisholop* begin with the voyage of Juan Rodriguez Cabrillo who landed at the village in 1542. The village site was later visited and described by other early Spanish explorers including Vizcaino in 1602, the 1769 Portola Expedition and the 1774 De Anza Expedition. Early explorers describe the village as consisting of approximately 30 round thatched houses and having a population of 300 to 400 people.

Site CA-VEN-3 was first recorded by Hoover and Rensch in 1948 in *Historic Spots in California*. In 1951, Eberhart recorded the site as a "shell midden, village site". The first scientific archaeological investigations undertaken at CA-VEN-3 were conducted by Greenwood and Browne in 1965 and 1967. Review of past coastal erosion revealed that what remained to be excavated was actually only the northernmost portion of the site, yet it still provided an abundance of data (Greenwood and Browne 1969).

A Phase II excavation and a monitoring program conducted within Promenade Park by Fugro West in 1994 and 1995 determined that the western edge of CA-VEN-3 (the area closest to the current project APE) has been extensively disturbed. No intact cultural deposits were found either during test excavations or monitoring (Maki 1995a,b).

In 1976, Browne checked for evidence of CA-VEN-3 extending west of Figueroa Street into Surfers Point Park. Four backhoe trenches were excavated in the "most likely" locations for cultural deposits to occur, but no cultural resources were found (Browne 1976). Greenwood and Associates 1988 subsurface testing for a Surfers Point Park improvements project also found no evidence of CA-VEN-3 extending westward into Surfers Point Park.

No impacts to CA-VEN-3 are expected from project implementation.

CA-VEN-842H consists of remnants of a WWII defense battery. Marmor (1986) describes the site as follows: *Gun emplacements and site of temporary camp of World War II coastal*

> *defense battery, occupied March 1942- January 1944. Visible remnants include two concrete artillery emplacements for 155 mm. Guns exposed by erosion on shoreline approximately 195 ft. apart...*
>
> CA-VEN-842H is located west of the Ventura River mouth and will not be impacted by project implementation.

Forty-five archaeological surveys have been conducted within a 0.5-mile radius of the APE, including three surveys that fall within the project APE. Greenwood and Associates conducted a survey of Surfers Point Park in 1988 that encompassed the majority of the current project APE and included 13 test borings. Greenwood and Foster (1988:9,10) summarize their findings as follows:

> *The results of the field work confirm earlier expectations that the area has been filled, probably repeatedly, by soil, rock, and a variety of relatively modern construction debris imported from unknown sources. Visible in the cut bank from the beach are massive deposits of roadbed, curbings, concrete rubble, sections of mortared brick, tile, and large rock. The auger testing demonstrated that the area of disturbance extends north for at least 150 feet from the shoreline. Cultural remains near the surface represent deliberate depositions of fill probably dating back to the 1920s and renewed subsequently. There are other remains, including Chinese ceramics, at a contact horizon which may reflect an original surface contour, presently at 10 feet and below....If there is to be any grading, or if utility lines are to be installed or relocated below the current elevation, we do recommend the presence of a qualified archaeological monitor.*

McKenna et al. conducted a survey of the Ventura County Fairgrounds parking lot that is located in the northern half of the current project's APE in 1993. McKenna (1993:iii) summarizes her findings as follows:

> *At this time, McKenna et al. has found no evidence for any historic or prehistoric remains on the property. Therefore, McKenna et al. is limiting the recommendations to a part-time archaeological monitor to be scheduled in accordance with the grading/ground alteration schedules. This monitor, operating on no less than a forty percent time (two days per week during ground alterations), shall have the authority to halt any activities identified as adversely impacting previously unidentified cultural resources.*

LSA Associates conducted a small Phase I archaeological survey for a Pacific Bell Mobile Services telecommunications facility located at the western end of the current project's APE in 1998. LSA Associates determined the project would have no affect any historic resources and no further recommendations were made (McLean 1998:5).

National Register of Historic Places

The National Register of Historic Places (NRHP) lists the following six properties within a 0.5-mile radius of the APE.

- **Ventura-56-50208- VN Feraud General Merchandise Store**
- **Ventura-56-150292-VN Franz, Emmanuel House**
- **Ventura-56-150212-VN Mission San Buenaventura and Mission Compound Site**
- **Ventura-56-150374-VN San Miguel Chapel Site**
- **Ventura-56-150307-VN Ventura County Courthouse**
- **Ventura-56-150155-VN Ventura Theatre**

All of these NRHP properties are located north of Highway 101 and at least 0.25 miles north of the project APE. Project implementation will not impact any of the six NRHP properties listed above.

California Points of Historical Interest

The following California Point of Historical Interest (California, Department of Parks and Recreation 1992) is located within a 0.5-mile radius of the project APE.

- **VEN-002 - Ortega Adobe**

The Ortega Adobe is located north of Highway 101 and at least 0.25 miles north of the project APE. Project implementation will not impact Ortega Adobe.

California Historical Landmarks

The following three California Historical Landmarks (California, Department of Parks and Recreation 1996) are located within 0.5-mile radius of the project APE.

- **No. 114 - Old Mission Reservoir**
- **No. 310 - Mission San Buenaventura**
- **No. 847 - Ventura County Courthouse**

All three of these California Historical Landmarks are located north of Highway 101 and at least 0.25 miles north of the project APE. Project implementation will not impact any of these properties.

City of San Buenaventura Landmarks

The closest two City of San Buenaventura Landmarks to the project APE are described below.

- **No. 18 - Shisholop Village Site/Cabrillo's Landing.** Located at the foot of Figueroa Street and the Promenade, this landmark is also archaeological site CA-VEN-3. As noted earlier this site is approximately 100 meters east of the eastern edge of the APE.
- **No. 88 - WWII Gun Emplacements.** Located near the mouth of the Ventura River on its west banks, this landmark corresponds to archaeological site CA-VEN-842H.

No impact to either of these City Landmarks is anticipated from project implementation.

Native American Heritage Commission's Sacred Lands File

A scared lands file check was conducted by Rob Wood of the Native American Heritage Commission (NAHC) on February 8, 2001 (Appendix B). No sacred lands were identified within or adjacent to the project area.

Ventura County Museum of Art & History Research Library, Thousand Oaks Library Special Collections, and Ventura County Public Works Department

Historic documents, maps and photographs of the general project area were examined at the Thousand Oaks Library Special Collections on April 5, 2001, and at the Ventura County Museum of Art & History's Research Library and the Ventura County Public Works Department on April 11, 2001. In summary, the background research indicates that the area of Seaside Park (the Ventura County Fairgrounds) was not historically previously developed prior its use for racing and recreation in the early 1900s. Although the project area was accessible historically, prior to construction of the Ventura River levee the project APE would have been subject to periodic flooding and covered with silt and debris from both the river and the coast. In 1914, the Ventura County Fair was moved to Seaside Park. During the 1920s large amounts of fill were placed along the park's oceanfront as various fairground facilities were developed including a baseball diamond, bathhouse, and tennis and basketball courts. Additional research findings are incorporated into the historical background setting section of this report.

4.0 ENVIRONMENTAL SETTING

4.1 Regional Setting

The project area is located near the western edge of the City of San Buenaventura adjacent to the Pacific Ocean and just east of the Ventura River. The Ventura area lies near the eastern end of the Santa Barbara Channel. The Santa Barbara Channel is marked by a coastline that runs east-west and is backed by an east-west trending coastal range known as the Santa Ynez Mountains. This region is endowed with an abundance and variety of natural resources, which has favored settlement by a long sequence of populations from prehistoric times to the present.

The major factors influencing settlement in the Santa Barbara Channel by prehistoric populations included the accessibility of fresh water, diverse plant communities and ocean resources. In addition, the temperate climate, availability of lithic materials for making stone tools and the local topography that allowed for inland trade routes to be established, made the region even more desirable.

The coastal plain itself is narrow and cut by steams descending from the mountains. Prehistoric settlements, including many of the larger Late Period Chumash villages were located where freshwater streams emptied into the ocean. Sloughs at the mouths of the rivers supported a wide variety of plant and animal life. The Chumash village of *Shisholop* is located approximately 0.5 mile east of the Ventura River adjacent to what was a historical slough area.

The Santa Barbara Channel supports an abundance of diverse fauna including fish, shellfish and marine mammals. Analysis of prehistoric archaeologaunal data indicates that the aboriginal populations were quite proficient at harvesting the channel's bounty of marine resources.

There is a general elevational zonation of the upland vegetation from the beach through the coastal plain and foothills up the southern slopes of the Santa Ynez Mountains. Native vegetative habitats in the area include coastal strand, salt marsh, coastal bluff, coastal sage scrub, grassland, oak savanna, oak woodland, chaparral, and riparian woodland. These various vegetation habitats in turn support a wide array of wildlife species.

The rich plant and animal resources of the surrounding terrestrial and marine environments, availability of fresh water, and Mediterranean climate, all combined to make the Ventura area a suitable and desirable location for both prehistoric and historic habitation.

4.2 Site Specific Setting

The project APE consists of the western portion of Surfers Point Park. It is bordered by the Ventura County Fairgrounds to the north, the Pacific Ocean to the south and the Ventura River to the west. Natural forces including erosion and deposition of soils associated with both high surf and flooding of the Ventura River have resulted in ground disturbance throughout the entire APE. The APE has also been extensively disturbed by the construction of Seaside Park and upgrades to Surfers Point Park in the late 1980s. Fill has been extensively dumped across the APE.

5.0 CULTURAL SETTING

5.1 Ethnography

The general project area lies within the historic territory of the Native American Indian group known as the Chumash. The Chumash occupied the region from San Luis Obispo County to Malibu Canyon on the coast, and inland as far as the western edge of the San Joaquin Valley, and the four northern Channel Islands (Grant 1978). The Chumash are subdivided into factions based on distinct dialects. Ventura County is within the historic territory of the Ventureño Chumash, whose name is derived from the mission with local jurisdiction, San Buenaventura.

The Chumash were very advanced in their culture, social organization, religious beliefs, and art and material object production (Morrato 1984). Class differentiation, inherited chieftainship, and intervillage alliances were all components of Chumash society. The development of a highly effective maritime subsistence pattern during this period, comprised of exploitation of fish, shellfish, sea mammals, and waterfowl, enabled Chumash villages of nearly 1,000 individuals to cluster in areas along the coast. These were the most populous aboriginal settlements west of the Mississippi River (Morrato 1984). Permanent inland settlements subsisted from a variety of resources including an abundance of acorns, seed plants, rabbits, and deer. The smaller inland villages were economically allied with the larger coastal villages. The Chumash villages, also known as rancherias, were usually situated near the confluence of several watercourses and/or habitats. The Chumash developed extensive trade networks, which extended to Sierra obsidian sources and other localities (King 1976).

The earliest historical accounts of the Chumash appear in the 1542-1543 diaries of Juan Rodriguez Cabrillo, who wintered in the Santa Barbara Channel. The next European encounters in the Santa Barbara Channel were spaced out over a period of years and included explorers Cermenho in 1595 and Viscaino in 1602. The combined sea and land 1769-1770 Portola expedition, which passed through Ventura County on its way to Monterey, was the prelude to systematic Spanish colonization of Alta California.

Spanish colonization was the beginning of the end of the Chumash aboriginal way of life. The Spanish missionaries began a program of converting the Chumash to Christianity, baptizing them, and moving them into missions. The Ventureño Chumash were sent primarily to Mission San Buenaventura. As neophytes brought into the mission system they were transformed from hunters and gatherers into agricultural laborers and exposed to diseases to which they had no resistance. By the end of the Mission Period in 1834, the Chumash population had been decimated by disease and declining birthrates. Population loss as a result of disease and economic deprivation continued into the next century. Still today many people proudly claim Chumash ancestry and take an active

interest in promoting their culture and protecting archaeological evidence of their ancestors.

Ethnothistoric Chumash place names noted by Applegate (1975:31, 39, 40) in the immediate project area include:

Kamehme'y - translated as "the reed" is a village just northwest of the mouth of the Ventura River.

Shisholop - translated as "in the mud" is a coastal village (CA-VEN-3).

Q'uyuy - no translation, is a place just northwest of the mouth of the Ventura River.

5.2 Archaeology

The archaeological record indicates that sedentary populations occupied the coastal regions of California more than 9,000 years ago. Several chronological frameworks have been developed for the Chumash region including Rogers (1929), Wallace (1955), Harrison (1964), Warren (1968), and King (1990). King postulates three major periods -- Early, Middle and Late. Based on artifact typologies from a great number of sites, he was able to discern numerous style changes within each of the major periods. The Early Period (8000 to 3350 Before Present [B.P.]) is characterized by a primarily seed processing subsistence economy. The Middle Period (3350 to 800 B.P.) is marked by a shift in the economic/subsistence focus from plant gathering and the use of hard seeds, to a more generalized hunting-maritime-gathering adaptation, with an increased focus on acorns. The full development of the Chumash culture, one of the most socially and economically complex hunting and gathering groups in North America, occurred during the Late Period (800 to 150 B.P.).

5.3 History

In 1769 Gaspar de Portola departed the newly established San Diego settlement and marched northward toward Monterey, with the objective to secure that port and establish five missions along the route. Mission San Buenaventura was founded by Padre Junipero Serra in 1782.

Mexico gained its independence from Spain in 1822. Twelve years later, in 1834, the missions were secularized. Jose Arnaz purchased Mission San Buenaventura with its vast lands and cattle for $12,000 in 1846 (Triem 1985). The Arnaz property was known as the Rancho Ex-Mission, which included the current project site within its historic boundaries.

The City of San Buenaventura was officially incorporated in 1866 around a nucleus of adobes located just west of the mission. The project APE is not shown as developed in the Sanborn Fire Insurance maps of 1886, 1890 and 1892 and apparently was not developed then. The general project area was subject to frequent flooding from both ocean and river, which probably explains why it was not historically developed. An 1882 photograph shows patches of surface water

across the area that is later known as Seaside Park (Brusta 1882). A horseracing track is shown on the Seaside Park property in the 1904 USGS 15" Ventura Quadrangle.

The first Ventura County Fair was held in 1874 at what was then called the Ventura Trotting Park, below the bluffs on Pierpont Bay (Brown 1982:26; Triem 1985:79). The fair moved to Hueneme where better racetrack facilities had been built in 1891 (Greenwood and Foster 1988:5). In the early 1900s Eugene P. Foster donated a 65-acre parcel that would become known as Seaside Park to the City of San Buenaventura. In 1914, the fair was moved back to Ventura and Seaside Park became its new home. During the 1920s extensive amounts of fill was placed along Seaside Park's oceanfront for erosion protection (Sheridan 1926a,b). Much of this fill was placed within the current project APE.

Extensive public improvements were made at Surfers Point Park in 1889. These improvements included the extension of Shoreline Drive eastward to the Ventura River, the construction of an ocean front public parking lot, the relocation of a very popular seaside bike path and pedestrian walkway, restoration of sensitive dune habitat, and beach access improvements. Stormy seas have since caused serious erosion to the dunes and undercut portions of the bike path, pedestrian walkway and parking lot within the APE.

6.0 FIELD METHODS & RESULTS

An archaeological survey of the project APE was conducted by archaeologists Mary Maki and Georganna Hawley on March 24, 2001 (Exhibits 2,3). Project boundaries were determined based on maps (1"-100') and verbal descriptions provided by the client. The southern boundary was marked by the shoreline, the western boundary by the river levee, the northern half of the APE consists of a fenced off 6.9-acre dirt parking lot, and the western boundary is within Surfers Point Park. Exhibit 4 provides photographic overviews of the project APE. For ease of description the project APE is broken into two sections as described below.

APE South of Shoreline Drive

Survey methodology included close examination of all visible ground surface in the landscaped areas, linear transects spaced no more than five meters (16 ft.) apart on the beach and close inspection of the eroded vertical wall face beneath the bike trail. The beach and dune area consists of sand and cobbles, with scattered clumps of vegetative debris washed down from the Ventura River. The beach/dune area has been very disturbed by past storms. Examination of the eroded vertical section of soil beneath the bike path indicates that it all fill material, based on the mix of different soils interspersed with chunks of concrete and asphalt. The fill material appears to have a depth of approximately 1 to 1.5 meters (3 to 4 ft.) along the beach. The soils underlying the existing paved parking lot, portions of which had eroded away, are fill also. Scattered fragments of marine shell were observed including *Protothaca staminea*, *Mytilus* sp., *Tivela stultorum* and *Chiton* sp. All the shell noted was in fill areas and has no depositional context or significance. No evidence of prehistoric artifacts or significant historic materials was noted. The entire APE, except some of the beach area, was disturbed by construction of the existing facilities that are currently being eroded away by stormy seas.

APE North of Shoreline Drive

The northern half of the APE consists of a fenced off, 6.9-acre, graded, dirt parking lot located on the south side of the Ventura County Fairgrounds. Survey methodology consisted of walking linear transects spaced no more than 5 meters (16 ft) apart across the parking lot. Ground surface visibility was excellent throughout the parking lot. A few scattered pieces of marine shell fragments (*Protothaca staminea*), and some small chunks of asphalt and concrete were observed. The shell, asphalt and concrete were all in a disturbed context as the parking lot has been graded. The asphalt and concrete fragments are indicative that the ground surface inspected was at least partially covered by fill material, which is consistent with Greenwood and Foster's (1988:9) findings. No evidence of potentially significant historic or prehistoric resources was noted. The parking lot area has been extensively disturbed by grading and historic inundation from river flooding.

EXHIBIT 3
CULTURAL RESOURCES SURVEY AREA
SURFERS POINT MANAGED SHORELINE RETREAT PROJECT
USGS 7.5' VENTURA QUADRANGLE

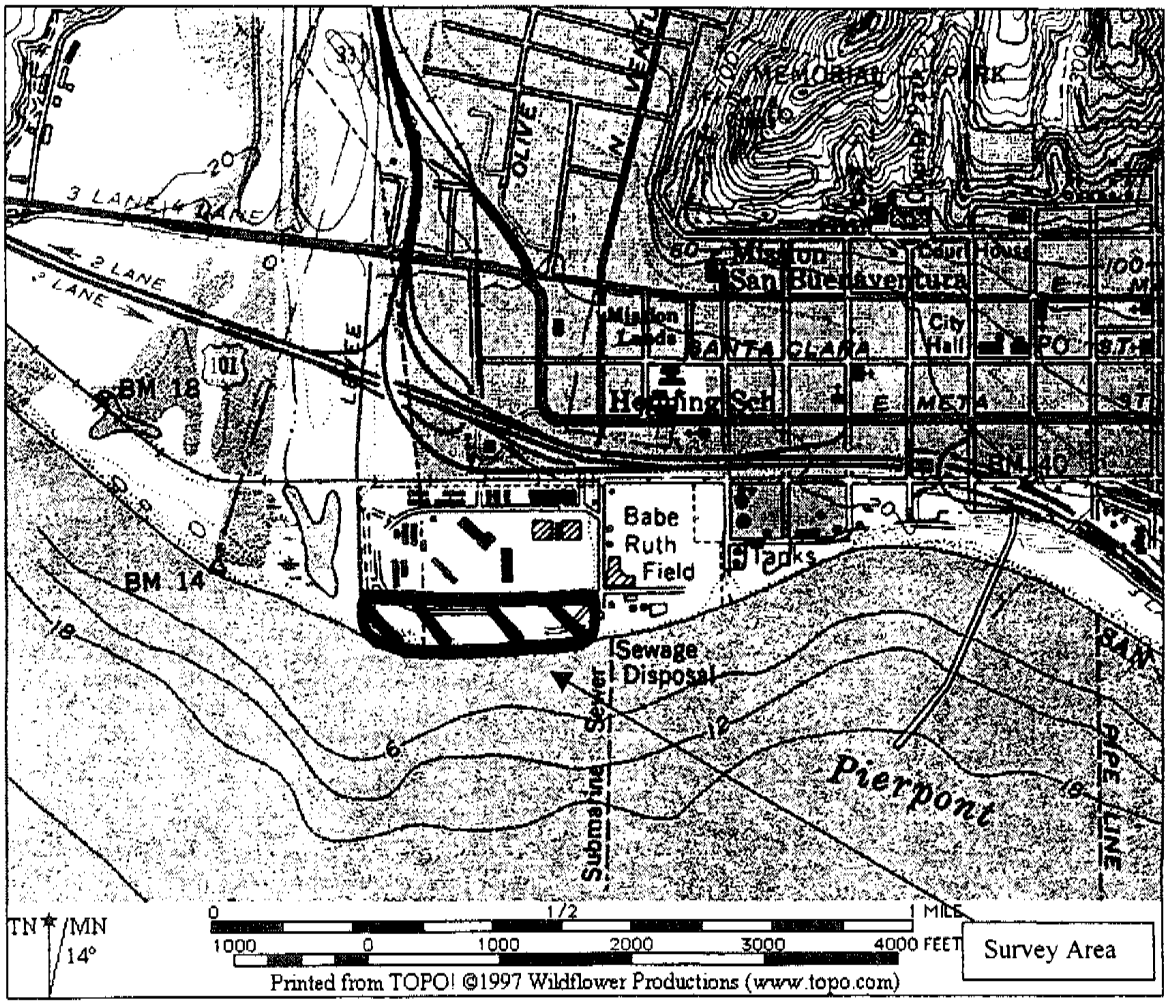
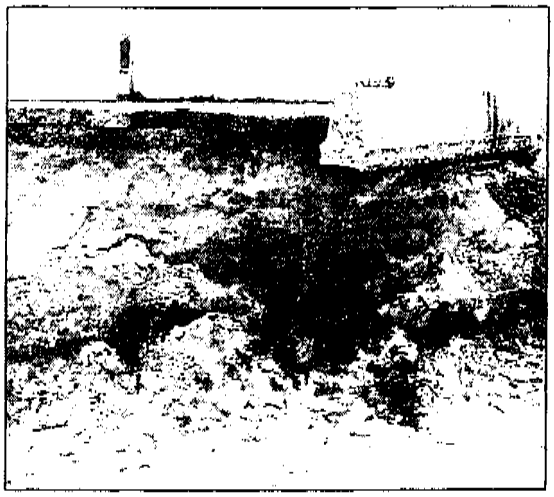


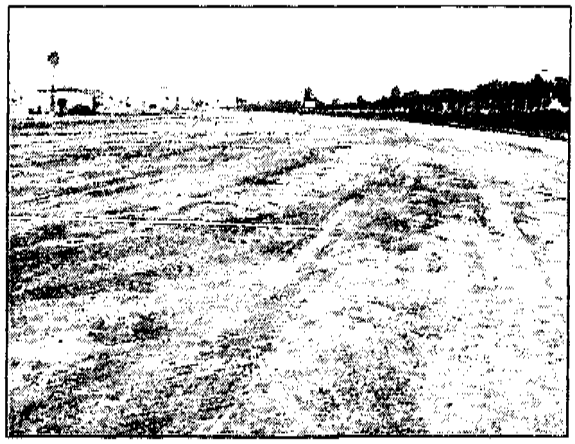
EXHIBIT 4 - GENERAL PHOTOGRAPHIC OVERVIEWS OF APE

View west along eroded bike path.

View west along beach area.



Fill under eroded bike path.



Existing Ventura County Fairgrounds parking lot that will be paved. View East.

7.0 FINDINGS & RECOMMENDATIONS

7.1 Findings

Section 106 of NHPA requires that Federal agencies take into account the effects of their undertaking on historic properties and that a substantial impact on the environment will occur if the project will adversely effect significant prehistoric or historic resources. The significance of a historic resource is based on whether or not it meets the criteria of eligibility for listing on the National Register of Historic Places.

The project is located within a general area of moderate archaeological sensitivity as noted by the presence of twelve recorded archaeological sites within a 0.5-mile radius of the APE, including one large village site (CA-VEN-3) located approximately 300 meters to the east. However, the extent of past disturbance associated with both natural forces and construction activity reduce the likelihood of significant intact cultural deposits occurring within the APE. The Phase I field survey found no evidence of any prehistoric or historic resources within the project APE, but virtually all the ground surface inspected (except on the beach) consisted of fill material. Based on the results of the record search, background research, field survey, and the extent of previous ground disturbance within the project APE, in combination with the expectation that most project earth disturbance will be limited to fill soils, no significant impacts to archaeological resources are anticipated under project implementation. Therefore, no further archaeological studies are recommended prior to project implementation as long as the following three recommendations are incorporated as conditions of project approval.

7.2 Recommendations

1. A professional archaeologist shall be retained to monitor ground disturbance within those areas where excavation extends below existing fill into native soils. (No archaeological monitoring is required for earth disturbance limited to fill and/or on the existing beach.) The archaeologist shall have the power to temporarily halt or redirect project construction in the event that potentially significant cultural resources are exposed. Based on monitoring observations, the lead archaeologist shall have the authority to refine the monitoring requirements as appropriate (i.e., change to spot checks, reduce or increase the area to be monitored) in consultation with the City project manager.

   A monitoring report shall be prepared upon completion of construction. The report shall include a map showing location(s) monitored, the results of monitoring and a conclusion on whether the project resulted in any significant impacts to cultural resources. A copy of the

monitoring report shall be provided to the City, Caltrans District 7 and the SCCIC.

2. In the event that archaeological resources are unearthed during project construction, all earth disturbing work within the vicinity of the find must be temporarily suspended or redirected until an archaeologist has evaluated the nature and significance of the find. After the find has been appropriately mitigated, work in the area may resume. A Chumash representative shall be retained to monitor any mitigation work associated with Native American cultural material.

3. If human remains are unearthed, State Health and Safety Code Section 7050.5 requires that no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to Public Resources Code Section 5097.98. If the remains are determined to be of Native American descent, the coroner has 24 hours to notify the Native American Heritage Commission.

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APPENDIX A

South Central Coastal Information Center Record Search

South Central Coastal Information Center
California Historical Resources Information System
California State University, Fullerton
Department of Anthropology
800 North State College Boulevard
Fullerton, CA 92834-6846
(714) 278-5395 / FAX (714) 278-5542
anthro.fullerton.edu / sccic.html

Los Angeles
Orange
Ventura

November 20, 2000

Mary Maki
Conejo Archaeological Consultants
2321 Goldsmith Ave.
Thousand Oaks, CA 91380

RE: Records Search for Ventura Quadrangle

Dear Ms. Maki,

As per your request received on November 20, we have conducted a records search for the above referenced project. This search includes a review of all recorded historic and prehistoric archaeological sites within a half-mile radius of the project area as well as a review of all known cultural resource reports. In addition, we have checked our file of historic maps, the National Register of Historic Places, the California State Historic Resources Inventory, the California Points of Historical Interest, and the listing of California Historical Landmarks in the region. The following is a discussion of our findings.

PREHISTORIC RESOURCES:

No prehistoric sites have been identified within a half-mile radius of the project area.

One isolate (56-100073) has been identified within a half-mile radius of the project area (see enclosed map).

HISTORIC RESOURCES:

Twelve historic archaeological sites have been identified within a half-mile radius of the project area (see enclosed map). There are two sites on the D.O.E. (Determination of Eligibility) list, 56-000087, 56-000480 (see enclosed list).

Included are copies of the 1904, 1941 editions of the Ventura Historic quads (see enclosed maps).

The California State Historic Resources Inventory may list properties that have been evaluated for historical significance within a half-mile radius of the project area (see enclosed list).

The National Register of Historic Places lists six properties within a half-mile radius of the project area.

Ventura –56-150208- VN Feraud General Merchandise Store 2 and 12 W. Main St. VN 19860123 86000109

Ventura –56-150292 VN Franz, Emmanuel, House 31 N. Oak St. VN 19820625 82002282

Ventura –56-150212- VN Mission San BuenaVentura and Mission Compound Site 19750410 75000496

Ventura –56-150374- VN San Miguel Chapel Site Address Restricted VN 19780720 78000826

Ventura –56-150307- VN VN County Cthouse 501 Poli St. VN 19710819 71000211

Ventura –56-150155- VN VN Theatre 26 S. Chestnut VN 19861229 86003523

The California Historical Landmarks (1990) of the Office of Historic Preservation, California Department of Parks and Recreation, lists three landmarks within a half-mile radius of the project area.

No. 114 Old Mission Reservoir
Part of the mission water system for Mission San Buenaventura, this was the settling tank or receiving reservoir from which water was distributed to the church and to the few Spanish families who lived near the mission. Located at Eastwood Park, north of Valdez Alley, 115 East Main Street, Ventura. (56-152361)

No. 310 Mission San Buenaventura
Tis mission, established in 1782, was the ninth and the last to be dedicated by Father Juinpero Serra. the first chapel and church were destroyed; the present mission church was begun in 1793 and completed in 1809. Located on 210 East Main Street at Figueroa, Ventura. (56-150211)

No. 847 Ventura County Courthouse
The courthouse was designed in 1910 by one of the early pioneers of architecture in southern California--Albert C. Martin, Sr. Dedicated in July 1913, the structure is an outstanding example of neoclassic architecture, a style prevalent in the United States at the turn of the century. The courthouse is an extremely wellproportioned building, and is rich in detail and materials not likely to be found elsewhere in the Southern California area. Located at 501 Poli Street at North California Street, Ventura (56-150308)

The California Points of Historical Interest (1992), of the Office of Historic Preservation California Department of Parks and Recreation, lists one property within a half-mile radius of the project area.

VEN-002 OrtegaAdobe
215 West Main Street, Ventura

PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS:

Forty-five studies have been conducted within a half-mile radius of the project area. Of these, three are located within the project area. There are twelve additional investigations located on the Ventura 7.5' USGS quadrangle and are potentially within a half-mile radius of the project area. These reports are not mapped due to insufficient locational information.

Please forward a copy of any reports resulting from this project to our office as soon as possible. Due to the sensitive nature of site location data, we ask that you do not include record search maps in your report. If you have any questions regarding the results presented herein, please feel free to contact our office at (714) 278-5395.

Invoices are mailed approximately two weeks after records searches are completed. This enables your firm to request further information under the same invoice number. **Please reference the invoice number listed below when making inquires.** Requests made after invoicing will result in the preparation of a separate invoice with a $15.00 handling fee.

Sincerely,

Esther Won
Staff Archaeologist

Enclosures:

(X) Primary Number Explanation
(X) Map - Ventura 7.5' USGS Quadrangle
(X) Bibliography - 15 pages
(X) Site list - 1 pages
(X) Determination of Eligibility List – 1pg
(X) HRI - 2 pages
(X) National Register Status Codes - 4 pages
( ) Site records -
(X) Survey reports - VN1229 (34pgs), VN1608 (22pgs)
(X) Confidentiality Form
( ) Invoice # 9031

APPENDIX B

Native American Heritage Commission
Sacred Lands File Check

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-4082
Fax (916) 657-5390

December 13, 2000

Mark Maki
Conejo Archaeological Consultants
2321 Goldsmith Avenue
Thousand Oaks, CA 91360

RE: Surfers Point Project – Ventura County

Dear Mr. Maki:

A record search of the sacred lands 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 other with specific knowledge. A minimum of two weeks must be allowed for responses after notification.

If you receive notification of change of addresses and phone numbers from any 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) 653-4040.

Sincerely,

Rob Wood
Associate Governmental Program Analyst

Appendix E

Traffic and Circulation Study

ASSOCIATED TRANSPORTATION ENGINEERS

100 N. Hope Avenue, Suite 4, Santa Barbara, CA 93110 • (805) 687-4418 • FAX (805) 682-8509

Vlaynard Keith Franklin, P.E.
Richard L. Pool, P.E.
Scott A. Schell, AICP

May 9, 2001

Joe Power
Rincon Consultants
790 East Santa Clara Street
Ventura, CA 93001

TRAFFIC AND CIRCULATION STUDY FOR THE SURFERS POINT MANAGED SHORELINE RETREAT PROJECT EIR - CITY OF SAN BUENAVENTURA, CALIFORNIA

Associated Transportation Engineers (ATE) is pleased to submit the following traffic and circulation study for the Surfers Point Managed Shoreline Retreat Project, located in the City of Ventura. It is our understanding that the information presented in this study will be utilized by Rincon Consultants in completing the project EIR.

We appreciate the opportunity to assist you with this project.

Associated Transportation Engineers

Scott A. Schell, AICP
Principal Transportation Planner

SURFERS POINT MANAGED SHORELINE RETREAT PROJECT EIR
CITY OF SAN BUENAVENTURA, CALIFORNIA

TRAFFIC AND CIRCULATION STUDY

ATE Project 00124

May 9, 2001

Prepared for:
Rincon Consultants
790 East Santa Clara Street
Ventura, CA 93001

ASSOCIATED TRANSPORTATION ENGINEERS

100 N. Hope Avenue, Suite 4, Santa Barbara, CA 93110-1686 • (805) 687-4418 • FAX (805) 682-8509

TABLE OF CONTENTS

INTRODUCTION 1

PROJECT DESCRIPTION 1

STUDY AREA 1

EXISTING CONDITIONS 1
Site Access and Circulation 1
Parking 3

CONSTRUCTION IMPACTS AND MITIGATIONS 3

CALIFORNIA COASTAL ACT CONSISTENCY 12

STUDY PARTICIPANTS AND REFERENCES 14

FIGURES

Figure 1 Surfers Point Managed Shoreline Retreat Project - Area of Influence . . 2
Figure 2 Surfers Point Managed Shoreline Retreat Project - Phase I 4
Figure 3 Surfers Point Managed Shoreline Retreat Project - Phase II 5
Figure 4 Proposed Construction Improvement Measures 7
Figure 5 Traffic Control for Work Zones 10

INTRODUCTION

The following study contains an analysis of the potential circulation, access and parking impacts associated with the construction phase of the Surfers Point Managed Shoreline Retreat Project. The report also addresses the project's consistency with California Coastal Act policies.

PROJECT DESCRIPTION

The project area is located adjacent to Seaside Park and the Ventura County Fairgrounds in the City of San Buenaventura. The project is proposing to revitalize the shoreline from the Ventura River east to the Promenade Park. In addition to stabilizing the beach erosion, the project includes the removal of the existing parking lots located south of Shoreline Drive, the replacement of the bicycle/pedestrian path adjacent to the roadway, the addition of on-street parking along Shoreline Drive and the development of a paved parking lot on the Ventura County Fairgrounds site located north of Shoreline Drive. One of the goals of the project is to enhance public access to the shoreline, which is consistent with the goals and policies of the California Coastal Act.

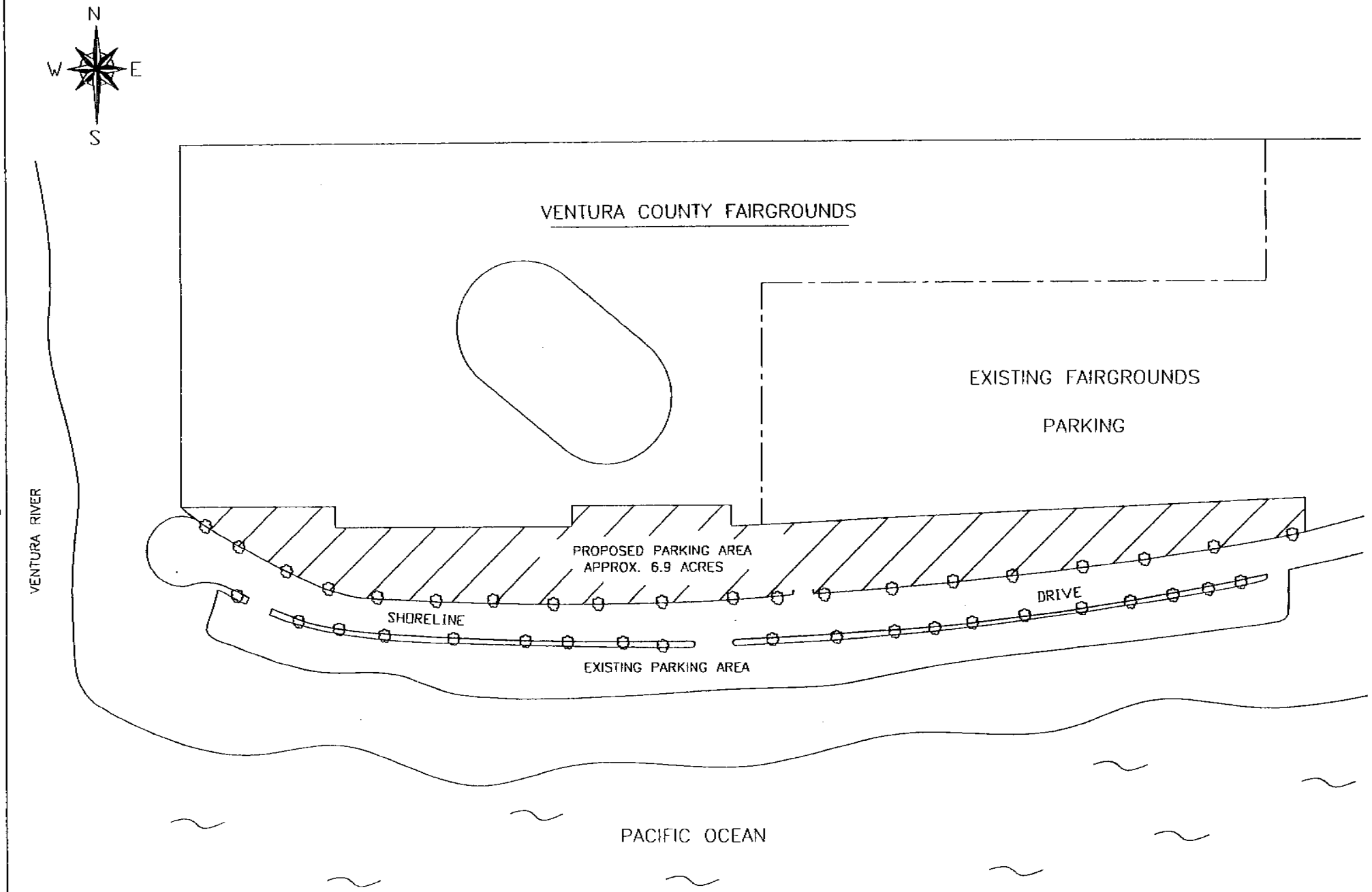
STUDY AREA

The area analyzed in this study is generally bounded the Ventura County Fairgrounds on the north, the Pacific Ocean on the south, the Ventura River on the west and Figueroa Street on the east. The site consists of 2,100 linear feet of beach and various beach front facilities including a bicycle/pedestrian path and surface parking lots located south of Shoreline Drive, as well as Shoreline Drive itself. The project site also includes a 6.9-acre area of the Ventura County Fairgrounds that would be paved to provide additional parking. Figure 1 shows the area that would be affected by the project.

EXISTING CONDITIONS

Site Access and Circulation

Access to the study area is provided by Shoreline Drive. This three-lane roadway currently provides access to the existing Seaside Park and Fairgrounds parking areas. On-street parking is currently prohibited along Shoreline Drive in the project area. Shoreline Drive extends easterly from its terminus at the Ventura River to Figueroa Street. Figueroa Street then connects with Harbor Boulevard and proceeds northerly under U.S. Highway 101 to the downtown area of Ventura.



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TRANSPORTATION
ENGINEERS

SURFERS POINT MANAGED SHORELINE RETREAT PROJECT
AREA INFLUENCE

1

Parking

An inventory of the Seaside Park and Fairgrounds parking facilities was conducted for this study. The two existing surface lots serving this area were surveyed. Currently there are approximately 223 usable parking spaces available in the Surfers Point fee parking lot. This lot originally contained 352 spaces but 129 spaces have been lost due to storm damage and beach erosion. The lot is open daily from 6 a.m. to 10 p.m and is monitored by an attendant. There are 35 designated parking spaces and 4 unmarked parking spaces available in the Surfers Point free parking lot, which is located east of the fee lot.

Additional parking resources are provided in the Ventura County Fairgrounds paved and unpaved parking lots located on the north side of Shoreline Drive. These lots are generally unused during weekdays but are used during weekends and when special events are held at the Fairgrounds. The annual Ventura County Fair occurs during the first two weeks of August and generates the largest demand for parking in the area. Throughout the year, non-fair events are also held at the Fairgrounds. These non-fair events also place demands on the on-site and off-site parking supply in the area.

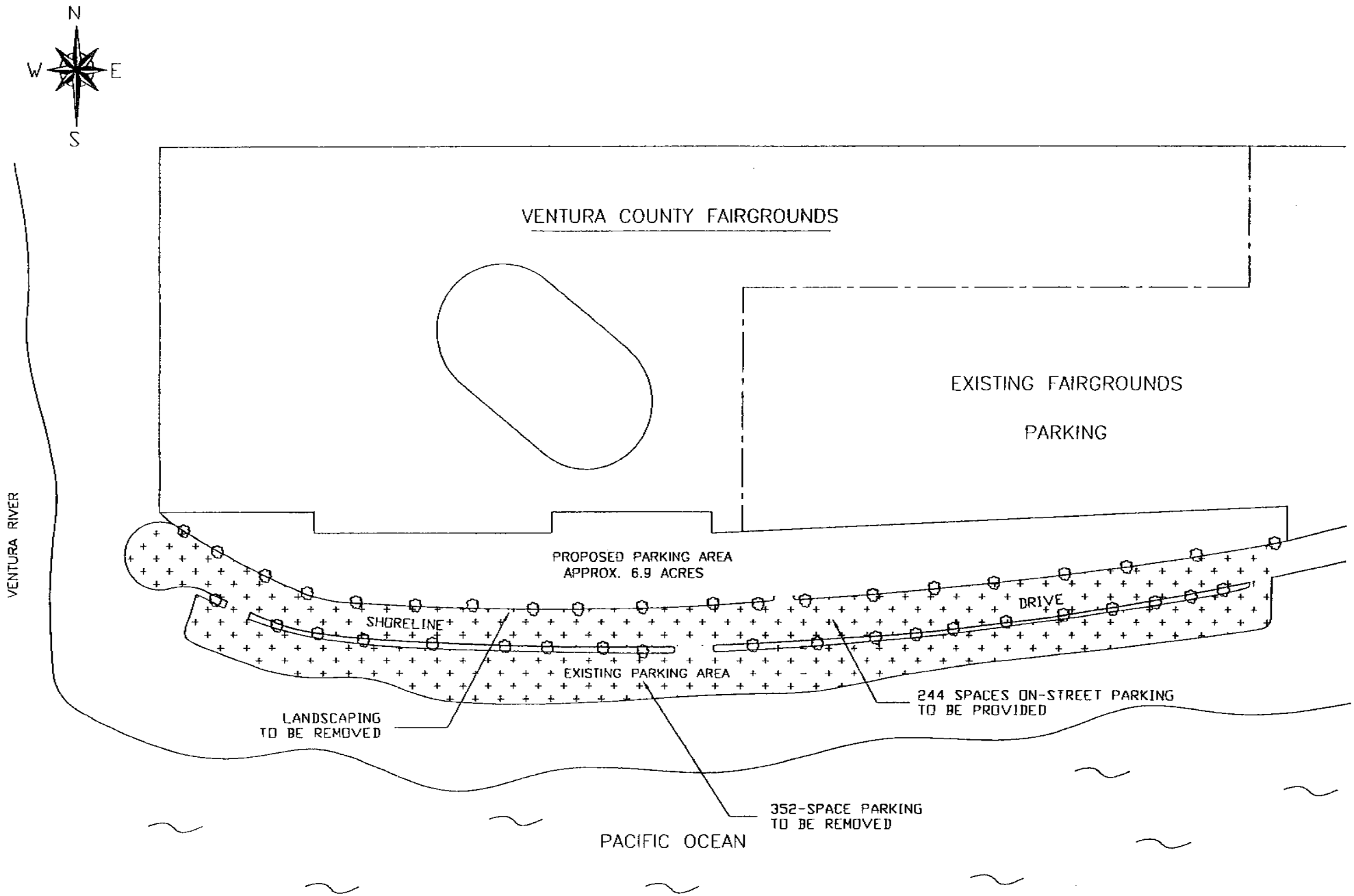
CONSTRUCTION IMPACTS AND MITIGATIONS

In general, construction activities will impact access, circulation and parking in the Seaside Park and Fairgrounds areas. The magnitude of the impacts on parking and access will depend upon the level of activities occurring at the Fairgrounds during the construction period, and the level of public use of the Seaside Park beach area.

Phase I of the construction sequence will begin on the south side of Shoreline Drive and would include removal of the existing beach parking lots, removal and reconstruction of the pedestrian path and bike path, removal of the landscaping along the north side of the road, and reconfiguration of Shoreline Drive to provide on-street parking. Approximately 169 perpendicular spaces would be provided on the south side of the road and 75 parallel spaces would be provided on the north side of the road. Phase 2 of the project would include construction of a paved parking lot on the north side of Shoreline Drive on the Fairgrounds property. This new lot would offset the loss of parking created by removal of the existing parking lots south of Shoreline Drive. Figures 2 and 3 show the proposed construction phasing.

The following section reviews the project's impacts to access and parking in the area.

Impact T-1 Construction of the project will require either the partial or full closure of Shoreline Drive, thus disrupting access to the Fairgrounds and the Seaside Park area. This would generate a Class II impact (adverse but mitigable).



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SURFERS POINT MANAGED SHORELINE RETREAT PROJECT
ASE 1

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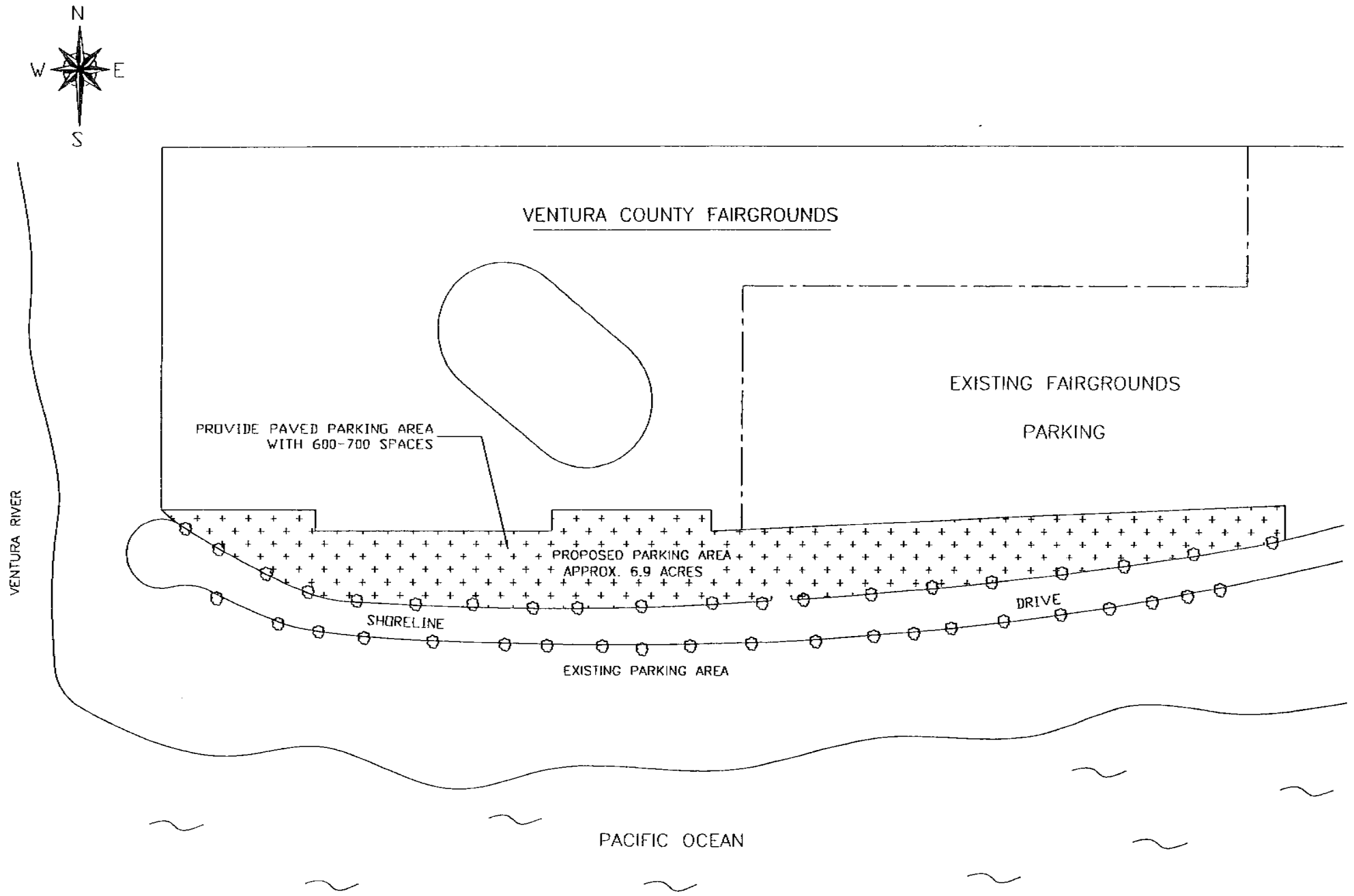

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ASSOCIATED TRANSPORTATION ENGINEERS

SURFERS POINT MANAGED SHORELINE RETREAT PROJECT
PHASE 2

Shoreline Drive is expected to be temporarily closed during portions of the Phase I construction period. Traffic circulation and access will therefore be impacted during this phase of the project, particularly during summer months and when the County Fair is held at the Fairgrounds. Closure of Shoreline Drive and demolition and relocation of the existing pedestrian/bicycle path will also impact pedestrian and bicycle access during the construction period.

Construction is expected to take approximately 12-18 months. As part of the redevelopment project, the contractor will import material and excavate and export material from the site, thus requiring truck access and staging. Construction workers will also travel to and from the area and will need a parking area. The work would occur on weekdays between the hours of 7:00 a.m. to 6:00 p.m.

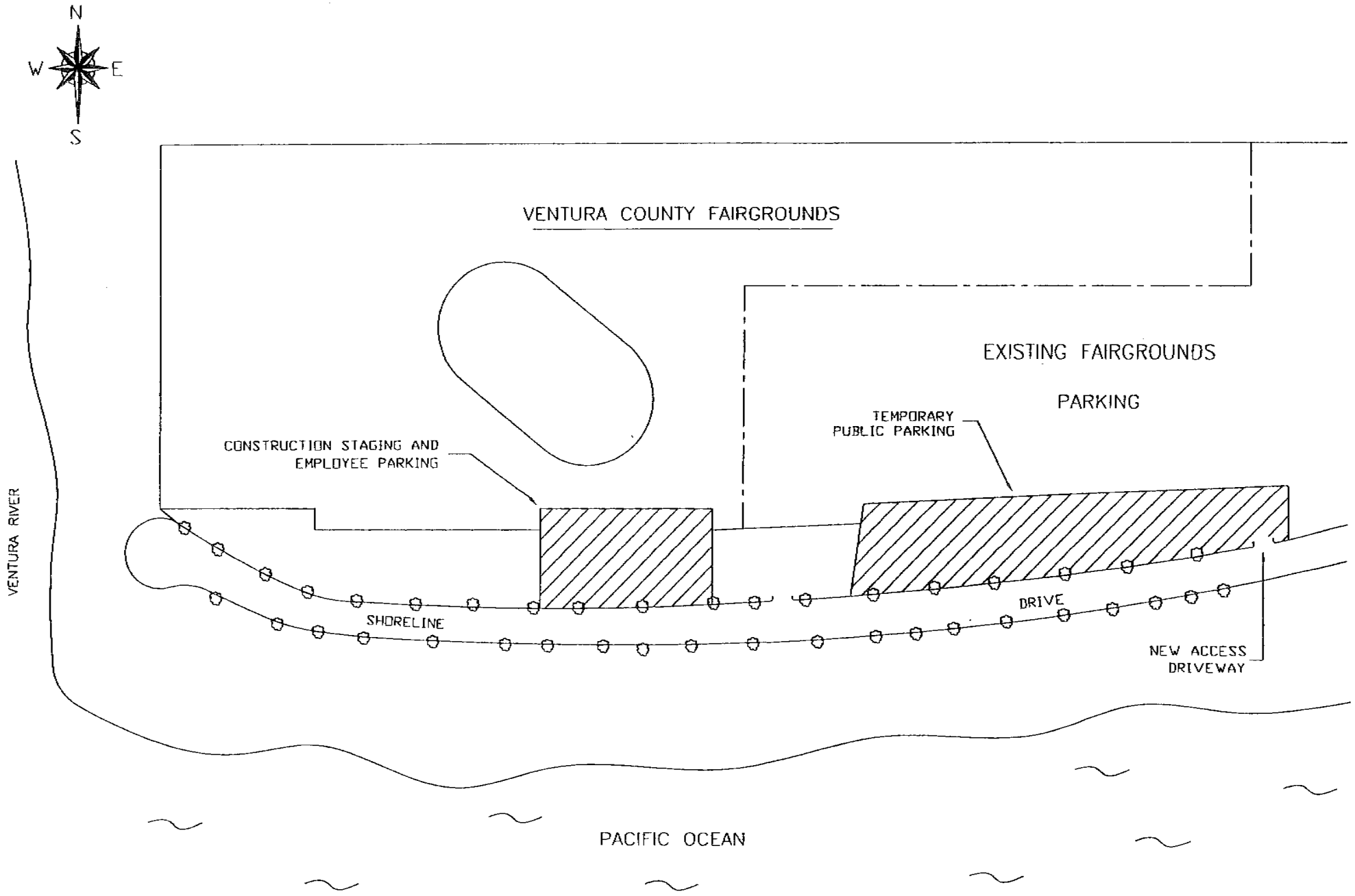
Mitigation T-1 **A Traffic Control Plan will need to be developed by the project contractor and the City to control construction traffic and circulation within the Shoreline Drive corridor during the construction period. An access plan should also be developed for the area addressing vehicular access, pedestrian access, and bicycle access during the Phase I construction period. A construction schedule should also be developed to avoid significant construction during peak activity periods at the Fairgrounds.**

Vehicular Access

In order to provide vehicular access to the Fairgrounds site during the Phase I construction period, it is recommended that a new driveway access point be constructed on Shoreline Drive at the east end of the existing Fairgrounds parking lot. Figure 4 illustrates the general location of the new driveway. Conversely, the existing gated driveway on Shoreline Drive could be used. Either driveway will allow vehicles to enter and exit from the Fairgrounds parking lots when events are held at the Fairgrounds during the construction period. This new driveway could also be used to access a temporary public parking area on the Fairgrounds site which could be established during the period when the southerly beach parking lots are demolished (see Mitigation T-2).

Pedestrian Access

Pedestrian access to the Fairgrounds site and the beach area should be maintained during the construction period. A pedestrian routing plan (with proper signing and barriers) will need to be developed to provide connections to the beach area south of the construction zone and the Fairgrounds area north of the construction zone.



ASSOCIATED
TRANSPORTATION
ENGINEERS

PROPOSED CONSTRUCTION IMPROVEMENT MEASURES

Bicycle Access

Bicycle travel in the area will be interrupted during Phase I of the project when the bicycle path connection through the Seaside Park area to the Ventura River trail is demolished and relocated. During this period, a bicycle detour route (with advance signing) will need to be developed to direct users of the bike path around the construction zone.

Construction Scheduling

The Ventura County Fair is generally scheduled during the first 2 weeks of August. During this period, construction should be halted and Shoreline Drive should be made available for access to the dirt parking lots serving the Fairgrounds via the new access driveway discussed above as well as the existing Fairgrounds driveway on Shoreline Drive. Adequate signing and traffic control devices should be implemented to alert motorists of the rough or irregular surfaces they may encounter during this period. Recreational traffic also increases on Shoreline Drive during the summer periods. Major construction activities should be minimized during the summer period to the extent possible.

Traffic Control Plan

Traffic control within the construction zone shall be in accordance with the Traffic Control Plan (TCP) which is to be developed for the project. The TCP shall utilize signs and traffic cones to direct traffic around closed lanes, and signs, cones and flaggers to direct traffic. When barricades or traffic cones are used to alert motorist of construction hazards they shall be in compliance with provisions contained in the Caltrans Manual.

The design agency shall either develop a Traffic Control Plan (TCP) to be included as part of the Plans and Specifications or they will require the Contractor to prepare a plan and submit it for agency approval prior to the start of construction. Adherence to this plan will minimize impacts to the local traffic to the extent feasible.

Section 21400 of the California Vehicle Code (CVC) requires the California Department of Transportation (Caltrans) to adopt rules and regulations prescribing uniform standards and specifications for all official traffic control devices placed pursuant to the CVC. Pursuant to the CVC, Caltrans has prepared a manual entitled Manual of Traffic Controls for Construction and Maintenance Work Zones (1990).

The following is taken directly from the introduction of the Traffic Controls Manual;

> "This Manual of Traffic Controls for Construction and Maintenance Work Zones is published by the State of California, Department of Transportation (Caltrans), and is issued to provide the basic standards for uniform types of warning signs, lights and devices to be placed upon any public highway or street by any person engaged in performing work which interferes with or endangers the safe movement of traffic upon such highway or street, in accordance with Section 21400 of the California Vehicle Code."

"It is the responsibility of the Contractor or Organization performing work on, or adjacent to, a highway to install and maintain such devices which are necessary to provide safe passage for the travelling public through the work, as well as for the safeguard of workers. Before work begins, traffic control plans for handling traffic through a construction or maintenance project shall be approved by the Engineer of the public agency or authority having jurisdiction over the highway."

The General Provisions section of the Manual under the heading "Engineering Study Required", states as follows:

"The decision to use a particular device at a particular location should be made on the basis of an engineering study of the location. Thus, while this Manual provides standards for design and application of traffic control devices, it is not a substitute for engineering judgement. It is the intent that the provisions of this Manual be standards for traffic control devices, but not a legal requirement for installation.

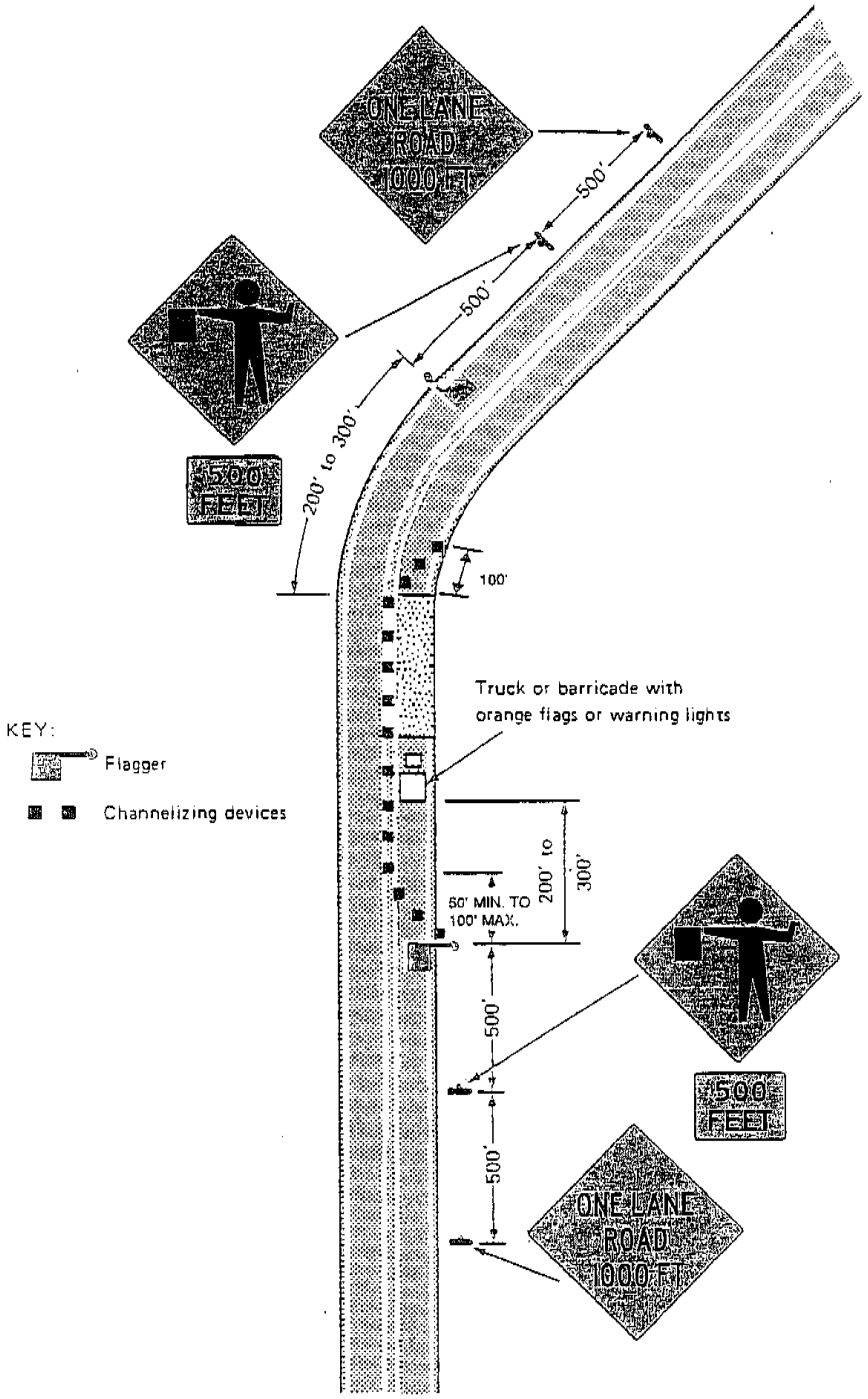
"Qualified engineers are needed to exercise the engineering judgement inherent in the selection of traffic control devices, just as they are needed to locate and design the roads and streets which devices complement. Jurisdictions with responsibility for traffic control, that do not have qualified engineers on their staffs, should seek assistance from the State traffic department, their county, a large nearby city of a traffic consultant."

The CVC also requires all agencies to conform to the uniform standards and specifications promulgated by Caltrans. In order to comply with the CVC, each agency, with jurisdiction of the road/street system, has developed a policy of fair traffic management in connection with construction within the road/street right-of-way and permits or special conditions will be required for the project.

The management of traffic in construction zones is an issue that must be addressed by the design engineer, the agency that owns and operates the facility and the contractor. All of these have a part in developing and implementing the particular Traffic Control Plan for the project. The CVC places the responsibility for approval of a traffic control plan upon respective City, County or State owner of the roadway facility and this cannot preempted by others.

Mitigation of project traffic impacts is accomplished by reiterating the statutory requirement related to construction within public roadways in California. The general components that are involved in traffic control are shown on Figure 5 which was derived from the Manual of Traffic Controls for Construction and Maintenance Work Zones.

The design agency shall incorporate the most recent provisions of the Manual of Traffic Controls for Construction and Maintenance Work Zones, or the most recent update into Plans and Specifications for the project.


ONE LANE ROAD 1000 FT
500'
500'
200' to 300'
500 FEET
100'
Truck or barricade with orange flags or warning lights
KEY:
Flagger
Channelizing devices
50' MIN. TO 100' MAX.
200' to 300'
500'
500'
500 FEET
ONE LANE ROAD 1000 FT

The design agency shall use Section 110.6 of the Caltrans Highway Design Manual as a guide in the development of Traffic Control Plan.

The design agency shall cooperate with City, County or State entity that has operational responsibility for the roads and streets in the development of the Traffic Control Plan for the project.

Impact T-2 Construction of the project will result in the short-term loss of the beach parking provided in the lots located on the south side of Shoreline Drive.

Parking at Seaside Park and the Fairgrounds will be interrupted during Phase I of the construction project. The existing 352-space Surfers Point parking lot currently provides 223 usable spaces due to beach erosion. This parking lot will be demolished during the first phase of construction, thus public parking for the beach area will be impacted during this phase. Parking will ultimately be replaced along both sides of Shoreline Drive and a new paved parking area will be constructed on the Fairgrounds site north of Shoreline Drive. These parking resources will more than off-set the loss of spaces in the southern parking lots.

Parking will also need to be provided for construction workers and construction equipment during Phase I and Phase II of the project.

Mitigation T-2 A Parking Management Plan should be developed to provide temporary parking for public beach users during the period when the beach parking lots are removed and the replacement parking has not been finished on Shoreline Drive. The plan should also identify parking areas for construction workers and construction equipment.

Public Parking

Temporary public parking could be provided in the Fairgrounds dirt parking lot located north of Shoreline Drive. This area would be accessed from the new access driveway or the existing gated driveway to serve the Fairgrounds parking lots (see Mitigation T-1). This temporary parking area would be utilized for beach access and parking during the period when the existing beach parking lot is demolished and the new parking on Shoreline Drive has not finished. Once the on-street parking on Shoreline Drive is completed, use of the temporary Fairground lot would end.

Construction Parking

Parking will need to be provided for construction workers and construction equipment. It can be expected that parking for construction traffic can be provided on-site in designated and undesignated spaces without disruption to the local parking and circulation. Trucks and equipment can be staged on-site. At times there maybe some on-street staging, however there is no on-street parking to disrupt.

A portion of the Fairgrounds dirt parking area could be used for construction parking and equipment staging during the Phase I period. This area could be accessed via the existing Fairgrounds driveway on Shoreline Drive. Figure 4 illustrates a potential location for this temporary construction parking area.

CALIFORNIA COASTAL ACT CONSISTENCY

The California Coastal Act related to shoreline access include the following sections:

> Section 30210. In carrying out the requirement of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all people consistent with public safety needs and the need to protect public rights, rights of private property owners and natural resource area from overuse.
>
> Section 30211. Development shall not interfere with the public's right of access to the sea where acquired through use, custom, or legislative authorization, including but not limited to, the use of dry sand and coastal beaches to the first line terrestrial vegetation.
>
> Section 30212. Public access from the nearest public roadway to the shoreline and along the coast shall be provided in new development projects except where: (1) it is inconsistent with public safety, military security needs, or the protection of fragile coastal resources; (2) adequate access exist nearby, or (3) agriculture would be adversely affected. Dedicated accessway shall not be required to be opened to public use until a public agency or private association agrees to accept responsibility for maintenance and liability of the accessway.
>
> Nothing in this division shall restrict public access nor shall it excuse the performance of the duties and responsibilities of public agencies which are required by Sections 66478.1-66478-14, inclusive, of the Government Code and by Section 4 of Article X of the California constitution.
>
> Section 30212.5. Wherever appropriate and feasible, public facilities, including parking areas or facilities, shall be distributed throughout an area so as to mitigate against the impacts, social and otherwise, of overcrowding or overuse by the public of any single area.

The project is intended to support the goals and policies of the Coastal Act. During the construction period there may be temporary interruptions of pedestrian and bicycle access to the shoreline in this area, although access to the shoreline east and west of the project area would not affected. This study also outlines a series of mitigation measures to ensure public access to the Seaside Park beach area and the adjacent Fairgrounds during the construction period. After the project is completed, there will be enhanced access for pedestrians, bicyclists and motorists in the project area. The area parking supply will increase from the 223 existing spaces to a minimum of about 244 spaces after the construction project is completed.

■ ■ ■

STUDY PARTICIPANTS AND REFERENCES

Associated Transportation Engineers

Richard L. Pool, Principal Engineer
Scott Schell, Principal Transportation Planner
Darryl Nelson, Transportation Planner III

Persons Contacted

John Moore, Noble Engineering
Joe Power, Rincon Consultants

References

Traffic Volumes on California State Highways, California Department of Transportation, June 2000.

Highway Capacity Manual, Transportation Research Special Report 209, National Research Council, Updated 1997.

Highway Design Manual, California Department of Transportation, 4th Edition, revised 1994.

Appendix F

Historical Review/Negative HPSR

SAN BUENAVENTURA RESEARCH ASSOCIATES

MEMORANDUM

1328 Woodland Drive • Santa Paula CA • 93060

805/525-1909
Fax 805/525-1597
sbra@historicresources.com
www.historicresources.com

To: Joe Power, Rincon Consultants, Inc.
From: Judy Triem, San Buenaventura Research Associates
Date: November 28, 2001
Re: **Historical Review of Surfers Point Managed Shoreline Retreat Project**

A site visit was conducted on November 26, 2001 to determine if any buildings or structures were located within the APE (Area of Potential Effect) of the Surfers Point Managed Shoreline Retreat Project. One small structure was identified at the western edge of the APE adjacent to the mouth of the Ventura River. The building measures approximately twelve by twelve feet and is constructed of concrete block with a flat roof. The only opening is a single door on the northern elevation. The building is flanked by two large telephone poles. The facility is owned by Pac Bell and is used to house broadcasting equipment. The lease for the property was obtained in 1958, when Pac Bell (then AT&T) constructed the building and installed the ship-to-shore radio transmission equipment. It was changed in later years to a general broadcasting service. There have been plans within the last three years to move this equipment facility to the adjacent fairgrounds site.

In our opinion, this property is not eligible for listing on the NRHP due to insufficient age, and should not be regarded as "exceptional" in terms of the NRHP. No other buildings or structures are located within the APE.

NEGATIVE HPSR FORM

California Department of Transportation

1. HIGHWAY PROJECT DESCRIPTION AND LOCATION

District	County	Route	Kilo Post	Charge Unit	Expenditure Authorization
07	Ventura	1	N/A		

Description:
The project involves removal of a damaged shorefront bike path and parking lot along an approximately 2,100 foot stretch of beach in the City of Ventura, construction of a new bike path approximately 64-1/2 feet further inland, addition of onstreet parking on both sides of Shoreline Drive, and possible restoration/stabilization of the 64-1/2-foot "retreat zone" through placement of cobble and/or sand. The project would also involve paving of an approximately 7.3-acre dirt parking lot at the Ventura County Fairgrounds.

2. AREA OF POTENTIAL EFFECTS

Description:
The Area of Potential Effects (APE) has been set at the maximum right of way line required for all alternatives. The APE was approved by FHWA on 5/29/01.

3. SOURCES CONSULTED

	Month/Year
☒ National Register of Historic Places and updates to:	5/1999
☐ OHP Database of Determinations of Eligibility and updates to:	
☐ California Register of Historical Resources and updates to:	
☒ California Historical Landmarks and updates to:	1990
☒ California Points of Historical Interest and updates to	1992
☒ California Inventory of Historic Resources	4/2000
☒ Caltrans Historic Highway Bridge Inventory	1986
☒ Archaeological Site Records [California State University, Fullerton]	

☒ Local Historical Society (Names and dates contacted)
Ventura County Historical Society, 11/26/01
☒ Other (Names and dates) Michael Carney, Public Relations manager, Pacific Bell, telephone interview, 11/27/01

4. LIST OF ATTACHED DOCUMENTATION

☒ Negative Archaeological Survey Report (ASR)
☐ Correspondence from SHPO
☐ Post-1947 MOU Short-form HASR
☐ Caltrans Historic Highway Bridge Inventory print-out
☐ Other (Specify) Bridge Evaluation Short Form

5. PROPERTIES IDENTIFIED

Properties previously listed or determined eligible (include date of listing or determination)

- None

Properties which appear eligible/ineligible

- An equipment shed and two power poles, located at the far eastern edge of the APE adjacent to the Ventura River, are determined ineligible for listing because they were constructed in 1958.

Properties unevaluated (provide reason why, e.g., archaeological properties not evaluated because of multiple alignments; property will be protected as an ESA, etc.)

- None

6. FINDINGS

☒ No historic properties have been identified within the APE of the proposed undertaking. Request SHPO concurrence that responsibilities pursuant to 36 CFR800.4(d) implementing Section 106 of the NHPA have been met.

☐ Historic properties or potentially historic properties have been identified within the APE of the proposed project.

☐ Documentation appended. Request the SHPO's concurrence that responsibilities pursuant to 36 CFR800.4(a)-(c) implementing Section 106 of the NHPA have been met.

☐ Documentation will be submitted to the SHPO at a later date.

If appropriate, check the following box.

☐ The undertaking will have no effect as described below. Request the SHPO's concurrence that responsibilities pursuant to 36 CFR800.5(a)-(b) implementing Section 106 of the NHPA have been met.

7. FHWA DETERMINATION

A. No cultural resources are present within or adjacent to the project's APE.

B. Cultural resources within or adjacent to the project's APE do not possess any historical, architectural, archaeological or cultural value.

Cultural studies are complete and satisfactory. The requirements of 36 CFR 800 have been completed.

_____ _____

Caltrans Cultural Staff Date

_____ _____

FHWA District Engineer Date

Appendix G

Construction Cost Estimates

NOBLE CONSULTANTS INC.

PROJECT MEMORANDUM

3201 DUPONT DRIVE, SUITE 620, IRVINE, CA 92612 (949) 752-1520
FACSIMILE (949) 752-8581

City of San Buenaventura
Surfers Point Plan for Managed Retreat
Job Number 605-29

To: Rick Raives
From: Jon Moore
Date: March 15, 2002
RE: Opinion of Construction Cost
Cc: Richard Parsons
Robert Warren Lawrence Lundeen Roger Kobata
File

Rick:

This memorandum summarizes our opinion of construction cost for the alternatives being considered for the managed retreat plan. The attached three figures show the scope of the proposed demolition and reconstruction work: Figure 1 shows the approximate limits of demolition; Figure 2 shows the conceptual details of the Preferred Plan that has been carried forward to the EIR review process; and Figure 3 illustrates the modified plan being proposed by the Surfrider Foundation.

The two managed retreat plans represent modest variations of how the retreat zone may be reconfigured. The Preferred Plan, currently favored by the Working Group, includes a buried sheet pile wall component to protect the relocated improvements. The Surfrider Foundation Plan proposes that a more shallow depth structure be used to separate the landward bike path, street, and Fairgrounds parking lot from the ocean frontage. Other differences include the placement plan for gravel, boulders, and cobble (GBC) and the extent of dune planting and re-vegetation that might be performed.

An overall summary of our opinion of construction cost for both alternatives is provided in Table 1. Tables 2 and 3 summarize more detailed breakdowns for the component items to indicate the basis for the total price.

Sensitivities to the cost analysis include uncertainties in unit price for GBC and its availability in large quantities. Recently demand for GBC by landscape construction interests has increased. This alternative use has resulted in greater competition to acquire the material and market driven pricing. Significant cost increases could also occur if NPDES requirements force all discharge of storm water runoff to the Figueroa storm drain. Existing topography and pipe inverts dictate that the treated runoff be discharged into the Ventura River as is currently the case for the Fairgrounds storm water drainage.

Summary of Opinion of Construction Cost

Item	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Demolition	$175,000	$175,000	$175,000	$24,000	$175,000
Fairgrounds parking lot	$1,656,000	$1,656,000	$1,656,000	$0	$1,656,000
Shoreline Drive improvements	$511,000	$511,000	$511,000	$0	$511,000
Retreat zone conversion					
Buried wall	$1,804,000	$1,804,000	$0	$0	$0
Buried curb (5' deep)	$0	$0	$119,000	$46,000	$119,000
Parapet wall (2' high)	$0	$0	$55,000	$31,000	$55,000
GBC	$0	$439,000	$839,000	$127,000	$717,000
Dune fill	$0	$158,000	$0	$0	$113,000
Sand fill	$0	$250,000	$38,000	$0	$250,000
Bike path	$50,000	$50,000	$50,000	$105,000	$50,000
Landscape (bike path)	$50,000	$50,000	$50,000	$24,000	$50,000
Landscape (dune)	$0	$400,000	$0	$100,000	$500,000
Miscellaneous	$200,000	$200,000	$200,000	$25,000	$200,000
Sub-total	$4,446,000	$5,693,000	$3,693,000	$482,000	$4,396,000
Contingency @ 15%	$667,000	$854,000	$554,000	$72,000	$659,000
Total estimate (rounded)	$5,100,000	$6,500,000	$4,200,000	$600,000	$5,100
Additional cost for subsurface debris removal if required	$684,000	$684,000	$684,000	$0	$684,000

Alternative 1: Buried Seawall Behind Retreat Zone

Demolition in Retreat Zone

	Item	Unit	Quantity	Unit Cost	Total
1	Bike Path AC	TN	600		
2	Bike Path AB	CY	300		
3	Bike Path Curb	TN	365		
4	PCC Curb	TN	280		
5	Parking Lot AC	TN	1,520		
6	Parking Lot AB	CY	1,100		
7	Light Poles	EA	13		
8	Miscellaneous	LS	1		
	Sub-total (rounded)				$175,000

Shoreline Improvements

9	Toe Excavation	CY	19,700	8.50	167,450
10	Filter Fabric	SY	360	3.00	1,080
11	Toe Stone	TN	7,100	40	284,000
12	Sheet Pile wall	LF	1,700	595	1,011,500
13	Concrete Cap	CY	504	675	340,200
14	Bike Path AC (4" w/ color)	TN	600	70	42,000
15	Bike Path AB (4")	CY	300	25	7,500
16	Landscape (Bike path)	SF	10,000	5.00	50,000
17	Furnishings	LS	1	100,000	100,000
18	Miscellaneous	LS	1	100,000	100,000
	Sub-total (rounded)				$2,104,000

Site Remediation Contingency

Remove 65'x1,900'x5' soil/ debris layer if found. Haul away or use as fill at Fairgrounds.)

19	Excavation and removal	CY	19,000	11	209,000
20	Replacement sand fill	CY	19,000	25	475,000

Alternative 2: Cobble Mattress with Sacrificial Dune Cross Section

Demolition in Retreat Zone

	Item	Unit	Quantity	Unit Cost	Total
1	Bike Path AC	TN	600		
2	Bike Path AB	CY	300		
3	Bike Path Curb	TN	365		
4	PCC Curb	TN	280		
5	Parking Lot AC	TN	1,520		
6	Parking Lot AB	CY	1,100		
7	Light Poles	EA	13		
8	Miscellaneous	LS	1		
	Sub-total (rounded)				$175,000

Preferred Plan for Retreat Zone Improvements

9	Toe Excavation	CY	19,700	8.50	167,450
10	Filter Fabric	SY	360	3.00	1,080
11	Toe Stone	TN	7,100	40	284,000
12	Sheet Pile wall	LF	1,700	595	1,011,500
13	Concrete Cap	CY	504	675	340,200
14	Excavation for Mattress	CY	17,600	2.50	44,000
15	GBC mattress	TN	28,200	14	394,800
16	Sand fill	CY	10,000	25	250,000
17	Dune fill	CY	6,300	25	157,500
18	Bike Path AC (4" w/ color)	TN	600	70	42,000
19	Bike Path AB (4")	CY	300	25	7,500
20	Landscape (Bike path)	SF	10,000	5.00	50,000
21	Landscape (Dune area)	SF	80,000	5.00	400,000
22	Furnishings	LS	1	100,000	100,000
23	Miscellaneous	LS	1	100,000	100,000
	Sub-total (rounded)				$3,350,000

Site Remediation Contingency

Remove 65'x1,900'x5' soil/ debris layer if found. Haul away or use as fill at Fairgrounds.)

24	Excavation and removal	CY	19,000	11	209,000
25	Replacement sand fill	CY	19,000	25	475,000

Alternative 3: Cobble Berm with Retreat Zone

Demolition in Retreat Zone

	Item	Unit	Quantity	Unit Cost	Total
1	Bike Path AC	TN	600		
2	Bike Path AB	CY	300		
3	Bike Path Curb	TN	365		
4	PCC Curb	TN	280		
5	Parking Lot AC	TN	1,520		
6	Parking Lot AB	CY	1,100		
7	Light Poles	EA	13		
8	Miscellaneous	LS	1		
	Sub-total (rounded)				$175,000

Preferred Plan for Retreat Zone Improvements

14	Excavation for berm	CY	44,000	2.50	110,000
15	GBC berm	TN	52,100	14	729,400
16	Sand fill	CY	1,500	25	37,500
18	Bike Path AC (4" w/ color)	TN	600	70	42,000
19	Bike Path AB (4")	CY	300	25	7,500
20	Landscape (Bike path)	SF	10,000	5	50,000
21	Landscape (Dune area)	SF	80,000	5	400,000
22	Furnishings	LS	1	100,000	100,000
23	Miscellaneous	LS	1	100,000	100,000
	Sub-total (rounded)				1,576,000

Site Remediation Contingency

Remove 65'x1,900'x5' soil/ debris layer if found. Haul away or use as fill at Fairgrounds.)

24	Excavation and removal	CY	19,000	11	209,000
25	Replacement sand fill	CY	19,000	25	475,000

Alternative 4: Extension of Existing Cobble Berm

Demolition in Retreat Zone

	Item	Unit	Quantity	Unit Cost	Total	
1	Clear and grub	SF	6,000	$0.50	$3,000	
2	Excavate damage to trim line	CY	900	$6	$5,400	
3	Remove riprap	TN	1,200	$13	$15,600	
	Sub-total (rounded)					$24,000

Restoration of Improvements

4	Blade sand to receive GBC	SY	8,500	$0.15	$1,275	
5	Import GBC	TN	9,000	$14	$126,000	
6	Replace parking/ bike path	SF	21,500			
	AB	TN	4,700	$16	$75,200	
	AC	TN	413	$50	$20,650	
	Stripe	EA	90	$100	$9,000	
7	CIP buried curb (5' deep)	CY	91	$500	$45,500	
8	CIP parapet wall (2' high)	CY	48	$650	$31,200	
9	Landscape (Bike path)	SF	4,750	$5.00	$23,750	
10	Landscape (Dune)	SF	20,000	$5.00	$100,000	
11	Furnishings	LS	1	$10,000	$10,000	
12	Miscellaneous allowance	LS	1	$15,000	$15,000	
	Sub-total (rounded)					$458,0[illegible]

Sub-total	$482,000
Contingency @ 15% (rounded)	$72,300
Estimated total cost (rounded)	$554,000

Alternative 5: Modified Surfrider Foundation Alternative

Demolition in Retreat Zone

	Item	Unit	Quantity	Unit Cost	Total
1	Bike Path AC	TN	600		
2	Bike Path AB	CY	300		
3	Bike Path Curb	TN	365		
4	PCC Curb	TN	280		
5	Parking Lot AC	TN	1,520		
6	Parking Lot AB	CY	1,100		
7	Light Poles	EA	13		
8	Miscellaneous	LS	1		
	Sub-total (rounded)				$175,000

Shoreline Improvements

9	Excavation for GBC	CY	30,300	2.50	75,750
10	GBC	TN	45,800	14	641,200
11	CIP buried curb (5' deep)	CY	238	500	119,000
12	CIP Parapet wall (2' high)	CY	85	650	55,250
13	Sand fill	CY	10,000	25	250,000
14	Dune fill	CY	4,500	25	112,500
15	Bike Path AC (4" w/ color)	TN	600	70	42,000
16	Bike Path AB (4")	CY	300	25	7,500
17	Landscape (Bike path)	SF	10,000	5	50,000
18	Landscape (Dune area)	SF	100,000	5	500,000
19	Furnishings	LS	1	100,000	100,000
20	Miscellaneous	LS	1	100,000	100,000
	Sub-total (rounded)				$2,053,000

Site Remediation Contingency

Remove 65'x1,900'x5' soil/ debris layer if found. Haul away or use as fill at Fairgrounds.)

21	Excavation and removal	CY	19,000	11	209,000
22	Replacement sand fill	CY	19,000	25	475,000

County Fairgrounds Parking Lot

	Item	Unit	Quantity	Unit Cost	Total
1	Grading	CY	12,000	$1.50	$18,000
2	Paving (3"AC /6" AB)	SF	281,000	2.00	562,000
3	Landscape/ irrigation	SF	38,000	5.00	190,000
4	Curb/ Curb and Gutter	LF	1,250	12	15,000
5	Lighting	LS	1	214,000	214,000
6	Parking stripe	EA	670	3.75	2,513
7	Retaining wall	SF	300	25	7,500
8	Catch basins (24x24)	EA	14	1,600	22,400
9	24" RCP	LF	270	85	22,950
10	36" RCP	LF	1,670	115	192,050
11	Outlet to river	LS	1	20,000	20,000
12	NPDES Treatment	LS	1	40,000	40,000
13	Pump station	LS	1	250,000	250,000
14	Miscellaneous	LS	1	100,000	100,000
	Subtotal (rounded)				$1,656,000

Shoreline Drive Improvements

15	Demolition	ACRE	4.1	45,000	184,500
16	Paving (3" AC/ 8" AB)	SF	25,000	2.00	50,000
17	Slurry seal traffic lanes	SF	48,000	0.25	12,000
18	Color seal parking areas	SF	47,000	1.00	47,000
19	Curb and gutter	LF	4,100	12	49,200
20	Parking stripe	EA	235	3.75	881
21	NPDES Treatment	LS	1	20,000	20,000
22	Landscape/ irrigation	SF	20,000	5.00	100,000
23	Lighting/ substructures	LS	1	47,000	47,000
	Subtotal (rounded)				$511,000

Notes:

Item 1:	Assumes 1' over 7.5 acres
Item 8,9,10:	Assumes onsite detention
Item 2 and 15	Includes fine grading, PMB, prime coat, one lift of AC, and fog seal

Appendix H

Responses to Comments on the Draft EIR

RESPONSES TO COMMENTS ON THE DRAFT EIR

The letters in this appendix to the EIR are the public comments on the Draft Environmental Impact Report (EIR) for the proposed Surfers Point Managed Shoreline Retreat project. The Draft EIR was circulated for a 45-day public review period that began on December 16, 2002 and concluded on February 2, 2003. This appendix includes responses to comments on the Draft EIR.

The City received ten comment letters on the Draft EIR. Commentors and the page number on which each comment letter can be found are listed below

Commentor	Page Number
1. Terry Roberts, Director, State Clearinghouse, Governor's Office of Planning and Research	2
2. Stephen L. Jenkins, Assistant Chief, Division of Environmental Planning and Management, California State Lands Commission	5
3. Harlan R. Jeche, Unit Chief, Southern California Cleanup Operations Branch - Glendale Office, Department of Toxic Substances Control	8
4. Rich Rojas, District Superintendent, California Department of Parks and Recreation	12
5. Christopher Stephens, County of Ventura Resource Management Agency	15
6. Nazir Lalani, Principal Engineer, Ventura County Public Works Agency, Transportation Department	17
7. Alicia Stratton, Ventura County Air Pollution Control District	19
8. Mark Rauscher, Coastal Science Manager, Surfrider Foundation	21
9. A. Paul Jenkin, M.S., Environmental Director, Surfrider Foundation - Ventura County Chapter	28
10. A. Paul Jenkin, M.S., Environmental Director, Surfrider Foundation - Ventura County Chapter	62

The comment letters and the City's responses follow. The Draft EIR and the following comment letters and responses collectively comprise the Final EIR for the Surfers Point Managed Shoreline Retreat project.

STATE OF CALIFORNIA

Governor's Office of Planning and Research

State Clearinghouse

Gray Davis
Governor

Tal Finney
Interim Director

February 3, 2003

1

RECEIVED

FEB - 6 2003

PLANNING DIV.

Paul Calderwood
City of San Buenaventura
501 Poli Street
Ventura, CA 93001

Subject: Surfers Point Managed Shoreline Retreat
SCH#: 2001011129

Dear Paul Calderwood:

The State Clearinghouse submitted the above named Draft EIR to selected state agencies for review. On the enclosed Document Details Report please note that the Clearinghouse has listed the state agencies that reviewed your document. The review period closed on January 31, 2003, and the comments from the responding agency (ies) is (are) enclosed. If this comment package is not in order, please notify the State Clearinghouse immediately. Please refer to the project's ten-digit State Clearinghouse number in future correspondence so that we may respond promptly.

Please note that Section 21104(c) of the California Public Resources Code states that:

> "A responsible or other public agency shall only make substantive comments regarding those activities involved in a project which are within an area of expertise of the agency or which are required to be carried out or approved by the agency. Those comments shall be supported by specific documentation."

These comments are forwarded for use in preparing your final environmental document. Should you need more information or clarification of the enclosed comments, we recommend that you contact the commenting agency directly.

This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act. Please contact the State Clearinghouse at (916) 445-0613 if you have any questions regarding the environmental review process.

Sincerely,

Terry Roberts

Terry Roberts
Director, State Clearinghouse

Enclosures
cc: Resources Agency

State Clearinghouse Data Base

SCH# 2001011129
Project Title Surfers Point Managed Shoreline Retreat
Lead Agency San Buenaventura, City of

Type EIR Draft EIR

Description The Surfers Point Managed Shoreline Retreat project would involve three primary components: 1) stabilization/restoration of an approximately 1,800- foot stretch of beach: 2) replacement of the damaged shorefront bike path and parking lot: and 3) provision of more paved parking at the Ventrua County Fairgrounds.

Lead Agency Contact

Name Paul Calderwood
Agency City of San Buenaventura
Phone 805 454-7727 **Fax**
email
Address 501 Poli Street
City Ventura **State** CA **Zip** 93001

Project Location

County Ventura
City Ventura
Region
Cross Streets Shoreline Drive, Figueroa Street
Parcel No. 0730231010,0730231030
Township **Range** **Section** **Base**

Proximity to:

Highways U.S. 101
Airports
Railways Southern Pacific
Waterways Ventura River, Pacific Ocean
Schools
Land Use Land Use: Recreation; Zoning: Parks; General Plan: Pulic Use

Project Issues Air Quality; Archaeologic-Historic; Coastal Zone; Economics/Jobs; Geologic/Seismic; Noise; Recreation/Parks; Traffic/Circulation; Vegetation; Water Quality; Landuse; Toxic/Hazardous

Reviewing Agencies Resources Agency; Department of Boating and Waterways; California Coastal Commission; Department of Conservation; Department of Fish and Game, Region 5; Department of Fish and Game, Marine Region; Department of Parks and Recreation; Department of Water Resources; Caltrans, District 7; Regional Water Quality Control Board, Region 4; Department of Toxic Substances Control; Native American Heritage Commission; Public Utilities Commission; State Lands Commission

Date Received 12/18/2002 **Start of Review** 12/18/2002 **End of Review** 01/31/2003

Note: Blanks in data fields result from insufficient information provided by lead agency.

Letter 1

COMMENTOR: Terry Roberts, Director, State Clearinghouse, Governor's Office of Planning and Research

DATE: February 3, 2003

RESPONSE:

The commentor acknowledges that the City has complied with State Clearinghouse review requirements for environmental documents. No response is necessary.

STATE OF CALIFORNIA

GRAY DAVIS, *Governor*

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

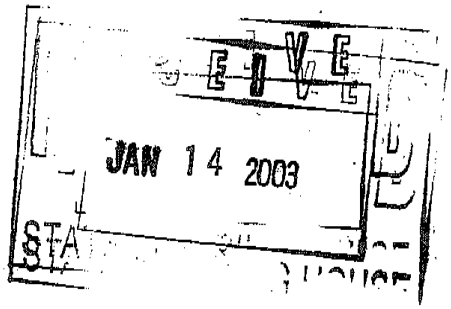
PAUL D. THAYER, *Executive Officer*
(916) 574-1800 FAX (916) 574-1810
California Relay Service From TDD Phone 1-800-735-2922
from Voice Phone 1-800-735-2929

Contact Phone: **(916) 574-1880**
Contact FAX: **(916) 574-1885**

January 13, 2002

2

File Ref: SCH 2001011129
G 19-01



Clear
1.31.03

Mr. Paul Calderwood
City of San Buenaventura
501 Poli Street
Ventura CA 93001

Ms. Nadell Gayou
The Resources Agency
901 P Street
Sacramento, CA 95814

Dear Mr. Calderwood and Ms. Gayou:

SUBJECT: Draft Environmental Impact Report (EIR) for the Surfers Point Managed Shoreline Retreat, SCH 2001011129

Staff of the California State Lands Commission (CSLC) has reviewed the subject document. Under the California Environmental Quality Act (CEQA), the City is the Lead Agency and the CSLC is a Responsible and/or Trustee Agency for any and all projects that could directly or indirectly affect sovereign lands, their accompanying Public Trust resources or uses, and the public easement in navigable waters.

As general background, the CSLC has jurisdiction and authority over all ungranted tidelands, submerged lands, and the beds of navigable rivers, sloughs, lakes, etc. The CSLC has an oversight responsibility for tide and submerged lands legislatively granted in trust to local jurisdictions (Public Resources Code Section 6301). All tide and submerged lands, granted or ungranted, as well as navigable rivers, sloughs, etc. are impressed with the Common Law Public Trust.

The Public Trust is a sovereign public property right held by the State or its delegated trustee for the benefit of all the people. This right limits the uses of these lands to waterborne commerce, navigation, fisheries, open space, recreation, or other

recognized Public Trust purposes. A lease from the CSLC is required for any portion of a project extending onto State-owned lands that are under its exclusive jurisdiction.

The project provides for stabilization/restoration of an approximately 1800-foot stretch of beach, replacement of the damaged shorefront bike path and parking lot and provision of more paved parking at the adjacent Ventura County Fairgrounds. The preferred alternative (Alternative 5) involves the development of a cobble berm and the creation of a substantial sacrificial sand dune, revegetated with native dune habitat.

The major portion of the project located waterward of the mean high tide line will be located on sovereign lands, which have been legislatively granted to the City of San Buenaventura pursuant to Chapter 213, Statutes of 1935. However, as pointed out in Section S.4, Required Approvals, the westernmost portion (approximately 300 feet) will be located on ungranted sovereign lands, and a lease from the CSLC will be required. Enclosed is information related to the CSLC's application process. The application should be submitted to the CSLC, along with the noted fees, as soon as it is appropriate.

The CSLC is continuing to compile information related to certain coastal hazards, one of which is purported to be located on the beach near the mouth of the Ventura River. We would appreciate being notified if the City has any information related to the nature and precise location of the hazard should that be available now, during the construction of the subject project, or subsequent thereto.

Thank you for the opportunity to comment. Any questions concerning the CSLC's jurisdiction should be directed to Jane E. Smith, Public Land Management Specialist, at (916) 574-1892.

Sincerely,

Stephen L. Jenkins, Asst. Chief
Division of Environmental Planning
and Management

cc: Jane E. Smith

Letter 2

COMMENTOR: Stephen L. Jenkins, Assistant Chief, Division of Environmental Planning and Management, California State Lands Commission

DATE: January 13, 2003

RESPONSE:

The commentor describes the jurisdiction of the State Lands Commission and notes that, as discussed in the Draft EIR, a lease from the State Lands Commission will be required for the westernmost portion of the project. The commentor also requests receipt of any information about coastal hazards that becomes available. If the project is approved, the City will apply for a lease on the portion of the project that is within the jurisdiction of the State Lands Commission following completion of a final design for the project. Any additional information about possible coastal hazards that is compiled during the final design phase will be submitted to the State Lands Commission as part of that application.

Department of Toxic Substances Control

Edwin F. Lowry, Director
1011 N. Grandview Avenue
Glendale, California 91201

Winston H. Hickox
Agency Secretary
California Environmental
Protection Agency

Gray Davis
Governor

3

January 27, 2003

Mr. Paul Calderwood
City of San Buenaventura
501 Poli Street
Ventura, California 93001

NOTICE OF COMPLETION OF DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE SURFERS POINT MANAGED SHORELINE RETREAT, SCH NO. 2001011129

Dear Mr. Calderwood:

The Department of Toxic Substances Control (DTSC) has received your Notice of Completion of a draft Environmental Impact Report (EIR) for the project mentioned above.

Based on the review of the document, DTSC comments are as follows:

1. The draft EIR states that remediation of known areas of contamination was conducted in 1989 prior to construction of the existing Surfers Point improvements. The EIR should include the name of the government agency that provides regulatory oversight during the conduct of the 1989 remediation. A

2. The EIR should identify the mechanism to initiate any required investigation and/or remediation for any site that may require remediation, and which government agency will provide appropriate regulatory oversight. B

3. If during construction of the project, soil contamination is suspected, construction in the area should stop, and appropriate health and safety procedures should be implemented. If it is determined that contaminated soils exists, the EIR should identify how any required investigation and/or remediation will be conducted, and which government agency will provide regulatory oversight. C

DTSC provides guidance for Preliminary Endangerment Assessment preparation and cleanup oversight through the Voluntary Cleanup Program (VCP). For additional

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our Web-site at www.dtsc.ca.gov.

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information on the VCP please visit DTSC's web site at www.dtsc.ca.gov. If you would like to meet and discuss this matter further, please contact Mr. Alberto Valmidiano, Project Manager, at (818) 551-2870 or me, at (818) 551-2877.

Sincerely,

Harlan R. Jeche

Harlan R. Jeche
Unit Chief
Southern California Cleanup Operations Branch – Glendale Office

Enclosure

cc: Governor's Office of Planning and Research
State Clearinghouse
P. O. Box 3044
Sacramento, California 95812-3044

Mr. Guenther W. Moskat, Chief
Planning and Environmental Analysis Section
CEQA Tracking Center
Department of Toxic Substances Control
P. O. Box 806
Sacramento, California 95812-0806

Department of Toxic Substances Control

Edwin F. Lowry, Director
1001 "I" Street, 25th Floor
P.O. Box 806
Sacramento, California 95812-0806

Winston H. Hickox
Agency Secretary
California Environmental
Protection Agency

Gray Davis
Governor

MEMORANDUM

TO: Sayareh Amirebrahimi, Branch Chief
Site Mitigation Program, Region 3

FROM: Guenther W. Moskat, Chief
Planning and Environmental Analysis Section

DATE: December 26, 2002

SUBJECT: TRANSMITTAL AND REVIEW OF LEAD AGENCY ENVIRONMENTAL DOCUMENTS FOR
Surfers Point Managed Shoreline Retreat - SCH # 2001011129

The Department has received the project listed above. The project is being referred to you as a:

- [X] Non-Essential/Information Item Only
- [ ] Sensitive Land Use Project
- [ ] Non-Sensitive land Use Project

A Courtesy Copy of the Notice of Completion Transmittal Form has also been sent to:

- [X] Permitting Branch (document not included)

The Department is encouraged to review this project and if applicable make comments pertaining to the project as it relates to hazardous waste and/or any activities which may fall within the Department's jurisdiction. Please have your staff: 1) conduct its review of the attached document prior to the end of the comment period; 2) complete the applicable items below stating whether the department made comments or that no comments were necessary for the document; and 3) return this original transmittal sheet and a copy of any response letter from your office to:

Planning & Environmental Analysis Section (PEAS)
CEQA Tracking Center
1001 I Street, 22nd Floor
P.O. Box 806
Sacramento, California 95812-0806
Fax (916) 323-3215

Date Comment Period Began: 12-18-02

Comments due to OPR: 1-31-03

Reviewed by: A Valadao Date: 01/23/03

COMMENTS have been prepared and a copy has been provided to PEAS via:

- [X] Attached Copy
- [ ] FAX (916) 323-3215

DEPARTMENT OF TOXIC SUBSTANCES CONTROL
SOUTHERN CALIFORNIA REGION
DEC 30 2002
RECEIVED

NO COMMENTS NECESSARY because:

- [ ] All Department concerns have been adequately addressed; OR
- [ ] Project does not fall within the Department's areas of responsibility

Thank you for your assistance with this project. If you have any questions, please contact Ken Tipon, CEQA Tracking Center, at (916) 322-5266.

Letter 3

COMMENTOR: Harlan R. Jeche, Unit Chief, Southern California Cleanup Operations Branch - Glendale Office, Department of Toxic Substances Control

DATE: January 27, 2003

RESPONSE:

Response 3A

The commentor states an opinion that the EIR should include the name of the agency that provided regulatory oversight during the 1989 remediation program at Surfers Point. The remediation was conducted by McClelland Consultants under the supervision of the City of Ventura Public Works Agency.

Response 3B

The commentor states an opinion that the EIR should identify a mechanism to initiate any required investigation and/or remediation and identify the agency that would provide regulatory oversight. Mitigation Measure H-1 in Section 4.10 of the EIR specifies that, in the event potentially contaminated soils are encountered during excavation, on-site activity must stop until the contamination is investigated and, if necessary, remediated. Which agency would provide regulatory oversight would depend upon the nature and magnitude of any contamination found. Possible oversight agencies include the Ventura County Health Department, the Department of Toxic Substances Control, and the Regional Water Quality Control Board.

Response 3C

The commentor states an opinion that, if contamination is detected on-site, excavation activity should stop until appropriate health and safety procedures are implemented. The commentor also states that the EIR should indicate how such investigation would be conducted and which agency would provide oversight. As discussed in Response 3B, Mitigation Measure H-1 requires stopping work on-site in the event that contamination is discovered until the contamination is investigated and, if necessary, remediated. If contamination is detected, the most likely approach to remediation would be excavation and removal of the contaminated material, though the methods to be used for investigating and remediating contamination would depend upon the nature and magnitude of the contamination. Similarly, as discussed in Response 3B, the oversight agency for any necessary remediation would depend upon the nature and magnitude of the contamination. It should be noted that no soil or groundwater contamination problems are known to be present at Surfers Point.

State of California • The Resources Agency
Gray Davis, *Governor*

DEPARTMENT OF PARKS AND RECREATION
Ruth G. Coleman, *Acting Director*
Channel Coast District
1933 Cliff Drive
Suite 27
Santa Barbara CA 93109

4

February 3, 2003

Paul Calderwood
Community Development Department
City of San Buenaventura
501 Poli Street
Ventura, CA 93002-0099

Subject: Draft Environmental Impact Report – Surfer's Point Managed Retreat
SCH# 2001011129

Dear Mr. Calderwood:

California State Parks Channel Coast District staff has reviewed the above-referenced document and offers the following comments for the City's consideration. The proposed project consists of three components including stabilization/restoration of approximately 1/3-mile of beach, replacement or relocation of damaged shorefront bike path and parking and provision of additional parking at the adjacent Ventura County Fairgrounds. The project would accomplish this under one of five different alternatives and the "No Project" alternative. Alternative 5 is described as the "Preferred Alternative" supported by the Surfer's Point Working Group, and would include designating a "retreat zone" of 64-1/2 feet, relocating the existing Omer Rains Bikeway and Shoreline Drive landward of this zone, constructing a berm of imported cobble along the shorefront within the retreat zone, with a "sacrificial" dune planted with native dune vegetation created on top of much of the cobble berm.

This project is intended to culminate a lengthy and complex history of projects and land use planning issues associated with the Surfer's Point area that spans over two decades. As managing agency for the Omer Rains Bikeway, State Parks has participated on the Surfer's Point Working Group in an effort to help ensure the public's continued use and enjoyment of the bikeway and the shoreline to which it provides access. We greatly appreciate the sincerity of the Working Group's efforts, and the genuine concern the community has for supporting recreation and the natural resources of this beautiful site.

While we support the "Preferred Alternative" in concept, many questions remain. State Parks has a long-held policy of planned retreat where shoreline erosion has continued long-term adverse effect on man-made structures, especially where these may have been constructed too close to a dynamic shoreline. The proposed project is termed a "managed" retreat. It is important to be clear about what is being managed and we urge caution that this term should not imply that it is within any entity's power to manage the natural processes at work as much as the man-made structures affected by

them. Certainly the history of the bikeway in this area demonstrates that the natural processes cannot be managed by structural design.

Thus there are significant questions that arise about the long-term management and maintenance of any of the alternatives. California State Parks would encourage that the Final EIR address these questions by including a review of the context of the project that describes historic (i.e., pre-bikeway and Fairgrounds/Shoreline Drive improvements) conditions as compared to existing conditions, and a discussion of the reasons for the erosion of facilities constructed within this dynamic shoreline. The EIR would be stronger if the narrative included detail on the expected long-term maintenance and management of the structures and the potential for continued retreat – taking into consideration the challenges of funding public works projects. A review and analysis of past efforts that failed will help clearly identify a preferred, environmentally superior alternative, greatly enhancing the ability of the decision-makers to reach an informed decision, as intended by CEQA.

In many of our parks throughout the state, the public can observe the awesome power of nature simultaneously to create and destroy the shoreline environment in an endless cycle of building and breaking down. However it is difficult for taxpayer and land manager alike to appreciate nature's power when observing the destruction of public property and the loss of publicly funded infrastructure by natural forces. State Parks is concerned about both our collective long-term stewardship responsibilities and the best use of public funds. It is greatly heartening to see the City's efforts to support coastal recreation and access in the area without sacrificing those stewardship considerations.

We appreciate the commitment of all parties to staying engaged and working toward consensus. We trust the outcome will ultimately both benefit and be in the best long-term interest of the public. Thank you for the continuing opportunity to comment on and participate in this significant project. Should you have any questions, please do not hesitate to contact me at (805) 899-1400.

Sincerely,

Richard A. Rojas
District Superintendent

Letter 4

COMMENTOR: Richard A. Rojas, District Superintendent, California Department of Parks and Recreation

DATE: February 3, 2003

RESPONSE:

The commentor describes and expresses support for the preferred alternative and suggests that the Final EIR should include discussions of historic conditions at Surfers Point, past efforts at shoreline management that failed, and details on expected long-term maintenance and management requirements.

A detailed discussion of historic and present conditions along the shoreline at Surfers Point is included in Subsection 3.7 of Section 3.0, *Environmental Setting*, beginning on page 3-15. As discussed in that subsection of the EIR, the shoreline at Surfers Point is dynamic, with the location of the shoreline fluctuating episodically depending upon weather conditions. This constantly changing environment is the natural condition at Surfers Point and the fluctuation in the location of the shoreline is the primary reason for the failure of past attempts to construct permanent improvements near the shoreline.

Subsection 1.2 of Section 1.0, *Purpose and Need*, describes the failure of the previous effort to construct a bike path and parking lot at Surfers Point. Both of these facilities were damaged by wave erosion associated with unusually severe winter storms shortly after their completion in 1989. The reasons for the damage were the placement of the facilities within an area at risk from wave-related erosion, coupled with the lack of adequate protective devices for those facilities. The proposed relocation of the bike path and parking areas would move these facilities about 65 feet inland, thus reducing the potential for future erosion. Nevertheless, the relocated facilities would remain in an area potentially subject to wave-related damage. Thus, ongoing maintenance and renourishment of the shoreline would be needed to prevent erosion-related damage from occurring in the future. The actual amount of renourishment that would be needed cannot be predicted with any certainty, as it would depend upon future weather conditions. However, as discussed in Section 2.0, *Description of Project Alternatives*, it is estimated that, on average, about 10% of the cobble material to be deposited may erode away. The City is committed to long-term renourishment of the proposed cobble berm as necessary to maintain the berm and protect the relocated inland improvements.

RESOURCE MANAGEMENT AGENCY

County of Ventura

Planning Division
Christopher Stephens
Director

February 3, 2003

5

Paul Calderwood, Senior Planner
City of San Buenaventura
Planning Division
501 Poli Street
P. O. Box 89
Ventura, CA 93001

FAX #: 653-0763

Subject: DEIR - Surfers Point Managed Shoreline Retreat

Thank you for the opportunity to review and comment on the subject document. Attached are the comments that we have received resulting from intra-county review of the subject document.

Your proposed responses to these comments should be sent directly to the commentator, with a copy to Kelly Scoles, Ventura County Planning Division, L#1740, 800 S. Victoria Avenue, Ventura, CA 93009.

If you have any questions regarding any of the comments, please contact the appropriate respondent. Overall questions may be directed to Kelly Scoles at (805) 654-5042.

Sincerely,

Christopher Stephens
County Planning Director

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Attachment

County RMA Reference Number 02-101

Letter 5

COMMENTOR: Christopher Stephens, County Planning Director, County of Ventura Resource Management Agency

DATE: February 3, 2003

RESPONSE:

The commentor notes that comments from County agencies are attached to his letter. The letters from the County Public Works Agency and the Ventura County Air Pollution Control District are included as Letters 6 and 7. Responses to those letters follow each individual letter.

PUBLIC WORKS AGENCY
TRANSPORTATION DEPARTMENT
Traffic and Planning & Administration

JAN 1 7 2003

MEMORANDUM
January 14, 2003

6

TO: Resource Management Agency, Planning Division
Attention: Kelly Scoles

FROM: Nazir Lalani, Principal Engineer

SUBJECT: Review of Document 02-101
Draft Environmental Impact Report
for Surfers Point Managed Shoreline Retreat
Lead Agency: The City of **San Buenaventura**

The Transportation Department has completed the review of the subject DEIR. The proposed project involves solving erosion problems at Surfers Point, maintain and improve beach access, rebuild the coastal bicycle/pedestrian path and provide adequate parking. The project is located at the Seaside Park in the City of San Buenaventura.

1. The DEIR indicates that this project will not have a significant site-specific impact on the County's Regional Road Network.

2. As mentioned in our memo dated 12-5-2001, the project has the potential to create a short term adverse traffic impact on County roads due to construction/truck traffic. The DEIR should address mitigation measures for any damaged or defaced asphalt concrete pavement on County roads during hauling operations. During the hauling of material to or from the sites, the trucks shall be covered to secure all material so that any nuisance or danger to the public from flying debris can be avoided.

3. The construction traffic generated by this project is temporary in nature. Therefore there will be no adverse impact on the County Regional Road Network due this project and no Traffic Impact Mitigation Fee is owed to the County.

4. If haul routes involve any County road, the County should be notified prior to the beginning of the project.

Please call me at 654-2080 if you have questions.

c: Jim Myers

NL-RH-BE-AB:sa
N:\Non_County\02-101 -VEN.doc

Letter 6

COMMENTOR: Nazir Lalani, Principal Engineer, Ventura County Public Works Agency, Transportation Department

DATE: January 14, 2003

RESPONSE:

The commentor notes that the project would have no long-term impact to the County Regional Road Network, but suggests that the Draft EIR should provide mitigation measures for any damage to County roads that occurs during construction. Specifically, it is suggested that trucks hauling material to or from the site should be covered and that the County should be notified prior to any hauling on County roads. State law requires that trucks hauling debris be covered to prevent material from falling out of the truck bed. All contractors would comply with this standard requirement. Haul routes for material have not been determined at this point as the source of cobble material is not known; however, the City will notify the County Public Works Agency if future hauling would involve heavy truck traffic on County roads.

7

VENTURA COUNTY
AIR POLLUTION CONTROL DISTRICT
Memorandum

FEB 10 2003

TO: Kelly Scoles, Planning DATE: February 7, 2003

FROM: Alicia Stratton AS

SUBJECT: Request for Review of Draft Environmental Impact Report for Surfers Point Managed Shoreline Retreat, City of Ventura (Reference No. 02-101)

Air Pollution Control District staff has reviewed the subject project draft environmental impact report, which is a proposal for the Surfers Point Managed Shoreline Retreat project. This project involves three primary components: (1) stabilization/restoration of an approximately 1,800-foot stretch of beach; (2) replacement of the damaged shorefront bike path and parking lot; and (3) provision of more paved parking at the adjacent Ventura County Fairgrounds. The site consists of approximately 1,800 linear feet of rocky beach and various beachfront facilities, including a beachfront bicycle/pedestrian path and a 352-space surface parking lot (223 of which are currently usable). The project is located at Seaside Park in the City of Ventura, along the south side of Shoreline Drive, between Figueroa Street and the Ventura River.

District staff concurs with the air quality impact analysis in Chapter 4.4 of the draft EIR, which concludes that none of the project alternatives would generate air pollutant emissions in the long run. The mitigation measures described on pages 4-12 and 4-13 will adequately minimize emissions of ozone precursors and fugitive dust.

If you have any questions, please call me at 645-1426 or email me at alicia@vcapcd.org.

TOTAL P.02

Letter 7

COMMENTOR: Alicia Stratton, Planning, Ventura County Air Pollution Control District

DATE: February 7, 2003

RESPONSE:

The commentor states agreement with the conclusions of the air quality impact analysis and states that the recommended mitigation measures would adequately minimize emissions of ozone precursors and fugitive dust. No response is necessary.

Surfrider

Foundation
P.O Box 6010
San Clemente, CA 92674

8

City of San Buenaventura, Planning Division
501 Poli Street, Room 119
Ventura, California 93110

January 30, 2003

Re: Comments on Surfers Point Managed Shoreline Retreat Draft EIR

Dear Mr Calderwood:

The Surfrider Foundation is a non-profit grassroots organization dedicated to the protection and preservation of our world's oceans, waves and beaches. Founded in 1984 by a handful of visionary surfers, the Surfrider Foundation currently maintains over 37,000 members and 60 chapters across the United States and Puerto Rico, with international affiliates in Australia, Europe, Japan and Brazil.

Surfrider Foundation supports Alternative 5 (preferred alternative) with modifications based on the following concerns. In particular is the lack of recognition of significant impacts to the beach face due to excavation and construction on the beach below MLLW. Excavation of existing dunes for placement of buried cobble and replacement with artificial dunes is unwise. These impacts to vegetation and shoreline habitats should be avoided as much as possible. The project should take full advantage of the natural shoreline characteristics by placing sediments in the backshore area currently occupied by the parking lot, rather than along the active shoreline. Design of the cobble berm and dunes should be modified to minimize excavation of the existing beach and dunes and optimize opportunities to place sediment material in the backshore area in the western end of the project.

A

We are concerned that the EIR process has not determined the nature of the fill material beneath the bike path, parking lot and Shoreline Drive. Since alternatives 1-3 and 5 all call for the removal of these structures, any impacts by subsurface materials must be analyzed.

B

An alternative does not exist to simply relocate these structures without any additional shoreline alteration. This would be the ideal situation, but the EIR does not include the appropriate research to know the impacts of any potentially eroded materials.

C

General trends in shoreline management are moving away from the use of armoring as a tool. The CA Draft Erosion Policy states that "relocating development away from the erosion hazard zone is the preferred option when responding to the eventual or imminent threat of damage." The general objectives of Surfers Point Retreat project recognize these facts. However no alternative accounts for the fact that this location is a dynamic shoreline that can be allowed to take a natural course given enough room for retreat. The Draft Erosion Policy does not suggest to retreat and stabilize, but to simply retreat to allow the shoreline its natural behavior. D

Surfrider Foundation's Beach Preservation Policy (attached) clearly states:

> *In areas where erosion threatens existing coastal development, the Surfrider Foundation advocates appropriate long-term solutions that maximize public benefit. These include... landward retreat of structures from dynamic shorelines.*

While the preferred alternative does perform retreat, it still attempts to unnaturally stabilize a shoreline through the use of the cobble berm subsequent renourishment. All attempts should be made to leave the natural beach face and existing dunes in their present state while providing the sufficient space for future shoreline movement. The goal should not be to move the structures to a safe location and keep the shoreline at a permanent location, but to move the structures to a location that allows for natural processes to occur as expected given the best scientific research available. If it is expected that the "Retreat Zone" will not satisfy these goals as designed, then changes should be made to do so.

There is also a larger issue at hand in these proceedings. The entire state is watching as you proceed. This Surfers Point project has the potential to serve as a state-wide model for a progressive approach to shoreline erosion response and habitat restoration. The Matilija Dam is slated for removal to restore much-needed sediment supply to this stretch of coast. The Ventura River, its watersheds, and ocean outlets and shoreline will provide guidance to other projects throughout the state and nation on how to restore our waters and coasts to their previous glory for the benefit of all. E

In conclusion, the Surfers Point Managed Retreat project and Draft EIR are moving California towards a more progressive mode of thinking in shoreline erosion response. Surfrider Foundation supports the goals and objectives of the project. We support Alternative 5 as the preferred alternative with modifications as described above. We also support and incorporate all comments made by the Ventura Chapter of the Surfrider Foundation and Paul Jenkin. F

Sincerely,

Mark Rauscher
Coastal Science Manager

Beach Preservation Policy
Ratified by BOD 4.17.99

Introduction:

The Surfrider Foundation recognizes that beaches are unique coastal environments with ecological, recreational and economic value. The Surfrider Foundation further recognizes that beaches are a public resource and should be held in the public trust. As human activities and development in coastal areas increase, the need for preservation of beaches becomes ever more apparent.

"Hazards" occur when naturally dynamic coastal processes encounter static human development, and when humans interfere with marine and littoral systems. The Surfrider Foundation is working proactively to promote conservation and responsible coastal management that avoid creation of coastal hazards or erosion problems. The Surfrider Foundation supports coastal research and science-based management of coastal resources to promote sustainable, long term planning and preservation of beach environments.

This policy is general in nature; the Surfrider Foundation recognizes that every specific case must be evaluated in the context of its local setting.

Whereas:

Beaches are often perceived as separate habitats, but in reality are small parts of much larger coastal ecosystems. These systems include watersheds, wetlands, and nearshore marine environments.

Beaches are dynamic in nature and change on multiple temporal and spatial scales. These changes are therefore difficult to predict with certainty.

Therefore:

The Surfrider Foundation hereby advocates actions to promote long term beach preservation for the benefit of the public.

Coastal areas that are free of development should be protected via proactive means that do not interrupt coastal processes. These include:

- Placement of beaches and beachfront lands in public trust
- Establishment of beach setbacks based on current and historical erosional trends
- Restoration of natural sediment transport processes in coastal watersheds

In areas where erosion threatens existing coastal development, the Surfrider Foundation advocates appropriate long-term solutions that maximize public benefit. These include:

- Landward retreat of structures from dynamic shorelines

Where landward retreat is not feasible, beach nourishment[1] projects may be considered, on a case by case basis, as viable alternatives for short-term beach preservation.

Under no circumstances does the Surfrider Foundation support the installation of stabilization or sand retention structures along the coastline. Such structures can protect existing coastline development but have no place in beach preservation.

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[1] For the purposes of this policy, 'beach nourishment' is defined as: the placement of clean sand of the appropriate composition and grain size on the beach or within the littoral environment. Under no circumstances is the incorporation of sand retention devices of any form to be construed as included within this definition.

Letter 8

COMMENTOR: Mark Rauscher, Coastal Science Manager, Surfrider Foundation

DATE: January 30, 2003

RESPONSE:

Response 8A

The commentor expresses support for Alternative 5, but states an opinion that sediments should be placed in the backshore area currently occupied by the parking lot to avoid impacts to the beach face due to excavation and construction below the MLLW. The support for Alternative 5 is noted. That alternative is the preferred alternative of the Surfers Point Working Group. Alternative 5, which is a modification of a concept originally introduced by the Surfrider Foundation, has specifically been designed to maintain the current shoreline characteristics to the degree feasible, with cobble located primarily in the backshore area where the parking lot currently lies (see Figure 2-9 in Section 2.0 of the Draft EIR). However, in order to prevent wave activity from undermining the cobble berm, a toe below the MLLW would be needed. Although the existing dunes would be left alone to the degree feasible, construction of a berm that would withstand winter storm activity is expected to require removal of some existing sand and vegetation.

As discussed in Section 3.7 of the EIR, the shoreline at Surfers Point is dynamic, with the location of the shore changing from year to year as material is deposited from the adjacent Ventura River and eroded away by winter storms. In other words, the "natural" condition at Surfers Point is one in which the location and shape of the shoreline is constantly changing. The purpose of the cobble berm proposed as part of Alternative 5 is to provide protection against a further retreat of the shoreline that would damage the relocated bike path. However, even if the existing sand dunes were unaffected by the required excavation, the shoreline will continue to move in and out over time (with changes to the shape and location of the dunes) as part of the natural coastal process at Surfers Point.

It should also be recognized that there are no sensitive (threatened, endangered) plant or wildlife species in the area that would be affected by excavation of material or removal of vegetation. As discussed in Section 4.3 of the Draft EIR, the remnant dunes at Surfers Point lack native plant species. Re-creation of more substantial dunes and planting of native vegetation as envisioned as part of Alternative 5 is expected to improve the biological value of the dunes at Surfers Point. Although there would still be potential for future wave-related damage to the dunes, implementation of the proposed project is expected to improve the overall stability of the dunes as compared to the current condition at Surfers Point. Therefore, contrary to the commentor's assertion that the project would have significant adverse biological impacts, Alternative 5 is anticipated to have generally beneficial effects.

Response 8B

The commentor states an opinion that impacts related to subsurface materials need to be analyzed. As discussed in Section 4.10 of the Draft EIR, the fill material that was used for the 1989

construction of the existing improvements at Surfers Point was determined at that time not to be contaminated and no known incidents have occurred since 1989 to suggest that contamination of the fill material has occurred. Nevertheless, about 5 feet of subsurface soil below the existing fill layer (an estimated 19,000 cubic yards of material) would be temporarily excavated and screened for debris in conjunction with removal of the existing bike path and parking lot under Alternatives 2, 3, and 5. Clean material would be used as backfill to restore the pre-existing grade, supplemented as necessary with cobble and/or sand. Alternative 5, the preferred alternative, also calls for the replacement of non-beach-grade material and thus would alleviate concerns about migration of solid materials in surface waters to an even greater degree.

Response 8C

The commentor states that an alternative does not exist to relocate the structures (bike path and parking lot) without additional shoreline alteration and states that the EIR does not include information to know the impacts of any potentially eroded materials. In fact, the EIR does examine an alternative (Alternative 1) that would simply relocate the bike path and parking area with no further changes to the shoreline. In the absence of a cobble berm to provide protection of the relocated bike path, that alternative includes a buried seawall that would protect the bike path. As discussed in Section 4.10 of the Draft EIR, it is possible that solids such as glass, concrete, and rebar could migrate into open waters under Alternative 1 if they are present in existing fill material. Although this is not considered a significant health hazard, the failure to remove any such materials that may be present is a disadvantage of Alternative 1 relative to Alternatives 2, 3, and 5.

Response 8D

The commentor states an opinion that the California Draft Erosion Policy does not suggest shoreline retreat and stabilization, but rather suggests shoreline retreat to allow the shoreline its natural behavior. The commentor also states an opinion that the goal of the proposed project should be to move onshore structures to a location that allows natural coastal processes to occur. These opinions are noted. As discussed in Section 4.7 of the Draft EIR (on page 4-28), the Draft Erosion Policy to which the commentor refers simply states the following with respect to relocation of existing structures inland:

> *In cases where existing development is threatened, a first priority should be to evaluate the feasibility of locating such development.*

By relocating the existing bike path about 65-feet inland and moving the shorefront parking lot inland of the relocated path, Alternatives 1-3 and 5 appear to implement this first priority. It is true that relocating the bike path even further inland would likely have even greater benefits with respect to shoreline protection. However, the project analyzed in the Draft EIR represents the compromise of the various parties involved in the managed shoreline retreat project. Relocation of the bike path further inland than shown under Alternatives 1-3 and 5 would encroach into the Fairgrounds property and therefore would not meet the property owner's objectives for the project. In any event, it is important to remember that it is not the EIR's purpose to consider every imaginable alternative, but rather to examine the effects of the project that is proposed as well as a reasonable range of alternatives. The City has no obligation to study alternatives involving further retreat of the shoreline as all of the

alternatives studied in the Draft EIR (including the preferred Alternative 5) would have beneficial effects with respect to shoreline protection as compared to the current condition at Surfers Point.

Response 8E

The commentor states an opinion that the Surfers Point project can serve as a model for progressive approaches to shoreline erosion response and reiterates support for the general project goals and Alternative 5 specifically. The commentor also states support for comments made by the Ventura County Chapter of the Surfrider Foundation and Paul Jenkin. The support for the project is noted. It is the City's intent to implement a project that will serve as a model for shoreline erosion response. Responses to Mr. Jenkin's comments follow Letters 9 and 10.

Surfrider Foundation
Ventura County Chapter
239 W Main St., Ventura, CA 93001 (805) 667-2222

9

Paul Calderwood, Senior Planner
City of Ventura, Planning Division
501 Poli Street, Room 117
Ventura, CA 93110

February 2, 2003

RE: "Surfers Point Managed Shoreline Retreat" Draft Environmental Impact Report

Dear Mr Calderwood,

Enclosed are our comments on the "Surfers Point Managed Shoreline Retreat" Draft Environmental Impact Report, as well as a letter from the National Office of the Surfrider Foundation.

As you know, the Surfrider Foundation has been part of the Surfers Point Working Group since its inception in 1995. In fact, the founding members of the Surfrider Foundation participated in a "Surfers Workshop" way back in 1987, when the bike path and parking lot were originally being planned. Our organization remains committed to a long-term solution to the coastal erosion problems that resulted from the construction of these popular facilities, just as we have for the past 15 years. A

The Surfrider Foundation strongly supports the concept of "Managed Retreat" as it applies to relocating damaged infrastructure inland. We also support the conceptual "Preferred Alternative" identified in the Draft EIR.

However, we do have significant concerns relating to specific design details within the Preferred Alternative, as well as the disclosure of environmental impacts associated with all of the alternatives presented in the EIR. These issues are discussed at length in our written comments, along with proposed mitigation measures and suggestions for the Final EIR. B

We have consistently worked in good faith to provide timely and technically sound input to this process. Our comments on this Draft EIR reflect our commitment to our local surf break and the community that relies upon this resource. C

We hope that our comments at this time are helpful, and we request that our input be solicited and considered during the Final Design process. Please contact me with any questions.

Sincerely,

A. Paul Jenkin, M.S.
Environmental Director
Surfrider Foundation - Ventura County Chapter
(805) 648-4005 pjenkin@sbcglobal.net

Surfrider Foundation comments on
Surfers Point Managed Shoreline Retreat
Draft Environmental Impact Report

I. Summary of Surfrider Foundation concerns:

Upon review of the "Surfers Point Managed Shoreline Retreat" Draft EIR, we have several very significant concerns about the Environmental Impact Analysis. We present a summary of these here, followed by some brief general comments and an in-depth discussion by section below.

We believe the following measures would incur Significant Impacts under CEQA:

D

1) **Placing large quantities of cobble in the surf zone or on the recreational beach.**
2) **Excavation within the intertidal zone below MLLW.**
3) **Excavation of the existing beach and remnant dunes.**
4) **Stormwater discharge using the storm drain near the rivermouth.**
5) **Reconstructing existing infrastructure as proposed in Alternative 4.**

We offer the following mitigation measures to avoid these impacts:

Suggested Mitigation Measure 1: Significant Impacts to coastal resources can be avoided by placing sediments in the backshore area currently occupied by the parking lot, rather than along the active shoreline.

Suggested Mitigation Measure 2: Design of the cobble berm and dunes should be modified to minimize excavation of the existing beach and dunes and optimize opportunities to place sediment material in the backshore area.

Suggested Mitigation Measure 3: Fairgrounds runoff should be treated and directed to the Figueroa storm drain

We also offer the following recommendations for the Final EIR:

Recommendation 1: The Noble (2000) report should be included as an appendix to the EIR.

Recommendation 2: The final design should attempt to maximize the retreat zone in order to increase the life expectancy of the managed retreat project.

Recommendation 3: The information in the EIR relating to the "Cobble Nourishment Demonstration Project" should be updated, and a quantification of longshore transport from the demonstration site should be performed.

Recommendation 4: A lifespan and associated cost analysis should be performed to compare the various alternatives.

Recommendation 5: The "No Retreat" Alternative 4 should be removed from the "Surfers Point Managed Retreat Project" EIR.

II. General Comments:

The Surfers Point Managed Retreat project presents an unprecedented opportunity to restore and enhance a semi-urbanized shoreline to provide a long-term solution to coastal erosion problems. We believe that this project will provide a state- and worldwide example for other coastal communities experiencing similar issues. E

The **Surfrider Foundation** strongly supports the concept of "managed retreat" as it applies to relocating damaged infrastructure inland. We also support the conceptual "Preferred Alternative" identified in the Draft EIR. However, we do have significant concerns relating to specific design details as well as the disclosure of environmental impacts associated with the various alternatives presented in the EIR.

This project potentially invokes a paradigm shift in coastal management. Therein lies a fundamental flaw with the existing Draft EIR and coastal studies: these documents are written without a sensitivity to the natural processes at work in one of the most dynamic geographic features on the planet – an oceanic river delta. Throughout the EIR, the fundamental benefits of relocating the damaged infrastructure are overlooked and under-emphasized, while other "shore protection" measures are emphasized. It is not true that Shoreline Drive is in imminent danger from shoreline erosion.

The managed retreat project provides the following fundamental restoration opportunities:

1) Maximize a retreat zone to provide a long term solution
2) Remediate the artificial fill that was placed beneath parking lot
3) Restore the remnant dunes to provide an additional buffer to storm waves
4) Work with cobble and sand to enhance and restore the natural processes

It is our position that a successful managed retreat project must:

1) Remediate existing problems
2) Do no further harm
3) Qualify for applicable permits
4) Qualify for public funding
5) Satisfy public needs and concerns

It is unfortunate that the design and environmental documentation read like an attempt to engineer and justify a shore protection structure, rather than to evaluate an unprecedented restoration opportunity. The engineering design lacks sufficient analysis to justify or compare the proposed measures, and often contradicts the conclusions and recommendations of the consultants and working group members. The Project Alternatives are not developed in a logical or scientific manner, but rather presented as a "menu" of options from which to select. Because of this, although a preferred alternative is identified, this recommendation is not based upon any environmental considerations. F

Most importantly, the EIR lacks sufficient analysis of significant environmental impacts, and fails to provide mitigation measures for these impacts. These impacts and mitigation measures are outlined above, and a detailed discussion is provided below under specific comments for each section of the EIR. G

We concur with the Working Group consensus that Alternative 5 provides the best opportunity to realize a long-term solution to erosion problems at Surfers Point. This alternative will provide the greatest life span and maximize the restoration opportunities. The Preferred Alternative will also have the least environmental impact of any of the project alternatives, as long as the proposed mitigation measures are applied. H

III. Specific Comments:

The following detailed comments are arranged by section as they appear in the EIR:

2.3 CHARACTERISTICS OF PROJECT ALTERNATIVES

The Project Alternatives are not developed in a logical or scientific manner, but rather presented as a "menu" of options from which to select. I

A logical development of the project alternatives would point out environmental impacts associated with Alternative 1, and explain the reasoning behind Alternative 2, and so on, until an environmentally preferred alternative is developed. For instance, Alternative 1 enacts a retreat zone, but does not provide any beach restoration measures, and includes a seawall that would not likely meet permit approval. Alternative 2 provides some beach restoration measures, but further evaluation identified significant impacts with the cobble mattress design. Alternative 3 refined the cobble mattress, but has significant impacts to the dunes and sandy beach. Alternative 5 further refines the cobble berm design, while also providing complete remediation of the artificial fill and enacting a comprehensive dune restoration program, hence is environmentally preferred.

The proposed alignment of the bike path in Alternatives 1-5 does not fulfill project objectives to realize a retreat zone seaward of Shoreline Drive. J

- *To restore the lands seaward of Shoreline Drive to more natural beach habitat*
- *To provide a long term shoreline protection solution for Seaside Park and all improvements landward of Shoreline Drive*

The original intent of this project was to retreat to Shoreline Drive and provide the maximum retreat zone:

> *Relocation of Improvements: In conjunction with the shoreline protection, all of the existing infrastructure improvements seaward of the Shoreline Drive right-of-way, including the damaged bike path and a 352-space parking lot, would be removed.*

In the course of Working Group discussions, compromises were made without the implications being made clear to the group. Specifically, the lifespan of this project will be determined to a great extent by the width of the retreat zone.

For example, Noble (2000) suggests that the average annual recession rate of the shoreline in this area is approximately 1 foot per year. This would suggest that an 80-foot retreat zone would "buy" perhaps 80 years. Placing the bike path seaward of Shoreline Drive reduces the retreat zone by 15 feet, "costing" 15 years of project life. A higher erosion rate would mean a greater impact to this reduction in retreat zone width. K

Recommendation 1: The Noble (2000) report should be included as an appendix to the EIR. L

Recommendation 2: The final design should attempt to maximize the retreat zone in order to increase the life expectancy of the managed retreat project. M

Recommendation 4: A lifespan and associated cost analysis should be performed to compare the various alternatives. N

4.0 ENVIRONMENTAL IMPACT ANALYSIS:

The report, "Surfers Point Park, Managed Plan for Shoreline Retreat," Noble (2000) is not included in the list of technical studies referenced by the EIR. Throughout the EIR, information from this report is used, but the original document with its conclusions is not made available to the reader. O

Recommendation 1: The Noble (2000) report should be included as an appendix to the EIR.

4.1 LAND USE

Engineered cobble berms are "shoreline protection devices". P

"...the buried seawall that would be constructed under Alternatives 1 and 2 is a shoreline protection device..."

The cobble mattress in Alternative 2 as well as the engineered cobble berm of Alternatives 3-5 may also be considered "shore protection" devices. Although these dynamic structures are designed to provide a more natural response to wave action, the nature of their design and placement may have impacts similar to a more traditional coastal structure. For instance, wave reflection as occurs from rip-rap revetments placed within the wave runup zone would also occur with a similarly located "cobble berm". See comments on COASTAL GEOLOGY.

600-700 additional parking spaces would impact "fragile resources." Q

Alternatives 1-3 and 5 would all include paving of the existing 600-700 space dirt lot at the Fairgrounds

Paving the existing 600-700 space parking lot at the Fairgrounds would greatly increase public impacts to the beach and dunes. This is *not "consistent with fragile resource protection"* as required by the General Plan.

Conversely, *"Adequate ground level parking"* as required by the General Plan will only be provided if the proposed plans for parking along Shoreline Drive are carried out. Parking should be provided either on-street or in the dirt lot area under any final plan for the area.

4.3.1 Impact Analysis

a. Marine Resources:

There are Significant Impacts from placing large quantities of cobble in the surf zone: R

> *"...placement of an estimated 25,400 tonnes (28,000 tons) of cobble and 8,410 cubic meters (11,000 cubic yards) of sand within the upper intertidal area of the project..."*

Although it is true that turbidity is high due to fine suspended sediments from the Ventura River following winter storms, deposition of cobble into the surf zone during dry periods or summer months would cause significant impacts to ocean water quality. In addition, the inclusion of fine sediments in the cobble nourishment "demonstration project" demonstrated that this action may have long term effects as this fine material is slowly exposed and washed into the surf zone.

Excavation within the intertidal zone below MLLW in Alts 3 & 5 is a Significant Impact: S

> *"Alternative 3. ...development of a more substantial berm (approximately 48,990 tonnes [54,000 tons] of cobble) with a toe below the elevation of MLLW would increase the amount of disturbance within the marine environment."*

The disturbance caused by heavy equipment excavating in the surf zone below MLLW is a significant environmental impact. This action is neither necessary nor justified for the construction of a "dynamic revetment" – the artificial cobble berm would naturally merge with the cobble substrate under wave action without such a heavy disturbance.

> **Suggested Mitigation Measure 1: Significant Impacts can be avoided by placement of sediment material in the backshore area, rather than along the active shoreline.**
>
> - Cobble should be placed within the excavated area beneath the existing parking lot, rather than on the shoreline.
> - The placement of Sand Dunes in the backshore area will not affect water quality but rather enhance Marine Resources by increasing terrestrial habitat adjacent to the shoreline for beneficial flora and fauna.

b. **essential fish habitat** T

> **Steelhead Trout:** this federally listed endangered species has historically been caught along the shoreline at Surfers Point from the pier to Emma Wood State Beach. The adjacent estuary is critical habitat for this species as it migrates to and from the ocean. The actions of Alternatives 2-5 would affect water quality and potentially affect steelhead trout.

c. **Sensitive Species and Critical Habitat:** U

> As mentioned above, adjacent waters are critical habitat of the steelhead trout and other sensitive species. However, the EIR states that *"none of the project alternatives are expected to alter the hydrologic nature of this upstream and up-littoral current area."*

The currents in the area adjacent to the rivermouth are especially dynamic. For instance, during summer, south swells reverse the littoral current. Disturbance to adjacent waters could have an adverse impact due to ever changing wave, wind, and tidal conditions.

Suggested Mitigation Measure 1: Significant Impacts can be avoided by placement of sediment material in the backshore area, rather than along the active shoreline.

d. Impacts to Dune Remnant:

V

"The area was initially fenced with temporary construction fencing, followed by the installation of a split rail fence... but the increase in visitor beach access... essentially eliminated the coastal dune community in the area."

It is important to note that **the area was NOT initially fenced.** In fact, lack of fencing when the parking lot was initially constructed was one cause of the impacts from increased visitor access from 1989-1991. Because of the impacts to the dunes, the Coastal Conservancy funded a planning process and grant to construct of the dune fences. This was the first step in the "Dunes Restoration Project" (October 1991). Although subsequent restoration steps, including a revegetation program, were never carried out, the dune fences have been successful in allowing natural (although non-native) revegetation in the sandy areas. The designated walkways have proved successful in directing and concentrating foot traffic.

Although the native vegetation and habitat has been severely degraded, it is important to note that these dunes provide more than habitat values. They also provide natural shore protection and aesthetic benefits. Therefore:

Impacts associated with the excavation of the Remnant Dunes with Alternatives 2-5 would have significant impacts to COASTAL GEOLOGY and AESTHETICS. See comments in those sections below.

e. Landscape Trees and Shrubs:

W

"Reconstruction of Shoreline Drive and removal of the parking lot would remove an estimated 76 New Zealand Christmas Trees..."

Recent information suggests that the assumptions upon which this design was made may no longer be valid. Specifically, this was the Fairgrounds desire to maintain 3 lanes of traffic plus parking. Although these trees are non-native, they are well established and attempts should be made to adapt the final design to accommodate them.

f. Wetlands

X

"Alternatives 2-5 would involve temporary discharge of material into intertidal areas that are regulated as marine wetlands."

The impacts relating to discharge of material into the intertidal areas **are not the same** for each of the alternatives. For instance, frequent re-nourishment of a cobble berm as required for Alternatives 2 & 4 would result in greater impacts to wetlands. This is

discussed further under **Sedimentation.** Impacts may be mitigated through design modifications:

Suggested Mitigation Measure 1: Significant Impacts can be avoided by placement of sediment material in the backshore area, rather than along the active shoreline.

4.6 Water Resources

a. hydrology

"rerouting runoff directly into the ocean would improve water quality in the estuary" Y

But this could significantly impact the recreational waters at Surfers Point.

b. Water Quality

Shoreline Management Impacts: Z

p4-16 *"As discussed in Section 4.3, Biological Resources, the temporary increase in ocean water* ***turbidity is expected to adversely affect*** *any sensitive marine biological resources."*

We concur with the statement as written. See comments on Biological Resources above relating to long term impacts and recurrent impacts from the differing renourishment requirements of the alternatives.

Fairgrounds Parking Lot impacts:

"...would involve abandonment of the Ventura River outfall and re-routing of all discharges directly to the ocean." AA

The storm drain improvement plan (Fig 4-1) suggests using the existing storm drain outfall into ocean near rivermouth. **Discharge of stormwater directly into the surfing area would impact water quality in recreational waters.**

The manhole and pipe infrastructure within the "retreat zone" and intertidal is slated for removal with the retreat projects. If this plan is proposed, the cost of re-establishment and maintenance should be included in cost estimates.

Pumping runoff through existing storm drain near rivermouth does not fulfill project objectives that would include abandoning all infrastructure seaward of Shoreline Drive.

Suggested Mitigation Measure 3: Fairgrounds runoff should be treated and directed to the Figueroa storm drain

It should be noted that this project presents an opportunity to address the chronic water quality problems at Surfers Point. An area-wide storm runoff plan should be implemented wherein runoff is directed to the Figueroa storm drain, where all urban runoff could be treated and filtered before discharge into the ocean water. An opportunity to enhance the quality of recreational waters at Surfers Point could be realized by 1) Redirecting dry AB

weather flows to sanitary sewer and/or 2) redirecting stormwater further downcoast where body contact recreation is less.

Current actions by the Regional Water Quality Control Board include both dry and wet weather TMDL's for bacteria in Santa Monica Bay. Attention to this issue during the reconstruction of Surfers Point and in conjunction with the Promenade reconstruction will address this issue now, rather than awaiting future mandates.

4.7 COASTAL GEOLOGY

a. General Performance.

b. Shoreline Protection

These two sections describe how the Project Alternatives may help protect the bike path, parking lot, and Shoreline Drive. This is not an environmental impact, but an engineering design consideration. Most importantly, it should be made clear that the protection of upland improvements does not "protect" the shoreline. Any form of shoreline armoring designed to protect upland infrastructure has an impact on the beach. Is the potential loss of a bike path or parking lot a "coastal geology" impact? This is perhaps more appropriately a recreational impact. AC

Furthermore, the discussion of each of the Alternatives fails to mention the true merits of this project. **Retreat from the shoreline is the primary objective of the project.** Retreat also provides the greatest single benefit, and provides "Shoreline Protection" by relocating infrastructure out of harms way, reducing or eliminating the need for shoreline armoring. Verbage such as *"and, to a lesser extent, the increased setback from the existing shoreline"*, and *"(4) the increased setback from the existing shoreline"* fail to acknowledge that this action alone would provide decades of maintenance free "shoreline protection."

Most importantly, this paradigm is carried over into the apparent justification for the "no retreat" alternative:

Alternative 4

Considering the intent of this project to effect a "managed retreat" and restore the beach, the content of this section seems quite inappropriate. First of all, Alternative 4 does not meet project objectives. Secondly, this section appears to have been written to provide false justification for the "no retreat" alternative. Information was taken out of context from a separate report, **"Surfers Point Park, Managed Plan for Shoreline Retreat"** (Noble 2000) conducted for the Managed Retreat Project. This report with its Appendix A should be included an appendix to the EIR. AD

The EIR states:

"Based on the long-term stability of the cobble berm at Emma Wood State Beach..." AE

The Emma Wood shoreline is receding at a rate greater than suggested by the study – this may be directly evidenced by the WWII gun turrets that were constructed in the dunes in 1940's are now over 100 feet in the intertidal zone.

"...and the promising performance of the cobble berm test section at Surfers Point" AF

This statement was based upon one short mild winter storm season. Recent storms (winter 2002-2003) have transported a major portion of this berm alongshore, as witnessed by the reduced berm profile and the increased quantity of cobble along the city and state beach. The city is currently applying for permits to renourish this artificial berm. The EIR should present the most recent profiles (ideally at the end of this storm season) and provide a realistic estimate of future renourishment requirements for this approach.

Recommendation 3: The information in the EIR relating to the "Cobble Nourishment Demonstration Project" should be updated, and a quantification of longshore transport from the demonstration site should be performed.

"... the maximum and minimum shoreline positions in the project area differed by as much as 868 ft..." AG

This statement is based upon the maximum historic accretion at the rivermouth that resulted from the 1969 "El Nino" floods:

"The shoreline change that occurred in 1969 stands out in the data set. This data corresponds to the second highest discharge of record when a peak flow of 58,000 feet per second was gauged. Sediment delivery from the river contributed to the shoreline advanced almost 600 feet that was noted at the west end of Surfers Point near the river mouth (Station 9,000). (Noble, 2000) (pA-2):

This data **does not infer** the potential for erosion of the existing beach. In fact:

"...the shoreline at Surfers Point fluctuates widely with the episodic flood transport of sand from the Ventura River. Flood years bring more sand than the waves can transport, forming an accretionary buldge that is moving easterly across the delta and along Surfers Point in the form of a travelling accretion wave (Inman, 1987)." Appendix C p11

And:

"Using the rates summarized in Figure A-2 for the past 70 years it may be concluded that the backbeach line at the river mouth will retreat 75 feet in the next 50 years and 150 ft in the next 100 years; the backbeach line between there and the present position of Surfers Point will retreat half those amounts; and the backbeach line at Surfers Point will advance 45 ft and 90 feet respectively in the next 50 and 100 years. Using this approach east of the point, the backbeach line will retreat perhaps 10-15 ft in 50 years and 20 – 30 feet in 100 years." (Noble, 2000. (p A-5))

Given this information, the following statement is also false:

"retreat associated with Alts 1-3 and 5 would provide only a marginal improvement in shoreline protection as compared to the repair of the bike path.."

The EIR quotes the Ventura Comprehensive Plan: AH

No structures, other than those incidental to general public recreational purposes, and public access to the site and along the shore and the Fairgrounds, may be permitted in the oceanfront corridor. Such a corridor shall be at least 250 feet in depth, as measured from the top of the natural embankment, as officially established through a land survey. Public uses and development, including a public roadway, walkways, bikeways, parking, camping, and the like, which do not involve permanent buildings, may be permitted in the oceanfront corridor. The public roadway has been sited to be set back sufficiently to mitigate the need for any shoreline protection device, as determined by a geotechnical study of shoreline and erosion processes, for a minimum 50-year period, as measured from the top of the natural embankment. (EIR p4-2)

This policy was based upon a prior study (Moffatt & Nichols) and infers that the rate of erosion at Surfers Point is such that Shoreline Drive, while placed within the 250 foot "oceanfront corridor," has a minimum lifespan of 50 years without a seawall.

As quoted above, the **Noble (2000)** study estimates that shoreline erosion for the next 50 years would be a maximum of 75 feet at the rivermouth and only 10-15 feet further east of the point.

This information indicates that **there IS a significant benefit to the alternatives that include a retreat.** The proposed 65 ft retreat zone with Alts 1-3 and 5 would provide at least a 40-year lifespan in the areas of highest erosion **even without the proposed beach nourishment and restoration measures.** Indeed, the restoration of the dune complex and fortification of the backshore as proposed in the Preferred Alternative would provide significant extension of this lifespan.

During the scoping phase of the project the **Surfrider Foundation recommended that a lifespan analysis of the various alternatives be performed.** (See comment on section 6.1) The current cost analysis does not include future renourishment and other protection measures, only one-time construction costs. The EIR makes no attempt to quantify the relative impact to project lifespan from the various retreat, renourishment, and shore protection measures. It is critical that this information be provided in order that the decision makers and the public may understand the true costs and benefits of the proposed projects, and how long each may last in order to make an informed decision. AI

Recommendation 4: A lifespan and associated cost analysis should be performed to compare the various alternatives.

Because of the gross errors and misrepresentation of the facts relating to the discussion of Alternative 4, and the fact that it does not fulfill the project objectives or represent the consensus of the working group, we offer the following recommendation: AJ

Recommendation 5: The "No Retreat" Alternative 4 should be removed from the "Surfers Point Managed Retreat Project" EIR.

Unless all references to this Alternative can be re-assessed to provide an honest disclosure of its environmental impacts, it should be removed from the document. The assertion that there is **no environmental impact** to rebuilding the bike path and dumping rocks as needed to protect it is false. To expect that the future will differ from the past is ridiculous. The bike path and parking lot were constructed too close to the beach on fine-grained artificial

fill material. It didn't last in 1989, and it won't last in the future – with or without the rocks.

c. Sedimentation:

The sedimentation analysis fails to acknowledge that each of the alternatives would have different impacts. The discussion lumps together Alternatives 2 and 5, and Alternatives 3 and 4, but uses the following rationale for each Alternative: AK

- *The rate of cobble transport is low (much lower than that of sand);*
- *Cobble suitable for installation in a mattress would be less susceptible to wave induced erosion than the mixture of cobble and sand that is currently discharged from the Ventura River mouth; and*
- *The placement of cobbles on the beach face would be analogous to the episodic delivery of cobbles from the Ventura River during flood years, which has not exerted a significant negative impact to San Buenaventura State Beach. conditions.*

This is a direct contradiction of the previous "Shoreline Protection" section, which states:

> *It should be recognized that the cobble mattress and sacrificial sand dune as envisioned would be susceptible to undermining and dispersal due to the absence of a substantial toe below the elevation of MLLW. Consequently, relatively frequent maintenance would likely be required as compared to the cobble berm of Alternatives 3, 4, and 5 to replenish the mattress during those periods when shoreline retreat predominates in the project area.*

Also, in Appendix C, it is stated that with the cobble mattress of Alternative 2 *"the prominent salient between East and West beaches will cause longshore sediment transport to be deflected offshore."* This suggests that the cobble mattress in Alternative 2 would have significant impacts to the natural sedimentation processes. Also, the configuration of Alternative 4 is most similar to Alternative 2, and would likely have similar impacts. AL

In comparison, much of the cobble berm in Alternatives 3 & 5 is either buried, or located further back from the active shoreline. This approach would reduce the sedimentation impacts as compared to the other alternatives. Most importantly, if no material is placed on the active beach, as we suggest, impacts to sedimentation will be minimized.

Furthermore, the bulleted points above are inaccurate descriptions of the impacts from an engineered cobble/boulder mattress/berm. Specifically: AM

1) Those alternatives that place "cobble" directly onto the beach, in the intertidal and swash zone, will be subject to wave action and thus experience erosion and downcoast transport. It is true that the rate of transport of cobble is less than that of sand, but observations of the **"Cobble Nourishment Demonstration Project"** over the past two years indicate that a significant proportion of **cobble migrated down into the cove and past the pier. This HAS exerted a significant negative impact to San Buenaventura State Beach, as well as the City of Ventura**, who both remove rocks from the beach during the summer months.

The demonstration project has shown that cobble placed on the shoreline migrates downcoast within a couple of years.

2) **The cobble berm/mattress will have an affect on the presence or absence of beach sand.** Science has demonstrated that increased wave reflectivity increases the mean (time-averaged) undertow, and would result in increased offshore sediment transport. This is predicted by cross-shore sediment transport models (Bagnold, 1966; Bowen, 1980; Bailard, 1981). The EIR should study this impact for all 6 alternatives. AN

3) **The comparison between the natural delivery of sand and cobble from the river to any of the engineered cobble structures is simply not valid.** The natural processes, including fluvial and littoral fluid forces, sort and arrange the sediments according to the dynamic conditions at the rivermouth. Much of this "*mixture of cobble and sand that is currently discharged from the Ventura River mouth*" builds the submerged portion of the river delta and/or forms a spit after large flood events. This spit gradually migrates downcoast due to wave induced littoral drift, and seasonal wave action generates cross-shore (on- and off-shore) sediment migration. **At no time would natural processes deliver cobble and boulders to the shoreline hundreds of feet downcoast from the rivermouth in a manner analogous to a dump truck.** AO

4) The **"Cobble Nourishment Demonstration Project"** included a relatively large percentage of boulders (greater than 8"). As cobble is transported along shore the boulders are left to slump onto the beach. **These boulders left in the shallow water create an unnatural hazard to those who surf or swim.** AP

5) **The cumulative impacts from future re-nourishment are underestimated.** It is clear from the discussion above, that further "re-nourishment" of cobble and boulders is equivalent to selectively armoring the shoreline and will eventually lead to the creation of a boulder revetment. Those alternatives (2, 4) that would require the most renourishment would have the greatest impact. AQ

Recommendation 2: The information in the EIR relating to the "Cobble Nourishment Demonstration Project" should be updated, and a quantification of longshore transport from the demonstration site should be performed. AR

Suggested Mitigation Measure 1: Significant Impacts can be avoided by placement of sediment material in the backshore area, rather than along the active shoreline.

This section also is dismissive of impacts from the buried seawall in Alternatives (1) or (2), which contradicts the previous section asserting that the seawall will be protective of land behind it. The buried seawall cannot both protect structures landward of it and have no geological impact seaward, be it due to active, passive, or placement erosion. AS

Wave/Surf Impacts:

Alternative 2. *As long as the seawall remains buried, Alternative 2 would not exert a* AT

negative impact on the quality of the surf available for wave-related recreation. The cobble mattress may, in fact, reduce wave reflection to some degree, with a corresponding improvement in wave conditions due to increased energy dissipation.

This contradicts statements elsewhere:

... the mattress would be prone to undermining and dispersal due to the absence of a substantial toe that extends below the MLLW, and the presence of the sand dune at the top of the cobble slope (which would exacerbate wave backwash).

Appendix C also suggests that the cobble mattress in Alternative 2 would be subject to erosion. Backwash creates reflected waves, which can disrupt surf conditions. The cobble mattress of Alternative 2 is very likely to create, rather than dissipate, reflected waves under conditions other than high tide. **This is a significant impact to surfing and recreation.** AU

Alternatives 3, 4, and 5. *As with Alternative 2, the dissipative surface of the cobble berm that would be implemented under Alternative 3 could improve the quality of the surf by reducing wave reflection. This improvement, which is expected to be modest, is less likely to occur when water levels are low and relatively small waves affect the sand-charged toe of the berm.*

Again, these alternatives are considered to have a similar effect, and the cobble berm is described as dissipative. This is true if compared to the buried seawall. a cobble berm placed in the swash zone will result in increased wave reflection, and not dissipation as this suggests. In fact, no artificial means will *"improve the quality of the surf by reducing wave reflection."* AV

Suggested Mitigation Measure 1: Significant Impacts can be avoided by placement of sediment material in the backshore area, rather than along the active shoreline.

The configuration of the Preferred Alternative 5 with the suggested mitigation measure will avoid placing material in the surf-affected swash zone, thus eliminating any impact to the surfing conditions.

Other Impacts not addressed in the EIR: Impacts to Remnant Dunes

Excavation of Remnant dunes will have a significant impact:

The EIR does not acknowledge impacts to the dunes from construction traffic and the excavation and replacement of sand under alternatives 2-5. AW

The shore protection benefits of sand dunes have been well documented. At Surfers Point, the natural "point" near the rivermouth includes the remnants of a sandy dune backshore. This has helped maintain a relatively stable shoreline in the past, preventing overtopping and shoreline retreat as compared with the adjacent shoreline that does not benefit from this dune feature.

The design specifications of the buried cobble berm call for a 5:1 slope underneath the dune area. It is likely that excavating the existing beach and dunes in order to create an artificial "foundation" of cobble may result in increased erosion by de-stabilizing an embedded

coastal terrace. It is also likely that a cobble "foundation" already exists beneath the dunes and beach.

Excavating hundreds of cubic yards of natural dune and healthy beach in order to place the cobble berm/mattress structure would have significant and unmitigable environmental impacts.

> **Suggested Mitigation Measure 2: Design of the cobble berm and dune restoration should be modified to minimize excavation of the existing beach and dunes and optimize opportunities to place sediment material in the backshore area.**
>
> **For Alts 3&5:** In the existing dune area, a subsurface cobble berm with a pre-determined slope is unnecessary. The "one size fits all" approach for the entire project area does not acknowledge the natural processes and "shore protection" function of the existing cobble berm and sand dune complex. In fact, the intent of Alternative 5 was to minimize the impacts to the existing shoreline by placing cobble in the void left when artificial fill is removed from beneath the parking lot. If a 5:1 slope is deemed important, the shoreward portion of the 5:1 slope may be truncated in the area beneath the dunes, or the entire berm moved further back.

AX

4.11 AESTHETICS

AY

The dynamic, ever-changing nature of the rivermouth provides an aesthetic resource that is unique and irreplaceable. The rivermouth, estuary, beach, and dunes are the City of Ventura's most valuable natural asset, providing high quality recreation and relaxation through its proximity to the forces of nature. This section does not acknowledge that the current condition of the active beach is aesthetically appealing, but the crumbling bike path and parking lot detract from this appeal.

There is no mention of how the placement of a cobble berm along the shoreline will drastically change the visual and aesthetic appeal of the area. The elimination or excavation of the dunes or beach is also of great concern. These are significant impacts to varying degrees with alternatives 2-5, but may be mitigated with **Suggested Mitigation Measure 1 & 2** and **Alternative 5**.

Also, the EIR states:

AZ

> *"...possible loss of ocean views from the bike path associated with Alternatives 2 and 5 could be minimized by using a maximum dune elevation comparable to the elevation of the bike path."*

This statement completely misses the point. Views from the bike path will actually be enhanced by the return to a more natural environment.

6.1 NOTICE OF PREPARATION

During the Scoping Phase, the Surfrider Foundation had requested the following:

Additional design details need to be included in the project description, including design lifespan, removal of existing fill, sources of sand and cobble, and the need for a buried seawall - Addressed in Section 2.0, Description of Project Alternatives

BA

There is no design lifespan analysis in Section 2.0.

Recommendation 4: A lifespan and associated cost analysis should be performed to compare the various alternatives.

Other Issues:

CUMULATIVE IMPACTS

BB

Promenade Reconstruction – As stated above in comments relating to Water Quality, the reconstruction of the promenade represents an opportunity to develop an area-wide stormwater mitigation program.

Fairgrounds Master Plan – The Fairgrounds in 2003 began an update of their Master Plan. Until this is complete, cumulative impacts are difficult to assess. However, the managed retreat project should be considered in the context of future planned expansion of the Fairgrounds. In particular, parking and public access should be maintained.

Matilija Dam – The proposed removal of Matilija Dam will provide restoration of fluvial processes and sediment supply from the Ventura River. The Ventura River historically provided almost twice the sediment flux before dam construction. Increased sediment supply will provide long-term stabilization to the shoreline at Surfers Point. Although the Managed Retreat Project is separate, it should be considered in the context of this regional effort to restore the littoral sediment budget. For instance, with the removal of Matilija Dam it is likely that an era of shoreline accretion will return within a 50-year project lifespan.

PROJECT COST & PUBLIC ACCEPTANCE

BC

Funding through several State Propositions is available for well-planned restoration projects, especially those that enhance Parks, Water Quality, and Coastline areas. In order to secure grant funding, public acceptance and approval of the project will be required. This will require developing a project that has a favorable cost/benefit ration (i.e. the least cost and the highest benefits). Note that the benefits should be measured by the ecological restoration aspects of the project, and not by how many parking places are gained.

We encourage the City of Ventura to work to maximize the restoration potential for this project and apply for grant funding to offset the construction costs required to create the best project possible.

Letter 9

COMMENTOR: A. Paul Jenkin, M.S., Environmental Director, Surfrider Foundation – Ventura County Chapter

DATE: February 2, 2003

RESPONSE:

Response 9A

The commentor provides background information about the Surfrider Foundation's involvement in the project and states support for Alternative 5. The support for Alternative 5 is noted. This is the preferred alternative of the Surfers Point Working Group and the alternative that City staff intends to recommend to the Ventura City Council.

Response 9B

The commentor states concerns about design details of the preferred alternative and about the disclosure of environmental impacts in the EIR. The commentor's specific concerns are addressed in Responses 9E through 9BC. Design details of the proposed project will be finalized as part of the project design phase, assuming that the City Council approves one of the alternatives studied in the Draft EIR. It should be noted that the 31st Agricultural District (the property owner) conceptually approved Alternative 5 at its January 2003 Board meeting.

Response 9C

The commentor states that the Surfrider Foundation has consistently worked in good faith to provide "timely and technically sound" input to the process and notes the Foundation's commitment to the local surf break. The commitment to the area is noted. The Draft EIR incorporates much of the input received from the Surfrider Foundation over the course of the environmental review process. Perhaps most importantly, a concept originally introduced by the Surfrider Foundation ultimately became the preferred alternative of the Surfers Point Working Group and has been included in the EIR as Alternative 5. As noted above, the 31st Agricultural District approved Alternative 5 in concept and City staff intends to recommend this alternative to the Ventura City Council. With respect to the EIR, although the commentor's suggestions are appreciated at this time, it should be noted that administrative draft versions of the document were made available to the entire Surfers Point Working Group (including the commentor) several times prior to the release of the Draft EIR and the commentor failed to provide any substantive comments on the content of the document.

Response 9D

The commentor summarizes the contents of his letter, stating an opinion that five different components of the project would create significant impacts under CEQA and providing several recommendations for additional information and mitigation measures. The opinion regarding impacts and recommendations are noted. These points are addressed in Responses 9E through 9BC.

Response 9E

The commentor states support for the concept of managed retreat, but believes that the EIR overlooks the benefits of relocating the damaged infrastructure inland. The commentor also states an opinion that Shoreline Drive is not in imminent danger from shoreline erosion, and notes the restoration opportunities associated with the project and the Surfrider Foundation's goals for the managed retreat project. The support for the managed retreat concept is noted. The restoration opportunities and basic goals mentioned by the commentor are precisely those that the City is attempting to fulfill in pursuing the Surfers Point Managed Retreat project. The City believes that Alternative 5, the preferred alternative of the Surfers Point Working Group, would fulfill both the restoration opportunities at Surfers Point and the goals of the managed retreat project.

It should be noted that it is not the EIR's purpose to tout the benefits of the proposed project. To the contrary, the express purpose of the EIR is to identify any significant and adverse environmental impacts associated with the project. Under CEQA, a project's impacts are compared to conditions that exist at the time the project is initiated. As discussed throughout the Draft EIR, all of the alternatives studied in the EIR would have minor temporary impacts during construction, but would generally improve environmental conditions at Surfers Point as compared to the current situation (susceptibility to erosion, damaged onshore improvements, degraded aesthetic and biological conditions) in the long term. The fact that some of the alternatives would have greater benefits than others does not mean that those alternatives with fewer benefits would have significant adverse effects under CEQA.

Response 9F

The commentor states opinions that the project design and EIR read like "an attempt to justify a shore protection structure" and that the design contradicts the recommendations of consultants and Surfers Point Working Group members. The commentor also states that the identified preferred alternative is not based on environmental considerations. These opinions are noted. The preferred alternative identified in the EIR (Alternative 5) was identified as such by the Surfers Point Working Group. It is not the EIR's intent to identify a "preferred alternative" or to recommend one project alternative over another. Rather, the EIR's purpose is to evaluate the environmental effects of the project that is proposed (or, in this case, the various alternatives under consideration). It should be noted that the EIR does discuss the "environmentally superior alternative" as required by CEQA (see page S-3).

Response 9G

The commentor states an opinion that the EIR lacks sufficient analysis of, and mitigation for, significant environmental impacts. This opinion is noted. Specific impacts about which the commentor is concerned are addressed in Responses 9H through 9BC.

Response 9H

The commentor concurs with the Working Group consensus that Alternative 5 provides the best opportunity for a long-term solution to erosion problems at Surfers Point and states an opinion that Alternative 5 would have the least environmental impact among the studied

alternatives. The concurrence is noted. This is consistent with the fact that the commentor voted as part of the Working Group to identify Alternative 5 as the preferred alternative. As discussed on page S-3 of the Draft EIR, Alternative 5 appears to best meet the objectives of relocating onshore improvements inland and restoring the beach at Surfers Point.

Response 9I

The commentor states an opinion that the alternatives are not developed in a logical manner, stating a preference that each alternative studied build upon the previous alternative until an environmentally preferred alternative is developed. As explained in previous responses, it is not the EIR's purpose to define the project, but rather to assess the project that is proposed. In the case of the Surfers Point Managed Shoreline Retreat project, the EIR analyzes five alternatives plus the CEQA-required "no project" alternative. Three of the alternatives (Alternatives 1-3) were among those considered by the Surfers Point Working Group over the past several years and were included in the Noble Consultants' 2000 report entitled "Plan for Managed Shoreline Retreat." Alternative 4 was developed by Coastal Frontiers, Douglas Inman, and Patricia Masters (consulting coastal engineers/coastal oceanographers/geologists that performed the analysis of the project's impacts to coastal processes in conjunction with the EIR). The commentor introduced the concept that ultimately became Alternative 5. As discussed on page S-3 of the Draft EIR, Alternative 5 would best meet the objectives of relocating onshore improvements inland and restoring the beach at Surfers Point.

Response 9J

The commentor states opinions that none of the alternatives meet the objective of restoring lands seaward of Shoreline Drive to more natural beach habitat and that the lifespan of the project will be determined to a great extent by the width of the retreat zone. It is true that even Alternatives 1-3 and 5 (all of which include a retreat zone of about 65 feet) would include a 12-foot wide bike path seaward of Shoreline Drive. It was the consensus of the Surfers Point Working Group that the bike path should be maintained along the seaward side of Shoreline Drive. Again, it should be noted that it is not the EIR's purpose to design the project. Rather, the purpose is to assess the project that is proposed.

With respect to the lifespan of the project, the additional 12 feet of retreat that could be achieved by removing the bike path or relocating it yet further inland would incrementally improve the protection of onshore improvements against coastal erosion. However, as discussed in the Draft EIR (page 4-23), the location of the shoreline at Surfers Point differed by as much as 868 feet between 1929 and 1999. Based on this level of fluctuation, relocating onshore improvements another 12 feet inland would provide only marginal additional protection. It is important to note, however, that by combining the 65-foot retreat with a protective cobble berm, Alternative 5 (the preferred alternative) would be expected to provide the best overall protection of onshore improvements. In addition, the retreat would facilitate other objectives of the Surfers Point Working Group, notably the restoration of the beach at Surfers Point to a more natural condition.

Response 9K

The commentor suggests that placing the bike path seaward of Shoreline Drive would cost the project 15 years of life as compared to relocating the bike path further inland. As discussed in previous responses, relocating the bike path farther inland is not considered in the EIR because that is not the project that is proposed. Alternatives 1-5 would all improve the protection of onshore improvements as compared to the current condition at Surfers Point; therefore, any of the alternatives would have overall beneficial effects with respect to protection against coastal erosion. The fact that relocating the bike path further inland may provide even greater protection benefits does not necessitate analysis of such an alternative under CEQA.

It should be noted that the commentor may have misinterpreted some of the information provided in the EIR and supporting documentation. There is no steady retreat of the shoreline at Surfers Point, as suggested by the commentor. Rather, the shoreline episodically advances and retreats in response to the countervailing influences of sediment input from the Ventura River and sediment removal by coastal storm waves. As discussed in the Draft EIR, the location of the shoreline at Surfers Point varied by as much as 868 feet from 1929 to 1999. Between 1981 and 1984 alone, the shoreline on West Beach retreated up to 297 ft in response to the severe El Niño storms occurring in 1982-83. These large fluctuations suggest that the additional 12 feet of retreat that could be achieved by relocating the bike path farther inland would not greatly reduce the potential for future storm damage.

Response 9L

The commentor recommends inclusion of the Noble Consultants 2000 report "Plan for Managed Shoreline Retreat" as an appendix to the EIR. This report is available for review at Ventura City Hall. Nevertheless, in response to this request, it will be included as an appendix to the Final EIR.

Response 9M

The commentor recommends that the final design maximize the retreat zone. This recommendation is noted, though it should again be recognized that relocating the onshore improvements yet farther inland is not the project that is proposed. Because Alternatives 1-5 would all have beneficial effects with respect to protection of onshore improvements as compared to the current condition at Surfers Point, analysis of an alternative that considers relocating the improvements farther inland is not needed to fulfill CEQA's environmental review requirements.

Response 9N

The commentor states an opinion that a lifespan and cost analysis should be performed to compare the various alternatives. This opinion is noted. However, it is not the EIR's purpose to perform engineering analysis of the design of the project alternatives. Its purpose is to assess the impact of the project on the environment. As discussed above, Alternatives 1-5 would all improve the protection of onshore improvements against coastal erosion as compared to the current condition at Surfers Point. Although it is not the EIR's purpose to discuss or analyze the financial or economic implications of proposed projects, Section 2.0 of the Draft EIR

includes a summary of the construction costs associated with each alternative. This information was added at the request of the California Department of Transportation (Caltrans), a reviewing agency for the EIR. As discussed in the Draft EIR, maintenance costs would likely be highest for Alternative 2 since the less substantial cobble mattress associated with that alternative would be more prone to undermining than the more substantial berm or seawall that would be constructed under the other project alternatives. Nevertheless, actual costs associated with future maintenance cannot be predicted with any certainty as such costs would depend upon factors (such as future weather conditions) that are variable and unknown.

Response 9O

The commentor restates a recommendation that a Noble Consultants report be included in the EIR. The Noble report will be included as an appendix to the Final EIR.

Response 9P

The commentor states an opinion that the cobble berm included in Alternatives 3-5 is a "shoreline protection device" that may cause wave reflection. This opinion is noted. The analysis of the project's impacts to coastal processes was conducted by Craig Leidersdorf of Coastal Frontiers Corporation and Dr. Douglas Inman and Dr. Patricia Masters. Each of these individuals has substantial experience and expertise in coastal processes. Their report, included as Appendix C to the EIR, concludes that the engineered cobble berm in Alternatives 3-5 would incrementally reduce wave reflection as compared to current conditions at Surfers Point and would not negatively affect surf conditions. The anticipated modest reduction in wave reflection is attributable to the relatively flat (5:1), dissipative surface of the cobble berm.

Response 9Q

The commentor states an opinion that paving the parking lot at the Ventura Fairgrounds would increase public impacts to the beach. The commentor also states an opinion that parking should be provided either on the street or in the dirt lot area.

The opinion about the impacts of paving the parking lot is noted, though it is not clear how paving the Fairgrounds parking lot would increase impacts to the beach. The area in question is already a dirt parking lot that is used for various events at the Fairgrounds and the lot would continue to be used for Fairgrounds events in the future. Paving of the lot and implementation of required filtration techniques for runoff from the lot would be expected to have generally beneficial effects with respect to the quality of surface runoff from the Fairgrounds.

As discussed in Section 4.8 of the Draft EIR, Alternatives 1-3 and 5 all include sufficient on-street parking along Shoreline Drive to offset the loss of parking associated with removal of the shorefront parking lot. In addition, it should be noted that the Board of the 31st Agricultural District has recently indicated that it may not wish to pave the dirt parking area on the Fairgrounds property. As such, paving of that area ultimately may be removed from the project. A final use for the dirt parking area will be determined as part of a master plan that is currently being developed for the Fairgrounds.

Response 9R

The commentor states an opinion that placing large quantities of cobble in the surf zone for Alternative 2 is a significant impact. This opinion is noted, although the criteria upon which the commentor bases this opinion are not clear. The commentor appears to be suggesting that Alternative 2 on its face would generate "significant" impacts simply because it would change conditions in the area. However, not all physical changes to the environment are significant and adverse. In the case of the proposed managed shoreline retreat project, most of the physical changes would be beneficial.

Typically, the impacts associated with an activity are considered "significant" under CEQA if they would adversely affect a resource that is considered "sensitive" or otherwise important under established criteria. For example, placement of cobble within the surf zone could be considered a significant impact if it would destroy the habitat of a threatened or endangered plant or animal species. However, as discussed in Section 4.3 of the Draft EIR, there are no such species in the vicinity of the project site that would be affected by the temporary construction activity required to implement the proposed project.

As discussed throughout the Draft EIR, Alternatives 1-5 would all involve short-term construction activity and long-term changes to conditions at Surfers Point. However, there is no basis for concluding that such changes are "significant" impacts under established CEQA criteria. To the contrary, as discussed in several sections of the Draft EIR, any of the project alternatives would generally improve aesthetic, recreational, and coastal erosion conditions as compared to the current situation at Surfers Point. Alternatives 2 and 5 would also be expected to provide for the restoration of coastal dune habitat at Surfers Point, thus improving conditions from a biological perspective.

Response 9S

The commentor reiterates an opinion that excavation and placement of cobble within the intertidal zone is a significant environmental impact and states an opinion that such action is not justified. These opinions are noted. Please see Response 9R. It is not the EIR's purpose to determine whether or not a proposed project is justified. The purpose is to evaluate the environmental impacts of the project that is proposed. That said, it is the opinion of Coastal Frontiers Corporation and Douglas Inman/Patricia Masters (the consulting coastal engineers and coastal oceanographers/geologists for the EIR) that in the absence of a substantial toe below MLLW, a cobble berm at Surfers Point would be prone to undermining and dispersal.

Response 9T

The commentor states an opinion that construction activity associated with Alternatives 2-5 would potentially affect steelhead trout. This opinion is noted, although the commentor has not provided any evidence to support this contention. As discussed in Section 4.3 of the Draft EIR, the project site provides little habitat for the steelhead trout and none of the project alternatives are expected to alter the hydrologic nature of the Ventura River estuary, which is upstream and up-littoral from Surfers Point. Consequently, no impact to this species is anticipated.

Response 9U

The commentor reiterates concerns about possible impacts to steelhead trout and suggests a mitigation measure requiring placement of sediment material in the backshore area rather than along the active shoreline. Please see Response 9T. As no impact to steelhead trout is anticipated, mitigation is not necessary. It should be noted, however, that Alternative 5 (the preferred alternative of the Surfers Point Working Group) would place cobble material primarily within the backshore area. Specifically, in the western portion of the project area, the berm would be constructed entirely in the backshore. In the eastern portion, which lies farther from the river mouth, the berm would be constructed by re-shaping and augmenting the existing cobble test section.

Response 9V

The commentor states that the dune area at Surfers Point was not initially fenced and states an opinion that removal of this dune area would have significant impacts relating to coastal geology and aesthetics. The opinions regarding coastal geology and aesthetic impacts are addressed in Responses 9AK through 9AZ. The discussion about fencing referenced by the commentor specifically notes that temporary construction fencing was initially installed at Surfers Point following completion of the current onshore improvements, followed by split rail fencing. In any event, the native dune habitat that was once present on-site has essentially been eliminated by human activity and coastal erosion. Implementation of the proposed project (particularly Alternatives 2 or 5) is expected to provide an opportunity to restore the dune habitat that historically existed at Surfers Point.

Response 9W

The commentor states opinions that the current project design may make the information about removal of 76 landscape trees along Shoreline Drive invalid and that the final design should accommodate preservation of the trees. The City is not aware of any new information about the removal of the landscape trees. It is anticipated that the trees along the north (landward) side of Shoreline Drive would need to be removed to accommodate a third lane along Shoreline Drive, but that the trees along the south (seaward) side of Shoreline Drive can largely be preserved. This is consistent with the discussion in the Draft EIR. The City intends to preserve as many of the existing street trees as possible as the project is implemented.

Response 9X

The commentor states an opinion that the discharge of material into intertidal areas is not the same for Alternatives 2-5 and suggests a mitigation measure for what the commentor believes is a "significant" impact to wetland resources. This opinion is noted. It is true that the various alternatives would involve slightly different requirements with respect to renourishment of the beach. For example, the more substantial cobble berm associated with Alternatives 3 and 5 is expected to be more stable than the cobble mattress associated with Alternatives 2 or 4 and would therefore likely require less frequent renourishment. However, because of the depauperate nature of the wetland resources at Surfers Point and rapid recovery time of species that would be affected by periodic renourishment, none of the alternatives would result in impacts that would be considered significant under CEQA. As such, mitigation is not

necessary. The Draft EIR acknowledges that the City would need to obtain a Section 404 permit from the U.S. Army Corps of Engineers and comply with any conditions required as part of that permit. It should be noted, however, that Alternative 5 (the preferred alternative of the Surfers Point Working Group) would limit the placement of material to the backshore area as suggested by the commentor to the degree feasible. Also, please see Response 9U.

Response 9Y

The commentor suggests that re-routing of runoff to the ocean could significantly affect recreational waters at Surfers Point. Runoff from the Fairgrounds parking lot would be required to meet current National Pollutant Discharge Elimination System (NPDES) water quality standards prior to discharge offsite. Compliance with these standards would require use of filtration systems or other techniques that would improve the quality of runoff as compared to current conditions. As such, no significant water quality impacts are anticipated. It should again be noted that the Board of the 31st Agricultural District has recently indicated that it may not pursue paving of the dirt parking area at the Fairgrounds. Thus, that component of the project may not be implemented.

Response 9Z

The commentor states agreement with a statement about sensitive marine biological resources on page 4-16 of the Draft EIR. The commentor has noted a typographical error. The statement referenced should read "...the temporary increase in ocean water turbidity is not expected to adversely affect any sensitive marine biological resources." As discussed in Section 4.3 of the Draft EIR, there are no sensitive biological resources at Surfers Point that would be affected by construction activity. The text of the Final EIR will be revised to correct this statement.

Response 9AA

The commentor reiterates concerns about the impact of re-routing storm runoff associated with the Fairgrounds from the Ventura River estuary to the ocean and suggests a mitigation measure requiring re-routing of Fairgrounds runoff to the Figueroa storm drain. Please see Response 9Z. The mitigation measure suggested by the commentor is not warranted for the proposed project as no significant water quality impacts are anticipated. However, the commentor's suggestion could be considered in conjunction with the ongoing master plan for the Fairgrounds.

Response 9AB

The commentor states an opinion that the project represents an opportunity to enhance water quality at Surfers Point through development of an area-wide storm runoff plan. Such a plan would be more appropriately implemented as part of the master plan for the Fairgrounds. As discussed in Section 4.6 of the Draft EIR, the current proposal would not create any significant water quality impacts. In addition, the only component of the project that would affect stormwater runoff patterns (paving of the dirt lot at the Fairgrounds) likely will not be implemented in conjunction with the managed shoreline retreat project based on the current direction of the Board of the 31st Agricultural District.

Response 9AC

The commentor notes that protection of the bike path is not an environmental impact, but an engineering consideration and states that loss of the bike path would not be a coastal geology impact but a recreational impact. The commentor also states an opinion that the EIR fails to acknowledge the merits of shoreline retreat, which he says would move infrastructure "out of harm's way," and suggests that the EIR attempts to justify the "no retreat" alternative.

It is agreed that any failure to protect the bike path would not be a significant environmental impact under CEQA. As discussed in previous responses, any of the project alternatives would improve the protection of the bike path as compared to the current condition at Surfers Point. Consequently, all of the alternatives would have beneficial effects relating to the preservation of this recreational amenity. With respect to coastal processes, as discussed in Section 4.7 of the Draft EIR and in several responses below, none of the alternatives are expected to result in significant impacts relating to surf conditions or sedimentation.

As discussed in earlier responses, the EIR is not intended to "justify" any of the alternatives or to discuss the merits of the project. The purpose of the EIR is to identify the significant environmental impacts of the project that is proposed. The *CEQA Guidelines* state that EIRs should focus not on project benefits, but on significant adverse environmental effects.

Contrary to what the commentor suggests, the Draft EIR explicitly acknowledges the fact that the "no retreat" alternative (Alternative 4) would not meet the objective of implementing a managed retreat, would conflict with State policies regarding coastal management, and would have fewer recreational benefits than other alternatives.

The commentor is incorrect in suggesting that the 65-foot retreat would move onshore infrastructure out of harm's way. As discussed in Section 4.7 of the Draft EIR, although managed retreat would incrementally reduce the potential for storm-related erosion to affect onshore improvements, the location of the shoreline at Surfers Point has varied by up to 868 feet since 1929. As such, even the relocated bike path and other improvements could be subject to erosion-related damage in the absence of a cobble berm, buried seawall, or other protective device. The fact that the bike path and parking area cannot be moved completely out of harm's way outside of completely abandoning the facilities is precisely why various options for protecting these improvements are being considered.

Response 9AD

The commentor states opinions that inclusion of Alternative 4 is inappropriate and that the discussion of the alternative is written to justify that alternative. The commentor also states an opinion that information from the Noble Consultants 2002 report is taken out of context and suggests that the Noble report be included in the Final EIR.

The opinion regarding Alternative 4 is noted. As discussed in several previous responses, it is not the EIR's intent to attempt to justify any of the alternatives, but rather to provide an objective analysis of the project's environmental impacts. As discussed in Response 9AC, the Draft EIR acknowledges the fact that Alternative 4 would not meet the objective of

implementing a managed retreat, would conflict with State policies regarding coastal management, and would have fewer recreational benefits than other alternatives.

Specific concerns about how information from the Noble Consultants report was interpreted are addressed in Responses 9AG and 9AH. The Noble report will be included as an appendix to the Final EIR. Finally, it should be noted that Coastal Frontiers Corporation, Dr. Douglas Inman, and Dr. Patricia Masters were included on the EIR team specifically to provide an independent assessment of the various alternatives for the managed shoreline retreat project. The Draft EIR text reflects their expert opinions with respect to the performance and impacts of the various alternatives, which do not necessarily correspond in all cases to the opinions of Noble Consultants.

Response 9AE

The commentor suggests that the Emma Wood shoreline is receding at a greater rate than suggested in the Draft EIR. As discussed in Section 3.7 of the Draft EIR, an analysis of aerial photographs of Emma Wood State Beach indicates that the shoreline in the area of the Emma Wood berm has remained stable for the past 70 years. A comparison of historical profiles contained in a study of the feasibility of installing a man-made surfing reef (Coastal Frontiers, 1988) provides additional confirmation of the stability of the cobble berm at Emma Wood State Beach. An example is provided on Figure 5 of Appendix C of the Draft EIR (page 17), in which it can be seen that the berm (0 to +13 feet, MLLW), experienced only minor changes between 1964 and 1988.

Response 9AF

The commentor suggests that the Draft EIR should include the most recent profiles for the cobble berm test section east of the project site and provide an estimate of future renourishment requirements. The data included in the Draft EIR regarding the cobble test section were the most recent data available at the time of preparation of the Draft EIR. A subsequent report prepared by Noble Consultants was completed on January 20, 2003 and will be included as an appendix to the Final EIR.

The most recent data indicate that the western portion of the cobble nourishment section placed at a 5:1 slope has been effective in preventing erosion of landward improvements. However, the material placed on a steeper slope within the eastern portion of the nourishment section has not been effective. Wave overtopping occurred regularly within this section during high tide and surf conditions. The lack of effectiveness is a consequence of insufficient nourishment volume placed at a steeper slope, the latent effects of the debris removal process, and exposure to more energetic surf. The nourishment project was determined to have no impact on sand movement within the littoral zone or on local surf conditions. The migration of cobble from the test section is believed to have occurred primarily in the offshore direction and to a lesser extent downcoast.

Based on the most recent data, Noble Consultants has concluded that, when material is properly placed (at a slope no steeper than 5:1), cobble nourishment has considerable potential to mimic a natural form of shoreline stabilization. This is consistent with the conclusions

reached by Coastal Frontiers Corporation and Inman/Masters in their review of the project in conjunction with preparation of the Draft EIR.

Response 9AG

The commentor states disagreement with the conclusions that the available data regarding fluctuations of the shoreline at Surfers Point suggest the potential for erosion of the existing beach and that the 65-foot retreat would provide only a marginal improvement in shoreline protection. This disagreement is noted, although the fact that the existing bike path and shorefront parking lot have experienced erosion-related damage provides clear evidence that there is erosion potential at Surfers Point. Obviously, concerns about past and possible future erosion-related damage are exactly what prompted the formation of the Surfers Point Working Group and development of the plan for managed shoreline retreat. As discussed in the Draft EIR and in previous responses, the 65-foot retreat would incrementally reduce the potential for erosion-related damage, but would not move the bike path out of harm's way. This is why a cobble berm or other protective technique would be needed in addition to the retreat if the bike path and other shorefront improvements are to be maintained.

The fact that the 65-foot retreat would not completely eliminate the potential for erosion damage to the bike path does not mean that the retreat should not be implemented. To the contrary, the retreat, in combination with the placement of a protective cobble berm seaward of the bike path as envisioned in Alternative 5, is expected to substantially reduce the potential for future erosion-related damage as compared to the current condition at Surfers Point. Moreover, the 65-foot retreat would provide an opportunity for the restoration of the beach at Surfers Point to a more natural condition, with both biological and recreational benefits.

The estimates of the sand budget for Surfers Point (EIR Appendix C, Fig. 3, p. 12) show that during wet El Niño flood years there will be a potential sand supply to the beach of 1.3 million yd^3 and during dry years a deficit of 1.2 million yd^3. Recent studies show that southern California has been in a wet phase of the climate pattern known as the Pacific Decadal Oscillation (PDO) that extended from about 1977 to the flood year of 1998. (The flood year of 1969 was a brief wet fluctuation of the PDO.) Looking forward, we are now entering the dry phase of the PDO. Flood years are expected to be less intense and less frequent, and the climate will be dominated by dry years. The potential deficit of sand transport of 1.2 million yd^3/year will likely become the norm for most years during the dry cycle of PDO, and this cycle may last for 20 years or more. These considerations suggest there will be a shortage of beach sand, resulting generally in an increase in erosion for southern California beaches.

Response 9AH

The commentor states an opinion that information from a City of Ventura policy and the Noble Consultants 2000 report suggests that the 65-foot retreat would provide at least a 40-year lifespan and notes that the fortification of the backshore area as envisioned under Alternative 5 would extend this lifespan. It is agreed that the 65-foot retreat, in combination with placement of a protective cobble berm, would extend the lifespan of the relocated bike path and other onshore improvements. Indeed, extension of the lifespan of these improvements is one of the fundamental goals of the managed shoreline retreat project. The commentor's opinion regarding the lifespan of the improvements is noted. However, even a relocated bike path

would not be completely removed from harm's way. It is important to remember that it was thought that the bike path in its current location would have a lifespan of 20 or more years, but actually experienced erosion damage within two years of its completion. This unfortunate circumstance arose from short-term fluctuations in shoreline position, rather than from the long-term change rates cited by commentor.

Just as the current bike path and parking lot were damaged by short-term fluctuations in shoreline position, the commentor's opinion that a 65-foot retreat zone would provide "at least a 40-year lifespan in the areas of highest erosion even without the proposed beach nourishment and restoration measures" appears to be optimistic when compared with the short-term shoreline changes documented in the recent past. In West Beach, which is the area of highest erosion, shoreline variations over the past 70 years have been on the order of 500 feet (Noble, 2000). Even if the accretionary bulge that resulted from the floods of 1969 is excluded from consideration, the variations in shoreline position tend to be considerably larger than the 65-foot zone allocated for retreat. During the 21-year period between 1978 and 1999, for example, shoreline variations as large as 480 feet were documented at West Beach (Noble, 2000, Table A-1). This shoreline volatility in an active river delta is why the fortification of the beach with a protective cobble berm is needed in addition to the 65-foot retreat if the relocated bike path and other improvements are to be maintained.

Response 9AI

The commentor states an opinion that a lifespan and cost analysis of the various alternatives should be included in the Final EIR. As discussed in previous responses, it is not the EIR's purpose to analyze engineering and cost implications associated with proposed projects. Rather, CEQA's purpose is to assess and disclose the significant environmental effects of proposed actions. Section 2.0 of the Draft EIR includes construction cost estimates because such estimates were requested by the California Department of Transportation (Caltrans), which is a reviewing agency for the project because the City is seeking federal funds from the Federal Highway Administration for reconstruction of the bike path. As discussed in Section 2.0, the amount of renourishment that would be needed cannot be predicted with any certainty because the loss of cobble material would depend upon future weather conditions. The January 20, 2003 Noble Consultants report on the status of the cobble nourishment test section immediately east of the project site indicates that the western portion of the test section dissipated at a rate of about 1,500 cubic yards in 2002. However, it should again be noted that the actual amount of dissipation will vary from year to year, depending upon the severity of winter storms.

Response 9AJ

The commentor recommends removal of Alternative 4 from the EIR because of what he perceives as a failure to disclose the environmental impacts of that alternative and because it does not meet the objectives of the Surfers Point Working Group. It is agreed that Alternative 4 would not meet the Working Group objective of implementing a managed shoreline retreat. This fact is disclosed in Sections 2.0 (page 2-16) and 4.8 (page 4-34). Furthermore, the Draft EIR indicates that Alternative 4 may be considered in conflict with State Resource Agency and Coastal Commission policies due to the failure to implement a shoreline retreat.

The opinion regarding the impacts of Alternative 4 is noted. However, it is important to remember that the EIR is only intended to assess the project's environmental effects relative to current conditions. Given that the current condition at Surfers Point consists of an eroded shoreline with damaged onshore improvements, implementation of Alternative 4 would generally improve conditions in the area. As discussed throughout the Draft EIR, Alternative 4 does not include many of the recreational, biological, and aesthetic benefits of other alternatives (notably, Alternative 5). However, the fact that this alternative would have fewer benefits does not mean that it would create significant environmental impacts under CEQA. In fact, the only real environmental impacts associated with any of the alternatives are those which would occur during construction. Such impacts are not considered significant under CEQA criteria under any of the alternatives.

Response 9AK

The commentor states an opinion that the Draft EIR inappropriately suggests that sedimentation impacts associated with Alternative 5 would be the same as those of Alternative 2. It is agreed that the impacts of Alternative 5 would be somewhat different than those of Alternative 2, although none of the alternatives are expected to create any significant impacts relating to sedimentation.

In response to this comment, the heading "Alternatives 2 and 5" under "Sedimentation" will be changed to read "Alternative 2." In addition, the discussion of alternatives 3 and 4 will be revised to read as follows:

> *Alternatives 3 and 4. The cobble berm associated with Alternatives 3 and 4 would not be expected to adversely affect sedimentation or coastal processes since it would not restrict the transport of sediment to downdrift beaches. Impacts associated with possible cobble transport would be similar to those described for Alternative 2 and would not be expected to result in adverse impacts.*

Finally, a new discussion of Alternative 5 will be added, as follows:

> *Alternative 5. As with Alternative 2, the sacrificial dune associated with this alternative would be subject to periodic erosion. Whenever the sacrificial dune is eroded by wave runup, sand would be added to the littoral zone, which may incrementally benefit downdrift beaches. The cobble berm associated with Alternative 5 would not be expected to adversely affect sedimentation or coastal processes. As the cobble berm would be largely restricted to the backshore area under this alternative, the rate of transport of cobble material to downdrift beaches would likely be somewhat lower than under Alternatives 3 and 4.*

Response 9AL

The commentor suggests that the cobble mattress associated with Alternative 2 would have a significant impact to natural sedimentation processes because its conceptual design includes a prominent salient at the western end of Surfers Point. The commentor again suggests that a relative disadvantage of Alternative 2 (minor change in longshore transport restricted to the area immediately downdrift of the western end of the project site) constitutes a significant

environmental effect. In fact, this minor design issue would affect only a small area at Surfers Point and would have little if any effect on beaches farther downdrift. It should also be recognized that the salient to which the commentor refers is largely an existing condition at Surfers Point that is created by material deposited by the Ventura River. Finally, it should be noted that Alternative 5 (the preferred alternative that was introduced in concept by the commentor) specifically attempts to maintain the existing cobble/sand bulge at the western end of Surfers Point to the degree feasible.

Response 9AM

The commentor states an opinion that the cobble nourishment test section has had a significant negative impact to downdrift beaches because of cobble transport and that the proposed project would have a similar effect. This opinion is noted. It is agreed that the impacts of the proposed project may be similar to those of the cobble nourishment test section, although the placement of cobble material primarily in the backshore area as would occur under Alternative 5 would be expected to minimize the alongshore transport of cobble during non-storm periods. Contrary to what the commentor suggests, the January 20, 2003 Noble Consultants monitoring report for the cobble nourishment test section states that the cobble nourishment has had "negligible impacts to sediment movement and deposition."

It should be noted that a combination of cobble and sand has historically moved downshore from the Ventura River mouth even prior to implementation of the cobble nourishment test section. As discussed in Section 3.7 of the Draft EIR (page 3-18), the volume of material (sand and cobble) transported to Surfers Point from the river and points farther upcoast ranges from about 272,000 cubic yards during dry years to 2.6 million cubic yards during episodic flood years. Because much of this material is transported east into Pierpont Bay, the deposition of cobble onto beaches downdrift of Surfers Point is the natural condition in the area. The volume of cobble and sand associated with both the test section and the proposed managed shoreline retreat is miniscule as compared to the volume of material, including cobble, deposited by the river.

Response 9AN

The commentor expresses concern that the cobble berm/mattress could result in increased offshore sediment transport due to "increased wave reflectivity", and states that the EIR should study this impact. Impacts relating to sediment transport are discussed in the coastal engineering review in Appendix C of the Draft EIR and in Section 4.7. The analysis, conducted as part of a collaborative effort by three experts in the fields of coastal geology and engineering, concludes that none of the alternatives would exert significant negative impacts on coastal processes. The commentor's specific concern about wave reflection contradicts the dissipative nature of relatively flat cobble slopes, as described in detail in Response 9AU. Also, please see Response 9AM.

Response 9AO

The commentor states an opinion that the comparison between the natural delivery of sand and cobble from the Ventura River and the delivery of such material from a cobble berm is not valid. This opinion is noted. However, although it is true that the project would involve

placement of cobble downdrift of where the Ventura River would directly deposit the material, placement of this material to protect onshore improvements is one of the fundamental purposes of the project. Contrary to what the commentor suggests, the City considers placement of this material along the coast to renourish the beach and protect onshore improvements a substantial benefit of the project. As deposited sand moves down the coast through natural processes, it would actually result in incremental benefits to downdrift beaches. The commentor may consider the gradual movement of cobble down the coast an adverse effect of the project, but such material would move down the coast in much the same manner as would cobble material from the river. In addition, as discussed in previous responses, the volume of cobble associated with any of the project alternatives is miniscule as compared to that which is delivered naturally by the Ventura River.

Response 9AP

The commentor states an opinion that boulders associated with the cobble nourishment test section adjacent to the project site create a hazard to those who surf or swim. This opinion is noted, though the test section is not the subject of the EIR. Moreover, as the commentor has suggested, the presence of cobble material deposited by the Ventura River is part of the natural condition at Surfers Point and no evidence that cobble material creates a hazard has been presented.

Response 9AQ

The commentor states opinions that future renourishment of Surfers Point would eventually lead to the creation of a "boulder revetment" and that Alternatives 2 and 4 would have the greatest impact in this regard. This opinion is noted, though the City has no intention of creating a boulder revetment. It is agreed that Alternative 2 would require more frequent maintenance than the other alternatives due to the use of a less substantial cobble mattress. The lack of a buried seawall structure and, the failure to implement the 65-foot retreat, would also necessitate more frequent renourishment under Alternative 4. However, as discussed in several previous responses, the amount of renourishment needed for any of the alternatives cannot be predicted with any certainty because it is dependent upon future weather conditions. In no case is the impact associated with renourishment considered significant under CEQA as such activities would consist of short-term disruptions to the Surfers Point area with long-term benefits.

Response 9AR

The commentor reiterates a request that information regarding the cobble nourishment test section be updated and again suggests a mitigation measure requiring placement of sediment material in the backshore area. As no significant impacts to coastal processes have been identified, mitigation is not necessary. That said, Alternative 5 (the preferred alternative of the Surfers Point Working Group) does limit placement of material to the backshore area to the degree feasible. This alternative is generally considered to have the greatest overall benefits among the studied alternatives. Also, please see Responses 9U and 9AF.

Response 9AS

The commentor states an opinion that the Draft EIR understates the impact of the buried seawall associated with Alternatives 1 and 2. The buried seawall included as part of Alternatives 1 and 2 is intended to be a final line of protection against erosion damage to the relocated bike path and Shoreline Drive. Most of the time, the seawall would not be exposed and thus would not have any effect on coastal processes. Under unusual circumstances where extreme erosion occurs, the wall could be temporarily exposed. Under Alternative 2, the City has made a commitment to renourish the beach if such a circumstance occurs and similar renourishment has been recommended as a design modification for Alternative 1 in the event that alternative was selected. Thus, any impacts on downdrift beaches would be temporary in nature. It should be noted, however, that Alternative 5 (which does not include a buried seawall) remains the preferred alternative of the Surfers Point Working Group and is the alternative that City staff will recommend to the City Council.

Response 9AT

The commentor states an opinion that the suggestion that the buried seawall associated with Alternative 2 would not adversely affect surf conditions contradicts the suggestion that the cobble mattress associated with that alternative would be prone to undermining. There is no contradiction between these two statements. Although it is the opinion of Coastal Frontiers Corporation and Douglas Inman/Patricia Masters (the consulting coastal engineers/coastal oceanographers/geologists for the EIR) that the cobble mattress would be prone to undermining, Alternative 2 includes a commitment to renourish the mattress in the event that the buried seawall becomes exposed. Hence, impacts to surf conditions would be limited to the periods in which the buried seawall is exposed by extreme storm conditions. Long-term impacts would be avoided by the planned renourishment that restores the cobble mattress and reburies the wall. It should again be noted that Alternative 5 remains the preferred alternative of the Surfers Point Working Group and is the alternative that City staff will recommend to the City Council.

Response 9AU

The commentor suggests that because the cobble mattress associated with Alternative 2 would be prone to undermining, it would result in a significant impact to surf conditions. Possible impacts to surf conditions are addressed in Section 4.7 of the Draft EIR. Contrary to what the commentor suggests, it is the opinion of Coastal Frontiers Corporation and Douglas Inman/Patricia Masters (the consulting coastal engineers/coastal oceanographers/geologists for the EIR) that Alternatives 2-5 would all tend to provide a modest improvement in surf conditions in the area as compared to the current condition at Surfers Point by reducing wave reflection. As indicated in their report (which is included in Appendix C), "The movable cobble berm is a very efficient wave absorber, with minimal wave reflection. This is because of the high permeability of the large void spaces and the energy expended in moving the cobble mass up and down the berm face. Further, the cobble berm will adjust its slope in the event of storm waves with little loss of effectiveness."

Response 9AV

The commentor reiterates an opinion that no "artificial" means would improve the quality of the surf. This opinion is noted. Please see Response 9AU. As acknowledged in the Draft EIR, any improvement in surf conditions associated with the project is expected to be modest. There is no evidence to suggest that Alternatives 2-5 would adversely affect surf conditions.

Response 9AW

The commentor states an opinion that the Draft EIR does not acknowledge impacts to the dunes associated with construction of Alternatives 2-5 and suggests a mitigation measure to minimize excavation in the existing beach area. Contrary to what the commentor suggests, the Draft EIR explicitly acknowledges the temporary biological and recreational impacts associated with construction of any of the project alternatives (please see Sections 4.3 and 4.8). As discussed in Response 9R, these effects were not determined to be significant impacts under CEQA because of the lack of sensitive biological resources at Surfers Point and the temporary nature of the disturbance. In the long-term, any of the project alternatives are expected to improve biological and recreational conditions at Surfers Point and provide a more stable shoreline that protects onshore improvements. Alternative 5, the preferred alternative of the Surfers Point Working Group, would provide the greatest overall benefits and, as discussed in Response 9U, would limit excavation and placement of new material to the backshore area as suggested by the commentor to the degree feasible.

Response 9AX

The commentor states an opinion that a subsurface cobble berm in the western portion of Surfers Point is unnecessary for Alternatives 3 and 5 and suggests that if a 5:1 slope is important, the shoreward portion of the slope should be truncated in the area beneath the dunes or the entire berm should be moved back. This opinion is noted. Determining whether or not the cobble berm is necessary is not the purpose of the EIR. Rather, the EIR's purpose is to evaluate and disclose the significant environmental effects of the project that is proposed. That said, it is the opinion of Coastal Frontiers Corporation and Douglas Inman/Patricia Masters (the consulting coastal engineers and coastal oceanographers/geologists for the EIR)) that in the absence of a substantial toe below the MLLW, a cobble berm at Surfers Point would be prone to undermining and dispersal.

Although any of the alternatives would involve temporary disturbance of the beach at Surfers Point, the impacts associated with this temporary disruption are not considered significant under CEQA. The design issues with which the commentor is concerned will be addressed in the final design phase for the project. Also, please see Response 9S.

Response 9AY

The commentor states an opinion that the Draft EIR fails to acknowledge the aesthetic appeal of Surfers Point and what the commentor perceives as negative impacts associated with the excavation of the dunes placement of a cobble berm. This opinion is noted. Aesthetics is an inherently subjective topic as different viewers often react differently to the same visual conditions. It is the opinion of the EIR preparers that the visual character of Surfers Point is

poor due not only to the damaged condition of the bike path and parking lot, but also to eroding coastline and degraded nature of the dune area, which is largely inhabited by introduced, weedy species (please see Section 4.3 of the Draft EIR). All of the project alternatives would generally improve these conditions by repairing/relocating the bike path/parking area, restoring the beach to a more natural condition, and providing an opportunity for the restoration of the dune areas. Alternatives 2 and 5 in particular would enhance opportunities for creation of a restored dune habitat with native vegetation. Alternative 5 would appear to have the greatest overall aesthetic benefits among the studied alternatives, but none of the alternatives would appear to have a detrimental effect as compared to the current condition at Surfers Point.

Response 9AZ

The commentor states an opinion that views from the bike path would be enhanced by the return to a "more natural" environment. As mentioned, in Response 9AY, aesthetics is an inherently subjective topic. For that reason, the Draft EIR explicitly acknowledges that the alteration of views from the bike path could be perceived as either positive (because of the overall enhancement of visual conditions in the area) or negative (because of the possible obscurement of ocean views from some vantage points). However, impacts to views are not considered significantly adverse for any alternative. It should be noted that the commentor's suggestion that returning the area to a more natural environment is a visual enhancement is consistent with the opinion of the EIR preparers, but appears to contradict the commentor's previous assertion (in Comment 9AY) that the project would adversely affect visual conditions in the area.

Response 9BA

The commentor again requests additional design details, including a lifespan and cost analysis for the various alternatives. Please see Response 9N.

Response 9BB

The commentor reiterates a suggestion that an area-wide stormwater mitigation program is needed and suggests that the proposed project should be considered in light of the Fairgrounds Master Plan and the Matilija Dam removal. The City of Ventura will continue to coordinate with the 31st Agricultural District to ensure that the project is considered as part of the Fairgrounds Master Plan if it is approved. The removal of Matilija Dam would be expected to increase the sediment flux from the Ventura River, which would be expected to improve the influx of sand to area beaches. Also, please see Response 9AA.

Response 9BC

The commentor notes that funding for the project is available from a number of organizations, states opinions regarding what will help secure grant funding, and encourages the City to maximize the restoration potential of the project and to seek grant funding. The opinions are noted. The City has already secured funding from some sources and will continue to seek additional funds. It is the City staff's intent to recommend and pursue Alternative 5, which appears to provide the greatest overall benefits for the area.

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PLANNING DIV.

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Paul Calderwood, Senior Planner
City of Ventura, Planning Division
501 Poli Street, Room 117
Ventura, CA 93110

February 4, 2003

RE: "Surfers Point Managed Shoreline Retreat" Draft Environmental Impact Report

Dear Mr Calderwood,

Enclosed are a few additional comments on the "Surfers Point Managed Shoreline Retreat" Draft Environmental Impact Report. We have included these additional comments in an effort to provide the public and decisionmakers with a clear picture of the long-term implications of the project, as well as to improve the defensibility of the EIR once a decision has been made to move forward with a project. We believe that addressing these issues now will simplify the permitting process with the California Coastal Commission and the Army Corps of Engineers, which will likely use the EIR as supporting information in the issuance of Corps permits.

A

We hope that these additional comments are helpful, and we request that our input be solicited and considered during the Final Design process. Please contact me with any questions.

Sincerely,

A. Paul Jenkin, M.S.
Environmental Director
Surfrider Foundation - Ventura County Chapter
(805) 648-4005 pjenkin@sbcglobal.net

Supplemental comments on
Surfers Point Managed Shoreline Retreat
Draft Environmental Impact Report

PROJECT DESCRIPTION AND ALTERNATIVES ANALYSIS

B

The California Environmental Quality Act (CEQA), Section 15126(d) Alternatives to the Proposed Action, supports the use of an alternative screening analysis. This section states:

> *"Describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives."*

The CEQA guidelines also state:

> *"The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effect of the project. Of those alternatives, the EIR need examine in detail only the ones that the lead agency determines could feasibly attain most of the basic objectives of the project."*

The EIR does a good job in describing a range of alternatives. However, the EIR never really identifies a "project", but only a series of alternatives. Given the fact that no project is identified, it is difficult to determine which alternatives avoid or substantially lessen potentially significant impacts associated with the "project".

CEQA also requires that the EIR identify the environmentally superior alternative. Also, CEQA Guidelines, Section 15126 (d)(4) states that if the environmentally superior alternative is the No Project Alternative, then the next most environmentally superior alternative must also be identified. The Draft EIR makes no attempt to identify the environmentally superior alternative, nor does it provide a meaningful discussion of the relative merits of the proposed project and alternatives.

> **Recommendation: The EIR should clearly identify the proposed project and evaluate those alternatives that would avoid or lessen potential environmental impacts. The EIR should identify the environmentally superior alternative.**

PROJECT/ALTERNATIVE DESCRIPTION COMPLETENESS

C

The EIR does not provide a complete description of the proposed project/alternatives in terms of the long-term characteristics of the project. Clearly, long-term maintenance will be required for several of the alternatives, which would also result in future impacts. Given the known need to re-nourish the cobble berms for several alternatives, the project description should disclose the true parameters of the project, such as volume of material that will be required for re-nourishment over the next 30 years, the associated number of truck trips, beach closures, air quality impacts, impacts to coastal dunes, etc.

Without complete information on the long-term characteristics of an alternative, it is impossible to provide a reasonable comparison of the proposed project and alternatives. The EIR currently leaves the reader with the impression that a less-expensive alternative may be attractive due to relatively low costs and impacts. However, the EIR has failed to disclose the long-term impacts with the lower cost alternative (i.e., Alternative 4).

> **Recommendation: The EIR should be revised to disclose the true long-term costs and impacts associated with each alternative. This would include revising the Project/Alternative Descriptions and impact analyses. Finally, the comparison of alternatives should reflect the true long-term costs and impacts associated with each alternative.**

CUMULATIVE IMPACTS

D

The California Environmental Quality Act (CEQA), in Section 15355 of the guidelines, defines "cumulative impacts" as two or more individual effects that, when considered together, are either considerable or compound other environmental impacts. CEQA Section 15130(b)(1)(B)2 also requires an agency to consider how a project's impacts will cumulate with the impacts of past, present and probable future projects.

A typical "project specific" cumulative analysis looks at the changes in the environment that result from the incremental impact of development of a proposed project and other reasonably foreseeable projects that have not been included in the environmental setting. For example, the traffic impacts of two projects in close proximity may prove to be insignificant when analyzed separately, but could be significant when the impacts of the projects are analyzed together. While these projects may be unrelated, their combined (i.e., cumulative) impacts are significant.

CEQA Guideline Sections 15064(1)(4) and 15130(a)(4) provide that an agency could determine that the incremental of a project were not cumulatively considerable when they would make only a "de minimis" contribution to a significant effect. Guideline15064(i)(4) states that such de minimis incremental impacts, by themselves, would not trigger the obligation to evaluate cumulative impacts in an EIR. In a recent case, Communities for a Better Environment v. California Resources Agency (Case #C038844 10/28/02), the court found that an agency following these guidelines could fail to take into account the nature and scope of a significant cumulative impact, and instead might focus solely on the incremental impact of the project. The court suggested that the greater the cumulative environmental problem, the lower the threshold should be for determining the significance of a project's contribution to that cumulative impact.

Clearly, the EIR fails to provide any analysis of potential cumulative impacts with nearby or relevant projects. At a minimum, the EIR should be revised to include an impact analysis for the following projects:

- Rehabilitation of the Ventura Beach Promenade,
- Proposed 250-275 room hotel and restaurant at the southeast corner of Harbor Boulevard and Figueroa Street,
- Matilija Dam Removal.

These projects are well along in the planning stages and are reasonably foreseeable. In addition, they each have the potential to result in significant cumulative impacts, or possible beneficial impacts that would affect the evaluation of the proposed project.

In addition to these projects, numerous projects at the Fairgrounds are in the conceptual stage and will be evaluated as part of the Fairgrounds Master Plan. While the Master Plan has not been completed, components of the Master Plan that have been publicly discussed by the Fair Board should be included in the cumulative impact analysis section as well.

Recommendation: The EIR should reevaluate the projects that are considered in the cumulative impacts section of the EIR. At a minimum, the EIR should evaluate those projects bulleted above for each relevant issue area.

Letter 10

COMMENTOR: A. Paul Jenkin, M.S., Environmental Director, Surfrider Foundation – Ventura County Chapter

DATE: February 4, 2003

RESPONSE:

Response 10A

The commentor is providing additional comments that he states are intended to be helpful and improve the defensibility of the document. The commentor also requests that his input be solicited during the final design process. Specific comments are addressed in Responses 10B through 10D. If the project is approved, the commentor's input will be solicited as the project moves into final design.

Response 10B

The commentor states that the EIR should identify a specific alternative as the "project," suggests that alternatives be limited to those that would avoid or substantially reduce project impacts, and suggests that the EIR should identify the environmentally superior alternative.

The EIR is an "alternatives style" document that examines a series of alternative scenarios in an equal level of detail rather than identifying a single scenario as the "project." Although this format is atypical for CEQA documents, this is the required format for environmental review documents prepared pursuant to the National Environmental Policy Act (NEPA). The environmental document was originally prepared as a joint Environmental Impact Report/Environmental Assessment (EIR/EA) based on direction from Caltrans and the Federal Highway Administration (FHWA) because the City is pursuing federal funding from FHWA for funding of the bike path reconstruction. After an internal review draft of the document was completed (including approval of the document for release by the Surfers Point Working Group and Caltrans), FHWA determined that the project is categorically excluded from NEPA's environmental review requirements. Therefore, the document did not need to be circulated for review as a joint CEQA/NEPA document. At that point, the City simply removed the NEPA references and circulated the document for public review as an EIR rather than reformatting the entire document. This was done in the interest of avoiding further delays and expense for an environmental review process that had already incurred substantial delays and expenses as a result of changing direction from various parties. Although the document is not in the typical CEQA format, it includes all of the information required by CEQA and meets CEQA's intent of disclosing the environmental consequences of the proposed action. It should also be noted that the "preferred alternative" of the Surfers Point Working Group identified in the Draft EIR can be considered the proposed action for CEQA purposes.

It is true that the CEQA Guidelines suggest that EIRs should focus on alternative that reduce or eliminate significant environmental effects of the proposed project. However, in the case of the Surfers Point Managed Shoreline Retreat project generally (and the "preferred alternative" specifically), no unavoidably significant environmental impacts have been identified. To the

contrary, with a few minor exceptions, the effects of all of the alternatives studied in the Draft EIR are considered beneficial. As noted in several responses to the commentor's previous letter, it is important to remember that the baseline against which projects are analyzed under CEQA is the current condition. Given that the current condition at Surfers Point consists of an eroding shoreline and damaged bike path and parking lot, the changes that would occur under any of the alternatives would generally represent an improvement in environmental conditions. Because there are no significant impacts associated with the preferred alternative to avoid, the Draft EIR analyzes a range of alternatives that were developed by the Surfers Point Working Group (Alternatives 1-3) ,the EIR consultants (Alternative 4), and even the Surfrider Foundation (Alternative 5 –modified).

The Draft EIR does provide a summary comparison of the alternatives and discuss the environmentally superior alternative. Please see the discussion of "Environmental Impacts" on pages S-2 and S-3. As noted in that discussion, Alternative 5 (the preferred alternative) could be considered environmentally superior overall if the emphasis is on meeting the objectives of relocating improvements inland and restoring the beach. On the other hand, Alternative 4 could be considered superior if one was primarily concerned with minimizing initial disruption to the area and Alternatives 1 and 3 could be considered superior if minimizing future maintenance and associated impacts were deemed most important. Obviously, there are pros and cons to each of the alternatives. However, none of the alternatives would generate any unavoidably significant impacts under CEQA.

Response 10C

The commentor states an opinion that the alternative descriptions and analyses should include a comparison of long-term costs and impacts. This opinion is noted. Cost issues are outside the scope of CEQA documents. The purpose of the EIR is to disclose the significant environmental impacts of proposed projects. Long-term impacts associated with periodic maintenance are discussed throughout the Draft EIR. Periodic impacts relating to traffic, noise, air quality, and recreation, in particular, would occur under Alternatives 2-5 and would likely be greatest under Alternative 2. The actual amount of renourishment required for any of the alternatives cannot be predicted with any degree of certainty because such requirements are dependent upon future weather and storm conditions. However, in no case would such periodic maintenance activity generate impacts that would be considered significant under CEQA.

Response 10D

The commentor states an opinion that the Draft EIR fails to acknowledge potential cumulative impacts associated with various projects, including the rehabilitation of the Ventura Beach Promenade, a proposed hotel at the corner of Harbor Boulevard and Figueroa Street, and the Matilija Dam removal. A table summarizing cumulative development in the City of Ventura is including in Section 2.0 of the Draft EIR (page 2-23). That same page also specifically discusses other planned and pending development in the vicinity of the project site, including the hotel and Ventura Beach Promenade rehabilitation to which the commentor refers. These projects were considered in the environmental analysis of the project. However, it is important to remember that the proposed Surfers Point Managed Shoreline Retreat is not a development project (such as a hotel), but instead involves the reconstruction of an existing bike path and restoration of an eroded beach. As such, the proposed project would not generate traffic, noise,

or air pollutant emissions on a regular, long-term basis and therefore would not contribute to cumulative impacts in these areas (to which more typical development projects often contribute).

The Ventura Beach Promenade restoration to which the commentor refers merely involves repair of damage that has occurred since the construction of the facility in the 1960s. The restoration is a maintenance project that would not increase the capacity of the Promenade or involve any change in use. As such, it would not affect coastal processes in any way or contribute to any cumulative changes in the area.

As the commentor is aware, the possible future removal of Matilija Dam would be expected to generally increase the amount of sediment reaching the coast via the Ventura River. This increase in sediment would be expected to have generally beneficial effects with respect to local beaches, including Surfers Point Beach. In combination with the proposed managed shoreline retreat project, removal of the dam would be expected to have substantial cumulative benefits with respect to the local coastline.

In response to this comment, the following will be added to the text of the Final EIR:

> ***4.13 Cumulative Impacts***
>
> *Cumulative development in the City of Ventura is described in subsection 2.8, Status of other Projects in the Area, (beginning on page 2-23) and summarized in Table 2-4. The proposed Surfers Point Managed Shoreline Retreat project is not a development per se, but rather is a project specifically intended to improve and enhance conditions at Surfers Point by replacing an existing erosion-damaged bike path and parking lot and restoring an eroded and biologically degraded section of beach to a more natural condition. The proposed action would not generate any permanent increase in vehicle traffic, noise, or air pollution, and is anticipated to result in long-term benefits to the viability of the shorefront bike trail and to the health and desirability of the beach at Surfers Point. The only permanent physical changes associated with the proposed project are improvements to the appearance and biological and recreational functionality of Surfers Point and a possible minor increase in the deposition of sand and cobble on downdrift beaches. As such, the project is not expected to contribute to any significant negative cumulative impacts. Similarly, planning and pending developments in the City of Ventura are all infill projects that would have little or no cumulative effect on coastal processes. In combination with the future increased sediment loads associated with the possible future removal of Matilija Dam on the Ventura River, the project may contribute to the cumulative enhancement of area beaches.*

RESPONSES TO COMMENTS ON THE DRAFT EIR

The letters in this appendix to the EIR are the public comments on the Draft Environmental Impact Report (EIR) for the proposed Surfers Point Managed Shoreline Retreat project. The Draft EIR was circulated for a 45-day public review period that began on December 16, 2002 and concluded on February 2, 2003. This appendix includes responses to comments on the Draft EIR.

The City received ten comment letters on the Draft EIR. Commentors and the page number on which each comment letter can be found are listed below

Commentor	Page Number
1. Terry Roberts, Director, State Clearinghouse, Governor's Office of Planning and Research	2
2. Stephen L. Jenkins, Assistant Chief, Division of Environmental Planning and Management, California State Lands Commission	5
3. Harlan R. Jeche, Unit Chief, Southern California Cleanup Operations Branch - Glendale Office, Department of Toxic Substances Control	8
4. Rich Rojas, District Superintendent, California Department of Parks and Recreation	12
5. Christopher Stephens, County of Ventura Resource Management Agency	15
6. Nazir Lalani, Principal Engineer, Ventura County Public Works Agency, Transportation Department	17
7. Alicia Stratton, Ventura County Air Pollution Control District	19
8. Mark Rauscher, Coastal Science Manager, Surfrider Foundation	21
9. A. Paul Jenkin, M.S., Environmental Director, Surfrider Foundation - Ventura County Chapter	28
10. A. Paul Jenkin, M.S., Environmental Director, Surfrider Foundation - Ventura County Chapter	62

The comment letters and the City's responses follow. The Draft EIR and the following comment letters and responses collectively comprise the Final EIR for the Surfers Point Managed Shoreline Retreat project.

STATE OF CALIFORNIA

Governor's Office of Planning and Research

State Clearinghouse

Gray Davis
Governor

Tal Finney
Interim Director

February 3, 2003

1

RECEIVED
FEB - 6 2003
PLANNING DIV.

Paul Calderwood
City of San Buenaventura
501 Poli Street
Ventura, CA 93001

Subject: Surfers Point Managed Shoreline Retreat
SCH#: 2001011129

Dear Paul Calderwood:

The State Clearinghouse submitted the above named Draft EIR to selected state agencies for review. On the enclosed Document Details Report please note that the Clearinghouse has listed the state agencies that reviewed your document. The review period closed on January 31, 2003, and the comments from the responding agency (ies) is (are) enclosed. If this comment package is not in order, please notify the State Clearinghouse immediately. Please refer to the project's ten-digit State Clearinghouse number in future correspondence so that we may respond promptly.

Please note that Section 21104(c) of the California Public Resources Code states that:

> "A responsible or other public agency shall only make substantive comments regarding those activities involved in a project which are within an area of expertise of the agency or which are required to be carried out or approved by the agency. Those comments shall be supported by specific documentation."

These comments are forwarded for use in preparing your final environmental document. Should you need more information or clarification of the enclosed comments, we recommend that you contact the commenting agency directly.

This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act. Please contact the State Clearinghouse at (916) 445-0613 if you have any questions regarding the environmental review process.

Sincerely,

Terry Roberts

Terry Roberts
Director, State Clearinghouse

Enclosures
cc: Resources Agency

SCH# 2001011129
Project Title Surfers Point Managed Shoreline Retreat
Lead Agency San Buenaventura, City of

Type EIR Draft EIR

Description The Surfers Point Managed Shoreline Retreat project would involve three primary components: 1) stabilization/restoration of an approximately 1,800- foot stretch of beach: 2) replacement of the damaged shorefront bike path and parking lot: and 3) provision of more paved parking at the Ventrua County Fairgrounds.

Lead Agency Contact

Name Paul Calderwood
Agency City of San Buenaventura
Phone 805 454-7727 **Fax**
email
Address 501 Poli Street
City Ventura **State** CA **Zip** 93001

Project Location

County Ventura
City Ventura
Region
Cross Streets Shoreline Drive, Figueroa Street
Parcel No. 0730231010,0730231030
Township **Range** **Section** **Base**

Proximity to:

Highways U.S. 101
Airports
Railways Southern Pacific
Waterways Ventura River, Pacific Ocean
Schools
Land Use Land Use: Recreation; Zoning: Parks; General Plan: Pulic Use

Project Issues Air Quality; Archaeologic-Historic; Coastal Zone; Economics/Jobs; Geologic/Seismic; Noise; Recreation/Parks; Traffic/Circulation; Vegetation; Water Quality; Landuse; Toxic/Hazardous

Reviewing Agencies Resources Agency; Department of Boating and Waterways; California Coastal Commission; Department of Conservation; Department of Fish and Game, Region 5; Department of Fish and Game, Marine Region; Department of Parks and Recreation; Department of Water Resources; Caltrans, District 7; Regional Water Quality Control Board, Region 4; Department of Toxic Substances Control; Native American Heritage Commission; Public Utilities Commission; State Lands Commission

Date Received 12/18/2002 **Start of Review** 12/18/2002 **End of Review** 01/31/2003

Note: Blanks in data fields result from insufficient information provided by lead agency.

Letter 1

COMMENTOR: Terry Roberts, Director, State Clearinghouse, Governor's Office of Planning and Research

DATE: February 3, 2003

RESPONSE:

The commentor acknowledges that the City has complied with State Clearinghouse review requirements for environmental documents. No response is necessary.

STATE OF CALIFORNIA GRAY DAVIS, *Governor*

CALIFORNIA STATE LANDS COMMISSION
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 **1-800-735-2922**
from Voice Phone **1-800-735-2929**

Contact Phone: **(916) 574-1880**
Contact FAX: **(916) 574-1885**

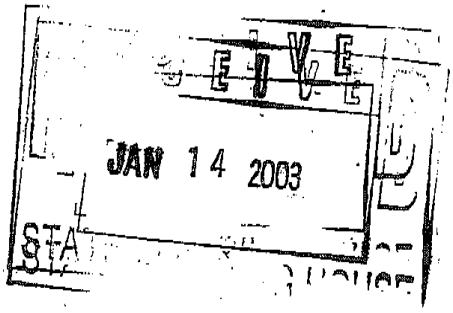
January 13, 2002

2

File Ref: SCH 2001011129
G 19-01

Mr. Paul Calderwood
City of San Buenaventura
501 Poli Street
Ventura CA 93001

Ms. Nadell Gayou
The Resources Agency
901 P Street
Sacramento, CA 95814



Clear
1-31-03

Dear Mr. Calderwood and Ms. Gayou:

SUBJECT: Draft Environmental Impact Report (EIR) for the Surfers Point Managed Shoreline Retreat, SCH 2001011129

Staff of the California State Lands Commission (CSLC) has reviewed the subject document. Under the California Environmental Quality Act (CEQA), the City is the Lead Agency and the CSLC is a Responsible and/or Trustee Agency for any and all projects that could directly or indirectly affect sovereign lands, their accompanying Public Trust resources or uses, and the public easement in navigable waters.

As general background, the CSLC has jurisdiction and authority over all ungranted tidelands, submerged lands, and the beds of navigable rivers, sloughs, lakes, etc. The CSLC has an oversight responsibility for tide and submerged lands legislatively granted in trust to local jurisdictions (Public Resources Code Section 6301). All tide and submerged lands, granted or ungranted, as well as navigable rivers, sloughs, etc. are impressed with the Common Law Public Trust.

The Public Trust is a sovereign public property right held by the State or its delegated trustee for the benefit of all the people. This right limits the uses of these lands to waterborne commerce, navigation, fisheries, open space, recreation, or other

recognized Public Trust purposes. A lease from the CSLC is required for any portion of a project extending onto State-owned lands that are under its exclusive jurisdiction.

The project provides for stabilization/restoration of an approximately 1800-foot stretch of beach, replacement of the damaged shorefront bike path and parking lot and provision of more paved parking at the adjacent Ventura County Fairgrounds. The preferred alternative (Alternative 5) involves the development of a cobble berm and the creation of a substantial sacrificial sand dune, revegetated with native dune habitat.

The major portion of the project located waterward of the mean high tide line will be located on sovereign lands, which have been legislatively granted to the City of San Buenaventura pursuant to Chapter 213, Statutes of 1935. However, as pointed out in Section S.4, Required Approvals, the westernmost portion (approximately 300 feet) will be located on ungranted sovereign lands, and a lease from the CSLC will be required. Enclosed is information related to the CSLC's application process. The application should be submitted to the CSLC, along with the noted fees, as soon as it is appropriate.

The CSLC is continuing to compile information related to certain coastal hazards, one of which is purported to be located on the beach near the mouth of the Ventura River. We would appreciate being notified if the City has any information related to the nature and precise location of the hazard should that be available now, during the construction of the subject project, or subsequent thereto.

Thank you for the opportunity to comment. Any questions concerning the CSLC's jurisdiction should be directed to Jane E. Smith, Public Land Management Specialist, at (916) 574-1892.

Sincerely,

Stephen L. Jenkins, Asst. Chief
Division of Environmental Planning
and Management

cc: Jane E. Smith

Letter 2

COMMENTOR: Stephen L. Jenkins, Assistant Chief, Division of Environmental Planning and Management, California State Lands Commission

DATE: January 13, 2003

RESPONSE:

The commentor describes the jurisdiction of the State Lands Commission and notes that, as discussed in the Draft EIR, a lease from the State Lands Commission will be required for the westernmost portion of the project. The commentor also requests receipt of any information about coastal hazards that becomes available. If the project is approved, the City will apply for a lease on the portion of the project that is within the jurisdiction of the State Lands Commission following completion of a final design for the project. Any additional information about possible coastal hazards that is compiled during the final design phase will be submitted to the State Lands Commission as part of that application.

Department of Toxic Substances Control

Edwin F. Lowry, Director
1011 N. Grandview Avenue
Glendale, California 91201

Vinston H. Hickox
Agency Secretary
California Environmental
Protection Agency

Gray Davis
Governor

3

January 27, 2003

Mr. Paul Calderwood
City of San Buenaventura
501 Poli Street
Ventura, California 93001

NOTICE OF COMPLETION OF DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE SURFERS POINT MANAGED SHORELINE RETREAT, SCH NO. 2001011129

Dear Mr. Calderwood:

The Department of Toxic Substances Control (DTSC) has received your Notice of Completion of a draft Environmental Impact Report (EIR) for the project mentioned above.

Based on the review of the document, DTSC comments are as follows:

1. The draft EIR states that remediation of known areas of contamination was conducted in 1989 prior to construction of the existing Surfers Point improvements. The EIR should include the name of the government agency that provides regulatory oversight during the conduct of the 1989 remediation. A

2. The EIR should identify the mechanism to initiate any required investigation and/or remediation for any site that may require remediation, and which government agency will provide appropriate regulatory oversight. B

3. If during construction of the project, soil contamination is suspected, construction in the area should stop, and appropriate health and safety procedures should be implemented. If it is determined that contaminated soils exists, the EIR should identify how any required investigation and/or remediation will be conducted, and which government agency will provide regulatory oversight. C

DTSC provides guidance for Preliminary Endangerment Assessment preparation and cleanup oversight through the Voluntary Cleanup Program (VCP). For additional

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our Web-site at www.dtsc.ca.gov.

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information on the VCP please visit DTSC's web site at www.dtsc.ca.gov. If you would like to meet and discuss this matter further, please contact Mr. Alberto Valmidiano, Project Manager, at (818) 551-2870 or me, at (818) 551-2877.

Sincerely,

Harlan R. Jeche

Harlan R. Jeche
Unit Chief
Southern California Cleanup Operations Branch – Glendale Office

Enclosure

cc: Governor's Office of Planning and Research
State Clearinghouse
P. O. Box 3044
Sacramento, California 95812-3044

Mr. Guenther W. Moskat, Chief
Planning and Environmental Analysis Section
CEQA Tracking Center
Department of Toxic Substances Control
P. O. Box 806
Sacramento, California 95812-0806

Department of Toxic Substances Control

Edwin F. Lowry, Director
1001 "I" Street, 25th Floor
P.O. Box 806
Sacramento, California 95812-0806

Winston H. Hickox
Agency Secretary
California Environmental
Protection Agency

Gray Davis
Governor

MEMORANDUM

TO: Sayareh Amirebrahimi, Branch Chief
Site Mitigation Program, Region 3

FROM: Guenther W. Moskat, Chief
Planning and Environmental Analysis Section

DATE: December 26, 2002

SUBJECT: TRANSMITTAL AND REVIEW OF LEAD AGENCY ENVIRONMENTAL DOCUMENTS FOR
Surfers Point Managed Shoreline Retreat - SCH # 2001011129

The Department has received the project listed above. The project is being referred to you as a:

- [X] Non-Essential/Information Item Only
- [ ] Sensitive Land Use Project
- [ ] Non-Sensitive land Use Project

A Courtesy Copy of the Notice of Completion Transmittal Form has also been sent to:

- [X] Permitting Branch (document not included)

The Department is encouraged to review this project and if applicable make comments pertaining to the project as it relates to hazardous waste and/or any activities which may fall within the Department's jurisdiction. Please have your staff: 1) conduct its review of the attached document prior to the end of the comment period; 2) complete the applicable items below stating whether the department made comments or that no comments were necessary for the document; and 3) return this original transmittal sheet and a copy of any response letter from your office to:

Planning & Environmental Analysis Section (PEAS)
CEQA Tracking Center
1001 I Street, 22nd Floor
P.O. Box 806
Sacramento, California 95812-0806
Fax (916) 323-3215

Date Comment Period Began: 12-18-02

Comments due to OPR: 1-31-03

Reviewed by: [signature] Date: 01/23/03

COMMENTS have been prepared and a copy has been provided to PEAS via:

- [X] Attached Copy
- [ ] FAX (916) 323-3215

DEPARTMENT OF TOXIC SUBSTANCES CONTROL
SOUTHERN CALIFORNIA REGION

DEC 30 2002

RECEIVED

NO COMMENTS NECESSARY because:

- [ ] All Department concerns have been adequately addressed; OR
- [ ] Project does not fall within the Department's areas of responsibility

Thank you for your assistance with this project. If you have any questions, please contact Ken Tipon, CEQA Tracking Center, at (916) 322-5266.

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption.
For a list of simple ways you can reduce demand and cut your energy costs ...

Letter 3

COMMENTOR: Harlan R. Jeche, Unit Chief, Southern California Cleanup Operations Branch - Glendale Office, Department of Toxic Substances Control

DATE: January 27, 2003

RESPONSE:

Response 3A

The commentor states an opinion that the EIR should include the name of the agency that provided regulatory oversight during the 1989 remediation program at Surfers Point. The remediation was conducted by McClelland Consultants under the supervision of the City of Ventura Public Works Agency.

Response 3B

The commentor states an opinion that the EIR should identify a mechanism to initiate any required investigation and/or remediation and identify the agency that would provide regulatory oversight. Mitigation Measure H-1 in Section 4.10 of the EIR specifies that, in the event potentially contaminated soils are encountered during excavation, on-site activity must stop until the contamination is investigated and, if necessary, remediated. Which agency would provide regulatory oversight would depend upon the nature and magnitude of any contamination found. Possible oversight agencies include the Ventura County Health Department, the Department of Toxic Substances Control, and the Regional Water Quality Control Board.

Response 3C

The commentor states an opinion that, if contamination is detected on-site, excavation activity should stop until appropriate health and safety procedures are implemented. The commentor also states that the EIR should indicate how such investigation would be conducted and which agency would provide oversight. As discussed in Response 3B, Mitigation Measure H-1 requires stopping work on-site in the event that contamination is discovered until the contamination is investigated and, if necessary, remediated. If contamination is detected, the most likely approach to remediation would be excavation and removal of the contaminated material, though the methods to be used for investigating and remediating contamination would depend upon the nature and magnitude of the contamination. Similarly, as discussed in Response 3B, the oversight agency for any necessary remediation would depend upon the nature and magnitude of the contamination. It should be noted that no soil or groundwater contamination problems are known to be present at Surfers Point.

State of California • The Resources Agency
Gray Davis, *Governor*

DEPARTMENT OF PARKS AND RECREATION
Ruth G. Coleman, *Acting Director*
Channel Coast District
1933 Cliff Drive
Suite 27
Santa Barbara CA 93109

4

February 3, 2003

Paul Calderwood
Community Development Department
City of San Buenaventura
501 Poli Street
Ventura, CA 93002-0099

Subject: Draft Environmental Impact Report – Surfer's Point Managed Retreat
SCH# 2001011129

Dear Mr. Calderwood:

California State Parks Channel Coast District staff has reviewed the above-referenced document and offers the following comments for the City's consideration. The proposed project consists of three components including stabilization/restoration of approximately 1/3-mile of beach, replacement or relocation of damaged shorefront bike path and parking and provision of additional parking at the adjacent Ventura County Fairgrounds. The project would accomplish this under one of five different alternatives and the "No Project" alternative. Alternative 5 is described as the "Preferred Alternative" supported by the Surfer's Point Working Group, and would include designating a "retreat zone" of 64-1/2 feet, relocating the existing Omer Rains Bikeway and Shoreline Drive landward of this zone, constructing a berm of imported cobble along the shorefront within the retreat zone, with a "sacrificial" dune planted with native dune vegetation created on top of much of the cobble berm.

This project is intended to culminate a lengthy and complex history of projects and land use planning issues associated with the Surfer's Point area that spans over two decades. As managing agency for the Omer Rains Bikeway, State Parks has participated on the Surfer's Point Working Group in an effort to help ensure the public's continued use and enjoyment of the bikeway and the shoreline to which it provides access. We greatly appreciate the sincerity of the Working Group's efforts, and the genuine concern the community has for supporting recreation and the natural resources of this beautiful site.

While we support the "Preferred Alternative" in concept, many questions remain. State Parks has a long-held policy of planned retreat where shoreline erosion has continued long-term adverse effect on man-made structures, especially where these may have been constructed too close to a dynamic shoreline. The proposed project is termed a "managed" retreat. It is important to be clear about what is being managed and we urge caution that this term should not imply that it is within any entity's power to manage the natural processes at work as much as the man-made structures affected by

them. Certainly the history of the bikeway in this area demonstrates that the natural processes cannot be managed by structural design.

Thus there are significant questions that arise about the long-term management and maintenance of any of the alternatives. California State Parks would encourage that the Final EIR address these questions by including a review of the context of the project that describes historic (i.e., pre-bikeway and Fairgrounds/Shoreline Drive improvements) conditions as compared to existing conditions, and a discussion of the reasons for the erosion of facilities constructed within this dynamic shoreline. The EIR would be stronger if the narrative included detail on the expected long-term maintenance and management of the structures and the potential for continued retreat – taking into consideration the challenges of funding public works projects. A review and analysis of past efforts that failed will help clearly identify a preferred, environmentally superior alternative, greatly enhancing the ability of the decision-makers to reach an informed decision, as intended by CEQA.

In many of our parks throughout the state, the public can observe the awesome power of nature simultaneously to create and destroy the shoreline environment in an endless cycle of building and breaking down. However it is difficult for taxpayer and land manager alike to appreciate nature's power when observing the destruction of public property and the loss of publicly funded infrastructure by natural forces. State Parks is concerned about both our collective long-term stewardship responsibilities and the best use of public funds. It is greatly heartening to see the City's efforts to support coastal recreation and access in the area without sacrificing those stewardship considerations.

We appreciate the commitment of all parties to staying engaged and working toward consensus. We trust the outcome will ultimately both benefit and be in the best long-term interest of the public. Thank you for the continuing opportunity to comment on and participate in this significant project. Should you have any questions, please do not hesitate to contact me at (805) 899-1400.

Sincerely,

Richard A. Rojas
District Superintendent

Letter 4

COMMENTOR: Richard A. Rojas, District Superintendent, California Department of Parks and Recreation

DATE: February 3, 2003

RESPONSE:

The commentor describes and expresses support for the preferred alternative and suggests that the Final EIR should include discussions of historic conditions at Surfers Point, past efforts at shoreline management that failed, and details on expected long-term maintenance and management requirements.

A detailed discussion of historic and present conditions along the shoreline at Surfers Point is included in Subsection 3.7 of Section 3.0, *Environmental Setting*, beginning on page 3-15. As discussed in that subsection of the EIR, the shoreline at Surfers Point is dynamic, with the location of the shoreline fluctuating episodically depending upon weather conditions. This constantly changing environment is the natural condition at Surfers Point and the fluctuation in the location of the shoreline is the primary reason for the failure of past attempts to construct permanent improvements near the shoreline.

Subsection 1.2 of Section 1.0, *Purpose and Need*, describes the failure of the previous effort to construct a bike path and parking lot at Surfers Point. Both of these facilities were damaged by wave erosion associated with unusually severe winter storms shortly after their completion in 1989. The reasons for the damage were the placement of the facilities within an area at risk from wave-related erosion, coupled with the lack of adequate protective devices for those facilities. The proposed relocation of the bike path and parking areas would move these facilities about 65 feet inland, thus reducing the potential for future erosion. Nevertheless, the relocated facilities would remain in an area potentially subject to wave-related damage. Thus, ongoing maintenance and renourishment of the shoreline would be needed to prevent erosion-related damage from occurring in the future. The actual amount of renourishment that would be needed cannot be predicted with any certainty, as it would depend upon future weather conditions. However, as discussed in Section 2.0, *Description of Project Alternatives*, it is estimated that, on average, about 10% of the cobble material to be deposited may erode away. The City is committed to long-term renourishment of the proposed cobble berm as necessary to maintain the berm and protect the relocated inland improvements.

SOURCE MANAGEMENT AGENCY

County of Ventura

Planning Division
Christopher Stephens
Director

February 3, 2003

5

Paul Calderwood, Senior Planner
City of San Buenaventura
Planning Division
501 Poli Street
P. O. Box 89
Ventura, CA 93001

FAX #: 653-0763

Subject: DEIR - Surfers Point Managed Shoreline Retreat

Thank you for the opportunity to review and comment on the subject document. Attached are the comments that we have received resulting from intra-county review of the subject document.

Your proposed responses to these comments should be sent directly to the commentator, with a copy to Kelly Scoles, Ventura County Planning Division, L#1740, 800 S. Victoria Avenue, Ventura, CA 93009.

If you have any questions regarding any of the comments, please contact the appropriate respondent. Overall questions may be directed to Kelly Scoles at (805) 654-5042.

Sincerely,

Christopher Stephens
County Planning Director

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Attachment

County RMA Reference Number 02-101

Letter 5

COMMENTOR: Christopher Stephens, County Planning Director, County of Ventura Resource Management Agency

DATE: February 3, 2003

RESPONSE:

The commentor notes that comments from County agencies are attached to his letter. The letters from the County Public Works Agency and the Ventura County Air Pollution Control District are included as Letters 6 and 7. Responses to those letters follow each individual letter.

PUBLIC WORKS AGENCY
TRANSPORTATION DEPARTMENT
Traffic and Planning & Administration

JAN 17 2003

MEMORANDUM
January 14, 2003

6

TO: Resource Management Agency, Planning Division
Attention: Kelly Scoles

FROM: Nazir Lalani, Principal Engineer

SUBJECT: Review of Document 02-101
Draft Environmental Impact Report
for Surfers Point Managed Shoreline Retreat
Lead Agency: The City of **San Buenaventura**

The Transportation Department has completed the review of the subject DEIR. The proposed project involves solving erosion problems at Surfers Point, maintain and improve beach access, rebuild the coastal bicycle/pedestrian path and provide adequate parking. The project is located at the Seaside Park in the City of San Buenaventura.

1. The DEIR indicates that this project will not have a significant site-specific impact on the County's Regional Road Network.

2. As mentioned in our memo dated 12-5-2001, the project has the potential to create a short term adverse traffic impact on County roads due to construction/truck traffic. The DEIR should address mitigation measures for any damaged or defaced asphalt concrete pavement on County roads during hauling operations. During the hauling of material to or from the sites, the trucks shall be covered to secure all material so that any nuisance or danger to the public from flying debris can be avoided.

3. The construction traffic generated by this project is temporary in nature. Therefore there will be no adverse impact on the County Regional Road Network due this project and no Traffic Impact Mitigation Fee is owed to the County.

4. If haul routes involve any County road, the County should be notified prior to the beginning of the project.

Please call me at 654-2080 if you have questions.

c: Jim Myers

NL-RH-BE-AB:sa
N:\Non_County\02-101 -VEN.doc

Letter 6

COMMENTOR: Nazir Lalani, Principal Engineer, Ventura County Public Works Agency, Transportation Department

DATE: January 14, 2003

RESPONSE:

The commentor notes that the project would have no long-term impact to the County Regional Road Network, but suggests that the Draft EIR should provide mitigation measures for any damage to County roads that occurs during construction. Specifically, it is suggested that trucks hauling material to or from the site should be covered and that the County should be notified prior to any hauling on County roads. State law requires that trucks hauling debris be covered to prevent material from falling out of the truck bed. All contractors would comply with this standard requirement. Haul routes for material have not been determined at this point as the source of cobble material is not known; however, the City will notify the County Public Works Agency if future hauling would involve heavy truck traffic on County roads.

7

VENTURA COUNTY
AIR POLLUTION CONTROL DISTRICT
Memorandum

FEB 10 2003

TO: Kelly Scoles, Planning DATE: February 7, 2003

FROM: Alicia Stratton AS

SUBJECT: Request for Review of Draft Environmental Impact Report for Surfers Point Managed Shoreline Retreat, City of Ventura (Reference No. 02-101)

Air Pollution Control District staff has reviewed the subject project draft environmental impact report, which is a proposal for the Surfers Point Managed Shoreline Retreat project. This project involves three primary components: (1) stabilization/restoration of an approximately 1,800-foot stretch of beach; (2) replacement of the damaged shorefront bike path and parking lot; and (3) provision of more paved parking at the adjacent Ventura County Fairgrounds. The site consists of approximately 1,800 linear feet of rocky beach and various beachfront facilities, including a beachfront bicycle/pedestrian path and a 352-space surface parking lot (223 of which are currently usable). The project is located at Seaside Park in the City of Ventura, along the south side of Shoreline Drive, between Figueroa Street and the Ventura River.

District staff concurs with the air quality impact analysis in Chapter 4.4 of the draft EIR, which concludes that none of the project alternatives would generate air pollutant emissions in the long run. The mitigation measures described on pages 4-12 and 4-13 will adequately minimize emissions of ozone precursors and fugitive dust.

If you have any questions, please call me at 645-1426 or email me at alicia@vcapcd.org.

Letter 7

COMMENTOR: Alicia Stratton, Planning, Ventura County Air Pollution Control District

DATE: February 7, 2003

RESPONSE:

The commentor states agreement with the conclusions of the air quality impact analysis and states that the recommended mitigation measures would adequately minimize emissions of ozone precursors and fugitive dust. No response is necessary.

Surfrider
Foundation
P.O Box 6010
San Clemente, CA 92674

8

City of San Buenaventura, Planning Division
501 Poli Street, Room 119
Ventura, California 93110

January 30, 2003

Re: Comments on Surfers Point Managed Shoreline Retreat Draft EIR

Dear Mr Calderwood:

The Surfrider Foundation is a non-profit grassroots organization dedicated to the protection and preservation of our world's oceans, waves and beaches. Founded in 1984 by a handful of visionary surfers, the Surfrider Foundation currently maintains over 37,000 members and 60 chapters across the United States and Puerto Rico, with international affiliates in Australia, Europe, Japan and Brazil.

Surfrider Foundation supports Alternative 5 (preferred alternative) with modifications based on the following concerns. In particular is the lack of recognition of significant impacts to the beach face due to excavation and construction on the beach below MLLW. Excavation of existing dunes for placement of buried cobble and replacement with artificial dunes is unwise. These impacts to vegetation and shoreline habitats should be avoided as much as possible. The project should take full advantage of the natural shoreline characteristics by placing sediments in the backshore area currently occupied by the parking lot, rather than along the active shoreline. Design of the cobble berm and dunes should be modified to minimize excavation of the existing beach and dunes and optimize opportunities to place sediment material in the backshore area in the western end of the project. A

We are concerned that the EIR process has not determined the nature of the fill material beneath the bike path, parking lot and Shoreline Drive. Since alternatives 1-3 and 5 all call for the removal of these structures, any impacts by subsurface materials must be analyzed. B

An alternative does not exist to simply relocate these structures without any additional shoreline alteration. This would be the ideal situation, but the EIR does not include the appropriate research to know the impacts of any potentially eroded materials. C

General trends in shoreline management are moving away from the use of armoring as a tool. The CA Draft Erosion Policy states that "relocating development away from the erosion hazard zone is the preferred option when responding to the eventual or imminent threat of damage." The general objectives of Surfers Point Retreat project recognize these facts. However no alternative accounts for the fact that this location is a dynamic shoreline that can be allowed to take a natural course given enough room for retreat. The Draft Erosion Policy does not suggest to retreat and stabilize, but to simply retreat to allow the shoreline its natural behavior. D

Surfrider Foundation's Beach Preservation Policy (attached) clearly states:

> *In areas where erosion threatens existing coastal development, the Surfrider Foundation advocates appropriate long-term solutions that maximize public benefit. These include... landward retreat of structures from dynamic shorelines.*

While the preferred alternative does perform retreat, it still attempts to unnaturally stabilize a shoreline through the use of the cobble berm subsequent renourishment. All attempts should be made to leave the natural beach face and existing dunes in their present state while providing the sufficient space for future shoreline movement. The goal should not be to move the structures to a safe location and keep the shoreline at a permanent location, but to move the structures to a location that allows for natural processes to occur as expected given the best scientific research available. If it is expected that the "Retreat Zone" will not satisfy these goals as designed, then changes should be made to do so.

There is also a larger issue at hand in these proceedings. The entire state is watching as you proceed. This Surfers Point project has the potential to serve as a state-wide model for a progressive approach to shoreline erosion response and habitat restoration. The Matilija Dam is slated for removal to restore much-needed sediment supply to this stretch of coast. The Ventura River, its watersheds, and ocean outlets and shoreline will provide guidance to other projects throughout the state and nation on how to restore our waters and coasts to their previous glory for the benefit of all. E

In conclusion, the Surfers Point Managed Retreat project and Draft EIR are moving California towards a more progressive mode of thinking in shoreline erosion response. Surfrider Foundation supports the goals and objectives of the project. We support Alternative 5 as the preferred alternative with modifications as described above. We also support and incorporate all comments made by the Ventura Chapter of the Surfrider Foundation and Paul Jenkin. F

Sincerely,

Mark Rauscher
Coastal Science Manager

Beach Preservation Policy
Ratified by BOD 4.17.99

Introduction:

The Surfrider Foundation recognizes that beaches are unique coastal environments with ecological, recreational and economic value. The Surfrider Foundation further recognizes that beaches are a public resource and should be held in the public trust. As human activities and development in coastal areas increase, the need for preservation of beaches becomes ever more apparent.

"Hazards" occur when naturally dynamic coastal processes encounter static human development, and when humans interfere with marine and littoral systems. The Surfrider Foundation is working proactively to promote conservation and responsible coastal management that avoid creation of coastal hazards or erosion problems. The Surfrider Foundation supports coastal research and science-based management of coastal resources to promote sustainable, long term planning and preservation of beach environments.

This policy is general in nature; the Surfrider Foundation recognizes that every specific case must be evaluated in the context of its local setting.

Whereas:

Beaches are often perceived as separate habitats, but in reality are small parts of much larger coastal ecosystems. These systems include watersheds, wetlands, and nearshore marine environments.

Beaches are dynamic in nature and change on multiple temporal and spatial scales. These changes are therefore difficult to predict with certainty.

Therefore:

The Surfrider Foundation hereby advocates actions to promote long term beach preservation for the benefit of the public.

Coastal areas that are free of development should be protected via proactive means that do not interrupt coastal processes. These include:

- Placement of beaches and beachfront lands in public trust
- Establishment of beach setbacks based on current and historical erosional trends
- Restoration of natural sediment transport processes in coastal watersheds

In areas where erosion threatens existing coastal development, the Surfrider Foundation advocates appropriate long-term solutions that maximize public benefit. These include:

- Landward retreat of structures from dynamic shorelines

Where landward retreat is not feasible, beach nourishment[1] projects may be considered, on a case by case basis, as viable alternatives for short-term beach preservation.

Under no circumstances does the Surfrider Foundation support the installation of stabilization or sand retention structures along the coastline. Such structures can protect existing coastline development but have no place in beach preservation.

[1] For the purposes of this policy, 'beach nourishment' is defined as: the placement of clean sand of the appropriate composition and grain size on the beach or within the littoral environment. Under no circumstances is the incorporation of sand retention devices of any form to be construed as included within this definition.

Letter 8

COMMENTOR: Mark Rauscher, Coastal Science Manager, Surfrider Foundation

DATE: January 30, 2003

RESPONSE:

Response 8A

The commentor expresses support for Alternative 5, but states an opinion that sediments should be placed in the backshore area currently occupied by the parking lot to avoid impacts to the beach face due to excavation and construction below the MLLW. The support for Alternative 5 is noted. That alternative is the preferred alternative of the Surfers Point Working Group. Alternative 5, which is a modification of a concept originally introduced by the Surfrider Foundation, has specifically been designed to maintain the current shoreline characteristics to the degree feasible, with cobble located primarily in the backshore area where the parking lot currently lies (see Figure 2-9 in Section 2.0 of the Draft EIR). However, in order to prevent wave activity from undermining the cobble berm, a toe below the MLLW would be needed. Although the existing dunes would be left alone to the degree feasible, construction of a berm that would withstand winter storm activity is expected to require removal of some existing sand and vegetation.

As discussed in Section 3.7 of the EIR, the shoreline at Surfers Point is dynamic, with the location of the shore changing from year to year as material is deposited from the adjacent Ventura River and eroded away by winter storms. In other words, the "natural" condition at Surfers Point is one in which the location and shape of the shoreline is constantly changing. The purpose of the cobble berm proposed as part of Alternative 5 is to provide protection against a further retreat of the shoreline that would damage the relocated bike path. However, even if the existing sand dunes were unaffected by the required excavation, the shoreline will continue to move in and out over time (with changes to the shape and location of the dunes) as part of the natural coastal process at Surfers Point.

It should also be recognized that there are no sensitive (threatened, endangered) plant or wildlife species in the area that would be affected by excavation of material or removal of vegetation. As discussed in Section 4.3 of the Draft EIR, the remnant dunes at Surfers Point lack native plant species. Re-creation of more substantial dunes and planting of native vegetation as envisioned as part of Alternative 5 is expected to improve the biological value of the dunes at Surfers Point. Although there would still be potential for future wave-related damage to the dunes, implementation of the proposed project is expected to improve the overall stability of the dunes as compared to the current condition at Surfers Point. Therefore, contrary to the commentor's assertion that the project would have significant adverse biological impacts, Alternative 5 is anticipated to have generally beneficial effects.

Response 8B

The commentor states an opinion that impacts related to subsurface materials need to be analyzed. As discussed in Section 4.10 of the Draft EIR, the fill material that was used for the 1989

construction of the existing improvements at Surfers Point was determined at that time not to be contaminated and no known incidents have occurred since 1989 to suggest that contamination of the fill material has occurred. Nevertheless, about 5 feet of subsurface soil below the existing fill layer (an estimated 19,000 cubic yards of material) would be temporarily excavated and screened for debris in conjunction with removal of the existing bike path and parking lot under Alternatives 2, 3, and 5. Clean material would be used as backfill to restore the pre-existing grade, supplemented as necessary with cobble and/or sand. Alternative 5, the preferred alternative, also calls for the replacement of non-beach-grade material and thus would alleviate concerns about migration of solid materials in surface waters to an even greater degree.

Response 8C

The commentor states that an alternative does not exist to relocate the structures (bike path and parking lot) without additional shoreline alteration and states that the EIR does not include information to know the impacts of any potentially eroded materials. In fact, the EIR does examine an alternative (Alternative 1) that would simply relocate the bike path and parking area with no further changes to the shoreline. In the absence of a cobble berm to provide protection of the relocated bike path, that alternative includes a buried seawall that would protect the bike path. As discussed in Section 4.10 of the Draft EIR, it is possible that solids such as glass, concrete, and rebar could migrate into open waters under Alternative 1 if they are present in existing fill material. Although this is not considered a significant health hazard, the failure to remove any such materials that may be present is a disadvantage of Alternative 1 relative to Alternatives 2, 3, and 5.

Response 8D

The commentor states an opinion that the California Draft Erosion Policy does not suggest shoreline retreat and stabilization, but rather suggests shoreline retreat to allow the shoreline its natural behavior. The commentor also states an opinion that the goal of the proposed project should be to move onshore structures to a location that allows natural coastal processes to occur. These opinions are noted. As discussed in Section 4.7 of the Draft EIR (on page 4-28), the Draft Erosion Policy to which the commentor refers simply states the following with respect to relocation of existing structures inland:

> *In cases where existing development is threatened, a first priority should be to evaluate the feasibility of locating such development.*

By relocating the existing bike path about 65-feet inland and moving the shorefront parking lot inland of the relocated path, Alternatives 1-3 and 5 appear to implement this first priority. It is true that relocating the bike path even further inland would likely have even greater benefits with respect to shoreline protection. However, the project analyzed in the Draft EIR represents the compromise of the various parties involved in the managed shoreline retreat project. Relocation of the bike path further inland than shown under Alternatives 1-3 and 5 would encroach into the Fairgrounds property and therefore would not meet the property owner's objectives for the project. In any event, it is important to remember that it is not the EIR's purpose to consider every imaginable alternative, but rather to examine the effects of the project that is proposed as well as a reasonable range of alternatives. The City has no obligation to study alternatives involving further retreat of the shoreline as all of the

alternatives studied in the Draft EIR (including the preferred Alternative 5) would have beneficial effects with respect to shoreline protection as compared to the current condition at Surfers Point.

Response 8E

The commentor states an opinion that the Surfers Point project can serve as a model for progressive approaches to shoreline erosion response and reiterates support for the general project goals and Alternative 5 specifically. The commentor also states support for comments made by the Ventura County Chapter of the Surfrider Foundation and Paul Jenkin. The support for the project is noted. It is the City's intent to implement a project that will serve as a model for shoreline erosion response. Responses to Mr. Jenkin's comments follow Letters 9 and 10.

Surfrider Foundation
Ventura County Chapter
239 W Main St., Ventura, CA 93001 (805) 667-2222

9

Paul Calderwood, Senior Planner
City of Ventura, Planning Division
501 Poli Street, Room 117
Ventura, CA 93110

February 2, 2003

RE: "Surfers Point Managed Shoreline Retreat" Draft Environmental Impact Report

Dear Mr Calderwood,

Enclosed are our comments on the "Surfers Point Managed Shoreline Retreat" Draft Environmental Impact Report, as well as a letter from the National Office of the Surfrider Foundation.

As you know, the Surfrider Foundation has been part of the Surfers Point Working Group since its inception in 1995. In fact, the founding members of the Surfrider Foundation participated in a "Surfers Workshop" way back in 1987, when the bike path and parking lot were originally being planned. Our organization remains committed to a long-term solution to the coastal erosion problems that resulted from the construction of these popular facilities, just as we have for the past 15 years. A

The Surfrider Foundation strongly supports the concept of "Managed Retreat" as it applies to relocating damaged infrastructure inland. We also support the conceptual "Preferred Alternative" identified in the Draft EIR.

However, we do have significant concerns relating to specific design details within the Preferred Alternative, as well as the disclosure of environmental impacts associated with all of the alternatives presented in the EIR. These issues are discussed at length in our written comments, along with proposed mitigation measures and suggestions for the Final EIR. B

We have consistently worked in good faith to provide timely and technically sound input to this process. Our comments on this Draft EIR reflect our commitment to our local surf break and the community that relies upon this resource. C

We hope that our comments at this time are helpful, and we request that our input be solicited and considered during the Final Design process. Please contact me with any questions.

Sincerely,

A. Paul Jenkin, M.S.
Environmental Director
Surfrider Foundation - Ventura County Chapter
(805) 648-4005 pjenkin@sbcglobal.net

Surfrider Foundation comments on
Surfers Point Managed Shoreline Retreat
Draft Environmental Impact Report

I. Summary of Surfrider Foundation concerns:

Upon review of the "Surfers Point Managed Shoreline Retreat" Draft EIR, we have several very significant concerns about the Environmental Impact Analysis. We present a summary of these here, followed by some brief general comments and an in-depth discussion by section below.

We believe the following measures would incur Significant Impacts under CEQA:

D

1) **Placing large quantities of cobble in the surf zone or on the recreational beach.**
2) **Excavation within the intertidal zone below MLLW.**
3) **Excavation of the existing beach and remnant dunes.**
4) **Stormwater discharge using the storm drain near the rivermouth.**
5) **Reconstructing existing infrastructure as proposed in Alternative 4.**

We offer the following mitigation measures to avoid these impacts:

Suggested Mitigation Measure 1: Significant Impacts to coastal resources can be avoided by placing sediments in the backshore area currently occupied by the parking lot, rather than along the active shoreline.

Suggested Mitigation Measure 2: Design of the cobble berm and dunes should be modified to minimize excavation of the existing beach and dunes and optimize opportunities to place sediment material in the backshore area.

Suggested Mitigation Measure 3: Fairgrounds runoff should be treated and directed to the Figueroa storm drain

We also offer the following recommendations for the Final EIR:

Recommendation 1: The Noble (2000) report should be included as an appendix to the EIR.

Recommendation 2: The final design should attempt to maximize the retreat zone in order to increase the life expectancy of the managed retreat project.

Recommendation 3: The information in the EIR relating to the "Cobble Nourishment Demonstration Project" should be updated, and a quantification of longshore transport from the demonstration site should be performed.

Recommendation 4: A lifespan and associated cost analysis should be performed to compare the various alternatives.

Recommendation 5: The "No Retreat" Alternative 4 should be removed from the "Surfers Point Managed Retreat Project" EIR.

II. General Comments:

The Surfers Point Managed Retreat project presents an unprecedented opportunity to restore and enhance a semi-urbanized shoreline to provide a long-term solution to coastal erosion problems. We believe that this project will provide a state- and worldwide example for other coastal communities experiencing similar issues. E

The **Surfrider Foundation** strongly supports the concept of "managed retreat" as it applies to relocating damaged infrastructure inland. We also support the conceptual "Preferred Alternative" identified in the Draft EIR. However, we do have significant concerns relating to specific design details as well as the disclosure of environmental impacts associated with the various alternatives presented in the EIR.

This project potentially invokes a paradigm shift in coastal management. Therein lies a fundamental flaw with the existing Draft EIR and coastal studies: these documents are written without a sensitivity to the natural processes at work in one of the most dynamic geographic features on the planet – an oceanic river delta. Throughout the EIR, the fundamental benefits of relocating the damaged infrastructure are overlooked and under-emphasized, while other "shore protection" measures are emphasized. It is not true that Shoreline Drive is in imminent danger from shoreline erosion.

The managed retreat project provides the following fundamental restoration opportunities:

1) Maximize a retreat zone to provide a long term solution
2) Remediate the artificial fill that was placed beneath parking lot
3) Restore the remnant dunes to provide an additional buffer to storm waves
4) Work with cobble and sand to enhance and restore the natural processes

It is our position that a successful managed retreat project must:

1) Remediate existing problems
2) Do no further harm
3) Qualify for applicable permits
4) Qualify for public funding
5) Satisfy public needs and concerns

It is unfortunate that the design and environmental documentation read like an attempt to engineer and justify a shore protection structure, rather than to evaluate an unprecedented restoration opportunity. The engineering design lacks sufficient analysis to justify or compare the proposed measures, and often contradicts the conclusions and recommendations of the consultants and working group members. The Project Alternatives are not developed in a logical or scientific manner, but rather presented as a "menu" of options from which to select. Because of this, although a preferred alternative is identified, this recommendation is not based upon any environmental considerations. F

Most importantly, the EIR lacks sufficient analysis of significant environmental impacts, and fails to provide mitigation measures for these impacts. These impacts and mitigation measures are outlined above, and a detailed discussion is provided below under specific comments for each section of the EIR. G

We concur with the Working Group consensus that Alternative 5 provides the best opportunity to realize a long-term solution to erosion problems at Surfers Point. This alternative will provide the greatest life span and maximize the restoration opportunities. The Preferred Alternative will also have the least environmental impact of any of the project alternatives, as long as the proposed mitigation measures are applied. H

III. Specific Comments:

The following detailed comments are arranged by section as they appear in the EIR:

2.3 CHARACTERISTICS OF PROJECT ALTERNATIVES

The Project Alternatives are not developed in a logical or scientific manner, but rather presented as a "menu" of options from which to select. I

A logical development of the project alternatives would point out environmental impacts associated with Alternative 1, and explain the reasoning behind Alternative 2, and so on, until an environmentally preferred alternative is developed. For instance, Alternative 1 enacts a retreat zone, but does not provide any beach restoration measures, and includes a seawall that would not likely meet permit approval. Alternative 2 provides some beach restoration measures, but further evaluation identified significant impacts with the cobble mattress design. Alternative 3 refined the cobble mattress, but has significant impacts to the dunes and sandy beach. Alternative 5 further refines the cobble berm design, while also providing complete remediation of the artificial fill and enacting a comprehensive dune restoration program, hence is environmentally preferred.

The proposed alignment of the bike path in Alternatives 1-5 does not fulfill project objectives to realize a retreat zone seaward of Shoreline Drive. J

- *To restore the lands seaward of Shoreline Drive to more natural beach habitat*
- *To provide a long term shoreline protection solution for Seaside Park and all improvements landward of Shoreline Drive*

The original intent of this project was to retreat to Shoreline Drive and provide the maximum retreat zone:

> *Relocation of Improvements: In conjunction with the shoreline protection, all of the existing infrastructure improvements seaward of the Shoreline Drive right-of-way, including the damaged bike path and a 352-space parking lot, would be removed.*

In the course of Working Group discussions, compromises were made without the implications being made clear to the group. Specifically, the lifespan of this project will be determined to a great extent by the width of the retreat zone.

For example, Noble (2000) suggests that the average annual recession rate of the shoreline in this area is approximately 1 foot per year. This would suggest that an 80-foot retreat zone would "buy" perhaps 80 years. Placing the bike path seaward of Shoreline Drive reduces the retreat zone by 15 feet, "costing" 15 years of project life. A higher erosion rate would mean a greater impact to this reduction in retreat zone width. K

Recommendation 1: The Noble (2000) report should be included as an appendix to the EIR. L

Recommendation 2: The final design should attempt to maximize the retreat zone in order to increase the life expectancy of the managed retreat project. M

Recommendation 4: A lifespan and associated cost analysis should be performed to compare the various alternatives. N

4.0 ENVIRONMENTAL IMPACT ANALYSIS:

The report, "Surfers Point Park, Managed Plan for Shoreline Retreat," Noble (2000) is not included in the list of technical studies referenced by the EIR. Throughout the EIR, information from this report is used, but the original document with its conclusions is not made available to the reader. O

Recommendation 1: The Noble (2000) report should be included as an appendix to the EIR.

4.1 LAND USE

Engineered cobble berms are "shoreline protection devices". P

"...the buried seawall that would be constructed under Alternatives 1 and 2 is a shoreline protection device..."

The cobble mattress in Alternative 2 as well as the engineered cobble berm of Alternatives 3-5 may also be considered "shore protection" devices. Although these dynamic structures are designed to provide a more natural response to wave action, the nature of their design and placement may have impacts similar to a more traditional coastal structure. For instance, wave reflection as occurs from rip-rap revetments placed within the wave runup zone would also occur with a similarly located "cobble berm". See comments on COASTAL GEOLOGY.

600-700 additional parking spaces would impact "fragile resources." Q

Alternatives 1-3 and 5 would all include paving of the existing 600-700 space dirt lot at the Fairgrounds

Paving the existing 600-700 space parking lot at the Fairgrounds would greatly increase public impacts to the beach and dunes. This is *not "consistent with fragile resource protection"* as required by the General Plan.

Conversely, *"Adequate ground level parking"* as required by the General Plan will only be provided if the proposed plans for parking along Shoreline Drive are carried out. Parking should be provided either on-street or in the dirt lot area under any final plan for the area.

4.3.1 Impact Analysis
a. Marine Resources:

There are Significant Impacts from placing large quantities of cobble in the surf zone: R

> *"...placement of an estimated 25,400 tonnes (28,000 tons) of cobble and 8,410 cubic meters (11,000 cubic yards) of sand within the upper intertidal area of the project..."*

Although it is true that turbidity is high due to fine suspended sediments from the Ventura River following winter storms, deposition of cobble into the surf zone during dry periods or summer months would cause significant impacts to ocean water quality. In addition, the inclusion of fine sediments in the cobble nourishment "demonstration project" demonstrated that this action may have long term effects as this fine material is slowly exposed and washed into the surf zone.

Excavation within the intertidal zone below MLLW in Alts 3 & 5 is a Significant Impact: S

> *"Alternative 3. ...development of a more substantial berm (approximately 48,990 tonnes [54,000 tons] of cobble) with a toe below the elevation of MLLW would increase the amount of disturbance within the marine environment."*

The disturbance caused by heavy equipment excavating in the surf zone below MLLW is a significant environmental impact. This action is neither necessary nor justified for the construction of a "dynamic revetment" – the artificial cobble berm would naturally merge with the cobble substrate under wave action without such a heavy disturbance.

> **Suggested Mitigation Measure 1: Significant Impacts can be avoided by placement of sediment material in the backshore area, rather than along the active shoreline.**
> - Cobble should be placed within the excavated area beneath the existing parking lot, rather than on the shoreline.
> - The placement of Sand Dunes in the backshore area will not affect water quality but rather enhance Marine Resources by increasing terrestrial habitat adjacent to the shoreline for beneficial flora and fauna.

b. essential fish habitat T

> **Steelhead Trout:** this federally listed endangered species has historically been caught along the shoreline at Surfers Point from the pier to Emma Wood State Beach. The adjacent estuary is critical habitat for this species as it migrates to and from the ocean. The actions of Alternatives 2-5 would affect water quality and potentially affect steelhead trout.

c. **Sensitive Species and Critical Habitat:** U

> As mentioned above, adjacent waters are critical habitat of the steelhead trout and other sensitive species. However, the EIR states that *"none of the project alternatives are expected to alter the hydrologic nature of this upstream and up-littoral current area."*

The currents in the area adjacent to the rivermouth are especially dynamic. For instance, during summer, south swells reverse the littoral current. Disturbance to adjacent waters could have an adverse impact due to ever changing wave, wind, and tidal conditions.

Suggested Mitigation Measure 1: Significant Impacts can be avoided by placement of sediment material in the backshore area, rather than along the active shoreline.

d. Impacts to Dune Remnant:

V

"The area was initially fenced with temporary construction fencing, followed by the installation of a split rail fence... but the increase in visitor beach access... essentially eliminated the coastal dune community in the area."

It is important to note that **the area was NOT initially fenced.** In fact, lack of fencing when the parking lot was initially constructed was one cause of the impacts from increased visitor access from 1989-1991. Because of the impacts to the dunes, the Coastal Conservancy funded a planning process and grant to construct of the dune fences. This was the first step in the "Dunes Restoration Project" (October 1991). Although subsequent restoration steps, including a revegetation program, were never carried out, the dune fences have been successful in allowing natural (although non-native) revegetation in the sandy areas. The designated walkways have proved successful in directing and concentrating foot traffic.

Although the native vegetation and habitat has been severely degraded, it is important to note that these dunes provide more than habitat values. They also provide natural shore protection and aesthetic benefits. Therefore:

Impacts associated with the excavation of the Remnant Dunes with Alternatives 2-5 would have significant impacts to COASTAL GEOLOGY and AESTHETICS. See comments in those sections below.

e. Landscape Trees and Shrubs:

W

"Reconstruction of Shoreline Drive and removal of the parking lot would remove an estimated 76 New Zealand Christmas Trees..."

Recent information suggests that the assumptions upon which this design was made may no longer be valid. Specifically, this was the Fairgrounds desire to maintain 3 lanes of traffic plus parking. Although these trees are non-native, they are well established and attempts should be made to adapt the final design to accommodate them.

f. Wetlands

X

"Alternatives 2-5 would involve temporary discharge of material into intertidal areas that are regulated as marine wetlands."

The impacts relating to discharge of material into the intertidal areas **are not the same** for each of the alternatives. For instance, frequent re-nourishment of a cobble berm as required for Alternatives 2 & 4 would result in greater impacts to wetlands. This is

discussed further under **Sedimentation.** Impacts may be mitigated through design modifications:

Suggested Mitigation Measure 1: Significant Impacts can be avoided by placement of sediment material in the backshore area, rather than along the active shoreline.

4.6 Water Resources

a. hydrology

Y

"rerouting runoff directly into the ocean would improve water quality in the estuary"

But this could significantly impact the recreational waters at Surfers Point.

b. Water Quality

Shoreline Management Impacts:

Z

p4-16 *"As discussed in Section 4.3, Biological Resources, the temporary increase in ocean water* ***turbidity is expected to adversely affect*** *any sensitive marine biological resources."*

We concur with the statement as written. See comments on Biological Resources above relating to long term impacts and recurrent impacts from the differing renourishment requirements of the alternatives.

Fairgrounds Parking Lot impacts:

AA

"...would involve abandonment of the Ventura River outfall and re-routing of all discharges directly to the ocean."

The storm drain improvement plan (Fig 4-1) suggests using the existing storm drain outfall into ocean near rivermouth. **Discharge of stormwater directly into the surfing area would impact water quality in recreational waters.**

The manhole and pipe infrastructure within the "retreat zone" and intertidal is slated for removal with the retreat projects. If this plan is proposed, the cost of re-establishment and maintenance should be included in cost estimates.

Pumping runoff through existing storm drain near rivermouth does not fulfill project objectives that would include abandoning all infrastructure seaward of Shoreline Drive.

Suggested Mitigation Measure 3: Fairgrounds runoff should be treated and directed to the Figueroa storm drain

AB

It should be noted that this project presents an opportunity to address the chronic water quality problems at Surfers Point. An area-wide storm runoff plan should be implemented wherein runoff is directed to the Figueroa storm drain, where all urban runoff could be treated and filtered before discharge into the ocean water. An opportunity to enhance the quality of recreational waters at Surfers Point could be realized by 1) Redirecting dry

weather flows to sanitary sewer and/or 2) redirecting stormwater further downcoast where body contact recreation is less.

Current actions by the Regional Water Quality Control Board include both dry and wet weather TMDL's for bacteria in Santa Monica Bay. Attention to this issue during the reconstruction of Surfers Point and in conjunction with the Promenade reconstruction will address this issue now, rather than awaiting future mandates.

4.7 COASTAL GEOLOGY

a. General Performance.

b. Shoreline Protection

These two sections describe how the Project Alternatives may help protect the bike path, parking lot, and Shoreline Drive. This is not an environmental impact, but an engineering design consideration. Most importantly, it should be made clear that the protection of upland improvements does not "protect" the shoreline. Any form of shoreline armoring designed to protect upland infrastructure has an impact on the beach. Is the potential loss of a bike path or parking lot a "coastal geology" impact? This is perhaps more appropriately a recreational impact. AC

Furthermore, the discussion of each of the Alternatives fails to mention the true merits of this project. **Retreat from the shoreline is the primary objective of the project.** Retreat also provides the greatest single benefit, and provides "Shoreline Protection" by relocating infrastructure out of harms way, reducing or eliminating the need for shoreline armoring. Verbage such as *"and, to a lesser extent, the increased setback from the existing shoreline"*, and *"(4) the increased setback from the existing shoreline"* fail to acknowledge that this action alone would provide decades of maintenance free "shoreline protection."

Most importantly, this paradigm is carried over into the apparent justification for the "no retreat" alternative:

Alternative 4

Considering the intent of this project to effect a "managed retreat" and restore the beach, the content of this section seems quite inappropriate. First of all, Alternative 4 does not meet project objectives. Secondly, this section appears to have been written to provide false justification for the "no retreat" alternative. Information was taken out of context from a separate report, **"Surfers Point Park, Managed Plan for Shoreline Retreat"** (Noble 2000) conducted for the Managed Retreat Project. This report with its Appendix A should be included an appendix to the EIR. AD

The EIR states:

AE

"Based on the long-term stability of the cobble berm at Emma Wood State Beach..."

The Emma Wood shoreline is receding at a rate greater than suggested by the study – this may be directly evidenced by the WWII gun turrets that were constructed in the dunes in 1940's are now over 100 feet in the intertidal zone.

"...and the promising performance of the cobble berm test section at Surfers Point" AF

This statement was based upon one short mild winter storm season. Recent storms (winter 2002-2003) have transported a major portion of this berm alongshore, as witnessed by the reduced berm profile and the increased quantity of cobble along the city and state beach. The city is currently applying for permits to renourish this artificial berm. The EIR should present the most recent profiles (ideally at the end of this storm season) and provide a realistic estimate of future renourishment requirements for this approach.

Recommendation 3: The information in the EIR relating to the "Cobble Nourishment Demonstration Project" should be updated, and a quantification of longshore transport from the demonstration site should be performed.

"... the maximum and minimum shoreline positions in the project area differed by as much as 868 ft..." AG

This statement is based upon the maximum historic accretion at the rivermouth that resulted from the 1969 "El Nino" floods:

"The shoreline change that occurred in 1969 stands out in the data set. This data corresponds to the second highest discharge of record when a peak flow of 58,000 feet per second was gauged. Sediment delivery from the river contributed to the shoreline advanced almost 600 feet that was noted at the west end of Surfers Point near the river mouth (Station 9,000). (Noble, 2000) (pA-2):

This data **does not infer** the potential for erosion of the existing beach. In fact:

"...the shoreline at Surfers Point fluctuates widely with the episodic flood transport of sand from the Ventura River. Flood years bring more sand than the waves can transport, forming an accretionary buldge that is moving easterly across the delta and along Surfers Point in the form of a travelling accretion wave (Inman, 1987)." Appendix C p11

And:

"Using the rates summarized in Figure A-2 for the past 70 years it may be concluded that the backbeach line at the river mouth will retreat 75 feet in the next 50 years and 150 ft in the next 100 years; the backbeach line between there and the present position of Surfers Point will retreat half those amounts; and the backbeach line at Surfers Point will advance 45 ft and 90 feet respectively in the next 50 and 100 years. Using this approach east of the point, the backbeach line will retreat perhaps 10-15 ft in 50 years and 20 – 30 feet in 100 years." (Noble, 2000. (p A-5))

Given this information, the following statement is also false:

"retreat associated with Alts 1-3 and 5 would provide only a marginal improvement in shoreline protection as compared to the repair of the bike path.."

The EIR quotes the Ventura Comprehensive Plan: AH

No structures, other than those incidental to general public recreational purposes, and public access to the site and along the shore and the Fairgrounds, may be permitted in the oceanfront corridor. Such a corridor shall be at least 250 feet in depth, as measured from the top of the natural embankment, as officially established through a land survey. Public uses and development, including a public roadway, walkways, bikeways, parking, camping, and the like, which do not involve permanent buildings, may be permitted in the oceanfront corridor. The public roadway has been sited to be set back sufficiently to mitigate the need for any shoreline protection device, as determined by a geotechnical study of shoreline and erosion processes, for a minimum 50-year period, as measured from the top of the natural embankment. (EIR p4-2)

This policy was based upon a prior study (Moffatt & Nichols) and infers that the rate of erosion at Surfers Point is such that Shoreline Drive, while placed within the 250 foot "oceanfront corridor," has a minimum lifespan of 50 years without a seawall.

As quoted above, the **Noble (2000)** study estimates that shoreline erosion for the next 50 years would be a maximum of 75 feet at the rivermouth and only 10-15 feet further east of the point.

This information indicates that **there IS a significant benefit to the alternatives that include a retreat.** The proposed 65 ft retreat zone with Alts 1-3 and 5 would provide at least a 40-year lifespan in the areas of highest erosion **even without the proposed beach nourishment and restoration measures.** Indeed, the restoration of the dune complex and fortification of the backshore as proposed in the Preferred Alternative would provide significant extension of this lifespan.

During the scoping phase of the project the **Surfrider Foundation recommended that a lifespan analysis of the various alternatives be performed.** (See comment on section 6.1) The current cost analysis does not include future renourishment and other protection measures, only one-time construction costs. The EIR makes no attempt to quantify the relative impact to project lifespan from the various retreat, renourishment, and shore protection measures. It is critical that this information be provided in order that the decision makers and the public may understand the true costs and benefits of the proposed projects, and how long each may last in order to make an informed decision. AI

Recommendation 4: A lifespan and associated cost analysis should be performed to compare the various alternatives.

Because of the gross errors and misrepresentation of the facts relating to the discussion of Alternative 4, and the fact that it does not fulfill the project objectives or represent the consensus of the working group, we offer the following recommendation: AJ

Recommendation 5: The "No Retreat" Alternative 4 should be removed from the "Surfers Point Managed Retreat Project" EIR.

Unless all references to this Alternative can be re-assessed to provide an honest disclosure of its environmental impacts, it should be removed from the document. The assertion that there is **no environmental impact** to rebuilding the bike path and dumping rocks as needed to protect it is false. To expect that the future will differ from the past is ridiculous. The bike path and parking lot were constructed too close to the beach on fine-grained artificial

fill material. It didn't last in 1989, and it won't last in the future – with or without the rocks.

c. Sedimentation:

The sedimentation analysis fails to acknowledge that each of the alternatives would have different impacts. The discussion lumps together Alternatives 2 and 5, and Alternatives 3 and 4, but uses the following rationale for each Alternative: AK

- *The rate of cobble transport is low (much lower than that of sand);*
- *Cobble suitable for installation in a mattress would be less susceptible to wave induced erosion than the mixture of cobble and sand that is currently discharged from the Ventura River mouth; and*
- *The placement of cobbles on the beach face would be analogous to the episodic delivery of cobbles from the Ventura River during flood years, which has not exerted a significant negative impact to San Buenaventura State Beach. conditions.*

This is a direct contradiction of the previous "Shoreline Protection" section, which states:

> *It should be recognized that the cobble mattress and sacrificial sand dune as envisioned would be susceptible to undermining and dispersal due to the absence of a substantial toe below the elevation of MLLW. Consequently, relatively frequent maintenance would likely be required as compared to the cobble berm of Alternatives 3, 4, and 5 to replenish the mattress during those periods when shoreline retreat predominates in the project area.*

Also, in Appendix C, it is stated that with the cobble mattress of Alternative 2 *"the prominent salient between East and West beaches will cause longshore sediment transport to be deflected offshore."* This suggests that the cobble mattress in Alternative 2 would have significant impacts to the natural sedimentation processes. Also, the configuration of Alternative 4 is most similar to Alternative 2, and would likely have similar impacts. AL

In comparison, much of the cobble berm in Alternatives 3 & 5 is either buried, or located further back from the active shoreline. This approach would reduce the sedimentation impacts as compared to the other alternatives. Most importantly, if no material is placed on the active beach, as we suggest, impacts to sedimentation will be minimized.

Furthermore, the bulleted points above are inaccurate descriptions of the impacts from an engineered cobble/boulder mattress/berm. Specifically: AM

1) Those alternatives that place "cobble" directly onto the beach, in the intertidal and swash zone, will be subject to wave action and thus experience erosion and downcoast transport. It is true that the rate of transport of cobble is less than that of sand, but observations of the **"Cobble Nourishment Demonstration Project"** over the past two years indicate that a significant proportion of **cobble migrated down into the cove and past the pier. This RAS exerted a significant negative impact to San Buenaventura State Beach, as well as the City of Ventura**, who both remove rocks from the beach during the summer months.

The demonstration project has shown that cobble placed on the shoreline migrates downcoast within a couple of years.

2) **The cobble berm/mattress will have an affect on the presence or absence of beach sand.** Science has demonstrated that increased wave reflectivity increases the mean (time-averaged) undertow, and would result in increased offshore sediment transport. This is predicted by cross-shore sediment transport models (Bagnold, 1966; Bowen, 1980; Bailard, 1981). The EIR should study this impact for all 6 alternatives. AN

3) **The comparison between the natural delivery of sand and cobble from the river to any of the engineered cobble structures is simply not valid.** The natural processes, including fluvial and littoral fluid forces, sort and arrange the sediments according to the dynamic conditions at the rivermouth. Much of this "*mixture of cobble and sand that is currently discharged from the Ventura River mouth*" builds the submerged portion of the river delta and/or forms a spit after large flood events. This spit gradually migrates downcoast due to wave induced littoral drift, and seasonal wave action generates cross-shore (on- and off-shore) sediment migration. **At no time would natural processes deliver cobble and boulders to the shoreline hundreds of feet downcoast from the rivermouth in a manner analogous to a dump truck.** AO

4) The **"Cobble Nourishment Demonstration Project"** included a relatively large percentage of boulders (greater than 8"). As cobble is transported along shore the boulders are left to slump onto the beach. **These boulders left in the shallow water create an unnatural hazard to those who surf or swim.** AP

5) **The cumulative impacts from future re-nourishment are underestimated.** It is clear from the discussion above, that further "re-nourishment" of cobble and boulders is equivalent to selectively armoring the shoreline and will eventually lead to the creation of a boulder revetment. Those alternatives (2, 4) that would require the most renourishment would have the greatest impact. AQ

Recommendation 2: The information in the EIR relating to the "Cobble Nourishment Demonstration Project" should be updated, and a quantification of longshore transport from the demonstration site should be performed. AR

Suggested Mitigation Measure 1: Significant Impacts can be avoided by placement of sediment material in the backshore area, rather than along the active shoreline.

This section also is dismissive of impacts from the buried seawall in Alternatives (1) or (2), which contradicts the previous section asserting that the seawall will be protective of land behind it. The buried seawall cannot both protect structures landward of it and have no geological impact seaward, be it due to active, passive, or placement erosion. AS

Wave/Surf Impacts:

Alternative 2. *As long as the seawall remains buried, Alternative 2 would not exert a* AT

negative impact on the quality of the surf available for wave-related recreation. The cobble mattress may, in fact, reduce wave reflection to some degree, with a corresponding improvement in wave conditions due to increased energy dissipation.

This contradicts statements elsewhere:

... the mattress would be prone to undermining and dispersal due to the absence of a substantial toe that extends below the MLLW, and the presence of the sand dune at the top of the cobble slope (which would exacerbate wave backwash).

Appendix C also suggests that the cobble mattress in Alternative 2 would be subject to erosion. Backwash creates reflected waves, which can disrupt surf conditions. The cobble mattress of Alternative 2 is very likely to create, rather than dissipate, reflected waves under conditions other than high tide. **This is a significant impact to surfing and recreation.** AU

Alternatives 3, 4, and 5. *As with Alternative 2, the dissipative surface of the cobble berm that would be implemented under Alternative 3 could improve the quality of the surf by reducing wave reflection. This improvement, which is expected to be modest, is less likely to occur when water levels are low and relatively small waves affect the sand-charged toe of the berm.*

Again, these alternatives are considered to have a similar effect, and the cobble berm is described as dissipative. This is true if compared to the buried seawall. a cobble berm placed in the swash zone will result in increased wave reflection, and not dissipation as this suggests. In fact, no artificial means will *"improve the quality of the surf by reducing wave reflection."* AV

Suggested Mitigation Measure 1: Significant Impacts can be avoided by placement of sediment material in the backshore area, rather than along the active shoreline.

The configuration of the Preferred Alternative 5 with the suggested mitigation measure will avoid placing material in the surf-affected swash zone, thus eliminating any impact to the surfing conditions.

Other Impacts not addressed in the EIR: Impacts to Remnant Dunes

Excavation of Remnant dunes will have a significant impact:

The EIR does not acknowledge impacts to the dunes from construction traffic and the excavation and replacement of sand under alternatives 2-5. AW

The shore protection benefits of sand dunes have been well documented. At Surfers Point, the natural "point" near the rivermouth includes the remnants of a sandy dune backshore. This has helped maintain a relatively stable shoreline in the past, preventing overtopping and shoreline retreat as compared with the adjacent shoreline that does not benefit from this dune feature.

The design specifications of the buried cobble berm call for a 5:1 slope underneath the dune area. It is likely that excavating the existing beach and dunes in order to create an artificial "foundation" of cobble may result in increased erosion by de-stabilizing an embedded

coastal terrace. It is also likely that a cobble "foundation" already exists beneath the dunes and beach.

Excavating hundreds of cubic yards of natural dune and healthy beach in order to place the cobble berm/mattress structure would have significant and unmitigable environmental impacts.

> **Suggested Mitigation Measure 2: Design of the cobble berm and dune restoration should be modified to minimize excavation of the existing beach and dunes and optimize opportunities to place sediment material in the backshore area.**
>
> **For Alts 3&5:** In the existing dune area, a subsurface cobble berm with a pre-determined slope is unnecessary. The "one size fits all" approach for the entire project area does not acknowledge the natural processes and "shore protection" function of the existing cobble berm and sand dune complex. In fact, the intent of Alternative 5 was to minimize the impacts to the existing shoreline by placing cobble in the void left when artificial fill is removed from beneath the parking lot. If a 5:1 slope is deemed important, the shoreward portion of the 5:1 slope may be truncated in the area beneath the dunes, or the entire berm moved further back.

AX

4.11 AESTHETICS

AY

The dynamic, ever-changing nature of the rivermouth provides an aesthetic resource that is unique and irreplaceable. The rivermouth, estuary, beach, and dunes are the City of Ventura's most valuable natural asset, providing high quality recreation and relaxation through its proximity to the forces of nature. This section does not acknowledge that the current condition of the active beach is aesthetically appealing, but the crumbling bike path and parking lot detract from this appeal.

There is no mention of how the placement of a cobble berm along the shoreline will drastically change the visual and aesthetic appeal of the area. The elimination or excavation of the dunes or beach is also of great concern. These are significant impacts to varying degrees with alternatives 2-5, but may be mitigated with **Suggested Mitigation Measure 1 & 2** and **Alternative 5**.

Also, the EIR states:

AZ

> *"...possible loss of ocean views from the bike path associated with Alternatives 2 and 5 could be minimized by using a maximum dune elevation comparable to the elevation of the bike path."*

This statement completely misses the point. Views from the bike path will actually be enhanced by the return to a more natural environment.

6.1 NOTICE OF PREPARATION

During the Scoping Phase, the Surfrider Foundation had requested the following:

Additional design details need to be included in the project description, including design lifespan, removal of existing fill, sources of sand and cobble, and the need for a buried seawall - Addressed in Section 2.0, Description of Project Alternatives

BA

There is no design lifespan analysis in Section 2.0.

Recommendation 4: A lifespan and associated cost analysis should be performed to compare the various alternatives.

Other Issues:

CUMULATIVE IMPACTS

BB

Promenade Reconstruction – As stated above in comments relating to Water Quality, the reconstruction of the promenade represents an opportunity to develop an area-wide stormwater mitigation program.

Fairgrounds Master Plan – The Fairgrounds in 2003 began an update of their Master Plan. Until this is complete, cumulative impacts are difficult to assess. However, the managed retreat project should be considered in the context of future planned expansion of the Fairgrounds. In particular, parking and public access should be maintained.

Matilija Dam – The proposed removal of Matilija Dam will provide restoration of fluvial processes and sediment supply from the Ventura River. The Ventura River historically provided almost twice the sediment flux before dam construction. Increased sediment supply will provide long-term stabilization to the shoreline at Surfers Point. Although the Managed Retreat Project is separate, it should be considered in the context of this regional effort to restore the littoral sediment budget. For instance, with the removal of Matilija Dam it is likely that an era of shoreline accretion will return within a 50-year project lifespan.

PROJECT COST & PUBLIC ACCEPTANCE

BC

Funding through several State Propositions is available for well-planned restoration projects, especially those that enhance Parks, Water Quality, and Coastline areas. In order to secure grant funding, public acceptance and approval of the project will be required. This will require developing a project that has a favorable cost/benefit ration (i.e. the least cost and the highest benefits). Note that the benefits should be measured by the ecological restoration aspects of the project, and not by how many parking places are gained.

We encourage the City of Ventura to work to maximize the restoration potential for this project and apply for grant funding to offset the construction costs required to create the best project possible.

Letter 9

COMMENTOR: A. Paul Jenkin, M.S., Environmental Director, Surfrider Foundation – Ventura County Chapter

DATE: February 2, 2003

RESPONSE:

Response 9A

The commentor provides background information about the Surfrider Foundation's involvement in the project and states support for Alternative 5. The support for Alternative 5 is noted. This is the preferred alternative of the Surfers Point Working Group and the alternative that City staff intends to recommend to the Ventura City Council.

Response 9B

The commentor states concerns about design details of the preferred alternative and about the disclosure of environmental impacts in the EIR. The commentor's specific concerns are addressed in Responses 9E through 9BC. Design details of the proposed project will be finalized as part of the project design phase, assuming that the City Council approves one of the alternatives studied in the Draft EIR. It should be noted that the 31st Agricultural District (the property owner) conceptually approved Alternative 5 at its January 2003 Board meeting.

Response 9C

The commentor states that the Surfrider Foundation has consistently worked in good faith to provide "timely and technically sound" input to the process and notes the Foundation's commitment to the local surf break. The commitment to the area is noted. The Draft EIR incorporates much of the input received from the Surfrider Foundation over the course of the environmental review process. Perhaps most importantly, a concept originally introduced by the Surfrider Foundation ultimately became the preferred alternative of the Surfers Point Working Group and has been included in the EIR as Alternative 5. As noted above, the 31st Agricultural District approved Alternative 5 in concept and City staff intends to recommend this alternative to the Ventura City Council. With respect to the EIR, although the commentor's suggestions are appreciated at this time, it should be noted that administrative draft versions of the document were made available to the entire Surfers Point Working Group (including the commentor) several times prior to the release of the Draft EIR and the commentor failed to provide any substantive comments on the content of the document.

Response 9D

The commentor summarizes the contents of his letter, stating an opinion that five different components of the project would create significant impacts under CEQA and providing several recommendations for additional information and mitigation measures. The opinion regarding impacts and recommendations are noted. These points are addressed in Responses 9E through 9BC.

Response 9E

The commentor states support for the concept of managed retreat, but believes that the EIR overlooks the benefits of relocating the damaged infrastructure inland. The commentor also states an opinion that Shoreline Drive is not in imminent danger from shoreline erosion, and notes the restoration opportunities associated with the project and the Surfrider Foundation's goals for the managed retreat project. The support for the managed retreat concept is noted. The restoration opportunities and basic goals mentioned by the commentor are precisely those that the City is attempting to fulfill in pursuing the Surfers Point Managed Retreat project. The City believes that Alternative 5, the preferred alternative of the Surfers Point Working Group, would fulfill both the restoration opportunities at Surfers Point and the goals of the managed retreat project.

It should be noted that it is not the EIR's purpose to tout the benefits of the proposed project. To the contrary, the express purpose of the EIR is to identify any significant and adverse environmental impacts associated with the project. Under CEQA, a project's impacts are compared to conditions that exist at the time the project is initiated. As discussed throughout the Draft EIR, all of the alternatives studied in the EIR would have minor temporary impacts during construction, but would generally improve environmental conditions at Surfers Point as compared to the current situation (susceptibility to erosion, damaged onshore improvements, degraded aesthetic and biological conditions) in the long term. The fact that some of the alternatives would have greater benefits than others does not mean that those alternatives with fewer benefits would have significant adverse effects under CEQA.

Response 9F

The commentor states opinions that the project design and EIR read like "an attempt to justify a shore protection structure" and that the design contradicts the recommendations of consultants and Surfers Point Working Group members. The commentor also states that the identified preferred alternative is not based on environmental considerations. These opinions are noted. The preferred alternative identified in the EIR (Alternative 5) was identified as such by the Surfers Point Working Group. It is not the EIR's intent to identify a "preferred alternative" or to recommend one project alternative over another. Rather, the EIR's purpose is to evaluate the environmental effects of the project that is proposed (or, in this case, the various alternatives under consideration). It should be noted that the EIR does discuss the "environmentally superior alternative" as required by CEQA (see page S-3).

Response 9G

The commentor states an opinion that the EIR lacks sufficient analysis of, and mitigation for, significant environmental impacts. This opinion is noted. Specific impacts about which the commentor is concerned are addressed in Responses 9H through 9BC.

Response 9H

The commentor concurs with the Working Group consensus that Alternative 5 provides the best opportunity for a long-term solution to erosion problems at Surfers Point and states an opinion that Alternative 5 would have the least environmental impact among the studied

alternatives. The concurrence is noted. This is consistent with the fact that the commentor voted as part of the Working Group to identify Alternative 5 as the preferred alternative. As discussed on page S-3 of the Draft EIR, Alternative 5 appears to best meet the objectives of relocating onshore improvements inland and restoring the beach at Surfers Point.

Response 9I

The commentor states an opinion that the alternatives are not developed in a logical manner, stating a preference that each alternative studied build upon the previous alternative until an environmentally preferred alternative is developed. As explained in previous responses, it is not the EIR's purpose to define the project, but rather to assess the project that is proposed. In the case of the Surfers Point Managed Shoreline Retreat project, the EIR analyzes five alternatives plus the CEQA-required "no project" alternative. Three of the alternatives (Alternatives 1-3) were among those considered by the Surfers Point Working Group over the past several years and were included in the Noble Consultants' 2000 report entitled "Plan for Managed Shoreline Retreat." Alternative 4 was developed by Coastal Frontiers, Douglas Inman, and Patricia Masters (consulting coastal engineers/coastal oceanographers/geologists that performed the analysis of the project's impacts to coastal processes in conjunction with the EIR). The commentor introduced the concept that ultimately became Alternative 5. As discussed on page S-3 of the Draft EIR, Alternative 5 would best meet the objectives of relocating onshore improvements inland and restoring the beach at Surfers Point.

Response 9J

The commentor states opinions that none of the alternatives meet the objective of restoring lands seaward of Shoreline Drive to more natural beach habitat and that the lifespan of the project will be determined to a great extent by the width of the retreat zone. It is true that even Alternatives 1-3 and 5 (all of which include a retreat zone of about 65 feet) would include a 12-foot wide bike path seaward of Shoreline Drive. It was the consensus of the Surfers Point Working Group that the bike path should be maintained along the seaward side of Shoreline Drive. Again, it should be noted that it is not the EIR's purpose to design the project. Rather, the purpose is to assess the project that is proposed.

With respect to the lifespan of the project, the additional 12 feet of retreat that could be achieved by removing the bike path or relocating it yet further inland would incrementally improve the protection of onshore improvements against coastal erosion. However, as discussed in the Draft EIR (page 4-23), the location of the shoreline at Surfers Point differed by as much as 868 feet between 1929 and 1999. Based on this level of fluctuation, relocating onshore improvements another 12 feet inland would provide only marginal additional protection. It is important to note, however, that by combining the 65-foot retreat with a protective cobble berm, Alternative 5 (the preferred alternative) would be expected to provide the best overall protection of onshore improvements. In addition, the retreat would facilitate other objectives of the Surfers Point Working Group, notably the restoration of the beach at Surfers Point to a more natural condition.

Response 9K

The commentor suggests that placing the bike path seaward of Shoreline Drive would cost the project 15 years of life as compared to relocating the bike path further inland. As discussed in previous responses, relocating the bike path farther inland is not considered in the EIR because that is not the project that is proposed. Alternatives 1-5 would all improve the protection of onshore improvements as compared to the current condition at Surfers Point; therefore, any of the alternatives would have overall beneficial effects with respect to protection against coastal erosion. The fact that relocating the bike path further inland may provide even greater protection benefits does not necessitate analysis of such an alternative under CEQA.

It should be noted that the commentor may have misinterpreted some of the information provided in the EIR and supporting documentation. There is no steady retreat of the shoreline at Surfers Point, as suggested by the commentor. Rather, the shoreline episodically advances and retreats in response to the countervailing influences of sediment input from the Ventura River and sediment removal by coastal storm waves. As discussed in the Draft EIR, the location of the shoreline at Surfers Point varied by as much as 868 feet from 1929 to 1999. Between 1981 and 1984 alone, the shoreline on West Beach retreated up to 297 ft in response to the severe El Niño storms occurring in 1982-83. These large fluctuations suggest that the additional 12 feet of retreat that could be achieved by relocating the bike path farther inland would not greatly reduce the potential for future storm damage.

Response 9L

The commentor recommends inclusion of the Noble Consultants 2000 report "Plan for Managed Shoreline Retreat" as an appendix to the EIR. This report is available for review at Ventura City Hall. Nevertheless, in response to this request, it will be included as an appendix to the Final EIR.

Response 9M

The commentor recommends that the final design maximize the retreat zone. This recommendation is noted, though it should again be recognized that relocating the onshore improvements yet farther inland is not the project that is proposed. Because Alternatives 1-5 would all have beneficial effects with respect to protection of onshore improvements as compared to the current condition at Surfers Point, analysis of an alternative that considers relocating the improvements farther inland is not needed to fulfill CEQA's environmental review requirements.

Response 9N

The commentor states an opinion that a lifespan and cost analysis should be performed to compare the various alternatives. This opinion is noted. However, it is not the EIR's purpose to perform engineering analysis of the design of the project alternatives. Its purpose is to assess the impact of the project on the environment. As discussed above, Alternatives 1-5 would all improve the protection of onshore improvements against coastal erosion as compared to the current condition at Surfers Point. Although it is not the EIR's purpose to discuss or analyze the financial or economic implications of proposed projects, Section 2.0 of the Draft EIR

includes a summary of the construction costs associated with each alternative. This information was added at the request of the California Department of Transportation (Caltrans), a reviewing agency for the EIR. As discussed in the Draft EIR, maintenance costs would likely be highest for Alternative 2 since the less substantial cobble mattress associated with that alternative would be more prone to undermining than the more substantial berm or seawall that would be constructed under the other project alternatives. Nevertheless, actual costs associated with future maintenance cannot be predicted with any certainty as such costs would depend upon factors (such as future weather conditions) that are variable and unknown.

Response 9O

The commentor restates a recommendation that a Noble Consultants report be included in the EIR. The Noble report will be included as an appendix to the Final EIR.

Response 9P

The commentor states an opinion that the cobble berm included in Alternatives 3-5 is a "shoreline protection device" that may cause wave reflection. This opinion is noted. The analysis of the project's impacts to coastal processes was conducted by Craig Leidersdorf of Coastal Frontiers Corporation and Dr. Douglas Inman and Dr. Patricia Masters. Each of these individuals has substantial experience and expertise in coastal processes. Their report, included as Appendix C to the EIR, concludes that the engineered cobble berm in Alternatives 3-5 would incrementally reduce wave reflection as compared to current conditions at Surfers Point and would not negatively affect surf conditions. The anticipated modest reduction in wave reflection is attributable to the relatively flat (5:1), dissipative surface of the cobble berm.

Response 9Q

The commentor states an opinion that paving the parking lot at the Ventura Fairgrounds would increase public impacts to the beach. The commentor also states an opinion that parking should be provided either on the street or in the dirt lot area.

The opinion about the impacts of paving the parking lot is noted, though it is not clear how paving the Fairgrounds parking lot would increase impacts to the beach. The area in question is already a dirt parking lot that is used for various events at the Fairgrounds and the lot would continue to be used for Fairgrounds events in the future. Paving of the lot and implementation of required filtration techniques for runoff from the lot would be expected to have generally beneficial effects with respect to the quality of surface runoff from the Fairgrounds.

As discussed in Section 4.8 of the Draft EIR, Alternatives 1-3 and 5 all include sufficient on-street parking along Shoreline Drive to offset the loss of parking associated with removal of the shorefront parking lot. In addition, it should be noted that the Board of the 31st Agricultural District has recently indicated that it may not wish to pave the dirt parking area on the Fairgrounds property. As such, paving of that area ultimately may be removed from the project. A final use for the dirt parking area will be determined as part of a master plan that is currently being developed for the Fairgrounds.

Response 9R

The commentor states an opinion that placing large quantities of cobble in the surf zone for Alternative 2 is a significant impact. This opinion is noted, although the criteria upon which the commentor bases this opinion are not clear. The commentor appears to be suggesting that Alternative 2 on its face would generate "significant" impacts simply because it would change conditions in the area. However, not all physical changes to the environment are significant and adverse. In the case of the proposed managed shoreline retreat project, most of the physical changes would be beneficial.

Typically, the impacts associated with an activity are considered "significant" under CEQA if they would adversely affect a resource that is considered "sensitive" or otherwise important under established criteria. For example, placement of cobble within the surf zone could be considered a significant impact if it would destroy the habitat of a threatened or endangered plant or animal species. However, as discussed in Section 4.3 of the Draft EIR, there are no such species in the vicinity of the project site that would be affected by the temporary construction activity required to implement the proposed project.

As discussed throughout the Draft EIR, Alternatives 1-5 would all involve short-term construction activity and long-term changes to conditions at Surfers Point. However, there is no basis for concluding that such changes are "significant" impacts under established CEQA criteria. To the contrary, as discussed in several sections of the Draft EIR, any of the project alternatives would generally improve aesthetic, recreational, and coastal erosion conditions as compared to the current situation at Surfers Point. Alternatives 2 and 5 would also be expected to provide for the restoration of coastal dune habitat at Surfers Point, thus improving conditions from a biological perspective.

Response 9S

The commentor reiterates an opinion that excavation and placement of cobble within the intertidal zone is a significant environmental impact and states an opinion that such action is not justified. These opinions are noted. Please see Response 9R. It is not the EIR's purpose to determine whether or not a proposed project is justified. The purpose is to evaluate the environmental impacts of the project that is proposed. That said, it is the opinion of Coastal Frontiers Corporation and Douglas Inman/Patricia Masters (the consulting coastal engineers and coastal oceanographers/geologists for the EIR) that in the absence of a substantial toe below MLLW, a cobble berm at Surfers Point would be prone to undermining and dispersal.

Response 9T

The commentor states an opinion that construction activity associated with Alternatives 2-5 would potentially affect steelhead trout. This opinion is noted, although the commentor has not provided any evidence to support this contention. As discussed in Section 4.3 of the Draft EIR, the project site provides little habitat for the steelhead trout and none of the project alternatives are expected to alter the hydrologic nature of the Ventura River estuary, which is upstream and up-littoral from Surfers Point. Consequently, no impact to this species is anticipated.

Response 9U

The commentor reiterates concerns about possible impacts to steelhead trout and suggests a mitigation measure requiring placement of sediment material in the backshore area rather than along the active shoreline. Please see Response 9T. As no impact to steelhead trout is anticipated, mitigation is not necessary. It should be noted, however, that Alternative 5 (the preferred alternative of the Surfers Point Working Group) would place cobble material primarily within the backshore area. Specifically, in the western portion of the project area, the berm would be constructed entirely in the backshore. In the eastern portion, which lies farther from the river mouth, the berm would be constructed by re-shaping and augmenting the existing cobble test section.

Response 9V

The commentor states that the dune area at Surfers Point was not initially fenced and states an opinion that removal of this dune area would have significant impacts relating to coastal geology and aesthetics. The opinions regarding coastal geology and aesthetic impacts are addressed in Responses 9AK through 9AZ. The discussion about fencing referenced by the commentor specifically notes that temporary construction fencing was initially installed at Surfers Point following completion of the current onshore improvements, followed by split rail fencing. In any event, the native dune habitat that was once present on-site has essentially been eliminated by human activity and coastal erosion. Implementation of the proposed project (particularly Alternatives 2 or 5) is expected to provide an opportunity to restore the dune habitat that historically existed at Surfers Point.

Response 9W

The commentor states opinions that the current project design may make the information about removal of 76 landscape trees along Shoreline Drive invalid and that the final design should accommodate preservation of the trees. The City is not aware of any new information about the removal of the landscape trees. It is anticipated that the trees along the north (landward) side of Shoreline Drive would need to be removed to accommodate a third lane along Shoreline Drive, but that the trees along the south (seaward) side of Shoreline Drive can largely be preserved. This is consistent with the discussion in the Draft EIR. The City intends to preserve as many of the existing street trees as possible as the project is implemented.

Response 9X

The commentor states an opinion that the discharge of material into intertidal areas is not the same for Alternatives 2-5 and suggests a mitigation measure for what the commentor believes is a "significant" impact to wetland resources. This opinion is noted. It is true that the various alternatives would involve slightly different requirements with respect to renourishment of the beach. For example, the more substantial cobble berm associated with Alternatives 3 and 5 is expected to be more stable than the cobble mattress associated with Alternatives 2 or 4 and would therefore likely require less frequent renourishment. However, because of the depauperate nature of the wetland resources at Surfers Point and rapid recovery time of species that would be affected by periodic renourishment, none of the alternatives would result in impacts that would be considered significant under CEQA. As such, mitigation is not

necessary. The Draft EIR acknowledges that the City would need to obtain a Section 404 permit from the U.S. Army Corps of Engineers and comply with any conditions required as part of that permit. It should be noted, however, that Alternative 5 (the preferred alternative of the Surfers Point Working Group) would limit the placement of material to the backshore area as suggested by the commentor to the degree feasible. Also, please see Response 9U.

Response 9Y

The commentor suggests that re-routing of runoff to the ocean could significantly affect recreational waters at Surfers Point. Runoff from the Fairgrounds parking lot would be required to meet current National Pollutant Discharge Elimination System (NPDES) water quality standards prior to discharge offsite. Compliance with these standards would require use of filtration systems or other techniques that would improve the quality of runoff as compared to current conditions. As such, no significant water quality impacts are anticipated. It should again be noted that the Board of the 31st Agricultural District has recently indicated that it may not pursue paving of the dirt parking area at the Fairgrounds. Thus, that component of the project may not be implemented.

Response 9Z

The commentor states agreement with a statement about sensitive marine biological resources on page 4-16 of the Draft EIR. The commentor has noted a typographical error. The statement referenced should read "...the temporary increase in ocean water turbidity is not expected to adversely affect any sensitive marine biological resources." As discussed in Section 4.3 of the Draft EIR, there are no sensitive biological resources at Surfers Point that would be affected by construction activity. The text of the Final EIR will be revised to correct this statement.

Response 9AA

The commentor reiterates concerns about the impact of re-routing storm runoff associated with the Fairgrounds from the Ventura River estuary to the ocean and suggests a mitigation measure requiring re-routing of Fairgrounds runoff to the Figueroa storm drain. Please see Response 9Z. The mitigation measure suggested by the commentor is not warranted for the proposed project as no significant water quality impacts are anticipated. However, the commentor's suggestion could be considered in conjunction with the ongoing master plan for the Fairgrounds.

Response 9AB

The commentor states an opinion that the project represents an opportunity to enhance water quality at Surfers Point through development of an area-wide storm runoff plan. Such a plan would be more appropriately implemented as part of the master plan for the Fairgrounds. As discussed in Section 4.6 of the Draft EIR, the current proposal would not create any significant water quality impacts. In addition, the only component of the project that would affect stormwater runoff patterns (paving of the dirt lot at the Fairgrounds) likely will not be implemented in conjunction with the managed shoreline retreat project based on the current direction of the Board of the 31st Agricultural District.

Response 9AC

The commentor notes that protection of the bike path is not an environmental impact, but an engineering consideration and states that loss of the bike path would not be a coastal geology impact but a recreational impact. The commentor also states an opinion that the EIR fails to acknowledge the merits of shoreline retreat, which he says would move infrastructure "out of harm's way," and suggests that the EIR attempts to justify the "no retreat" alternative.

It is agreed that any failure to protect the bike path would not be a significant environmental impact under CEQA. As discussed in previous responses, any of the project alternatives would improve the protection of the bike path as compared to the current condition at Surfers Point. Consequently, all of the alternatives would have beneficial effects relating to the preservation of this recreational amenity. With respect to coastal processes, as discussed in Section 4.7 of the Draft EIR and in several responses below, none of the alternatives are expected to result in significant impacts relating to surf conditions or sedimentation.

As discussed in earlier responses, the EIR is not intended to "justify" any of the alternatives or to discuss the merits of the project. The purpose of the EIR is to identify the significant environmental impacts of the project that is proposed. The *CEQA Guidelines* state that EIRs should focus not on project benefits, but on significant adverse environmental effects.

Contrary to what the commentor suggests, the Draft EIR explicitly acknowledges the fact that the "no retreat" alternative (Alternative 4) would not meet the objective of implementing a managed retreat, would conflict with State policies regarding coastal management, and would have fewer recreational benefits than other alternatives.

The commentor is incorrect in suggesting that the 65-foot retreat would move onshore infrastructure out of harm's way. As discussed in Section 4.7 of the Draft EIR, although managed retreat would incrementally reduce the potential for storm-related erosion to affect onshore improvements, the location of the shoreline at Surfers Point has varied by up to 868 feet since 1929. As such, even the relocated bike path and other improvements could be subject to erosion-related damage in the absence of a cobble berm, buried seawall, or other protective device. The fact that the bike path and parking area cannot be moved completely out of harm's way outside of completely abandoning the facilities is precisely why various options for protecting these improvements are being considered.

Response 9AD

The commentor states opinions that inclusion of Alternative 4 is inappropriate and that the discussion of the alternative is written to justify that alternative. The commentor also states an opinion that information from the Noble Consultants 2002 report is taken out of context and suggests that the Noble report be included in the Final EIR.

The opinion regarding Alternative 4 is noted. As discussed in several previous responses, it is not the EIR's intent to attempt to justify any of the alternatives, but rather to provide an objective analysis of the project's environmental impacts. As discussed in Response 9AC, the Draft EIR acknowledges the fact that Alternative 4 would not meet the objective of

implementing a managed retreat, would conflict with State policies regarding coastal management, and would have fewer recreational benefits than other alternatives.

Specific concerns about how information from the Noble Consultants report was interpreted are addressed in Responses 9AG and 9AH. The Noble report will be included as an appendix to the Final EIR. Finally, it should be noted that Coastal Frontiers Corporation, Dr. Douglas Inman, and Dr. Patricia Masters were included on the EIR team specifically to provide an independent assessment of the various alternatives for the managed shoreline retreat project. The Draft EIR text reflects their expert opinions with respect to the performance and impacts of the various alternatives, which do not necessarily correspond in all cases to the opinions of Noble Consultants.

Response 9AE

The commentor suggests that the Emma Wood shoreline is receding at a greater rate than suggested in the Draft EIR. As discussed in Section 3.7 of the Draft EIR, an analysis of aerial photographs of Emma Wood State Beach indicates that the shoreline in the area of the Emma Wood berm has remained stable for the past 70 years. A comparison of historical profiles contained in a study of the feasibility of installing a man-made surfing reef (Coastal Frontiers, 1988) provides additional confirmation of the stability of the cobble berm at Emma Wood State Beach. An example is provided on Figure 5 of Appendix C of the Draft EIR (page 17), in which it can be seen that the berm (0 to +13 feet, MLLW), experienced only minor changes between 1964 and 1988.

Response 9AF

The commentor suggests that the Draft EIR should include the most recent profiles for the cobble berm test section east of the project site and provide an estimate of future renourishment requirements. The data included in the Draft EIR regarding the cobble test section were the most recent data available at the time of preparation of the Draft EIR. A subsequent report prepared by Noble Consultants was completed on January 20, 2003 and will be included as an appendix to the Final EIR.

The most recent data indicate that the western portion of the cobble nourishment section placed at a 5:1 slope has been effective in preventing erosion of landward improvements. However, the material placed on a steeper slope within the eastern portion of the nourishment section has not been effective. Wave overtopping occurred regularly within this section during high tide and surf conditions. The lack of effectiveness is a consequence of insufficient nourishment volume placed at a steeper slope, the latent effects of the debris removal process, and exposure to more energetic surf. The nourishment project was determined to have no impact on sand movement within the littoral zone or on local surf conditions. The migration of cobble from the test section is believed to have occurred primarily in the offshore direction and to a lesser extent downcoast.

Based on the most recent data, Noble Consultants has concluded that, when material is properly placed (at a slope no steeper than 5:1), cobble nourishment has considerable potential to mimic a natural form of shoreline stabilization. This is consistent with the conclusions

reached by Coastal Frontiers Corporation and Inman/Masters in their review of the project in conjunction with preparation of the Draft EIR.

Response 9AG

The commentor states disagreement with the conclusions that the available data regarding fluctuations of the shoreline at Surfers Point suggest the potential for erosion of the existing beach and that the 65-foot retreat would provide only a marginal improvement in shoreline protection. This disagreement is noted, although the fact that the existing bike path and shorefront parking lot have experienced erosion-related damage provides clear evidence that there is erosion potential at Surfers Point. Obviously, concerns about past and possible future erosion-related damage are exactly what prompted the formation of the Surfers Point Working Group and development of the plan for managed shoreline retreat. As discussed in the Draft EIR and in previous responses, the 65-foot retreat would incrementally reduce the potential for erosion-related damage, but would not move the bike path out of harm's way. This is why a cobble berm or other protective technique would be needed in addition to the retreat if the bike path and other shorefront improvements are to be maintained.

The fact that the 65-foot retreat would not completely eliminate the potential for erosion damage to the bike path does not mean that the retreat should not be implemented. To the contrary, the retreat, in combination with the placement of a protective cobble berm seaward of the bike path as envisioned in Alternative 5, is expected to substantially reduce the potential for future erosion-related damage as compared to the current condition at Surfers Point. Moreover, the 65-foot retreat would provide an opportunity for the restoration of the beach at Surfers Point to a more natural condition, with both biological and recreational benefits.

The estimates of the sand budget for Surfers Point (EIR Appendix C, Fig. 3, p. 12) show that during wet El Niño flood years there will be a potential sand supply to the beach of 1.3 million yd^3 and during dry years a deficit of 1.2 million yd^3. Recent studies show that southern California has been in a wet phase of the climate pattern known as the Pacific Decadal Oscillation (PDO) that extended from about 1977 to the flood year of 1998. (The flood year of 1969 was a brief wet fluctuation of the PDO.) Looking forward, we are now entering the dry phase of the PDO. Flood years are expected to be less intense and less frequent, and the climate will be dominated by dry years. The potential deficit of sand transport of 1.2 million yd^3/year will likely become the norm for most years during the dry cycle of PDO, and this cycle may last for 20 years or more. These considerations suggest there will be a shortage of beach sand, resulting generally in an increase in erosion for southern California beaches.

Response 9AH

The commentor states an opinion that information from a City of Ventura policy and the Noble Consultants 2000 report suggests that the 65-foot retreat would provide at least a 40-year lifespan and notes that the fortification of the backshore area as envisioned under Alternative 5 would extend this lifespan. It is agreed that the 65-foot retreat, in combination with placement of a protective cobble berm, would extend the lifespan of the relocated bike path and other onshore improvements. Indeed, extension of the lifespan of these improvements is one of the fundamental goals of the managed shoreline retreat project. The commentor's opinion regarding the lifespan of the improvements is noted. However, even a relocated bike path

would not be completely removed from harm's way. It is important to remember that it was thought that the bike path in its current location would have a lifespan of 20 or more years, but actually experienced erosion damage within two years of its completion. This unfortunate circumstance arose from short-term fluctuations in shoreline position, rather than from the long-term change rates cited by commentor.

Just as the current bike path and parking lot were damaged by short-term fluctuations in shoreline position, the commentor's opinion that a 65-foot retreat zone would provide "at least a 40-year lifespan in the areas of highest erosion even without the proposed beach nourishment and restoration measures" appears to be optimistic when compared with the short-term shoreline changes documented in the recent past. In West Beach, which is the area of highest erosion, shoreline variations over the past 70 years have been on the order of 500 feet (Noble, 2000). Even if the accretionary bulge that resulted from the floods of 1969 is excluded from consideration, the variations in shoreline position tend to be considerably larger than the 65-foot zone allocated for retreat. During the 21-year period between 1978 and 1999, for example, shoreline variations as large as 480 feet were documented at West Beach (Noble, 2000, Table A-1). This shoreline volatility in an active river delta is why the fortification of the beach with a protective cobble berm is needed in addition to the 65-foot retreat if the relocated bike path and other improvements are to be maintained.

Response 9AI

The commentor states an opinion that a lifespan and cost analysis of the various alternatives should be included in the Final EIR. As discussed in previous responses, it is not the EIR's purpose to analyze engineering and cost implications associated with proposed projects. Rather, CEQA's purpose is to assess and disclose the significant environmental effects of proposed actions. Section 2.0 of the Draft EIR includes construction cost estimates because such estimates were requested by the California Department of Transportation (Caltrans), which is a reviewing agency for the project because the City is seeking federal funds from the Federal Highway Administration for reconstruction of the bike path. As discussed in Section 2.0, the amount of renourishment that would be needed cannot be predicted with any certainty because the loss of cobble material would depend upon future weather conditions. The January 20, 2003 Noble Consultants report on the status of the cobble nourishment test section immediately east of the project site indicates that the western portion of the test section dissipated at a rate of about 1,500 cubic yards in 2002. However, it should again be noted that the actual amount of dissipation will vary from year to year, depending upon the severity of winter storms.

Response 9AJ

The commentor recommends removal of Alternative 4 from the EIR because of what he perceives as a failure to disclose the environmental impacts of that alternative and because it does not meet the objectives of the Surfers Point Working Group. It is agreed that Alternative 4 would not meet the Working Group objective of implementing a managed shoreline retreat. This fact is disclosed in Sections 2.0 (page 2-16) and 4.8 (page 4-34). Furthermore, the Draft EIR indicates that Alternative 4 may be considered in conflict with State Resource Agency and Coastal Commission policies due to the failure to implement a shoreline retreat.

The opinion regarding the impacts of Alternative 4 is noted. However, it is important to remember that the EIR is only intended to assess the project's environmental effects relative to current conditions. Given that the current condition at Surfers Point consists of an eroded shoreline with damaged onshore improvements, implementation of Alternative 4 would generally improve conditions in the area. As discussed throughout the Draft EIR, Alternative 4 does not include many of the recreational, biological, and aesthetic benefits of other alternatives (notably, Alternative 5). However, the fact that this alternative would have fewer benefits does not mean that it would create significant environmental impacts under CEQA. In fact, the only real environmental impacts associated with any of the alternatives are those which would occur during construction. Such impacts are not considered significant under CEQA criteria under any of the alternatives.

Response 9AK

The commentor states an opinion that the Draft EIR inappropriately suggests that sedimentation impacts associated with Alternative 5 would be the same as those of Alternative 2. It is agreed that the impacts of Alternative 5 would be somewhat different than those of Alternative 2, although none of the alternatives are expected to create any significant impacts relating to sedimentation.

In response to this comment, the heading "Alternatives 2 and 5" under "Sedimentation" will be changed to read "Alternative 2." In addition, the discussion of alternatives 3 and 4 will be revised to read as follows:

> *Alternatives 3 and 4. The cobble berm associated with Alternatives 3 and 4 would not be expected to adversely affect sedimentation or coastal processes since it would not restrict the transport of sediment to downdrift beaches. Impacts associated with possible cobble transport would be similar to those described for Alternative 2 and would not be expected to result in adverse impacts.*

Finally, a new discussion of Alternative 5 will be added, as follows:

> *Alternative 5. As with Alternative 2, the sacrificial dune associated with this alternative would be subject to periodic erosion. Whenever the sacrificial dune is eroded by wave runup, sand would be added to the littoral zone, which may incrementally benefit downdrift beaches. The cobble berm associated with Alternative 5 would not be expected to adversely affect sedimentation or coastal processes. As the cobble berm would be largely restricted to the backshore area under this alternative, the rate of transport of cobble material to downdrift beaches would likely be somewhat lower than under Alternatives 3 and 4.*

Response 9AL

The commentor suggests that the cobble mattress associated with Alternative 2 would have a significant impact to natural sedimentation processes because its conceptual design includes a prominent salient at the western end of Surfers Point. The commentor again suggests that a relative disadvantage of Alternative 2 (minor change in longshore transport restricted to the area immediately downdrift of the western end of the project site) constitutes a significant

environmental effect. In fact, this minor design issue would affect only a small area at Surfers Point and would have little if any effect on beaches farther downdrift. It should also be recognized that the salient to which the commentor refers is largely an existing condition at Surfers Point that is created by material deposited by the Ventura River. Finally, it should be noted that Alternative 5 (the preferred alternative that was introduced in concept by the commentor) specifically attempts to maintain the existing cobble/sand bulge at the western end of Surfers Point to the degree feasible.

Response 9AM

The commentor states an opinion that the cobble nourishment test section has had a significant negative impact to downdrift beaches because of cobble transport and that the proposed project would have a similar effect. This opinion is noted. It is agreed that the impacts of the proposed project may be similar to those of the cobble nourishment test section, although the placement of cobble material primarily in the backshore area as would occur under Alternative 5 would be expected to minimize the alongshore transport of cobble during non-storm periods. Contrary to what the commentor suggests, the January 20, 2003 Noble Consultants monitoring report for the cobble nourishment test section states that the cobble nourishment has had "negligible impacts to sediment movement and deposition."

It should be noted that a combination of cobble and sand has historically moved downshore from the Ventura River mouth even prior to implementation of the cobble nourishment test section. As discussed in Section 3.7 of the Draft EIR (page 3-18), the volume of material (sand and cobble) transported to Surfers Point from the river and points farther upcoast ranges from about 272,000 cubic yards during dry years to 2.6 million cubic yards during episodic flood years. Because much of this material is transported east into Pierpont Bay, the deposition of cobble onto beaches downdrift of Surfers Point is the natural condition in the area. The volume of cobble and sand associated with both the test section and the proposed managed shoreline retreat is miniscule as compared to the volume of material, including cobble, deposited by the river.

Response 9AN

The commentor expresses concern that the cobble berm/mattress could result in increased offshore sediment transport due to "increased wave reflectivity", and states that the EIR should study this impact. Impacts relating to sediment transport are discussed in the coastal engineering review in Appendix C of the Draft EIR and in Section 4.7. The analysis, conducted as part of a collaborative effort by three experts in the fields of coastal geology and engineering, concludes that none of the alternatives would exert significant negative impacts on coastal processes. The commentor's specific concern about wave reflection contradicts the dissipative nature of relatively flat cobble slopes, as described in detail in Response 9AU. Also, please see Response 9AM.

Response 9AO

The commentor states an opinion that the comparison between the natural delivery of sand and cobble from the Ventura River and the delivery of such material from a cobble berm is not valid. This opinion is noted. However, although it is true that the project would involve

placement of cobble downdrift of where the Ventura River would directly deposit the material, placement of this material to protect onshore improvements is one of the fundamental purposes of the project. Contrary to what the commentor suggests, the City considers placement of this material along the coast to renourish the beach and protect onshore improvements a substantial benefit of the project. As deposited sand moves down the coast through natural processes, it would actually result in incremental benefits to downdrift beaches. The commentor may consider the gradual movement of cobble down the coast an adverse effect of the project, but such material would move down the coast in much the same manner as would cobble material from the river. In addition, as discussed in previous responses, the volume of cobble associated with any of the project alternatives is miniscule as compared to that which is delivered naturally by the Ventura River.

Response 9AP

The commentor states an opinion that boulders associated with the cobble nourishment test section adjacent to the project site create a hazard to those who surf or swim. This opinion is noted, though the test section is not the subject of the EIR. Moreover, as the commentor has suggested, the presence of cobble material deposited by the Ventura River is part of the natural condition at Surfers Point and no evidence that cobble material creates a hazard has been presented.

Response 9AQ

The commentor states opinions that future renourishment of Surfers Point would eventually lead to the creation of a "boulder revetment" and that Alternatives 2 and 4 would have the greatest impact in this regard. This opinion is noted, though the City has no intention of creating a boulder revetment. It is agreed that Alternative 2 would require more frequent maintenance than the other alternatives due to the use of a less substantial cobble mattress. The lack of a buried seawall structure and, the failure to implement the 65-foot retreat, would also necessitate more frequent renourishment under Alternative 4. However, as discussed in several previous responses, the amount of renourishment needed for any of the alternatives cannot be predicted with any certainty because it is dependent upon future weather conditions. In no case is the impact associated with renourishment considered significant under CEQA as such activities would consist of short-term disruptions to the Surfers Point area with long-term benefits.

Response 9AR

The commentor reiterates a request that information regarding the cobble nourishment test section be updated and again suggests a mitigation measure requiring placement of sediment material in the backshore area. As no significant impacts to coastal processes have been identified, mitigation is not necessary. That said, Alternative 5 (the preferred alternative of the Surfers Point Working Group) does limit placement of material to the backshore area to the degree feasible. This alternative is generally considered to have the greatest overall benefits among the studied alternatives. Also, please see Responses 9U and 9AF.

Response 9AS

The commentor states an opinion that the Draft EIR understates the impact of the buried seawall associated with Alternatives 1 and 2. The buried seawall included as part of Alternatives 1 and 2 is intended to be a final line of protection against erosion damage to the relocated bike path and Shoreline Drive. Most of the time, the seawall would not be exposed and thus would not have any effect on coastal processes. Under unusual circumstances where extreme erosion occurs, the wall could be temporarily exposed. Under Alternative 2, the City has made a commitment to renourish the beach if such a circumstance occurs and similar renourishment has been recommended as a design modification for Alternative 1 in the event that alternative was selected. Thus, any impacts on downdrift beaches would be temporary in nature. It should be noted, however, that Alternative 5 (which does not include a buried seawall) remains the preferred alternative of the Surfers Point Working Group and is the alternative that City staff will recommend to the City Council.

Response 9AT

The commentor states an opinion that the suggestion that the buried seawall associated with Alternative 2 would not adversely affect surf conditions contradicts the suggestion that the cobble mattress associated with that alternative would be prone to undermining. There is no contradiction between these two statements. Although it is the opinion of Coastal Frontiers Corporation and Douglas Inman/Patricia Masters (the consulting coastal engineers/coastal oceanographers/geologists for the EIR) that the cobble mattress would be prone to undermining, Alternative 2 includes a commitment to renourish the mattress in the event that the buried seawall becomes exposed. Hence, impacts to surf conditions would be limited to the periods in which the buried seawall is exposed by extreme storm conditions. Long-term impacts would be avoided by the planned renourishment that restores the cobble mattress and reburies the wall. It should again be noted that Alternative 5 remains the preferred alternative of the Surfers Point Working Group and is the alternative that City staff will recommend to the City Council.

Response 9AU

The commentor suggests that because the cobble mattress associated with Alternative 2 would be prone to undermining, it would result in a significant impact to surf conditions. Possible impacts to surf conditions are addressed in Section 4.7 of the Draft EIR. Contrary to what the commentor suggests, it is the opinion of Coastal Frontiers Corporation and Douglas Inman/Patricia Masters (the consulting coastal engineers/coastal oceanographers/geologists for the EIR) that Alternatives 2-5 would all tend to provide a modest improvement in surf conditions in the area as compared to the current condition at Surfers Point by reducing wave reflection. As indicated in their report (which is included in Appendix C), "The movable cobble berm is a very efficient wave absorber, with minimal wave reflection. This is because of the high permeability of the large void spaces and the energy expended in moving the cobble mass up and down the berm face. Further, the cobble berm will adjust its slope in the event of storm waves with little loss of effectiveness."

Response 9AV

The commentor reiterates an opinion that no "artificial" means would improve the quality of the surf. This opinion is noted. Please see Response 9AU. As acknowledged in the Draft EIR, any improvement in surf conditions associated with the project is expected to be modest. There is no evidence to suggest that Alternatives 2-5 would adversely affect surf conditions.

Response 9AW

The commentor states an opinion that the Draft EIR does not acknowledge impacts to the dunes associated with construction of Alternatives 2-5 and suggests a mitigation measure to minimize excavation in the existing beach area. Contrary to what the commentor suggests, the Draft EIR explicitly acknowledges the temporary biological and recreational impacts associated with construction of any of the project alternatives (please see Sections 4.3 and 4.8). As discussed in Response 9R, these effects were not determined to be significant impacts under CEQA because of the lack of sensitive biological resources at Surfers Point and the temporary nature of the disturbance. In the long-term, any of the project alternatives are expected to improve biological and recreational conditions at Surfers Point and provide a more stable shoreline that protects onshore improvements. Alternative 5, the preferred alternative of the Surfers Point Working Group, would provide the greatest overall benefits and, as discussed in Response 9U, would limit excavation and placement of new material to the backshore area as suggested by the commentor to the degree feasible.

Response 9AX

The commentor states an opinion that a subsurface cobble berm in the western portion of Surfers Point is unnecessary for Alternatives 3 and 5 and suggests that if a 5:1 slope is important, the shoreward portion of the slope should be truncated in the area beneath the dunes or the entire berm should be moved back. This opinion is noted. Determining whether or not the cobble berm is necessary is not the purpose of the EIR. Rather, the EIR's purpose is to evaluate and disclose the significant environmental effects of the project that is proposed. That said, it is the opinion of Coastal Frontiers Corporation and Douglas Inman/Patricia Masters (the consulting coastal engineers and coastal oceanographers/geologists for the EIR)) that in the absence of a substantial toe below the MLLW, a cobble berm at Surfers Point would be prone to undermining and dispersal.

Although any of the alternatives would involve temporary disturbance of the beach at Surfers Point, the impacts associated with this temporary disruption are not considered significant under CEQA. The design issues with which the commentor is concerned will be addressed in the final design phase for the project. Also, please see Response 9S.

Response 9AY

The commentor states an opinion that the Draft EIR fails to acknowledge the aesthetic appeal of Surfers Point and what the commentor perceives as negative impacts associated with the excavation of the dunes placement of a cobble berm. This opinion is noted. Aesthetics is an inherently subjective topic as different viewers often react differently to the same visual conditions. It is the opinion of the EIR preparers that the visual character of Surfers Point is

poor due not only to the damaged condition of the bike path and parking lot, but also to eroding coastline and degraded nature of the dune area, which is largely inhabited by introduced, weedy species (please see Section 4.3 of the Draft EIR). All of the project alternatives would generally improve these conditions by repairing/relocating the bike path/parking area, restoring the beach to a more natural condition, and providing an opportunity for the restoration of the dune areas. Alternatives 2 and 5 in particular would enhance opportunities for creation of a restored dune habitat with native vegetation. Alternative 5 would appear to have the greatest overall aesthetic benefits among the studied alternatives, but none of the alternatives would appear to have a detrimental effect as compared to the current condition at Surfers Point.

Response 9AZ

The commentor states an opinion that views from the bike path would be enhanced by the return to a "more natural" environment. As mentioned, in Response 9AY, aesthetics is an inherently subjective topic. For that reason, the Draft EIR explicitly acknowledges that the alteration of views from the bike path could be perceived as either positive (because of the overall enhancement of visual conditions in the area) or negative (because of the possible obscurement of ocean views from some vantage points). However, impacts to views are not considered significantly adverse for any alternative. It should be noted that the commentor's suggestion that returning the area to a more natural environment is a visual enhancement is consistent with the opinion of the EIR preparers, but appears to contradict the commentor's previous assertion (in Comment 9AY) that the project would adversely affect visual conditions in the area.

Response 9BA

The commentor again requests additional design details, including a lifespan and cost analysis for the various alternatives. Please see Response 9N.

Response 9BB

The commentor reiterates a suggestion that an area-wide stormwater mitigation program is needed and suggests that the proposed project should be considered in light of the Fairgrounds Master Plan and the Matilija Dam removal. The City of Ventura will continue to coordinate with the 31st Agricultural District to ensure that the project is considered as part of the Fairgrounds Master Plan if it is approved. The removal of Matilija Dam would be expected to increase the sediment flux from the Ventura River, which would be expected to improve the influx of sand to area beaches. Also, please see Response 9AA.

Response 9BC

The commentor notes that funding for the project is available from a number of organizations, states opinions regarding what will help secure grant funding, and encourages the City to maximize the restoration potential of the project and to seek grant funding. The opinions are noted. The City has already secured funding from some sources and will continue to seek additional funds. It is the City staff's intent to recommend and pursue Alternative 5, which appears to provide the greatest overall benefits for the area.

Surfrider Foundation
Ventura County Chapter
239 W Main St., Ventura, CA 93001 (805) 667-2222

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PLANNING DIV.

10

Paul Calderwood, Senior Planner
City of Ventura, Planning Division
501 Poli Street, Room 117
Ventura, CA 93110

February 4, 2003

RE: "Surfers Point Managed Shoreline Retreat" Draft Environmental Impact Report

Dear Mr Calderwood,

Enclosed are a few additional comments on the "Surfers Point Managed Shoreline Retreat" Draft Environmental Impact Report. We have included these additional comments in an effort to provide the public and decisionmakers with a clear picture of the long-term implications of the project, as well as to improve the defensibility of the EIR once a decision has been made to move forward with a project. We believe that addressing these issues now will simplify the permitting process with the California Coastal Commission and the Army Corps of Engineers, which will likely use the EIR as supporting information in the issuance of Corps permits. A

We hope that these additional comments are helpful, and we request that our input be solicited and considered during the Final Design process. Please contact me with any questions.

Sincerely,

A. Paul Jenkin, M.S.
Environmental Director
Surfrider Foundation - Ventura County Chapter
(805) 648-4005 pjenkin@sbcglobal.net

Supplemental comments on
Surfers Point Managed Shoreline Retreat
Draft Environmental Impact Report

PROJECT DESCRIPTION AND ALTERNATIVES ANALYSIS

B

The California Environmental Quality Act (CEQA), Section 15126(d) Alternatives to the Proposed Action, supports the use of an alternative screening analysis. This section states:

> *"Describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives."*

The CEQA guidelines also state:

> *"The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effect of the project. Of those alternatives, the EIR need examine in detail only the ones that the lead agency determines could feasibly attain most of the basic objectives of the project."*

The EIR does a good job in describing a range of alternatives. However, the EIR never really identifies a "project", but only a series of alternatives. Given the fact that no project is identified, it is difficult to determine which alternatives avoid or substantially lessen potentially significant impacts associated with the "project".

CEQA also requires that the EIR identify the environmentally superior alternative. Also, CEQA Guidelines, Section 15126 (d)(4) states that if the environmentally superior alternative is the No Project Alternative, then the next most environmentally superior alternative must also be identified. The Draft EIR makes no attempt to identify the environmentally superior alternative, nor does it provide a meaningful discussion of the relative merits of the proposed project and alternatives.

> **Recommendation: The EIR should clearly identify the proposed project and evaluate those alternatives that would avoid or lessen potential environmental impacts. The EIR should identify the environmentally superior alternative.**

PROJECT/ALTERNATIVE DESCRIPTION COMPLETENESS

C

The EIR does not provide a complete description of the proposed project/alternatives in terms of the long-term characteristics of the project. Clearly, long-term maintenance will be required for several of the alternatives, which would also result in future impacts. Given the known need to re-nourish the cobble berms for several alternatives, the project description should disclose the true parameters of the project, such as volume of material that will be required for re-nourishment over the next 30 years, the associated number of truck trips, beach closures, air quality impacts, impacts to coastal dunes, etc.

Without complete information on the long-term characteristics of an alternative, it is impossible to provide a reasonable comparison of the proposed project and alternatives. The EIR currently leaves the reader with the impression that a less-expensive alternative may be attractive due to relatively low costs and impacts. However, the EIR has failed to disclose the long-term impacts with the lower cost alternative (i.e., Alternative 4).

> **Recommendation: The EIR should be revised to disclose the true long-term costs and impacts associated with each alternative. This would include revising the Project/Alternative Descriptions and impact analyses. Finally, the comparison of alternatives should reflect the true long-term costs and impacts associated with each alternative.**

CUMULATIVE IMPACTS

D

The California Environmental Quality Act (CEQA), in Section 15355 of the guidelines, defines "cumulative impacts" as two or more individual effects that, when considered together, are either considerable or compound other environmental impacts. CEQA Section 15130(b)(1)(B)2 also requires an agency to consider how a project's impacts will cumulate with the impacts of past, present and probable future projects.

A typical "project specific" cumulative analysis looks at the changes in the environment that result from the incremental impact of development of a proposed project and other reasonably foreseeable projects that have not been included in the environmental setting. For example, the traffic impacts of two projects in close proximity may prove to be insignificant when analyzed separately, but could be significant when the impacts of the projects are analyzed together. While these projects may be unrelated, their combined (i.e., cumulative) impacts are significant.

CEQA Guideline Sections 15064(1)(4) and 15130(a)(4) provide that an agency could determine that the incremental of a project were not cumulatively considerable when they would make only a "de minimis" contribution to a significant effect. Guideline15064(i)(4) states that such de minimis incremental impacts, by themselves, would not trigger the obligation to evaluate cumulative impacts in an EIR. In a recent case, Communities for a Better Environment v. California Resources Agency (Case #C038844 10/28/02), the court found that an agency following these guidelines could fail to take into account the nature and scope of a significant cumulative impact, and instead might focus solely on the incremental impact of the project. The court suggested that the greater the cumulative environmental problem, the lower the threshold should be for determining the significance of a project's contribution to that cumulative impact.

Clearly, the EIR fails to provide any analysis of potential cumulative impacts with nearby or relevant projects. At a minimum, the EIR should be revised to include an impact analysis for the following projects:

- Rehabilitation of the Ventura Beach Promenade,
- Proposed 250-275 room hotel and restaurant at the southeast corner of Harbor Boulevard and Figueroa Street,
- Matilija Dam Removal.

These projects are well along in the planning stages and are reasonably foreseeable. In addition, they each have the potential to result in significant cumulative impacts, or possible beneficial impacts that would affect the evaluation of the proposed project.

In addition to these projects, numerous projects at the Fairgrounds are in the conceptual stage and will be evaluated as part of the Fairgrounds Master Plan. While the Master Plan has not been completed, components of the Master Plan that have been publicly discussed by the Fair Board should be included in the cumulative impact analysis section as well.

Recommendation: The EIR should reevaluate the projects that are considered in the cumulative impacts section of the EIR. At a minimum, the EIR should evaluate those projects bulleted above for each relevant issue area.

Letter 10

COMMENTOR: A. Paul Jenkin, M.S., Environmental Director, Surfrider Foundation – Ventura County Chapter

DATE: February 4, 2003

RESPONSE:

Response 10A

The commentor is providing additional comments that he states are intended to be helpful and improve the defensibility of the document. The commentor also requests that his input be solicited during the final design process. Specific comments are addressed in Responses 10B through 10D. If the project is approved, the commentor's input will be solicited as the project moves into final design.

Response 10B

The commentor states that the EIR should identify a specific alternative as the "project," suggests that alternatives be limited to those that would avoid or substantially reduce project impacts, and suggests that the EIR should identify the environmentally superior alternative.

The EIR is an "alternatives style" document that examines a series of alternative scenarios in an equal level of detail rather than identifying a single scenario as the "project." Although this format is atypical for CEQA documents, this is the required format for environmental review documents prepared pursuant to the National Environmental Policy Act (NEPA). The environmental document was originally prepared as a joint Environmental Impact Report/Environmental Assessment (EIR/EA) based on direction from Caltrans and the Federal Highway Administration (FHWA) because the City is pursuing federal funding from FHWA for funding of the bike path reconstruction. After an internal review draft of the document was completed (including approval of the document for release by the Surfers Point Working Group and Caltrans), FHWA determined that the project is categorically excluded from NEPA's environmental review requirements. Therefore, the document did not need to be circulated for review as a joint CEQA/NEPA document. At that point, the City simply removed the NEPA references and circulated the document for public review as an EIR rather than reformatting the entire document. This was done in the interest of avoiding further delays and expense for an environmental review process that had already incurred substantial delays and expenses as a result of changing direction from various parties. Although the document is not in the typical CEQA format, it includes all of the information required by CEQA and meets CEQA's intent of disclosing the environmental consequences of the proposed action. It should also be noted that the "preferred alternative" of the Surfers Point Working Group identified in the Draft EIR can be considered the proposed action for CEQA purposes.

It is true that the CEQA Guidelines suggest that EIRs should focus on alternative that reduce or eliminate significant environmental effects of the proposed project. However, in the case of the Surfers Point Managed Shoreline Retreat project generally (and the "preferred alternative" specifically), no unavoidably significant environmental impacts have been identified. To the

contrary, with a few minor exceptions, the effects of all of the alternatives studied in the Draft EIR are considered beneficial. As noted in several responses to the commentor's previous letter, it is important to remember that the baseline against which projects are analyzed under CEQA is the current condition. Given that the current condition at Surfers Point consists of an eroding shoreline and damaged bike path and parking lot, the changes that would occur under any of the alternatives would generally represent an improvement in environmental conditions. Because there are no significant impacts associated with the preferred alternative to avoid, the Draft EIR analyzes a range of alternatives that were developed by the Surfers Point Working Group (Alternatives 1-3) ,the EIR consultants (Alternative 4), and even the Surfrider Foundation (Alternative 5 –modified).

The Draft EIR does provide a summary comparison of the alternatives and discuss the environmentally superior alternative. Please see the discussion of "Environmental Impacts" on pages S-2 and S-3. As noted in that discussion, Alternative 5 (the preferred alternative) could be considered environmentally superior overall if the emphasis is on meeting the objectives of relocating improvements inland and restoring the beach. On the other hand, Alternative 4 could be considered superior if one was primarily concerned with minimizing initial disruption to the area and Alternatives 1 and 3 could be considered superior if minimizing future maintenance and associated impacts were deemed most important. Obviously, there are pros and cons to each of the alternatives. However, none of the alternatives would generate any unavoidably significant impacts under CEQA.

Response 10C

The commentor states an opinion that the alternative descriptions and analyses should include a comparison of long-term costs and impacts. This opinion is noted. Cost issues are outside the scope of CEQA documents. The purpose of the EIR is to disclose the significant environmental impacts of proposed projects. Long-term impacts associated with periodic maintenance are discussed throughout the Draft EIR. Periodic impacts relating to traffic, noise, air quality, and recreation, in particular, would occur under Alternatives 2-5 and would likely be greatest under Alternative 2. The actual amount of renourishment required for any of the alternatives cannot be predicted with any degree of certainty because such requirements are dependent upon future weather and storm conditions. However, in no case would such periodic maintenance activity generate impacts that would be considered significant under CEQA.

Response 10D

The commentor states an opinion that the Draft EIR fails to acknowledge potential cumulative impacts associated with various projects, including the rehabilitation of the Ventura Beach Promenade, a proposed hotel at the corner of Harbor Boulevard and Figueroa Street, and the Matilija Dam removal. A table summarizing cumulative development in the City of Ventura is including in Section 2.0 of the Draft EIR (page 2-23). That same page also specifically discusses other planned and pending development in the vicinity of the project site, including the hotel and Ventura Beach Promenade rehabilitation to which the commentor refers. These projects were considered in the environmental analysis of the project. However, it is important to remember that the proposed Surfers Point Managed Shoreline Retreat is not a development project (such as a hotel), but instead involves the reconstruction of an existing bike path and restoration of an eroded beach. As such, the proposed project would not generate traffic, noise,

or air pollutant emissions on a regular, long-term basis and therefore would not contribute to cumulative impacts in these areas (to which more typical development projects often contribute).

The Ventura Beach Promenade restoration to which the commentor refers merely involves repair of damage that has occurred since the construction of the facility in the 1960s. The restoration is a maintenance project that would not increase the capacity of the Promenade or involve any change in use. As such, it would not affect coastal processes in any way or contribute to any cumulative changes in the area.

As the commentor is aware, the possible future removal of Matilija Dam would be expected to generally increase the amount of sediment reaching the coast via the Ventura River. This increase in sediment would be expected to have generally beneficial effects with respect to local beaches, including Surfers Point Beach. In combination with the proposed managed shoreline retreat project, removal of the dam would be expected to have substantial cumulative benefits with respect to the local coastline.

In response to this comment, the following will be added to the text of the Final EIR:

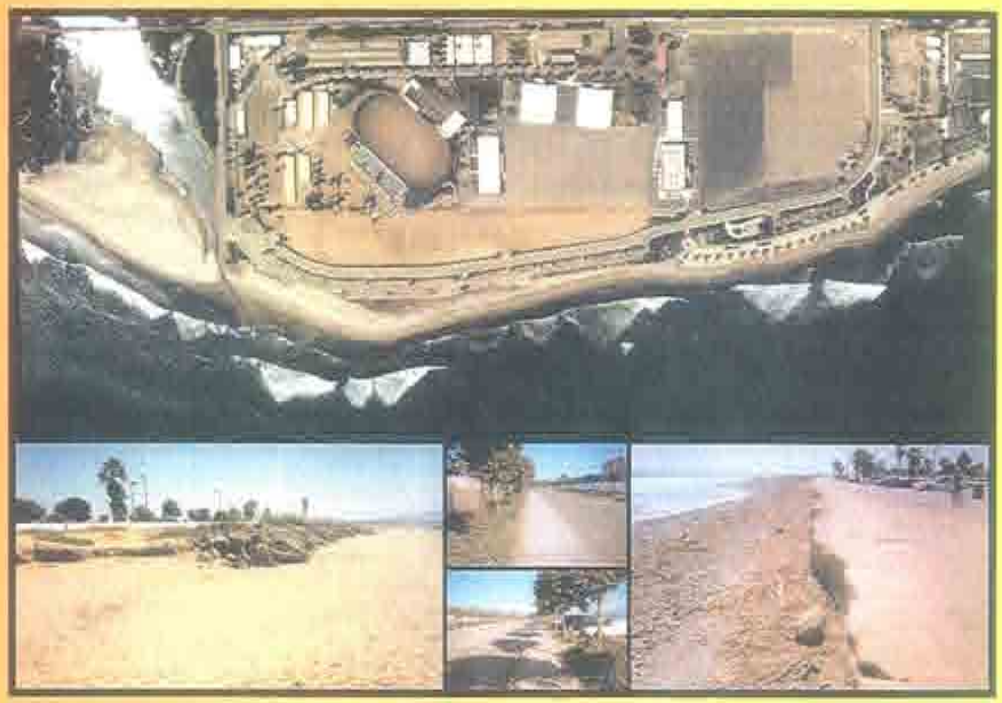
> ***4.13 Cumulative Impacts***
>
> *Cumulative development in the City of Ventura is described in subsection 2.8, Status of other Projects in the Area, (beginning on page 2-23) and summarized in Table 2-4. The proposed Surfers Point Managed Shoreline Retreat project is not a development per se, but rather is a project specifically intended to improve and enhance conditions at Surfers Point by replacing an existing erosion-damaged bike path and parking lot and restoring an eroded and biologically degraded section of beach to a more natural condition. The proposed action would not generate any permanent increase in vehicle traffic, noise, or air pollution, and is anticipated to result in long-term benefits to the viability of the shorefront bike trail and to the health and desirability of the beach at Surfers Point. The only permanent physical changes associated with the proposed project are improvements to the appearance and biological and recreational functionality of Surfers Point and a possible minor increase in the deposition of sand and cobble on downdrift beaches. As such, the project is not expected to contribute to any significant negative cumulative impacts. Similarly, planning and pending developments in the City of Ventura are all infill projects that would have little or no cumulative effect on coastal processes. In combination with the future increased sediment loads associated with the possible future removal of Matilija Dam on the Ventura River, the project may contribute to the cumulative enhancement of area beaches.*

Appendix I

Noble Consultants, Inc.
Report on Managed Plan for Shoreline Retreat

SURFERS POINT PARK

Managed Plan for Shoreline Retreat



December 2000

NOBLE CONSULTANTS, INC.

Table of Contents

Introduction 1

Historical Content 3

Erosion History 5

Shoreline Protection Concepts 8

Shoreline Retreat Alternative Plans 10

5.1 No Action Within the Shoreline Retreat Zone 10

5.2 Cobble Mattress With Sacrificial Dune 10

5.3 Cobble Berm 14

5.4 Relocation of Improvements 14

List of Tables

1 Grain Size Identification 9

List of Figures

e 1 Surfers Point and Vicinity 1
e 2 East Beach 1994, 1995, 1998, 2000 2
e 3 Surfers Point 1929 3
e 4 Surfers Point 1936 3
e 5 Surfers Point 1961 3
e 6 Surfers Point 1999 4
e 7 Average Rainfall in Ventura River Basin 5
e 8 Surfers Point Shoreline History 6
e 9 West Beach 1991 6
e 10 West Beach 1993 and 1999 6
e 11 Surfers Point Erosion Point 7
e 12 Emma Wood State Beach Cobble Berm 8
e 13 Opinion of Episodic Erosion and Accretion Limits 11
e 14 No Action Within Shoreline Retreat Zone 12
e 15 Cobble Mattress With Dune 13
e 16 Existing Improvements 14
e 17 Cobble Berm 15
e 18 Improvements Relocation Revised Seaside Park Plan 16

Appendix A Surfers Point Shoreline Analysis

Appendix B Protective Gravel, Cobble and Boulder Berms in Southern California

Appendix C Cobble Berm Design Guidelines

Appendix D Evaluation of Emma Wood State Beach

Appendix E References

1.0 Introduction

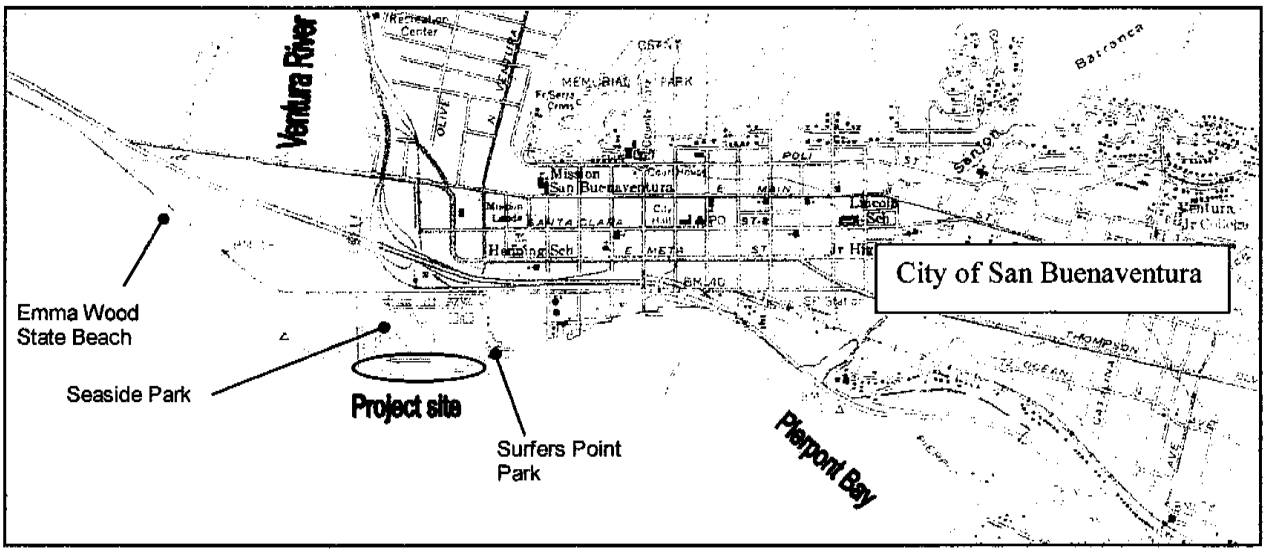
Surfers Point is one of the City of San Buenaventura's coastal areas dedicated to public access. The property consists of several land parcels which are bounded by Figueroa Avenue to the south, the Ventura County fairgrounds to the north, and the Ventura River to the west as shown on Figure 1.

The eastern most property is known as Surfers Point Park. The area consists of parking facilities, park improvements, and other amenities. Seaside Park occupies the northern and western limits of the area. The site is the home of the annual Ventura County Fair, and numerous other special event activities that take place throughout the year. The property is owned and maintained by the 31st Agricultural District, with several public easement provisions to accommodate site access and public access.

Approximately six acres of shorefront land about 1,700 feet in length was re-developed by the City of San Buenaventura in 1989 as part of the Fairgrounds Master Plan to improve and promote coastal access. At that time the new City street right-of-way (Shoreline Drive) was established, bike path and lateral public access corridors were constructed, extensive public parking facilities were built, and a small dune habitat was established.

The bike path easement was incorporated within the State Senator Omer Reins Bicentennial Bikeway, and, as such, the corridor is the responsibility of the State Department of Parks and Recreation.

Figure 1. Surfers Point and Vicinity



Not long after the Seaside Park shoreline improvements were dedicated, winter storm waves and tides began to seriously erode dune areas. Portions of the bike path also collapsed into the sea. In response to the situation, emergency measures were implemented in 1992, including the construction of a small stone revetment at the west end of the property. These measures were considered to be only temporary in nature until a more lasting solution could be adopted.

In 1995, State Senator Jack O'Connell and Assemblyman Brooks Firestone convened a Working Group to resolve long standing issues related to preservation of the Surfers Point/ Seaside Park shoreline. In question was how best to restore and/ or protect a very popular bike path, pedestrian walkway, public parking area, sensitive dune habitat, and beach access. The Working Group was convened to review the matter and recommend a policy that addressed all of the multi-faceted issues related to shoreline preservation or retreat alternatives.

Alternatives that have been discussed range from traditional methods to protect the existing bike path and parking areas at their existing locations to complete removal and abandonment of the public improvements within a designated buffer zone of separation. After considerable review of the pros and cons of each strategy, it was the consensus determination of the Working Group that a managed retreat plan be developed that would accomplish the following:

- Re-locate the bike path and public parking lots further inland;
- Preserve public access to the Surfers Point area via Shoreline Drive;
- Restore the lands seaward of Shoreline Drive to more natural beach habitat;
- Provide a permanent shoreline protection solution for Seaside Park and all improvements landward of Shoreline Drive.

This report presents the results of an engineering study that was performed to identify in more detail the conceptual design alternatives that may be considered to accomplish these goals and objectives.

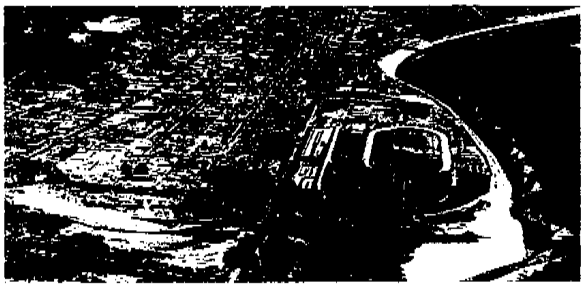
Figure 2. East Beach 1994, 1995, 1998, 2000

2.0 Historical Context

The Surfers Point shoreline is located within a coastal region that has undergone significant changes over the past century as a result of human intervention and population growth impacts. Historical photographs dating to the late 1920's show that the shoreline was already urbanized and developed to a large extent by that time. Buildings and roads were constructed close to the water's edge, and evidence of early attempts at shoreline erosion management was already underway.

At Surfers Point, prior development included fairground buildings, oil industry infrastructure, and wastewater treatment plant facilities. The shoreline has also been used in the past for construction debris disposal presumably in an attempt to provide low cost shoreline protection.

Figure 3. Surfers Point 1929



As with many coastal areas in southern California, the natural supply and movement of sand within this portion of Ventura County has been altered over time. Upcoast of Surfers Point, along the Rincon Parkway, railroad construction in the late 1800's and a series of State highway constructions between the 1920's and 1970's progressively encroached on beaches that were already narrow and ephemeral. The realignments culminated in further reductions of beach width, the necessity for fortification of the shoreline, and impacts to the natural coastal processes and littoral transport regime.

Within the local inland watersheds, construction of the Matilija Dam, Casitas Dam, and other flood control improvements upstream in the

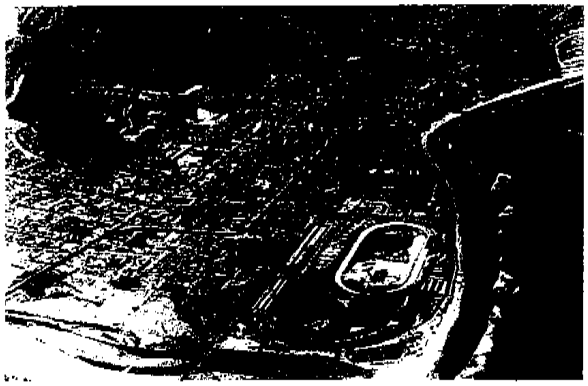


Figure 4. Surfers Point 1936

Ventura River basin and other local tributaries reduced the volume of sediment delivery to the coastline that historically prevailed. Years of sand and gravel mining within the Ventura River bed also affected the ability of the river to renourish the local coastline.

The cumulative impacts of the historical development and human interventions that took place within the natural system resulted in a chronic condition of shoreline erosion within the City of San Buenaventura. In response to the problem, a Federal shoreline protection project was constructed in the 1960's immediately downcoast of Surfers Point to stabilize the critically eroding Pierpont Bay shoreline. A series of stone groins were constructed and the compartments between each structure were filled

Figure 5. Surfers Point 1961

with sand obtained from the new construction of U.S. Highway 101 through the City. Later, shoreline protection measures were extended further upcoast to Figueroa Street as part of the Beach Promenade construction in 1970.

The 1989 Surfers Point re-development project was constructed as the last component of the City's program to revitalize the shorefront property. The primary purposes of the project included enhancement of public access, fulfillment of fairground land use plans, and introduction of more natural shoreline features. A secondary objective of the re-development was to stabilize the City's westernmost shoreline.

Surfers Point is one of the most utilized and popular coastal access points in southern California. The location is known for its excellent surfing, and the shoreline setting supports a diverse number of other active and passive forms of recreation.

The parking facilities and street access provide much needed parking and vehicular access to support Seaside Park's public service mission statement. In addition to the annual County fair that is held on the premises, numerous other special events take place within the grounds that critically depend on the roadway and parking improvements.

From a more regional perspective, the bike path segment through Surfers Points serves as a vital link on the State Senator Omar Reins Bicentennial Bike Path. The segment allows bicycle enthusiasts and pedestrians to access destinations to the east, north, and west from this coastal hub point.

Figure 6. Surfers Point 1999

3.0 Erosion History

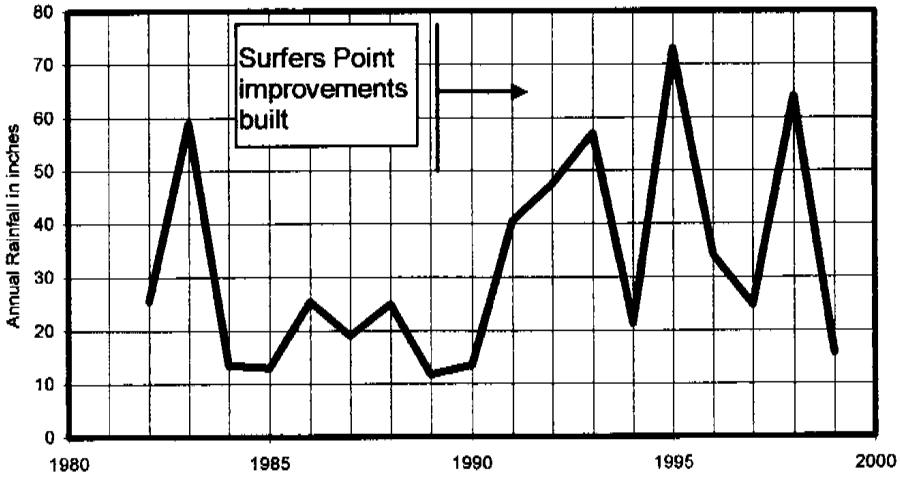
Surfers Point is a unique coastal setting which helps to understand its past, present, and future shoreline history. From a geological perspective, the area is located within the alluvial fan of the Ventura River. The adjacency of the site to the present day location of the mouth means that wide fluctuations in the shoreline may be expected in direct response to the variability of river discharges and related volumes of sediment that are carried in storm runoffs.

During years of heavy rainfall, more sand is delivered to the shoreline and a wider beach at Surfers Point will form. However, when sediment delivery is curtailed during times of drought, waves and currents will erode sediment faster than it can be replenished resulting in times of narrow to non-existent beach width.

The effects of a transient sediment supply to the site is somewhat offset by the resistant low tide terrace that may be found at Surfers Point. Immediately offshore, the surface consists of extensive beds of boulders and cobble. These deposits limit the incident wave energy that can impact on the shoreline and they provide more resistance to erosion of the profile. When storms do occur, storm surf on the beach is generally limited to the residual effects of broken waves. However, as with most coastal areas, the backshore area becomes more vulnerable to erosion during surf coincidence with higher tides.

A review of the regional and local shoreline behavior over the past 70 was conducted using historical aerial photography and maps to assess the historical sequences of past episodes of beach erosion and accretion. Twenty-five sets of aerial photographs covering a period of record of 1929 to 1999 were analyzed over a 4-mile long shoreline segment centered at the Ventura River mouth. A more detailed discussion of the analysis that was performed is provided in Appendix A of this report. The results of the study are summarized in Figure 8.

Figure 7. Average Rainfall in Ventura River Basin



In general, Surfers Point was concluded to have experienced wide fluctuations in shoreline position over the past 70 years in response to sediment discharge volumes from the Ventura River and severity of winter storm seasons. The data indicates that along the west end of the site (West Beach), variations on the order of 500 feet have occurred whereas the eastern end of Surfers Point (East Beach) has experienced changes of about 200 feet. The 1969 shoreline position

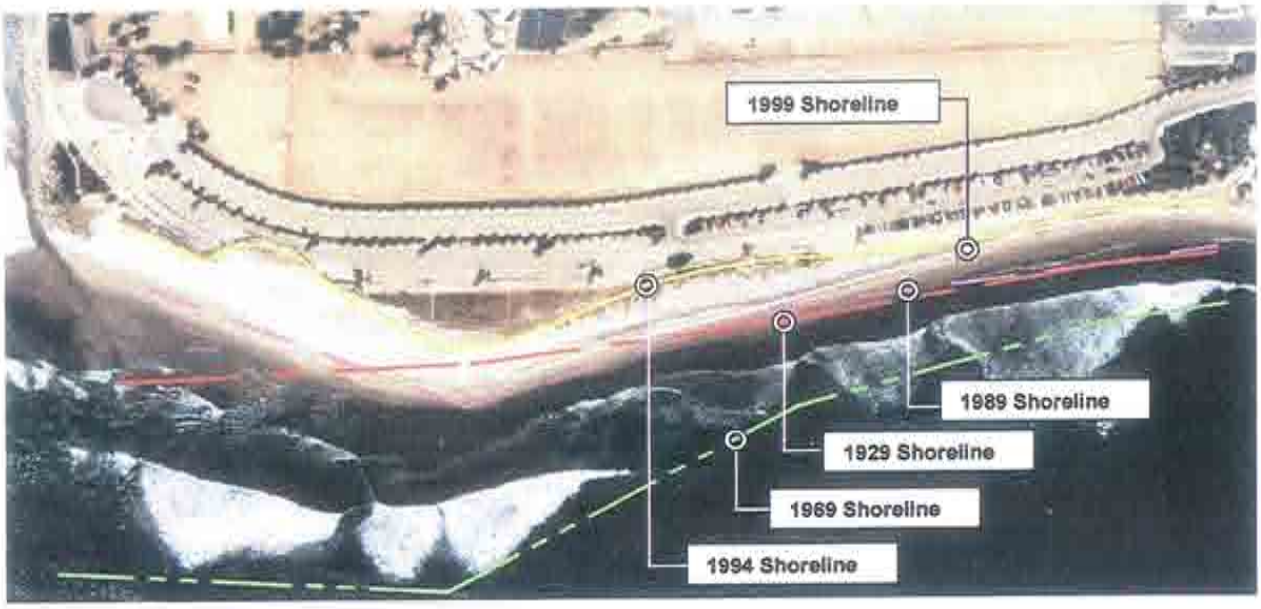


Figure 8. Surfers Point Shoreline History

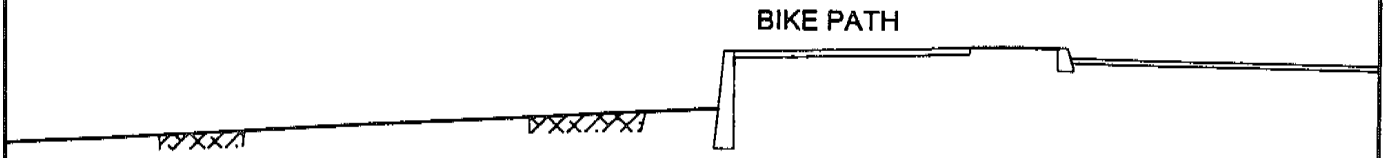
marked the line of maximum accretion over the data period. This date corresponds to the record flood of February 1969 when the highest peak flow of record in the Ventura River was measured.

The 1994 shoreline currently represents the line of greatest recession to date. This shoreline position coincided with a period of depleted sand conditions at Surfers Point. In this state, coastal storms coincident with higher tides produced broken wave runups and bore surges that eroded the development's fill profile. This erosion mechanism is schematically illustrated in Figure 11, and the process is considered to typify the mechanism for present and future erosion episodes.

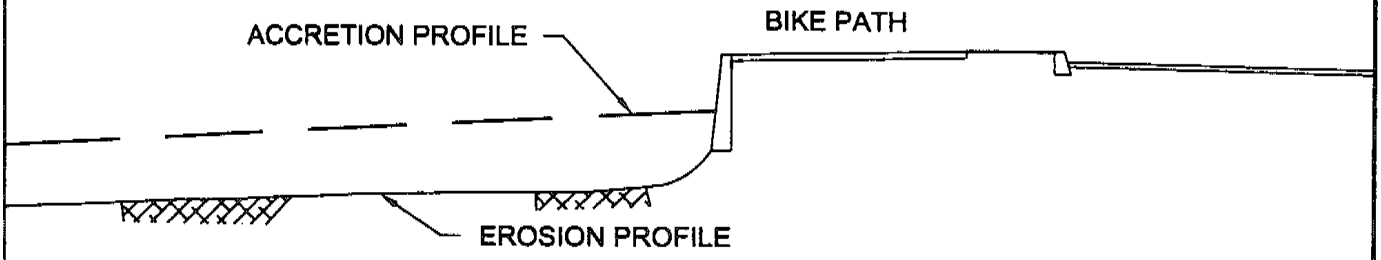
The El Nino rainfall years of 1993, 1994 and 1998 were responsible for the delivery of large volumes of sand and debris to Surfers Point. The delta-like deposit that formed at the mouth extended east along Surfers Point where they provide sufficient buffer to subsequent erosion episodes and temporary erosion protection for the Surfers Point backlands. However, as these emphemeral deposits recede, episodic erosion cycles will occur until such time as the shoreline is again temporarily renourished and protected by the river

Figure 9. West Beach 1991

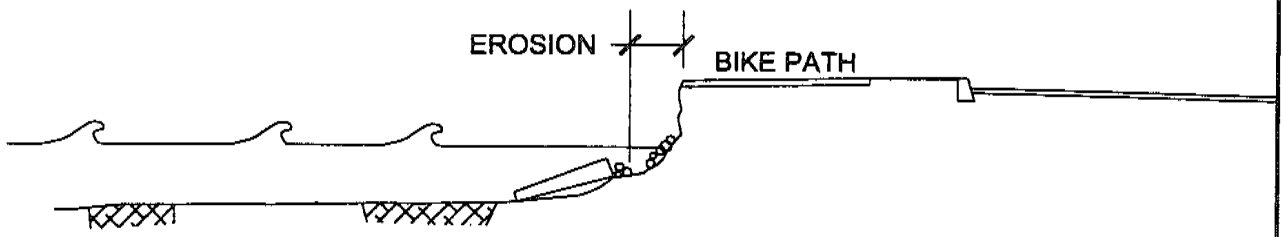
Figure 10. West Beach 1993 and 1999



1. BEACH ACCRETION CONDITION



2. SAND DEPLETED EXPOSING IMPROVEMENTS TO TIDAL ACTION



3. BROKEN WAVE RUNUP ATTACKES TOE AND UNDERMINES FILL AT HIGH TIDE

Surfers Point Erosion Process

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Figure 11

4.0 Shoreline Protection Concepts

Traditional concepts for shoreline protection include revetments, seawalls, and beach nourishment. These alternatives have been explored in prior studies, and the consensus review of the Surfers Point Working Group has concluded that more innovative approaches to solving the problem are desirable. Accordingly, more unique concepts were pursued in an effort to develop a more natural approach to solving the erosion problem by mimicking naturally occurring processes.

Non-traditional methods of shoreline protection generally fall within one of the following categories:

- techniques to retain sand,
- methods to reduce incident wave energy, or
- use of beach materials that are more resistant to erosion processes.

The first two methods involve use of structures set normal to the shoreline or submerged offshore and ideally disguised to appear as natural rock formations.

A naturally occurring example of erosion resistant material may be seen just west of the Ventura River mouth at Emma Wood State Beach where an extensive berm formation of boulders and cobble has existed for decades. The prototypical example suggests that devising ways to use and configure similar materials to stabilize the shoreline may also be a feasible option at Surfers Point.

Emma Wood State Beach is located immediately west of Surfers Point upcoast of the Ventura River mouth. The beach consists of a long shore face berm composed of gravel, boulders, and cobble (GBC) material. The berm has a naturally occurring wide crest with a slope that varies from 4 to 5 to 1. A protective low tide terrace in front of the berm is also composed of a vast expanse of GBC. Historical shoreline analysis within this area indicates that the shoreline has been relatively stable over the past 70 years.

Use of cobble as a shore protection material is state-of-the-art since research is limited and information to guide design specifications is almost non-existent. Therefore, as part of this study, further research was conducted to better understand the characteristics of the Emma Wood GBC structure in particular and gravel, boulder, and cobble berms in general. Appendix B presents a discussion of naturally occurring GBC berms in southern California. Appendix D

Figure 12. Emma Wood State Beach Cobble Berm

summarizes the exploratory work that was performed to review and evaluate the composition of the Emma Wood structure.

Throughout these references, material sizes are referenced to the Unified Soil Classification (USC) system. This arbitrary classification of soil grain size defines the descriptive terminology used to classify any soil or beach material. Table 1 shows the nomenclature that has been adopted by the USC system. Differentiation between sand, gravel, cobble, and boulder-sized material is listed by grain size diameter. For clarity, the system is referenced to commonly recognized items to help one visualize the different size ranges.

Given the proximity of Emma Wood's GBC berm to Surfers Point, it was considered to be a more valid model for potential application at Surfers Point. Key findings from the field research include:

- The thickness of the GBC was relatively thin over the profile. The low tide terrace fronting the GBC berm consisted of only a thin layer of gravel, cobbles, and boulders (1 to 2 feet thick) over fine to medium sand. The constituent GBC layer was only on the order of 2 to 3 feet thick near the toe increasing to about 9 feet thick near the crest.
- The gradation of material on the slope surface varied from 3 to 24 inches in size.
- The slope of the GBC berm varied between 4 to 5 to 1.

Research into GBC berms in southern California indicated the following:

- Stability of GBC berms appears to be controlled by differences in porosity, clast size, crest elevation, and profile shape.
- Data suggests that GBC berms accrete during storm events in stark contrast to the response of sandy beaches.
- Research and field measurements indicate that surcharging GBC berm crests with sand leads to erosion and destabilization of the berm.

Table 1. Grain Size Identification

Name	Size Limits in mm	Familiar Example
Boulder	305 (12 in.) and larger	Larger than basketball
Cobble	76 (3 in.) to 305	Grapefruit
Coarse gravel	19 (3/4 in.) to 76	Orange
Fine gravel	4.76 to 19	Grape
Coarse sand	2 to 4.76	Rocksalt
Medium sand	0.42 to 2	Sugar
Fine sand	0.074 to 0.42	Powdered sugar

Source: Unified Soil Classification System from Sowers and Sowers, 1970

5.0 Shoreline Retreat Alternative Plans

Selection of a preferred plan for the Surfers Point Managed Shoreline Retreat project involves two main elements: selection of a shoreline stabilization concept and selection of a preferred plan to relocate the landward improvements. The managed shoreline retreat concept assumes that the most seaward improvements of the existing development shall be demolished so that a more natural shoreline buffer zone may be established. This means that the bike path and parking lot areas will be moved over 60 feet inland from their existing locations. In so doing, decisions regarding the relocation of the bicycle path, parking facilities, and the configuration of Shoreline Drive must be made.

Alternative shoreline protection schemes include the following:

- No action within the designated shoreline retreat zone
- Cobble mattress with sacrificial dune
- Cobble berm

5.1 No Action Within the Shoreline Retreat Zone

This plan assumes that all improvements seaward of the existing location of Shoreline Drive will be demolished and the area re-graded to a smooth slope. No attempt would be made to address future episodes of erosion, and erosion episodes would presumably continue at the current frequency.

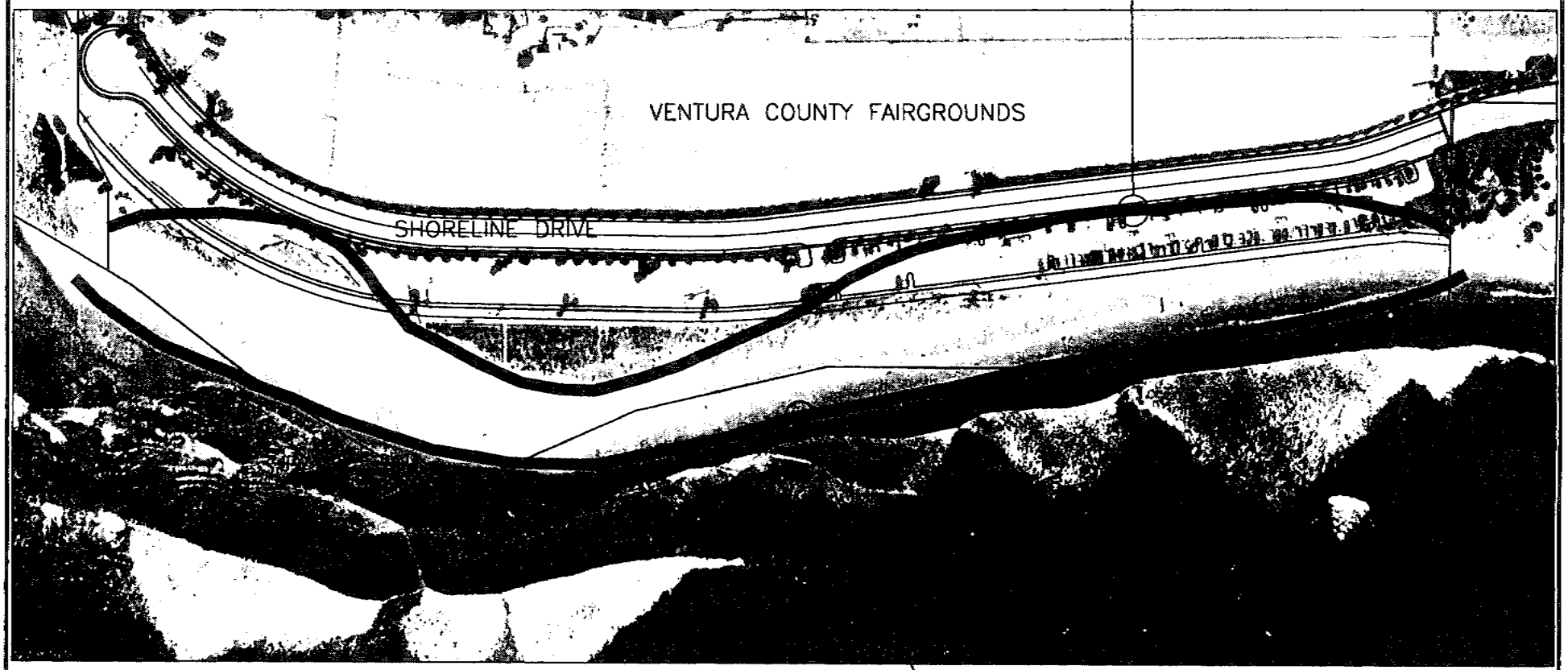
The impact of this plan on the remaining improvements is dependant upon the magnitude and extent of future cycles of beach recession and accretion and their coincidence with coastal storm events. It is anticipated that the back beach area will continue to erode during times of narrow to non-existent beach protection. The erosion sequences will be tempered by times when the shoreline is wider as a result of beneficial river discharges and littoral contributions.

A graphic representation of the range in shoreline position speculated to occur in the future is shown in Figure 13 to illustrate the opinion that relocated development will be impacted by storms and erosion unless some preventive measures are taken. Since 1989 when the existing improvements were dedicated at Surfers Point, the shoreline has eroded impacting portions of the bike path and parking lot as shown in the figure. The erosion sequence was followed by a cycle of beach accretion which thus far has provided protection against storm damages. However, it is believed that erosion incidents will recur in the future during times when the protective sand deposits are depleted and periodic winter storms coincide with higher tides.

In order to guarantee the preservation of the improvements landward of the retreat zone during those times of depleted beach sand, the plan recommends that the landward line of development retreat be protected with a buried seawall as shown in Figure 14. Although the structure would be buried in place, it is possible that portions of the seawall particularly on the west end of Surfers Point would become exposed for brief periods of time until subsequent river discharges of significance delivered enough sediment to the shoreline to re-bury the structure.

5.2 Cobble Mattress with Sacrificial Dune

This plan, illustrated in Figure 15, consists of two elements. Cobble would be imported and placed on the foreshore slope in an effort to provide a more erosion resistant beach face. Within the buffer zone of retreat, a low height artificial sand dune would be established behind the cobble mattress and in front of the re-located improvements to provide limited protection



Opinion of Episodic Erosion And Accretion Limits

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Figure 13

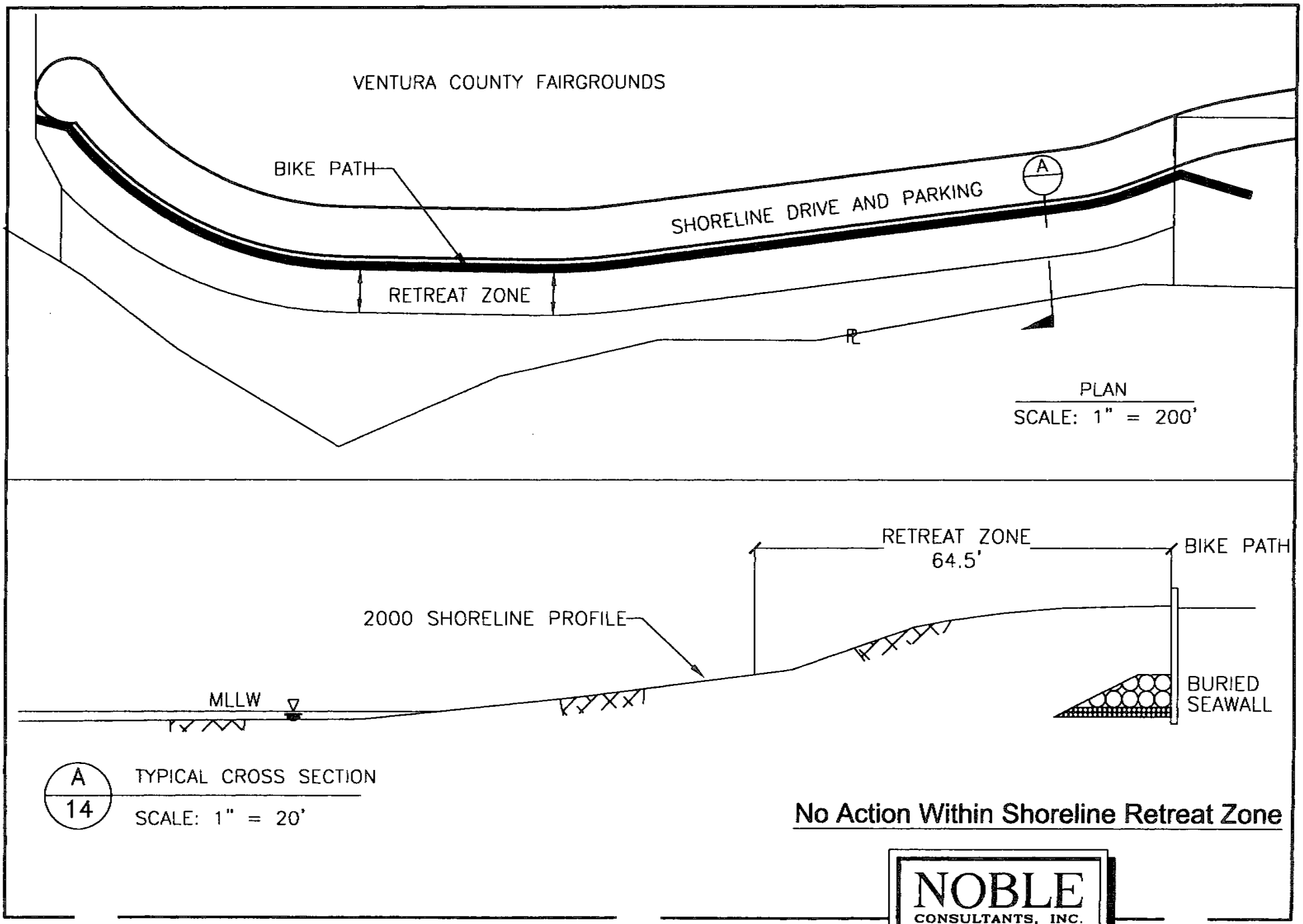
VENTURA COUNTY FAIRGROUNDS
BIKE PATH
SHORELINE DRIVE AND PARKING
A
RETREAT ZONE
PL
PLAN
SCALE: 1" = 200'
RETREAT ZONE
64.5'
BIKE PATH
2000 SHORELINE PROFILE
MLLW
BURIED
SEAWALL
A
14
TYPICAL CROSS SECTION
SCALE: 1" = 20'
No Action Within Shoreline Retreat Zone
NOBLE
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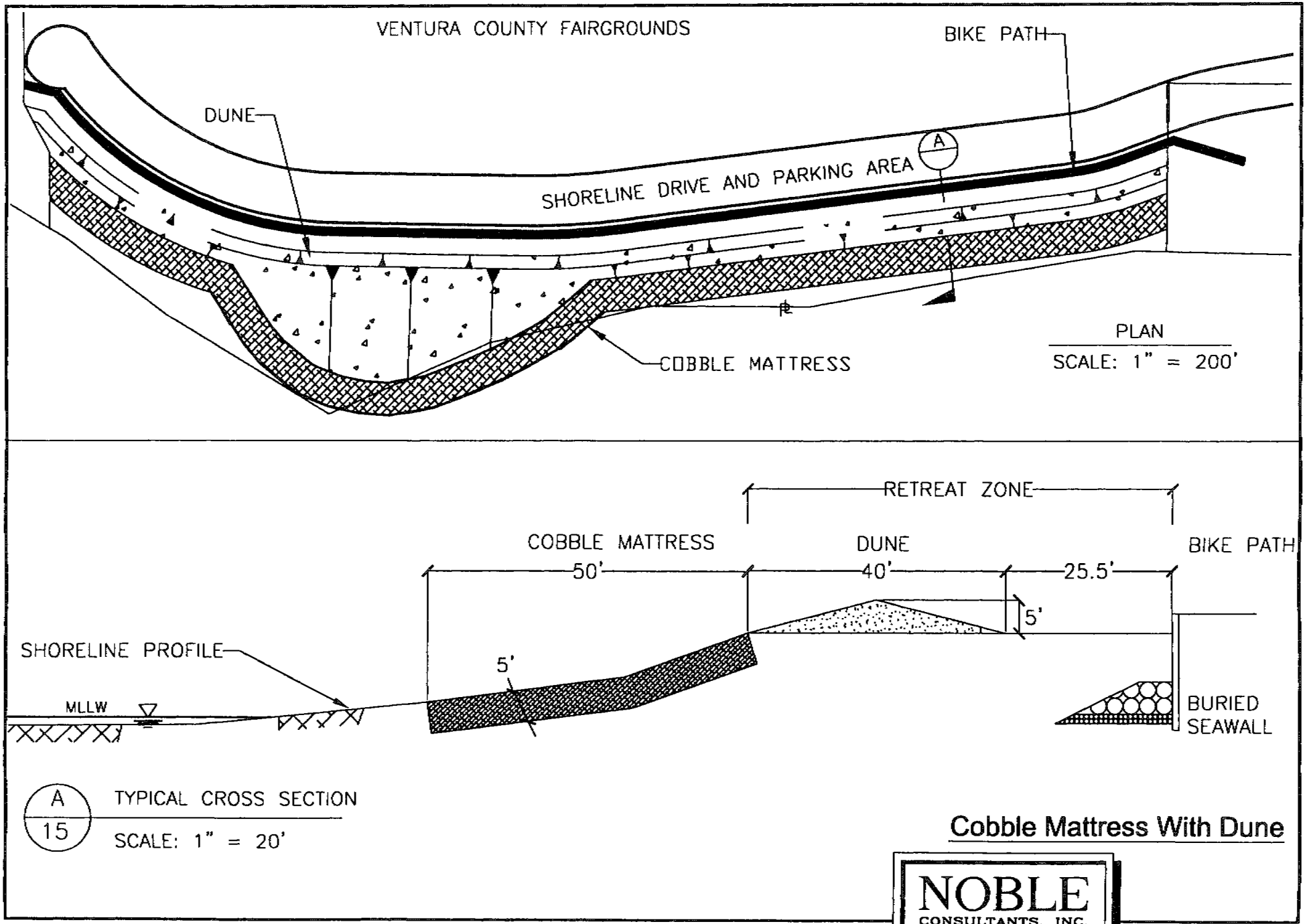
Figure 14



Cobble Mattress With Dune

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Figure 15

during storm events. Periodic replenishment of sand would be required to maintain the dune's cross-section at a rate depending on storm frequency and actual losses experienced. Thus, the dune is intended to be sacrificial and provide a secondary benefit to the littoral sub-cell by serving as a feeder site for sand.

This concept is considered to be experimental and unproven. Therefore, construction of a buried seawall at the retreat limit line is also considered necessary to guarantee preservation of the backshore lands and improvements.

5.3 Cobble Berm

This alternative patterns itself after the Emma Wood State Beach shoreline prototype. Boulders and cobble would be imported to construct a natural cobble berm as shown in Figure 17. Based on the findings of the current research, sandy fill behind the berm would be eliminated because of the opinion that sand infiltration may lead to destabilization of the GBC structure.

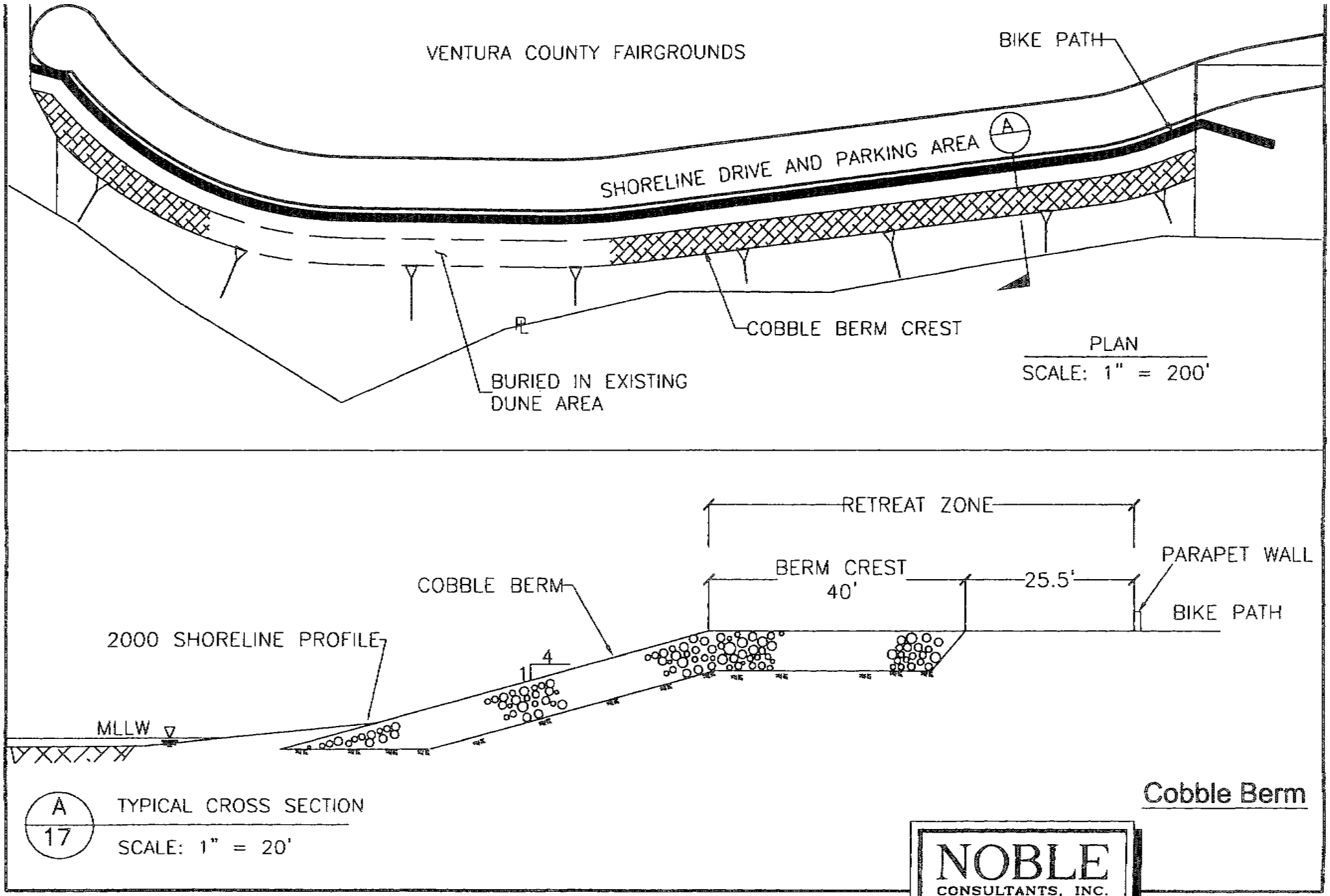
The apparent stability of GBC berms and the experience observed at Emma Wood implies that provisions for supplemental erosion protection are not required. Therefore no landward seawall structure is required for this alternative if the berm is built to the required cross section and the berm is adequately maintained.

5.4 Relocation of Improvements

The Surfers Point Working Group has formulated a consensus plan that addresses the relocation of public access and infrastructure improvements. The details of the plan are illustrated in Figure 18 in comparison to the existing cross section.

In addition to the above, renovation of the Seaside Park interior parking lot would be detailed to include upgrading the existing dirt surface to asphalt and improving the handling of storm drainage and runoff.

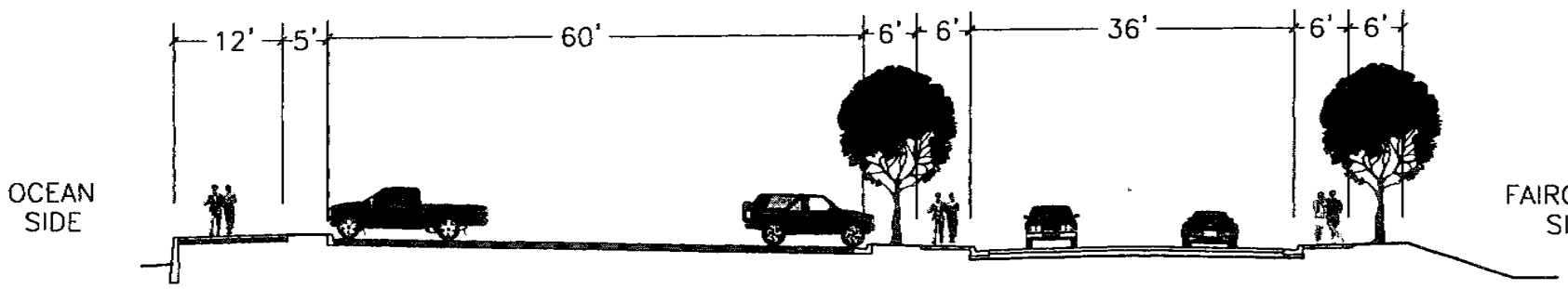
Figure 16. Existing Improvements



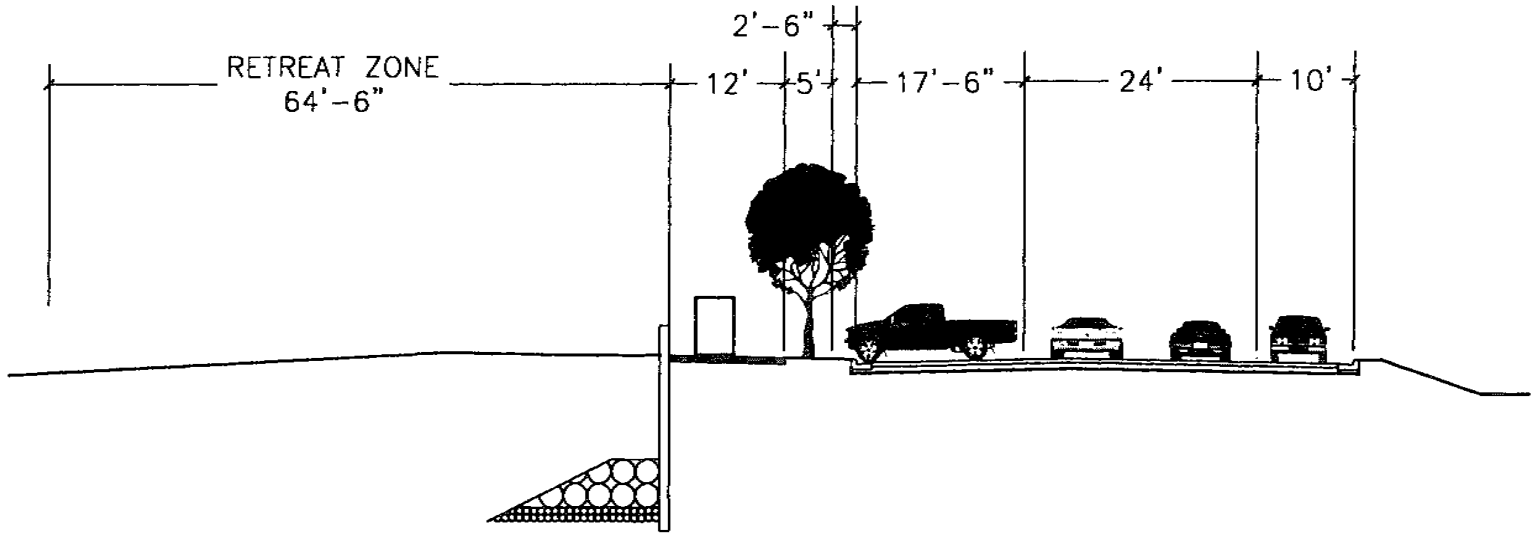
Cobble Berm

NOBLE CONSULTANTS, INC.

Figure 17



EXISTING CONDITIONS



REVISED SEASIDE PARK PLAN

SCALE: 1" = 20'

Improvements Relocation Revised Seaside Park Plan

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Figure 18

APPENDIX A

SURFERS POINT SHORELINE ANALYSIS

Prepared By: Dr. Craig Everts

Appendix A
Surfers Point Shoreline Analysis

A-1.0 Introduction

This appendix summarizes analysis that was conducted to review the historical shoreline behavior of the Surfers Point shoreline. Using historical aerial photography, maps, and survey data, an analysis was made to review the past recession and accretion episodes of the beach, the time frame that the changes occurred, and the degree of variability that occurred within a mean position. This analysis was intended to provide a basis to support conclusions relative to predicting future shoreline trends to support efforts to develop feasible shoreline stabilization and retreat plans

A-2.0 Shoreline Description

Surfers Point is a linear, south-facing ocean-side park immediately adjacent to the Ventura River delta. The narrow beach protecting the park is composed of a mixture of small boulders, cobbles, gravel, and sand that is occasionally stripped away during storms exposing the inland areas to wave attack. Since the site was re-developed with enhanced public access improvements in 1989, coastal erosion has affected portions of the paved parking lots and bicycle path. In response to the problem, a plan of managed shoreline retreat was proposed for Surfers Point to provide long term erosion protection by establishing a back beach buffer zone between the beach and reconfigured development together with stabilization methods that attempt to duplicate natural processes.

The Surfers Point shoreline extends for about 2,200 feet east from the mouth of the Ventura River to the urban shoreline park land improvements near Figueroa Street. The shoreline over this reach consists of two beach segments separated by a sandy point protrusion. The west beach area extends downcoast from a point immediately adjacent to the Ventura River jetty for a distance of about 650 feet. In 1999, the apex of the sandy point was located approximately 700 feet east of the Ventura River jetty. Continuing downcoast from this section the east beach portion stretches for a distance of about 1,500 feet long. Figure A-1 shows these shoreline features as they appeared in 1999.

A-2.1 Historical Shoreline Behavior at Surfers Point

Shoreline change statistics were developed for the west and east beach segments and the surrounding coastal segment by measuring the location of the wetted-bound shoreline position on map quality aerial photographs. Data was obtained from archival files of the U.S. Army Corps of Engineers and the University of California, Santa

Barbara Map and Imaging Laboratory. Twenty-five sets of vertical aerial photographs covering a period of record between 1929 and 1999 were used in the analysis.

Shoreline positions were established at 40 stations along 21,000 feet of coast centered at the mouth of the Ventura River as shown in Figure A-2. The zero alongshore distance station was arbitrarily located about 3,000 feet west of the Ventura River delta. For each photographic set, the position of the wetted-bound shoreline was measured relative to the south track of the railroad right-of-way that runs roughly parallel to the shoreline. Net shoreline change rates were calculated using least squares fitting methods for the entire period of record. The complete list of measurements is provided in Table A-1.

Figure A-2 is a plot of the net shoreline change rates that have occurred within the Ventura River delta area relative to shoreline position in 1929. As indicated in the figure, all but the center segment of the crescent-shaped Ventura River delta has been dynamically stable since 1929. A stable shoreline is defined in this report as a location where the net rate of change measured over the period of time is between a -0.5 ft/yr and +0.5 ft/yr envelope.

The implied stability of the shoreline segment west of the Ventura River may be attributed to the fact that the beaches are against seacliffs and partially armored with gravel, cobble, and boulder berms. The significant accretion that has occurred east of Surfers Point where the shoreline exhibited an average advance of 3 to 4 feet per year reflects the stabilizing influence of the groin field construction and artificial nourishment work that started in 19[illegible] and finished in 1967.

A-2.1.1 Relative Shoreline Position at West and East Beach

Figure A-3 shows the relative shoreline position within the west beach segment of Surfers Point. The plot indicates that west beach was slightly recessional between 1929 and 1999, but large survey-to-survey fluctuations in the position of its shoreline make it difficult to quantify the retreat. Since 1970, the center of west beach advanced and retreated within an envelope of almost 500 feet. The 1984 shoreline position reflects the significant erosion that occurred during the 1982-83 El Niño winter storm season.

The relative shoreline history within east beach is shown in lower portion of Figure A-3. Between 1929 and 1969, the beach was relatively stable, but for the past 25 years, it has been retreating. Since the early 1970's, the envelope of shoreline advances and retreats has been about 125 feet.

The shoreline change that occurred in 1969 stands out in the data set. This date corresponds to the second highest discharge of record when a peak flow of 58,000 cubic feet per second was gaged. Sediment delivery from the river

contributed to the shoreline advanced almost 600 feet that was noted at the west end of Surfers Point near the river mouth (Station 9,000). The accretion that occurred downcoast from this event decreased linearly as only 30 feet of shoreline advance was noted 2,000 further east.

The 1938 aerial photographs used in the analysis were flown before the record flood event of that year. By 1944, when the next set of photographs was taken, the discharged sediment had already moved downcoast from west beach and its impact on the shoreline was only detectable as an advance of about 100 feet on east beach.

Aerial photographs taken in 1981 and 1984 indicate that the wet 1982-83 El Niño winter storm season did not produce a lasting delta. It is believed that longshore sediment transport rates were so great that flood-discharged sediment was removed and transported away from both west and east beaches in less than a year.

A-2.1.2 Relative Shoreline Position of the Point

In the past 70 years, the high water shoreline at the sandy point that separates west and east beach migrated onshore, offshore, and alongshore. Figure A-5 illustrates these movements as shore normal and shore parallel offsets from the 1999 position of the tip of the point.

The trend of the shore normal movement of the point indicates that its 1999 location is near its 1929 minimum mean onshore-offshore position. However, the point has experienced dramatic erosion and accretion trends within a 500-foot envelope of change over the 70 years of record. The most landward extent of recession was noted in 1947 when over 100 of erosion occurred within three years. The largest advance occurred rapidly in response to the 1969 Ventura River flood discharge. The impact of that flood did not disappear until the late 1980's.

In contrast to its apparent long term shore normal behavior, the location of the sandy point between the east and west beaches has moved to its existing position in three alongshore migration sequences since 1929 as summarized below:

First sequence:	Easterly migration of 450 feet between 1929 and 1944 followed by a westerly return of 300 feet by 1953.
Second sequence:	An easterly migration until about 1960 where it remained in place until the late 1960's. In 1969, the point moved abruptly 600 feet to the west during the flood of that year.
Third sequence:	Since 1969, the tip has moved progressively east, reaching its present position in

the late 1980's. In the past decade, the point has remained within 100 feet of its present alongshore position.

Since 1969, the easterly movement of Surfers Point has been in phase with its shore-normal retreat. Before then, however, the tip of Surfers Point migrated within a 400-ft wide alongshore envelope while there was little change in its shore-normal position (1947 was an exception).

A-2.1.3 East and West Beach Alignment

Figure A-5 summarizes the high water shoreline orientation of the west and east beach and the variation in alignment that has existed between the two segments. As illustrated in the upper diagram of the figure, the orientation of the west beach shoreline fluctuated through a range of almost 70 degrees in response to the migration of the point. East beach was less volatile. Since 1929, the alignment of east beach fluctuated within a range of less than 15 degrees of its mean orientation of 262 degrees azimuth.

Both beaches exhibited a net counter-clockwise rotation. West beach rotated slightly faster than east beach at an average rate of -0.1 degree per year. East beach rotated on average at about -0.06 degrees per year. Correlation coefficients were low for both of these least-square fits, but the rotational trends are apparent to the eye on Figure A-6. A slow apparent retreat of the shoreline along the east end of east beach explains the rotation there. The sequential migration of the point explains the irregular counter-clockwise rotational trend that has been observed on west beach for the past 70 years.

The lower diagram in Figure A-5 indicates that the alignments of the west and east beach shorelines differ by about 50 degrees. However, large fluctuations in the alignment of west beach make it difficult to define a mean difference.

A-3.0 Estimated Backbeach Line Retreat for the No Project Condition

Surfers Point is located on land reclaimed from the floodplain of the Ventura River. In turn, the shoreline has been stabilized to some extent by the presence of the submerged river delta. The nearshore delta is believed to be composed of cobbles and boulders, and is believed to be a relatively stable platform.

Waves reaching the submerged delta from deep water are refracted, i.e., their crests are bent as they touch bottom in shallow water. This mechanism is responsible for the manner in which waves propagate to the beach and the

influence in shaping the shoreline. Wave refraction and the sandy point it creates act to reduce the longshore sediment transport rate near the river mouth. The extent to which waves are refracted as they pass across the delta is a function of the depth of water over it. As the water depth increases waves passing across it will be less refracted and longshore sediment transport rate along the Surfers Point shoreline will increase. This means that the sandy beach will become narrower, the backbeach line will be more exposed to more frequent and intense wave attack, and the rate of shoreline retreat will increase.

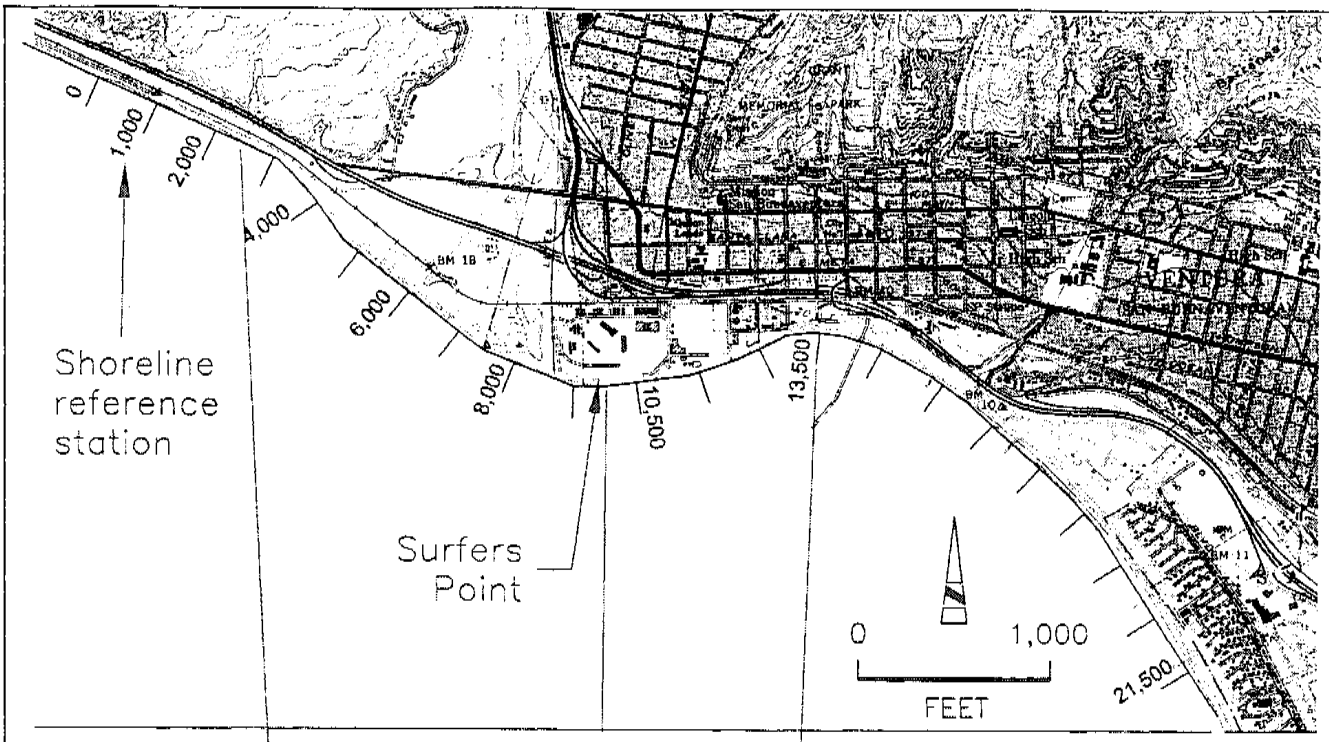
Sediment discharges in the Ventura River create large fluctuations in the width of that beach and in the position of Surfers Point as shown in Figure A-5. When the beach is wide, the back of the beach is rarely exposed to wave attack. When it is narrow, storms more easily strip the beach completely away and the unprotected ocean edge of the park is more likely to be eroded. Rarely is the beach wide enough to provide backbeach line protection during the most extreme storms. For this reason, unless the parkland is protected the gradual retreat of the backbeach line is to be expected. If sea level continues to rise, and/or if the rate of sand discharge from the Ventura River declines from its past long-term average rate, and/or the incidents of storminess associated with longer-term events like severe El Niño storm seasons increase, the rate of that retreat will increase in the future as well.

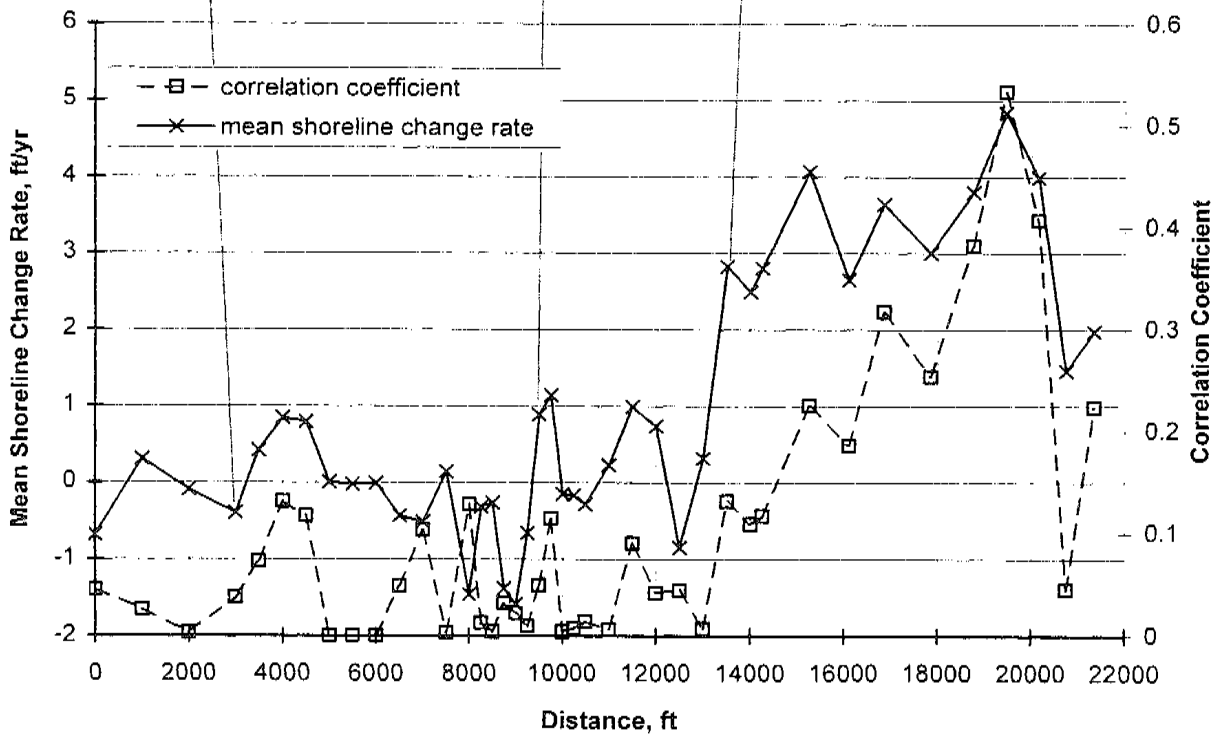
An estimate of the future shoreline position without a project in place may be estimated in several ways. One method is to assume that the shoreline and backbeach line move at the same rate, i.e. the beach width remains constant over time. In this manner the historic shoreline change rates may be extrapolated without judgment to estimate future rates. Using all rates given summarized in Figure A-2 for the past 70 years, it may be concluded that the backbeach line at the river mouth will retreat 75 ft in the next 50 years and 150 ft in the next 100 years; the backbeach line between there and the present position of Surfers Point will retreat half those amounts; and the backbeach line at Surfers Point will advance 45 ft and 90 ft, respectively, in the next 50 and 100 years. Using this approach east of the point, the backbeach line will retreat perhaps 10-15 ft in 50 years and 20-30 ft in 100 years.

However, inspection of Figure A-3 shows that the width of west beach is greatly reduced at certain times, which exposes the backbeach line to a high probability of erosion. Coupled with the likelihood of an increase in water depth over the delta and increased longshore sediment transport due to a rise in sea level, a reduction in the discharge of sand in the Ventura River due to human interventions, and more incidents of storminess associated with longer-term events like severe El Niño storm seasons, the rate of that retreat will probably increase in the future if the Matilija Dam is removed in the future, recession impacts will most likely be reduced.

Table A-1 Relative Shoreline Position as Measured from Archival Aerial Photography: 1929 to 1999

station	1929	1938	1944	1947	1953	1959	1962	1963	1964	1965	1966	1968	1969	1970	1972	1974	1977	1978	1981	1984	1986	1989	1992	1994	1999
0				91			91		91			91	68	46		0		137	114				0	91	
1000	23	46		69		69	69	23	69	91		91	46	23		23	114	91	91	91	69	23	0	91	
2000	114	46		46	46	69	46	46	69	114		69	46	23		46	114	92	92	92	69	46	0	92	
3000	115	46		46	23	92	23	92	46	69	137	46	46	0		46	92	46	92	92	69	46	23	23	
3500	0	23		92	69	69	23	92	46	46	69	46	46	0		69	92	46	69	46	69	46	69	46	
4000	0	23	114	114	92	92	69	114	69	92	92	92	46	46		160	92	69	69	46	69	92	183	92	
4500	0	0	91	46	46	23	23	91	46	46	46	91	23	23		114	114	46	46	23	46	23	160	46	
5000	46	46	137	69	69	23	46	69	46	92	69	92	0	23	46	92	92	23	46	46	69	69	69	92	
5500	23	46	114	69	46	23	23	23	46	69	46	69	0	0	23	69	91	23	46	23	69	69	23	69	
6000	92	69	138	92	92	69	92	69	92	92	92	115	46	0	46	115	115	23	69	92	92	115	69	138	
6500	0	69	137	69	46	23	69	23	69	69	69	92	46	23	46	46	92	0	23	23	46	46	0	69	
7000	46	23	92	92	92	46	46	69	69	69	69	69	69	46	69	69	69	23	46	23	0	46	92	0	
7500	92	46	138	92	138	92	92	92	160	115	138	138	115	69	138	92	92	92	92	0	69	69	229	115	
8000	343	275	343	320	298	298	298	320	366	343	343	320	343	298	343	343	320	320	320	206	320	298	366	298	0
8250	138	46	115	92	69	69	69	92	138	92	115	92	252	115	138	138	92		92	23	115	69	160	92	0
8500	183	46	91	68	68	68	46	91	137	91	137	68	343	183	228	160	46		46	0	68	91	137	137	46
8750	320		114	137	137	183		205	228	205	91	0	525	388	480	114	160		114	0	137	183	91	183	160
9000	548		365	388	457	411	228	411	434	434	365	297	868	731	800	434	503	480	297	0	343	388	388	480	365
9250	137	183	92	69	183	92	69	69	160	92	137	69	526	275	343	275	275	252	69	0	69	69	115	92	23
9500	0	68	91	0	68	68	114	68	114	91	114	91	365	114	137	160	183	160	114	114	114	68	68	91	23
9750	0	0	91	23	45	23	91	45	91	68	23	45	274	23	45	114	137	114	45	137	91	91	0	91	91
10000	46	23	91	23	23	0	68	0	68	46	0	23	183	0	46	91	91	91	46	46	23	23	0	23	23
10250	46	23	91	23	23	23	91	23	69	46	23	46	114	0	69	114	91	91	46	46	69	0	0	23	23
10500	46	23	160	46	46	46	92	23	69	46	46	69	137	46	92	137	137	92	69	69	69	46	0	46	0
11000	45	0		22	22	22	91	45	91	91	114	91	114	45	205	137	114	91	45	45	68	22	22	68	0
11500	46	0		23	0	46	114	114	137	114	137	160	160	114	160	160	183	137	91	114	114	69	0	137	46
12000	205	91		137	251	137	114	182	182	182	182	205	228	182	205	251	251	228	205	251	228	228	0	274	182
12500	320	229		252	275	229	160	252	229	252	252	275	389	275	229	297	297	252	252	297	252	275	0	297	206
13000	91	91		68	23	45	0	68	45	68	45	68	320	114	114	137	137	45	68	91	68	68	68	91	
13500	228	251		205	114	137	0	91	68	91	137	114	320	274	251	320	320	137	251	251	205	228	640	228	
14000	320	320		92	0	206	137	0	69	137	206	137	320	389	389	389	297	229	389	320	320	320	229	320	
14250	365	160		228	160	160	160	0	23	114	183	183	160	434	434	411	434	251	434	365	365	343	205	320	
15250	343	206		206	138	92	115	0	23	92	115	275	206	366	366	366	389	343	458	389	435	412	252	389	
16100	298	206		160	115	115	115	0	46	92	92	115	138	206	275	252	298	206	343	275	320	320	298	298	
16850	228	160		68	68	46	23	0	46	46	91	160	183	160	274	183	251	183	320	251	343	320	274	274	
17850	206	160		69	23	46	0	23	46	92	114	137	92	23	160	252	252	137	206	183	252	274	366	206	
18750	183	183		92	69	46	0	92	92	183	183	206	229	92	206	252	297	160	297	275	343	389	275	275	
19450				137	91	45		183	114	137	68	114	160	0	114	205	205	183	205	228	274	343	274	228	
20150				115	23	0		206	115	137	69	115	137	0	92	206	229		206	229	229		160	229	
20750				160	46	46		275		183	92	115	115	0	46				137	183	206				
21350				160	0						45								137	160	160				

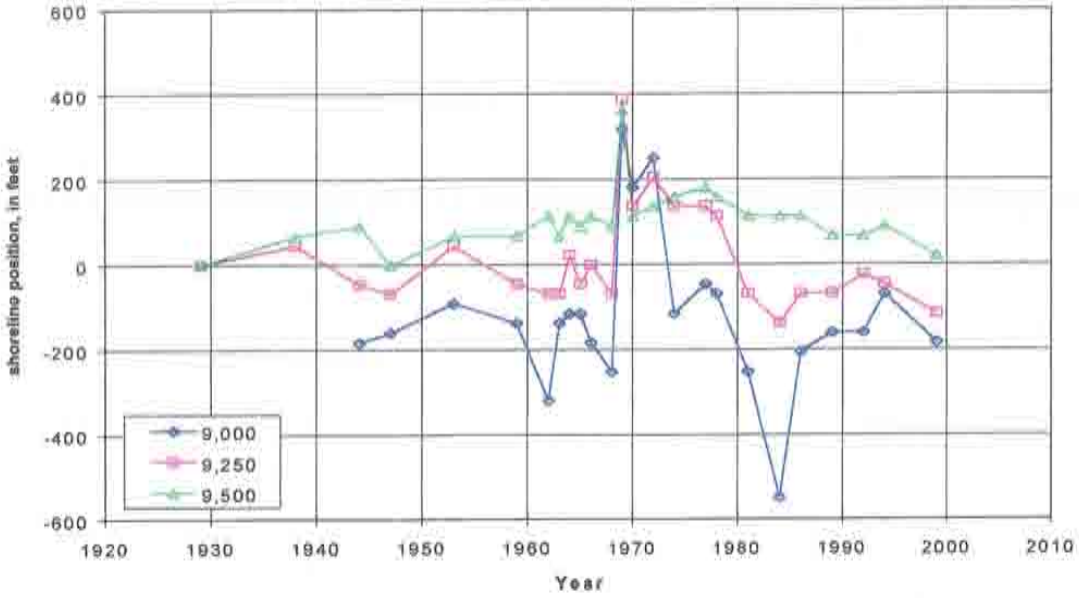


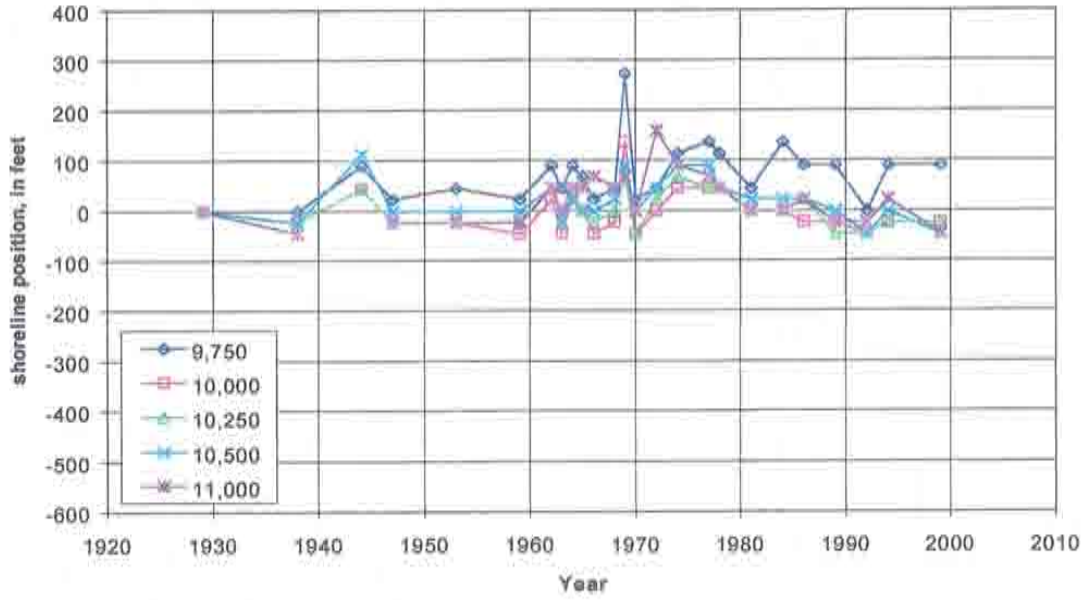


Net Shoreline Change Rates
Ventura River Delta and Adjacent
Coast 1929 to 1999

NOBLE CONSULTANTS, INC.

Figure A-2





Relative Shoreline Position of the West and East Beaches 1929 - 1999

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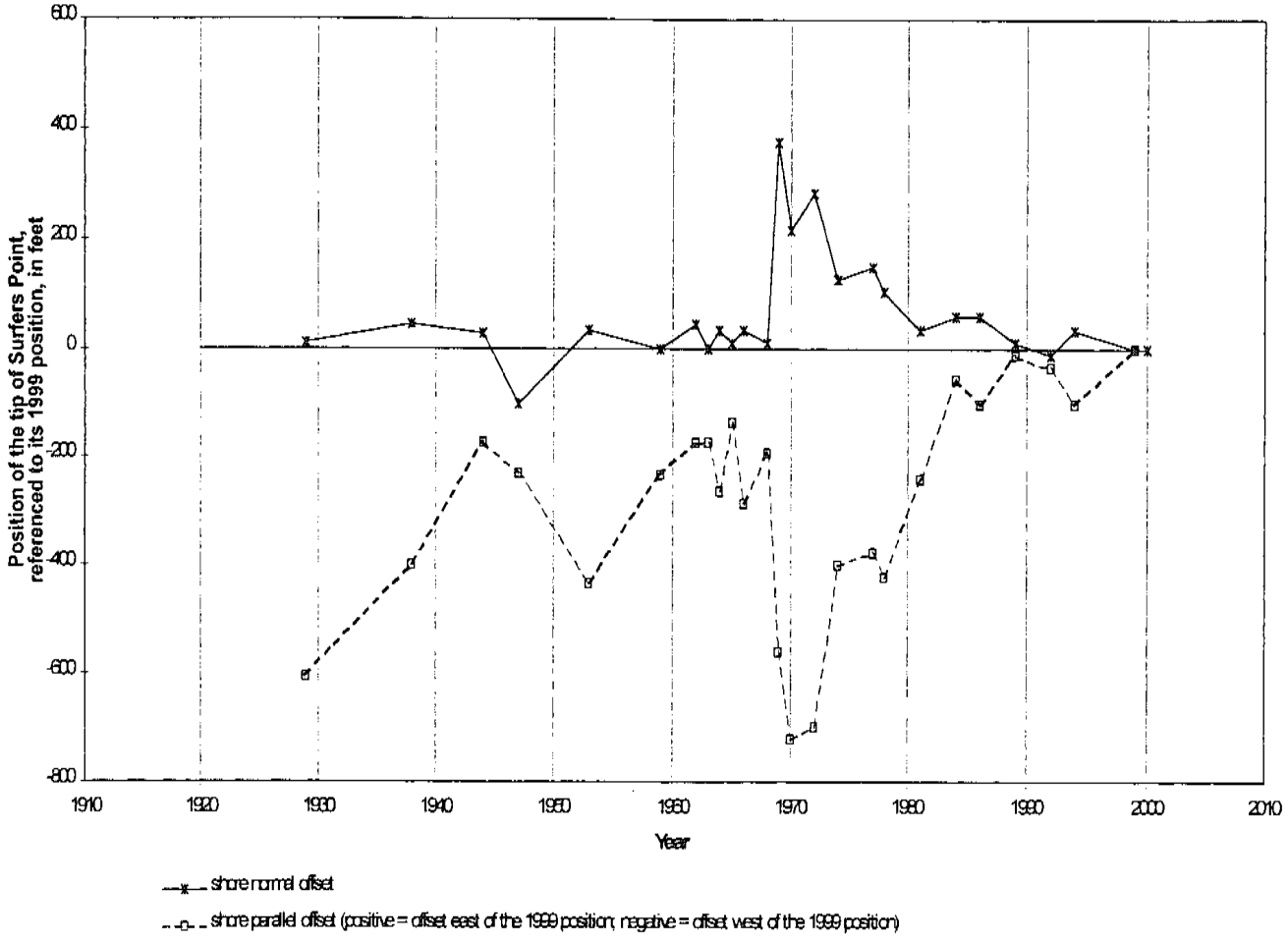
Figure A-3



Shore Normal and Alongshore Movements of the Tip of Surfers Point

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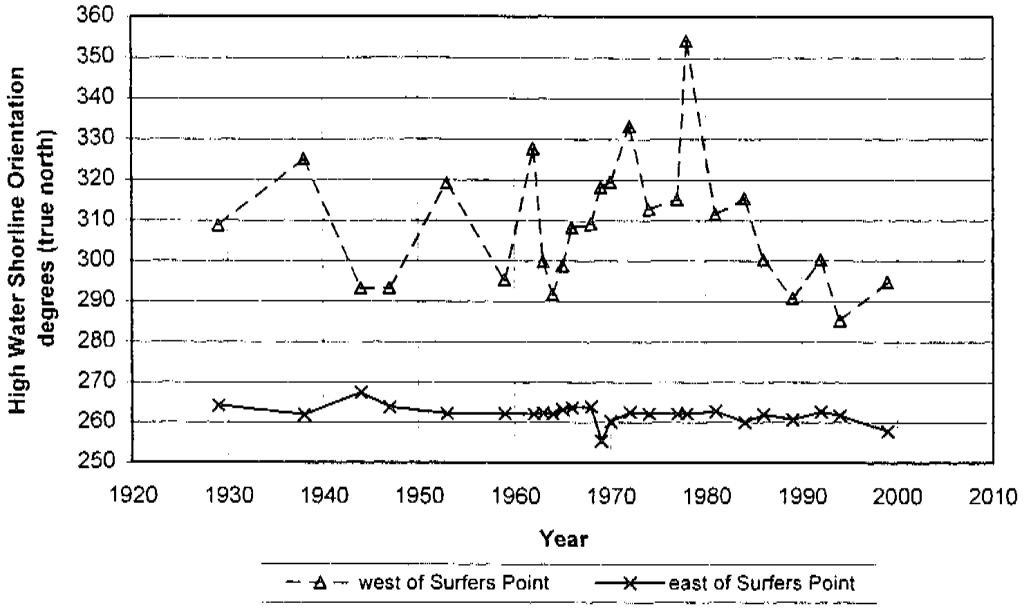
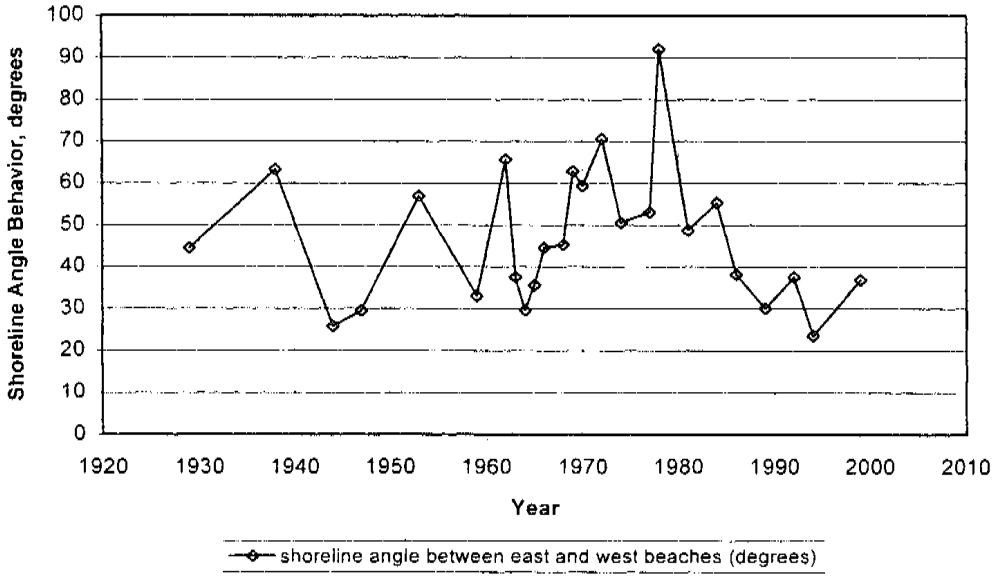
Figure A-4





Historic Orientations of the West and East Beach Shorelines

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Figure A-5

APPENDIX B

PROTECTIVE GRAVEL, COBBLE AND BOULDER BERMS IN SOUTHERN CALIFORNIA

Prepared By: Dr. Craig Everts

Appendix B
Protective Gravel, Cobble and Boulder Berms In Southern California

B-1.0 Introduction

In comparison to sand berms, cobble and boulder berms exhibit superior performance under wave action for equivalent volumes of material. A berm is the nearly flat-topped, high elevation, landward-most segment of a beach that forms when sediment is deposited in the run up-backwash (swash) zone. Sand berms typically erode in the winter and reform the following summer. Natural cobble and boulder berms are longer lasting and the larger ones are remarkably persistent. Under ideal circumstances, some accrete during even the most extreme storms.

Artificial gravel and cobble (shingle)* berms have been used for at least the past three decades in Britain, Ireland, France, and Japan for beach stabilization purposes. Muir-Wood (1970) and Nicholls (1991) report that they have become increasingly popular as shore protection devices in England with shingle nourishment and recycling tactics used to maintain them (Nicholls and Webber, 1988). In Japan, groin-retained, artificial shingle beaches have been constructed to protect reclaimed land in Osaka Bay (Deguchi et al., 1996).

Quantitative guidance for designing shingle or gravel, cobble, and boulder (gcb) berms are scarce. Some qualitative information may be extracted from the literature, which describes the European and Japanese experience, but the references cannot be directly applied to southern California sites of the morphological differences. For example, some of the local gcb berms, such as the one at Emma Wood State Beach, contain substantial quantities of natural, rounded boulders, whereas in Europe and Japan the common constituent is shingle. In addition, wave climates in Europe and Japan are unlike that of southern California that limits a direct correlation between European or Japanese shingle berm behavior to one that may be proposed for Surfers Point.

As a consequence of the knowledge gap, there are no readily available models that are considered quantitatively accurate to predict gcb behavior e.g. predicting the volume of material that will be displaced during extreme storm events. All existing numerical models that attempt to simulate beach morphology use drastic simplifications (Kamphuis, 1996), which renders their use for gcb berm design as unrealistic.

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*Shingle – Any beach material coarser than gravel especially having flat or flattish pebbles

In order to overcome the limitation in the current state-of-the-art in knowledge, an effort was made to study the character and performance of existing berms in southern California. Review of the morphology of local g berms and quantification their behavior can provide excellent prototype information that can be relevant to Surfers Point. This appendix summarizes a review of the selected berm examples that were studied.

Four prototype berms were selected for analysis:

1) An existing sand berm at Del Mar;
2) A predominantly gravel berm at Cardiff;
3) Cobble berms at south Carlsbad and Batiquitos Lagoon; and
4) The gbc berm at Emma Wood State Beach.

These examples represent the widest range of size distributions and permeabilities that exist regionally. The first three examples are located in north San Diego County. The Emma Wood State Beach berm was included in the review because of its local relevance and its unique composition of larger clast sizes. Since the same storms and generally the same seasonal variations in wave climate influenced each of the prototype berms, it is possible to compare their behaviors and speculate with some confidence on their different stabilities. By isolating the most important variables in gcb berm behavior, it is possible to propose a set of design guides for a Surfers Point berm Specific items of interest that can be manipulated in the design process include permeability, size distribution, crest elevation, crest width, base elevation, and material volume.

The berms in north San Diego County have been surveyed many times, which provides an excellent record of their performance. The berms cover the range of sizes from sand through gravel through cobbles. The internal compositions of some of them have been compromised by the artificial placement of sand, thus differences in their behavior without and with sand-charged voids can also be quantified. Measurements of the behavior of a boulder berm are unavailable anywhere in southern California, but for this effort, the internal composition of a boulder berm at Emma Wood State Beach was defined.

From an analysis of historic profile data collected since 1934, a detailed performance picture of the behavior of the cobble berm at south Carlsbad and Batiquitos Lagoon, including seasonal cycles and storms can be developed. The survey record is not as long for the berm at Cardiff, composed of smaller clasts most of which are in the gravel size range, and the sand berm at Del Mar. The Emma Wood State Beach boulder berm was investigated in a one-day field effort to establish the internal structure of the berm and the gcb distribution pattern on and beneath it and on and under the fronting shore platform.

Berm locations discussed in the following section of this appendix are shown in Figures B-1 and B-2. Emma Wood, Surfers Point, and Ventura River delta shoreline data were assembled specifically for this investigation. All other beach profile and shoreline change results were developed using Corps of Engineers, City of Carlsbad, and SANDAG survey data. Elevations in this report are referenced to mean lower low water level (mllw) unless otherwise noted.

B-2.0 Prototype Berm Analysis

Figure B-3 illustrates a definition sketch of gravel, shingle, and gcb berms. In general beaches in southern California tend to be compound, two-component systems with a steep, upper gcb bermface fronted by a mildly-sloping, lower sandy shore platform as shown in the figure. The intercept between the two features can usually be identified by a sharp contact between gcb and fine- or medium-sand, and a well-defined change in slope. The foreshore is the landward limit of wave action on the bermface. Typically, gcb berms contain varying amounts of sand; sandy shore platforms usually contain some gcb. Berm sedimentation is controlled by reversible uprush and backwash flow fields on the foreshore. Differences in porosity and clast-size distribution affect the slope, crest elevation, profile shape, and behavior of gcb berms, and explain why some are more stable than others.

B-2.1 Emma Wood State Beach

The nearest gcb berm to Surfers Point is on the west side of the Ventura River delta at Emma Wood State Beach. On 17 February 2000, Gorian and Associates managed a one-day study to define the surface and internal character of the berm and shore platform. The results of their investigation are summarized in Appendix D. The portion of Emma Wood State Beach that was studied has been essentially stable for at least the past 70 years as determined by a least-squares fit to wetted-bound (high water elevation or above) shoreline positions for the period 1929-1999. Fluctuations in shoreline position that were noted over the years as summarized in Figure B-6 are due to (1) seasonal changes caused by sandy beach buildup and erosion and (2) a possible 50-ft scaling uncertainty in the mapping tactic. The fronting sandy beach is ephemeral at this location. At times the wetted bound was observed to be on the sandy shore platform and at other times it intercepted the gcb berm.

To observe the subsurface composition and structure of the berm, two discontinuous trenches were dug by backhoe along lines 239 feet apart. The location where the fieldwork was performed is shown in Figure B-2. Figure B5 show photographs of the site at low tide and some of the exploratory test pits that were dug. Trench depths averaged about 6 feet on the berm and less on the shore platform where water table sloughing limited excavation to depths of about 4 feet.

Field observations, subsequent laboratory testing, and office analyses were conducted to define the permeabil of the deposit, establish an approximate size distribution of material, and identify internal structure. Observations noted regions of the berm where boulders and cobbles were supported on other cobbles and boulders and other areas where clasts were supported on sand. Anthropomorphic evidence was found that indicated the berm had accreted at least to a depth of 3 or 4 ft in the past 50-years (or less). The total thickness of the berm was only slightly greater than that recent accretion.

B-2.1.1 Berm Composition

The surface cobble-boulder foreshore is concave-up with a slope of 0.17 to 0.22 (based on four surveyed profiles). The slope of the cobble-boulder shore platform is an order of magnitude milder at 0.030 to 0.033 (again based on four profiles). The intercept of the berm and shore platform was well defined by a sharp change in slope. The elevation of the berm crest averaged +12.5 ft and the berm-shore platform intercept ranged between 0 and + 1.5 ft.

Cobbles and boulders were sorted by size with elevation, but not depth. Boulders with a maximum long axis of 2.5 feet and a weight of about 400 pounds reside on and beneath the lower half of the foreshore in the elevation range of 2 to 6 feet and on and beneath the shore platform. This distribution of the heaviest clasts at low elevations suggests wave forces are not strong enough to move 200-pound or heavier boulders to the upper half of the foreshore. Beneath the lower foreshore and in the upper 2 feet of the shore platform, the boulder density (clasts over 1 foot in long axis dimension) was found to be about 1 clast per 3 cubic feet of gcb deposit. The remaining material was smaller boulders, cobbles, gravel, and the sand matrix that occupied about 40% of the total berm and shore platform volume. Sorting patterns were noted to be different on the shore platform. Cobbles and boulders were concentrated in the upper 2 feet in what appeared to be semi-armor or lag deposit. Larger clasts dominated when gradation curves were calculated by weight. Using photographs to compute surface clast density, Gorian and Associates developed gradation curves and found that the mean size (50% smaller and 50% larger by weight) averaged about 1 foot overall for the berm and shore platform.

All cobbles and boulders at Emma Wood are well rounded, but they are not spherical. Many clasts are disk-shaped and ellipsoidal. Their size and shape suggests that most move as bed load by sliding and toppling instead of rolling. Boulders and cobbles on the berm surface were observed to lean downslope at a greater angle than the foreshore slope that gives evidence of their depositional environment. At depth, cobbles and boulder clasts were observed in lines or layers parallel or sub-parallel to the berm surface.

The Emma Wood berm and shore platform are sand-charged. Unfilled voids are uncommon in the berm and non-existent in the shore platform. Voids in the berm were charged with coarse sand and small gravel below the plane of the largest surface clasts (about 6 inches below the surface) except at the break in slope at the upper limit of the berm where, in some places, the upper 12 to 18 inches was unfilled (see Figure B-4).

Beneath the berm surface a very angular, coarse-grained, quartz-poor sand composed primarily of rock fragments and minor amounts of shell hash occupied the voids. A minor portion was granules and small gravel. This material is immature in the sense that it has not been exposed to abrasive and chemical processes as long as the finer local quartz-rich littoral sands found on the beach. Its origin is unknown, but others have reported seeing similar angular coarse sand in small quantities near Carpenteria (Bailard, 2000.) The packing density of the void infill material increases with depth. A small, thin lens of finer littoral-type sand is interspersed within the coarse infill deposit, but in general, it was homogenous to the eye. Coarse matrix sand beneath the berm gave way at lower elevations to a medium/coarse sand at the junction of the berm and shore platform. Above a sediment depth of about 2 feet, the voids were filled with a fine, mostly quartz sand that appears very similar in composition and maturity to the local beach sand. The coarse infill sand found within the berm voids continues under the shore platform at a sediment depth of about 2 feet and more.

The hydraulic conductivity of this and other local sand using the Hazen formula with a coefficient of 105 was calculated to provide information on permeability. The results are summarized in Table B-1.

Table B-1
Hydraulic Conductivities Void-Infill Sediment at Emma Wood State Beach and Beach Sand at Surfers Point (from Gorian and Assoc., 2000)

Location on profile	Depth below surface, ft	"Effective Hazen size", cm	Hydraulic conductivity, cm/sec
top of berm	2 to 3	0.07	0.51
	3	0.2 (sample from bucket)	4.2
	3	0.21 with 5% rock over 12 inches added	4.6
	3	0.22 with 10% rock over 12 inches added	5.1
	3	0.3 with 15% rock over 12 inches added	9.5
	8	0.031	0.10
2/3 distance from top to base of berm	Surface	0.031	0.10
	1 to 3	0.052	0.28
shore platform just seaward of base of berm	2.5 to 3.5	0.038	0.15
shore platform, 100-ft seaward of base of berm	2 to 3	0.032	0.11
upper location on beach at Surfers Point	Surface	0.03	0.09
lower location on beach at Surfers Point	Surface	0.031	0.10

In some places, shingle and boulders are in contact, indicating that they moved across and were deposited on a shingle-boulder surface. Rock-rock contacts were common with a coarse sand matrix at higher elevations beneath the berm face and with a fine sand matrix in the upper 2 feet of the shore platform. In other places, the gcb appeared to be supported by sand indicating they were probably transported at least near their resting place on a sand surface. The latter situation is most common on the lower foreshore and at the slope break between the berm and the shore platform, less obvious on the middle of the foreshore, and not observed at the top of the berm. Many of the rocks below a sediment depth of 2 feet on the shore platform were founded on medium to coarse, angular sand implying transport in the upper zone occurred over a cobble-boulder bed or the cobbles and boulders were left as a lag deposit, while the lower cobbles and boulders were moved over a sand bed, perhaps when the cobbles and boulders reached the littoral zone during a flood.

An anthropomorphic tracer was found on the Emma Wood berm that indicates stones that weigh less than 40 pounds and usually less than 10 pounds moved about 4,000 feet east in recent years. Distinctive white and black granite rocks placed as riprap by the railroad on the back of the beach near the western limits of the delta in the past 20-50 years were observed on the berm crest at the trench sites. They were not found beneath the surface il

the trenches. These rocks were rounded to some extent during their journey in the littoral zone, but they are still substantially more angular than the natural cobbles and boulders at Emma Wood.

B-2.1.2 Summary

The evolutionary history of the gcb berm at Emma Wood is unknown. However, the trenching exercise showed that the berm is supported on an erosional surface composed of well-packed silt and very fine sand. This alluvial-appearing material was exposed about 4 feet beneath the intercept of the berm and shore platform, the middle of the bermface, and near the top of the berm. The sharp contact between the alluvium and the gcb berm indicates the latter has been eroded and cut back in the past. The entire berm contained less than 10 to 15 cubic yards per foot (cyf) of gcb.

Perhaps there are times even now when the shingle-boulder berm is temporarily pulled offshore during an extreme wave storm exposing the alluvium. As previously noted, the zone from the surface to a depth of 2 feet deep on the shore platform appeared to be semi-armored, suggesting that an armored surface upon which cobble and boulder exchange between berm and platform occurs over a relatively short distance and in relatively small volumes. Shingle-boulder accretion is indicated by a plastic cable tie manufactured within the past 20 years that was detected about 2.5 feet below the berm surface about half way between the crest and shore platform. A tire remnant manufactured sometime in the last 60 years was found at a depth of approximately 3.2 ft at the top of the foreshore. Both artifacts were found in a coarse sand matrix.

B-2.2 Cobble Berm at South Carlsbad, Batiquitos Lagoon and North Encinitas

The longest, most nearly continuous, and highest volume gravel-cobble (predominantly cobble) berm in southern California is located between south Carlsbad and Leucadia (north Encinitas). Centered on Batiquitos Lagoon (see Figure 2.3) its bermface is everywhere steep, averaging about 4:1 slope (run/rise). Its seaward edge is intercepted by a mildly sloping sandy shore platform that is always present in the summer and usually present in the winter as shown in Figure B-7. Infrequently, when the shore platform is at an abnormally low elevation, it is covered with cobbles and gravel. The long axes of its cobble clasts average 2 to 5 inches. Historic records document the presence of this and nearby shingle berms during the entire span since the time of Spanish discovery.

In the past 70 years, this cobble berm has experienced two substantial episodes of accretion and one of erosion as summarized in Table B-2. The most complete record of observations based on repetitive surveys is at the

Batiquitos Lagoon range CB 0720 that is located about 800 feet south of the lagoon outlet. Surveys have been measured at that transect since 1934.

For 25 years between April 1957 and June 1982, and perhaps from 1934 to 1957 as well, the berm remained nearly stable in width, volume, shape, and elevation, as shown by the sequence of overplotted profiles in Figure B-8. Sometime within the next 16 months, the berm expanded upward 3 feet and advanced seaward by nearly 70 feet. Most of the 12 cubic yards per lineal foot of new shingle that accumulated was added near the berm crest above elevation +5 ft.

During the strong El Niño storm winter of 1982-1983, the bermface steepened to about a 5:1 slope. The observation occurred during the period when the southern California coast experienced the most severe clusters of wave storms and the most extensive beach erosion on record. A rise of the sea surface elevation of almost a foot above astronomical tides exacerbated the potential for erosion during the late January 1983 storms that coincided with perigean spring tides.

Table B-2
Summary of Changes in the Shingle Berm at Batiquitos Lagoon*

Survey period	Change	Remarks
1934 or 1957 to June 1982	very little	period of stability
June 1982 to October 1983	Accretion: gained 12 cubic yards of shingle per foot (cyf) of berm, crest height increased 3 ft, slope increased three-fold to 0.2	probably occurred during stormy periods of the ENSO winter of 1982-83
October 1983 to September 1987	Small seasonal changes in the position of the bermface, bermface slope increases to 0.25 (rise/run) in winter 1986-87	no exceptional storms; bermface advances in winter and retreats in summer
September 1987 to 26 January 1988	Accretion: gained 3 cyf of shingle, crest height increased 2 ft, face of berm is concave-up with its maximum slope of about 0.25	accretion occurred during the 17-18 January 1988 storm, maximum scour of -3.5 ft (mllw) ever recorded at base of shingle berm
January 1988 to October 1994	Small seasonal changes in the position of the bermface	bermface tended to advance in the winter and retreat in the summer, sand level against berm varies seasonally in elevation from -3.5 ft to +10 ft (mllw)
October 1994 to April 1996	Shingle berm is covered with sand during a beach enhancement project	
October 1996 to October 1998	Little change, berm remains sand-covered	no change during the stormy 1997-98 ENSO winter, probably because the enhanced beach protected the berm
October 1998 to May 1999	Erosion: loss of 4 or 5 cyf of mixed shingle/sand above an elevation of +13.5 ft	no exceptional storms during this period, loss is associated with sand charging of the shingle
May 1999 to October 1999	No change	

* berm foreshore averaged 0.25 (rise/run) after 1983

Little change was noted during the next four or five years except that the berm face shifted back and forth seasonally with a 4:1 slope that remained nearly constant for the next 11 years. The sand level moved up and down against the berm on a seasonal basis as shown in Figure 2.9, fluctuating from +10 feet in elevation in September 1987 to -3.5 feet in January 1988.

The shape of the sand intercept was less defined in the summer when it represented sand accretion and better defined as a sharp angle in the winter when it was created by sand scour. The highest shore platform sand levels were recorded in the autumn, and the lowest elevations were recorded during the spring. Although the sand level might have been exceptionally high before the 1988 storm, it did not result in erosion. At no time did a sand berm develop in front of the shingle berm. The slope of the sandy shore platform averaged 50:1 or less than a tenth the slope of the bermface and only slightly less than the slope of the cobble-boulder shore platform at Emma Wood. Before beach fill was added in 1995, the average seasonal difference in elevation of the shingle-sand intercept was about 5 ft. After sand was artificially added and that intercept rose in elevation, the average seasonal range of elevations remained near its pre-beach fill average. Between 1995 and 1999, the period after the beach fill was added, the average sand-intercept elevation dropped about 1 foot per year.

Like the 1982-83 El Niño storms, an intense storm in January 1988 produced accretion as shown in Figure 2.10. The 1982-83 storm clusters and the 1988 storm were the only events that produced a lasting change in the volume of the berm until sandy beach fill was placed atop it. The storm of January 17 to 18, 1988, generated the highest waves ever recorded on a gage off the southern California coast. Coincident with a perigean spring tide, swash transported cobbles to the top of the berm. Because the hydrodynamic uprush forces exceeded backwash forces, another 1.5 feet of crest elevation was added, raising the top elevation of the berm to 17.5 feet that translated to an additional cobble volume of 4 to 5 cubic yards per foot. A week after the storm, the elevation of the shore platform at the toe of the berm was still at -3.5 feet, which is the minimum depth, recorded in any survey. Figure B-10 shows the littoral zone profile change caused by that storm and it relationship with the envelope of all profiles.

Figure 2.11 illustrates the consistent winter advance of the bermface and its consistent summer retreat on all three-survey ranges that cross the south Carlsbad - Batiquitos Lagoon berm. Surveys were usually made in October and April. Advances and retreats were not of the same magnitude on the three ranges, but they followed the same seasonal trends; all were in phase. On Range CB0720, the Batiquitos Lagoon range, the April berm was an average 4.6 ft seaward of the October berm position. Its maximum advance was three times that average. Shorter records at the other ranges suggest similar seasonal changes.

The limiting upper elevation of profile change varied from year to year. The April 1988 elevation was almost 2 feet higher than the April 1989 elevations illustrated in Figure B-12. In addition, seasonal fluctuations such this were not always fully reversible in consecutive years as evidenced by the berm face advance of about 4 feet from 1988 to 1989 (see Figure B-12). Over longer periods, these year-to-year changes averaged out. Between October 1989 and October 1994, for example, the net change was less than minus 5 feet. Seasonal advances and retreats of the berm face indicate an annual cobble exchange of 1.5 to 2.0 cubic yards per foot between the berm and shore platform. The increase during the winter probably occurs because of the greater availability of cobbles on the winter-scoured shore platform when storm waves that are more conducive moving cobbles in a direction occur. Seasonal shifts took place without any noticeable alteration in slope.

Artificial beach enhancement charged the natural shingle berm with sand. Minor seasonal shifts prevailed until sometime in 1995 when beach fill containing cobbles and gravel blanketed the Batiquitos berm altering its profile as shown in Figure B-13 (October 1994 to October 1998 profile change). Two recent photographs of this berm near the jetties at Batiquitos Lagoon are shown in Figure B-14. Sometime between October 1998 and May 1999, the upper portion of the now sand-charged natural berm was uncovered and eroded. Approximately 4 cubic yards per foot of material was lost as shown in Figure B-14 between elevations +13 ft to +18.5 feet. The 1998-1999 winter storm season was unremarkable and no storm stands out as the erosional agent. Quite likely, the berm was weakened by the addition of sand in its voids. No changes in the underlying shingle profile occurred during t previous strong El Niño winter of 1997-98 when it was covered with beach fill. By the spring of 1999, the berm face was an erosional scarp as shown in the lower photograph of Figure B-14. Natural berms at the two ranges in south Carlsbad also experienced erosion after they were covered with beach fill. Table B-3 is a summary of the losses that occurred after the beach fill was added.

Table B-3
Shingle Losses at South Carlsbad and Batiquitos Lagoon After the Beach Was Artificially Enlarged in 1995

Range:	720	740	760
pre-1995 net change in the volume of the berm	none since 1988	none after 1988	small loss of berm volume in 1992-93 winter
net change in berm volume after beach fill was placed in front of and atop the berm	- 4 or 5 cyf	-2 cyf	-10 cyf

B-2.3 Cardiff Gravel Berm

Shingle clasts with a long axis of 1 to 2 inches are mostly within the gravel size range at Cardiff near San Elijo Lagoon. The berm shown in Figures 2.15 and 2.16 has only been an obvious feature since 1983. In earlier years, the 0.5-mile long barrier beach that separates San Elijo Lagoon from the Pacific Ocean was sandy.

Historical photographs show that the southern two-thirds of the Cardiff beach was over 100 feet wide until at least October 1982. However, the coast highway was noted to be directly behind this beach, and the top of a revetment is visible in the photographs that suggest that the roadway had been threatened at some earlier time. A gravel berm was not visible in any of the 1960's and 1970's photos. After the 1982-83 El Niño winter storms, the sand had disappeared and a narrow gravel berm formed with a low sandy shore platform in front of it. Granules and small gravel is contained within the sandy shore platform at Cardiff while the sandy shore platform fronting the mostly cobble berm in south Carlsbad and Batiquitos Lagoon contains less coarse material.

Eight surveys equally-divided between May and October provide a short-term glimpse of the character of the Cardiff profiles and the seasonal changes that have occurred on the berm since surveying began in May 1996. Figure B-17 summarizes the data. In this 4-year period, the berm crest elevation was 14 to 15 ft and the slope of the berm face was about 3.5:1 to 3.3:1. Summer and winter slopes were similar. The sand-pea gravel shore platform intercepted the coarser gravel berm in the elevation range between -4 to +4 ft.

A least-squares linear fit of the position of the San Elijo berm indicates that it advanced an average of 5 feet per year between 1996 and 1999. This advance, however, was far from steady. As shown in Figure 2.18, most of the movement took place because the berm advanced during the El Niño winter of 1997-98. At the same time the berm advanced, over 40 cubic yards per foot of sediment was deposited between a depth of 10 and 25 feet. This accumulation remained at depth during the summer of 1998 before it was displaced during the next winter (1998-99). However, the landward position of the berm in May 1999 suggests the displaced material was not transported onshore at Cardiff. The expected sediment gain above mllw was not balanced, at least to some extent, by a loss below mllw.

Seasonal changes in the Cardiff gravel berm were out of phase with seasonal changes in the Batiquitos Lagoon and south Carlsbad cobble berms. Unlike the cobble berm at south Carlsbad and Batiquitos Lagoon, which typically advanced in the winter, the Cardiff gravel berm advanced between May and October. The only exception was the small advance during the severe 1997-98 El Niño winter as indicated in Figure B-18. The landward winter retreat and seaward summer advance of the gravel berm averaged about 19 feet, which was almost four

times as great as the average 5-foot seasonal shift in the cobble berm (see Figure B-11). Seasonally, the gravel volume change was between 10 and 12 cubic yards per foot or equal to the largest accretional episode of tl cobble berm at Batiquitos Lagoon that occurred during the winter El Niño storms of 1982-83.

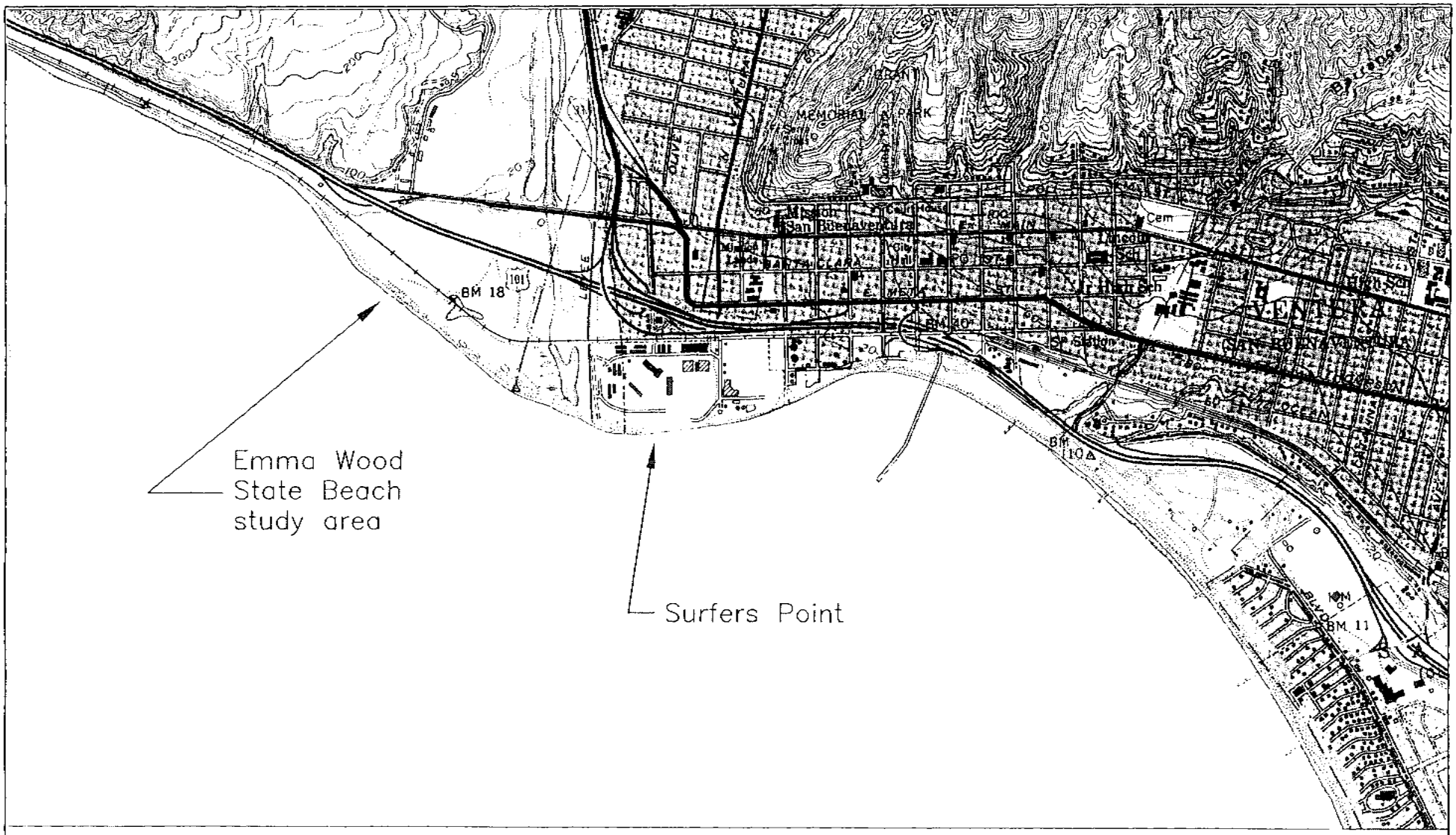
B-2.4 Del Mar Sand Berm

A 25-foot wide shingle berm exists at the landward edge of the usually wide sand beach at Del Mar just south of the San Dieguito River outlet. The upper elevations of the shingle were only exposed above elevation +8 feet on two occasions: in April 1986 just after the January 1988 storm and in May 1998 after the severe 1997-98 El Niño winter. Between November 1984 and April 1986, a small amount of shingle was deposited above +13.5 feet at the outer border of the berm crest. The same observation was noted as a result of the January 1988 storm. During the 1997-98 El Niño winter, the upper three feet of shingle berm was stripped down to an elevation of 10 feet with a loss of about 3 cubic yards per foot of shingle as shown in Figure B-19.

In most years, the entire active berm and shore platform is all sand as it was observed during a January 2000 visit. The berms crest elevation averages +9 to +11 feet, and its summer slope averages 12.5:1 to 14.3:1 as shown in Figure B-19. In the winter, the berm is usually absent, but the profile is still sand and its concave-up slope at the foreshore ranges between 14.3:1 to 16.7:1.

Repetitive surveys beginning in October 1983 document the behavior of the Del Mar sand berm. As illustrated in Figure 2.20, the sand berm tends to form in the summer and disappear in the winter. October 1983, following the severe 1982-83 El Niño winter, is the only end-of-summer survey in which the sand berm is not present at about +10 feet. Reversible seasonal and storm-caused displacements of berm sand are much larger than measured displacements of gravel or cobbles from the other berms. Seasonal on-offshore movements in the position of the +10 foot contour vary greatly from year to year. On average, the mean quantity of berm sand that moves offshore to below mllw in the winter and onshore again in the summer at Del Mar is 20 cubic yards per foot.

Not surprisingly, storms erode more sand from the San Dieguito berm than gravel or cobbles are removed from the berms at Cardiff or Batiquitos and south Carlsbad. About 40 cubic yards per foot was eroded above mllw during the January 1988 storm at Del Mar while nearby gravel and cobble berms accreted during that event. The Del Mar shore platform was eroded to a depth of about -4 feet and landward about 400 feet from the pre-storm face of the shore platform, not unlike the shore platform experience elsewhere (see Figure B-21).



Emma Wood State Beach Field Investigation Site

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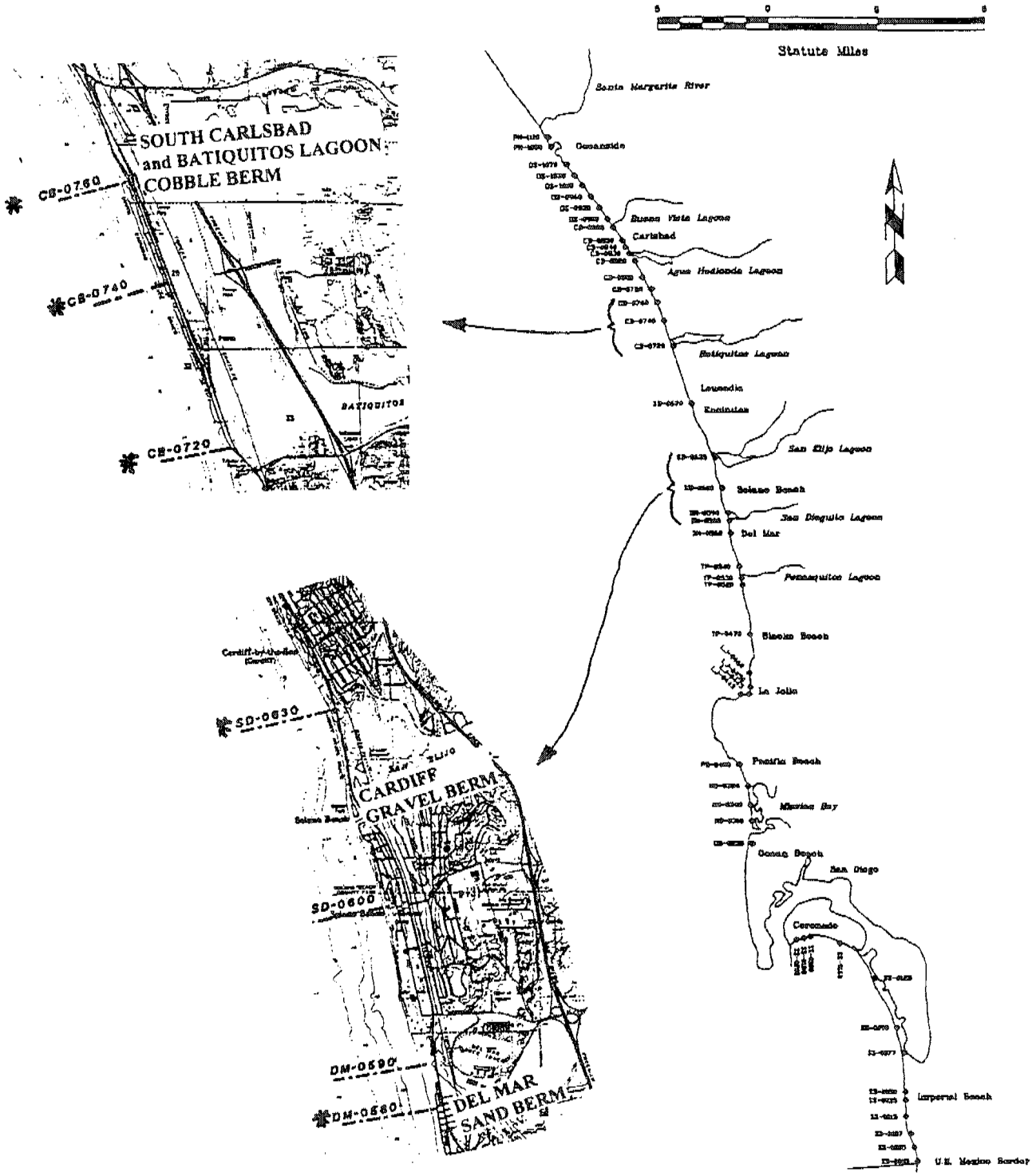
Figure B-1



South Carlsbad, Batiquitos Lagoon, Cardiff, and Del Mar Berm Sites

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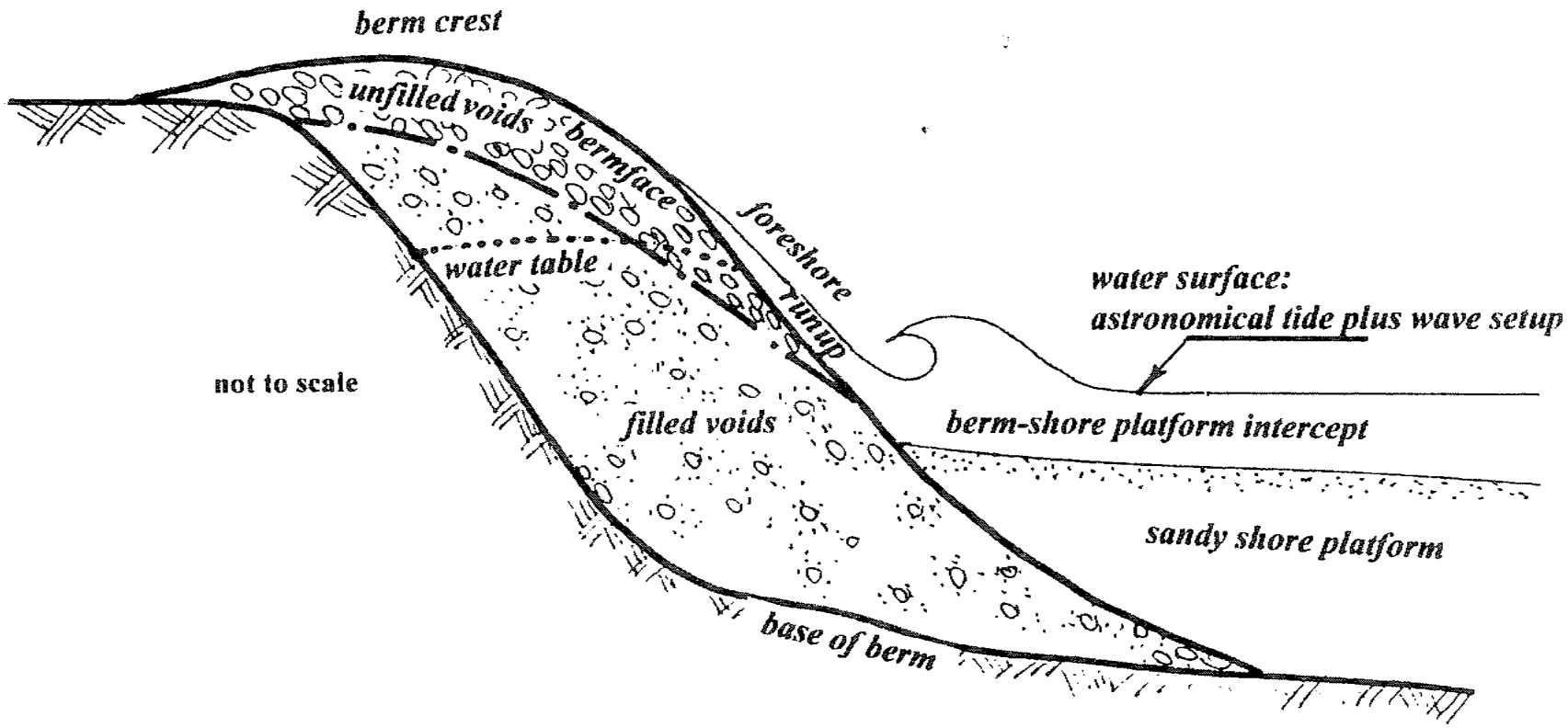
Figure B-2



Definition Sketch: Gravel, Shingle, and GBC Berm Cross Section

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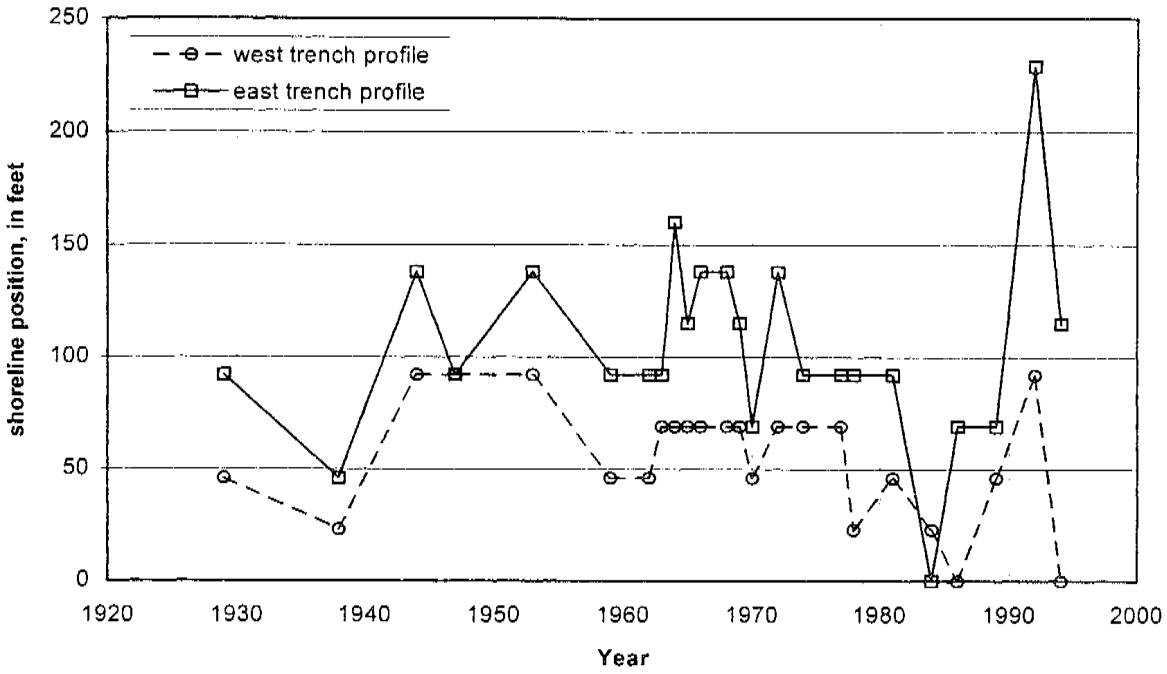
Figure B-3



Historical Shoreline Position:
1929-1999 Emma Wood State Beach

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Figure B-4

Views of the gbc berm at Emma Wood State Beach on February 17, 2000. Note the filled voids at mid-berm on the right and the upper unfilled void zone near the crest of the berm on the left.

Views of overwash portion of the berm crest and mildly sloping platform at Emma Wood State Beach on February 17, 2000.

Emma Wood State Beach Berm Site

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Figure B-5

Note the sandy shore platform on the right of the berm in the left photograph.

Cobble Berm at South Carlsbad in January 2000

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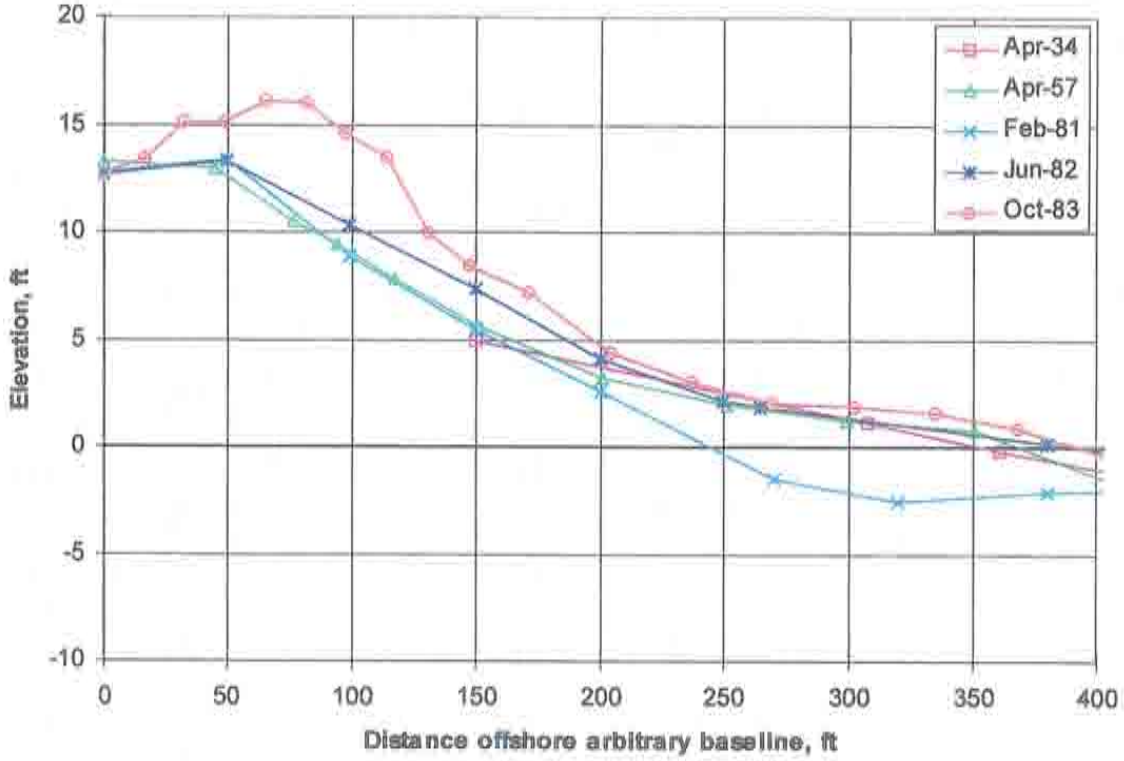
Figure B-6



Profiles Surveyed Between 1934 and 1893 Showing the Stability of the Batiquitos Shingle Berm Into the Early 1980's and Accretion that Occurred Between June1982 and October 1983.

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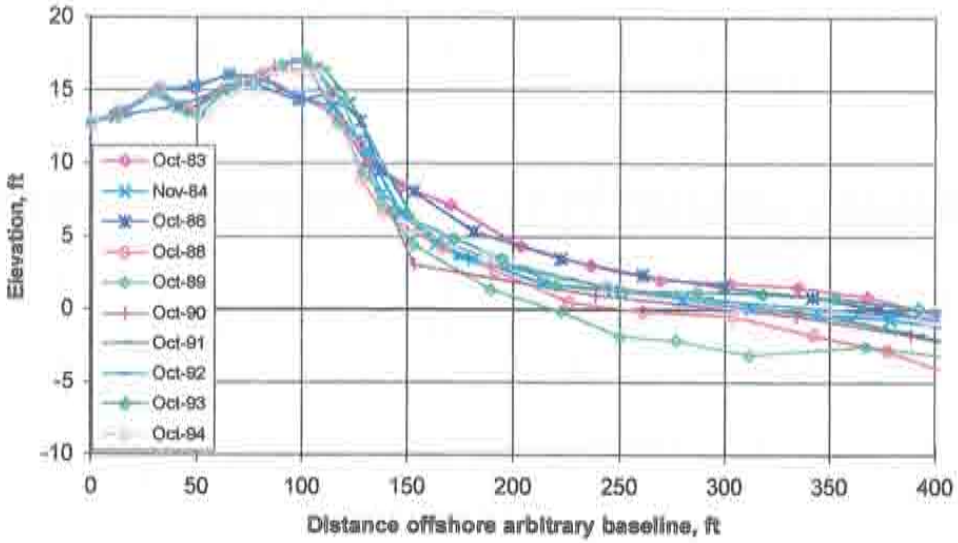
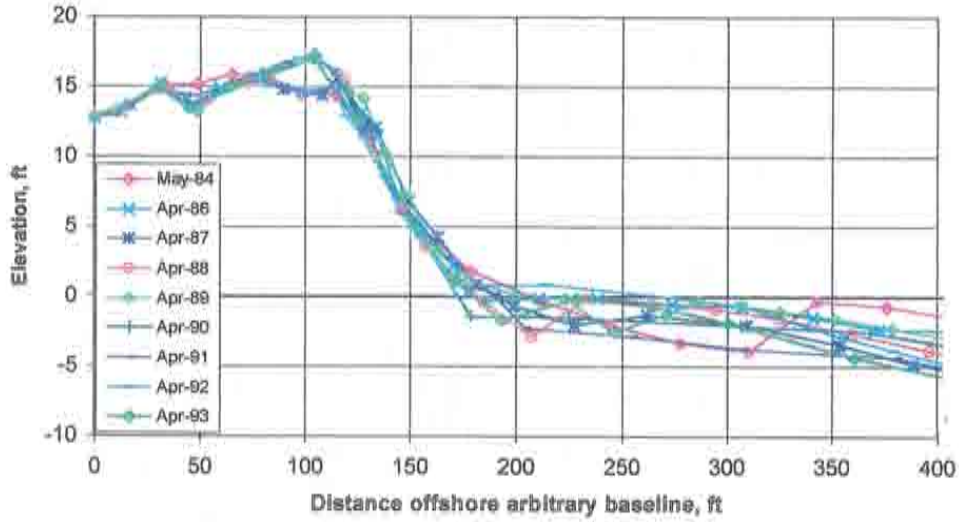
Figure B-7





End of Summer Profiles (upper) and End of Winter Profiles (lower) Showing Large Seasonal Fluctuations in Sand Level on the Shore Platform While the Shingle Berm Remained Nearly Unchanging Between 1983 and 1994, Except the Episode of Accretion at its Crest in January 1998.

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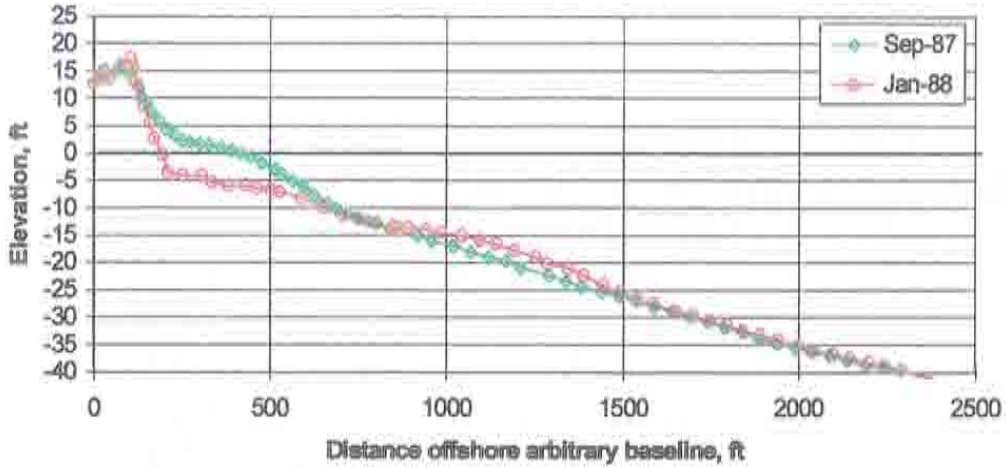
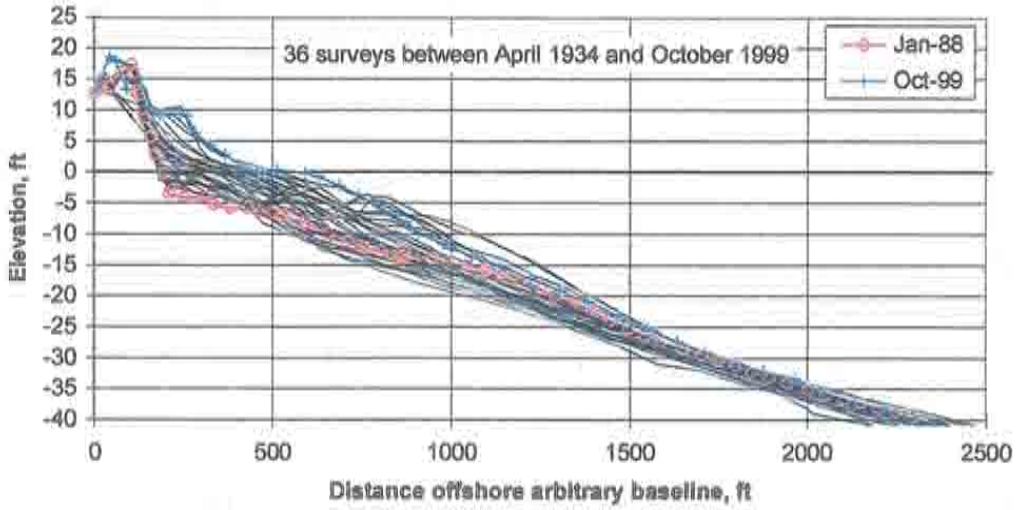
Figure B-8





Profile Change Due to the Storm of January 17 and 18, 1988 (upper) and Envelope of 36 Surveyed Profiles at Batiquitos Lagoon Through October 1999 (lower).

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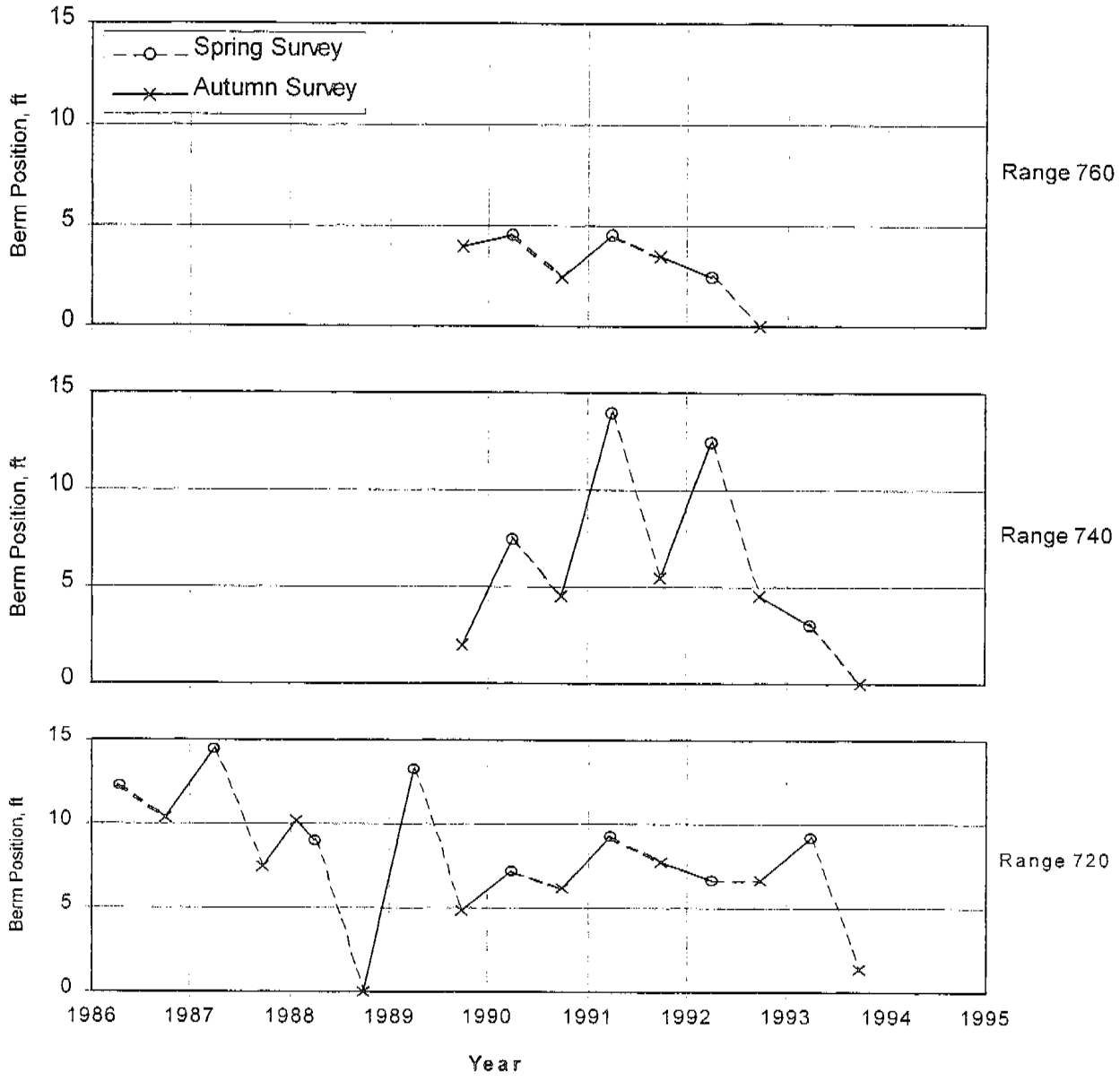
Figure B-9



Seasonal Changes in the Position of the Shingle Berm Face at Batiquitos Lagoon (range 720) and South Carlsbad (ranges 740 and 760).

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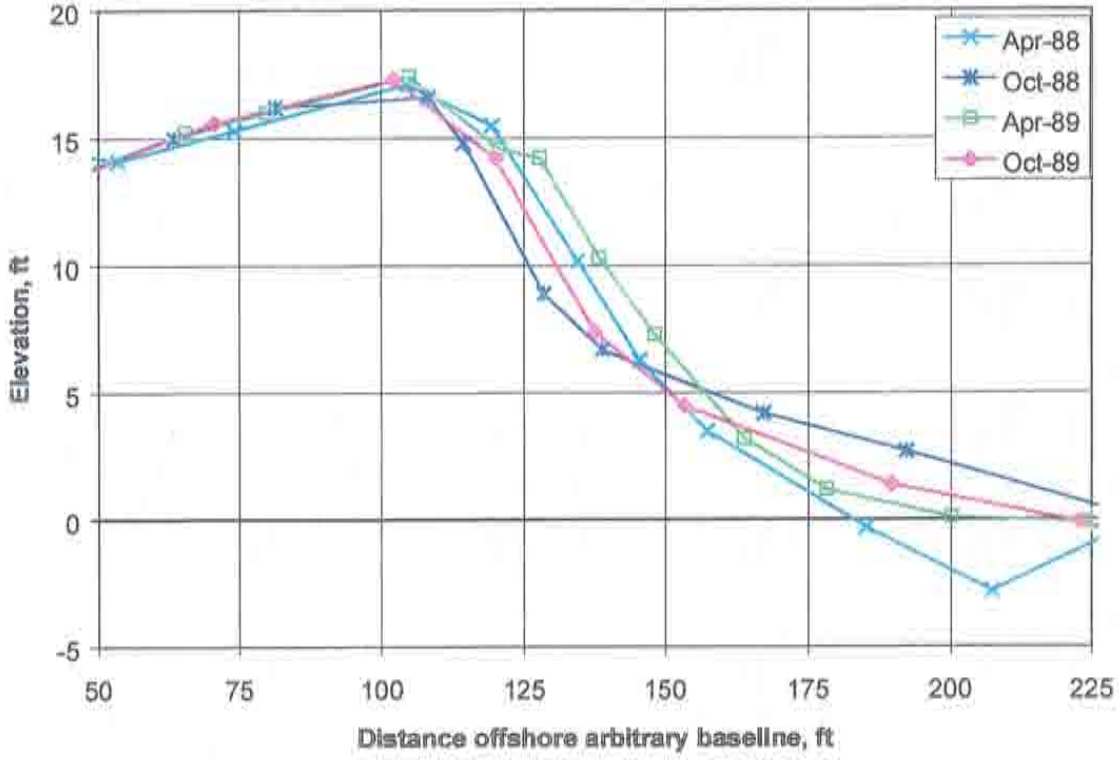
Figure B-10



Seasonal Advances and Retreats of the Shingle Berm Face Batiquitos Lagoon: April 1988 to October 1989

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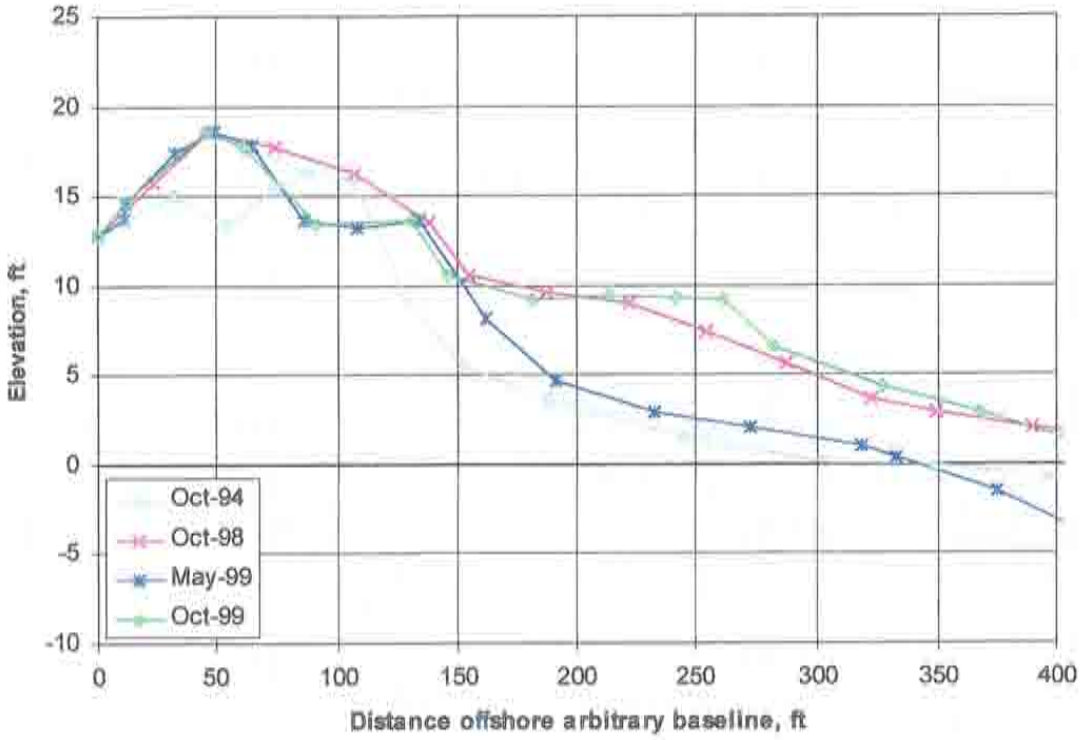
Figure B-11



Pre-May 1999 Erosion of the Natural (October 1994 Profile) Batiquitos Lagoon Shingle Berm After a Sand-Shingle Mixture was Placed Atop it in 1995.

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Figure B-12

Sand Covered Cobble (shingle)
Berm Near Batiquitos Lagoon
Entrance in January 2000

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Figure B-13

Gravel Berm at Cardiff, January 2000

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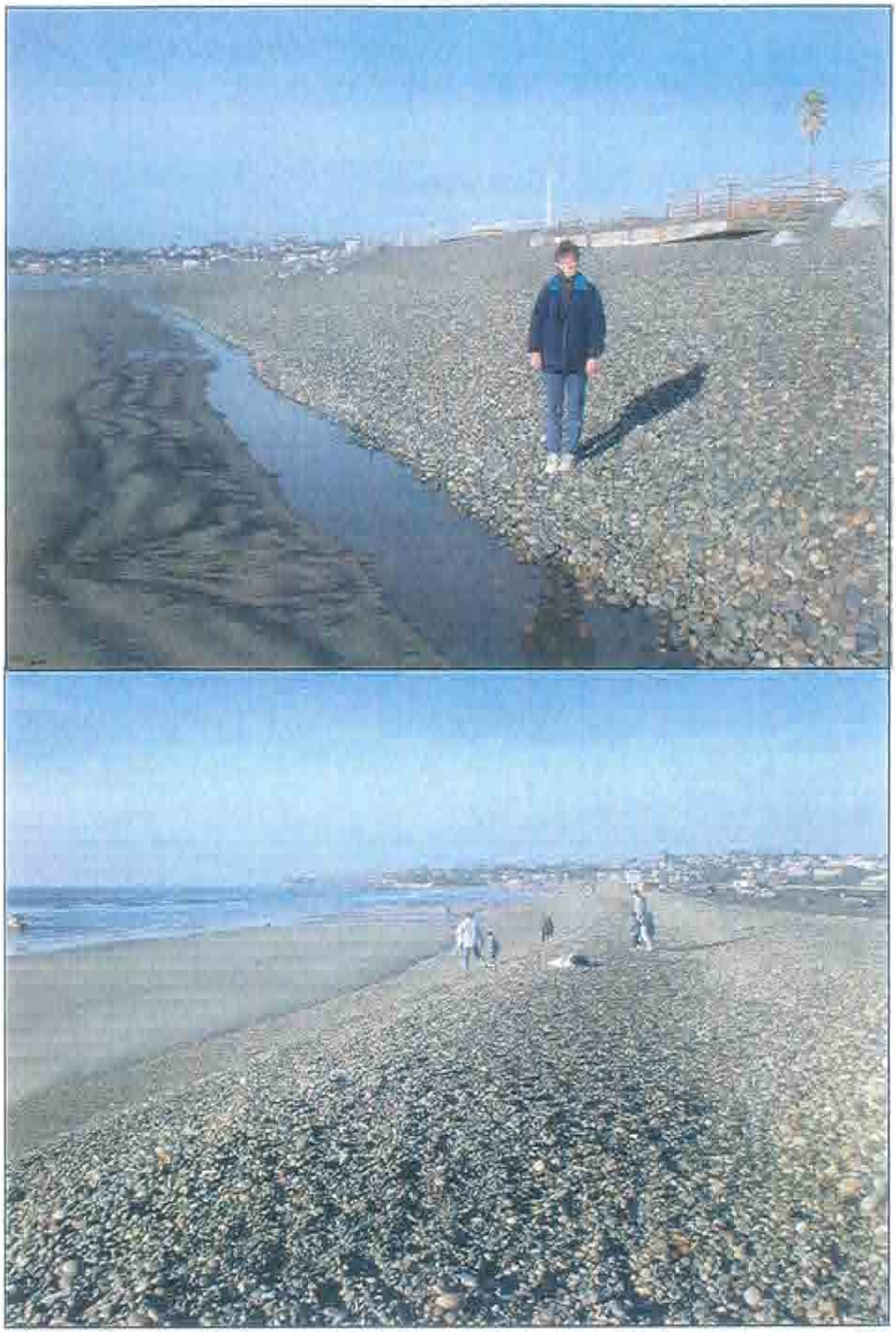
Figure B-14



Sandy Shore Platform Fronting the
Gravel Berm at Cardiff, January 2000

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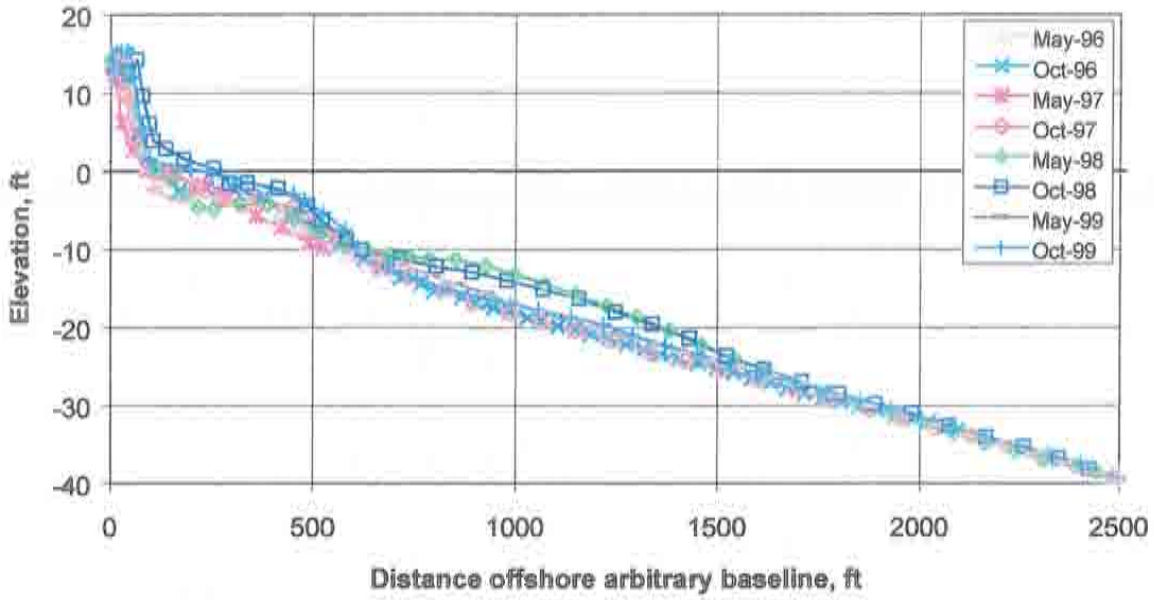
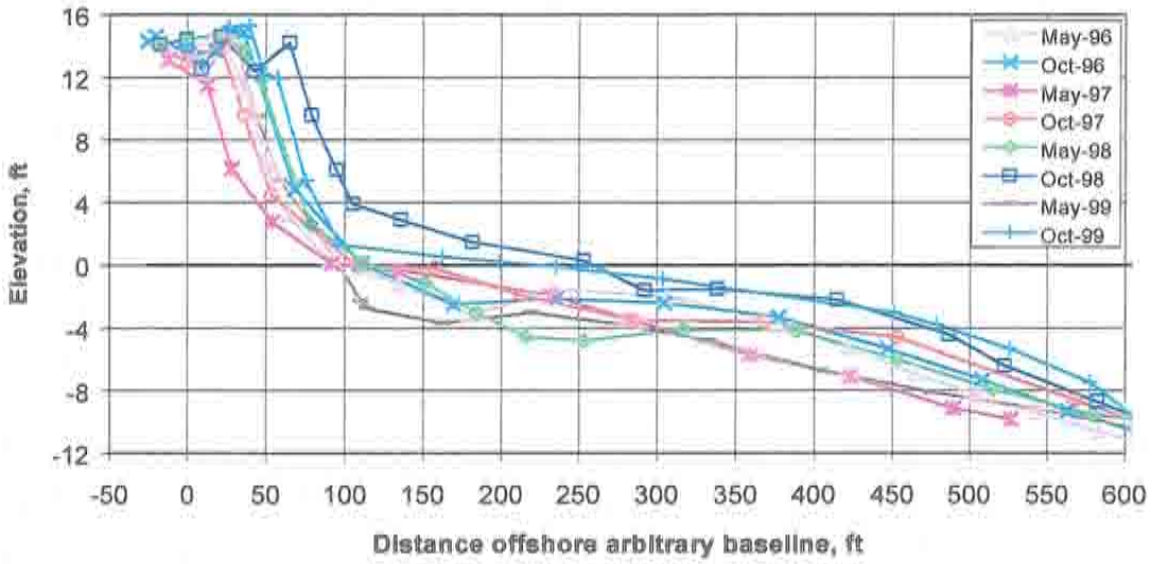
Figure B-15





Envelope of Profile Change (upper) and Gravel Berm Behavior (lower) at San Elijo Lagoon, 1996-1999

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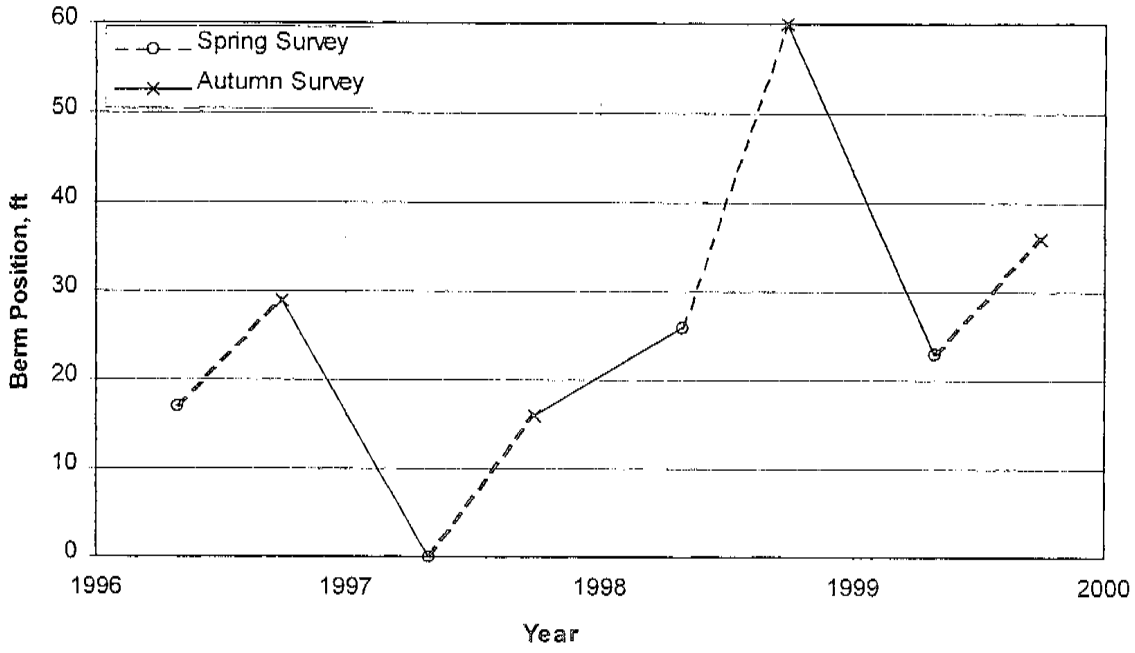
Figure B-16



Seasonal Advances and Retreats of the Gravel Bermface at Cardiff Between May 1996 and October 1999

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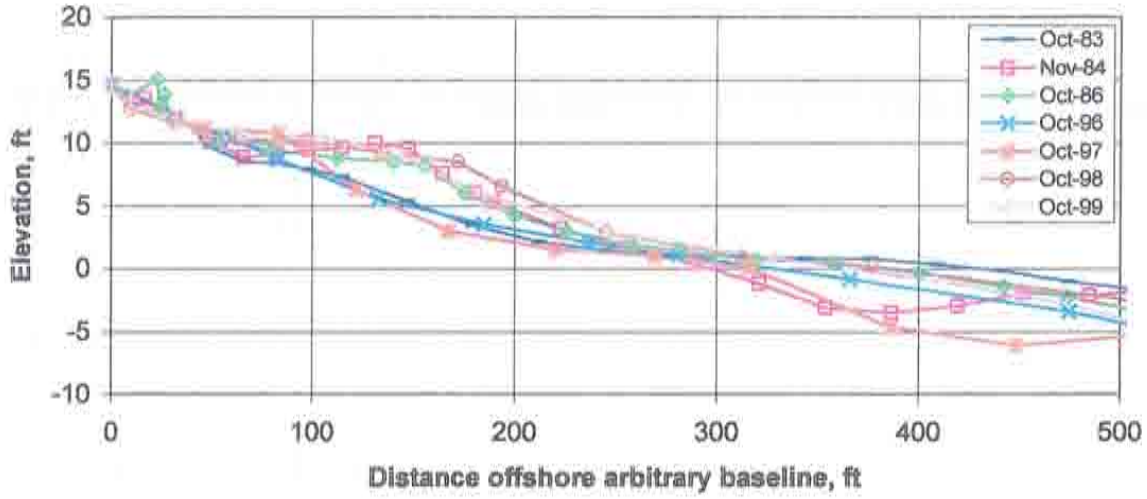
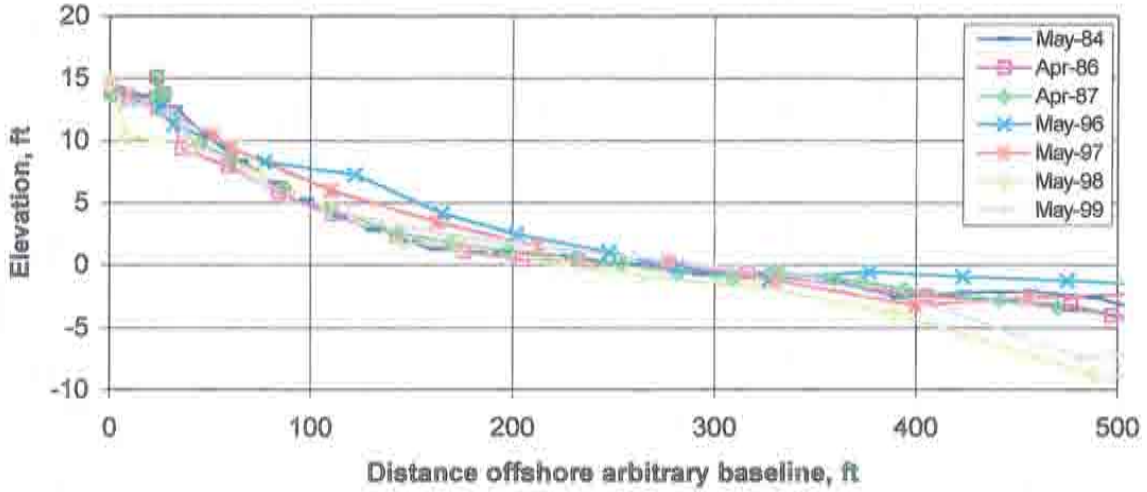
Figure B-17





Seasonal Profiles Showing the Narrow Shingle Berm Above an Elevation of +13 ft and the Sand Berm at an Elevation of +9 to +11 ft at Del Mar (Near the San Dieguito River Outlet)

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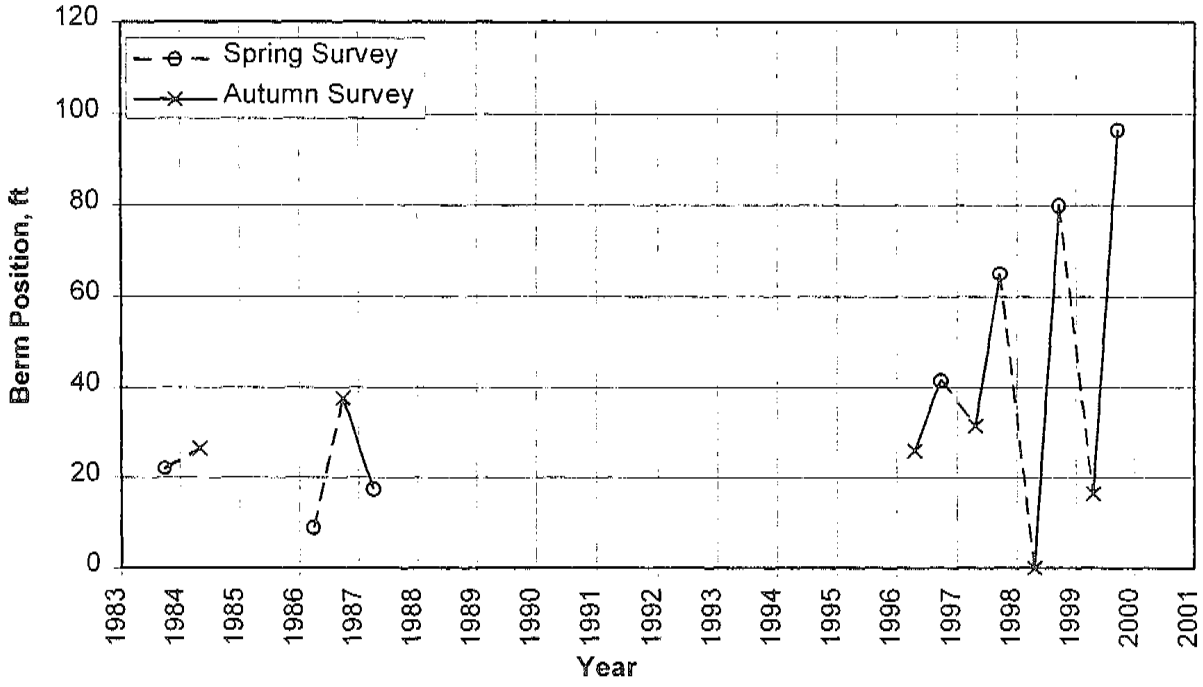
Figure B-18



Seasonal Advances and Disappearances of the Sandy Berm Faces at +10-ft (mllw) at Del Mar Between 1983 and 1999.

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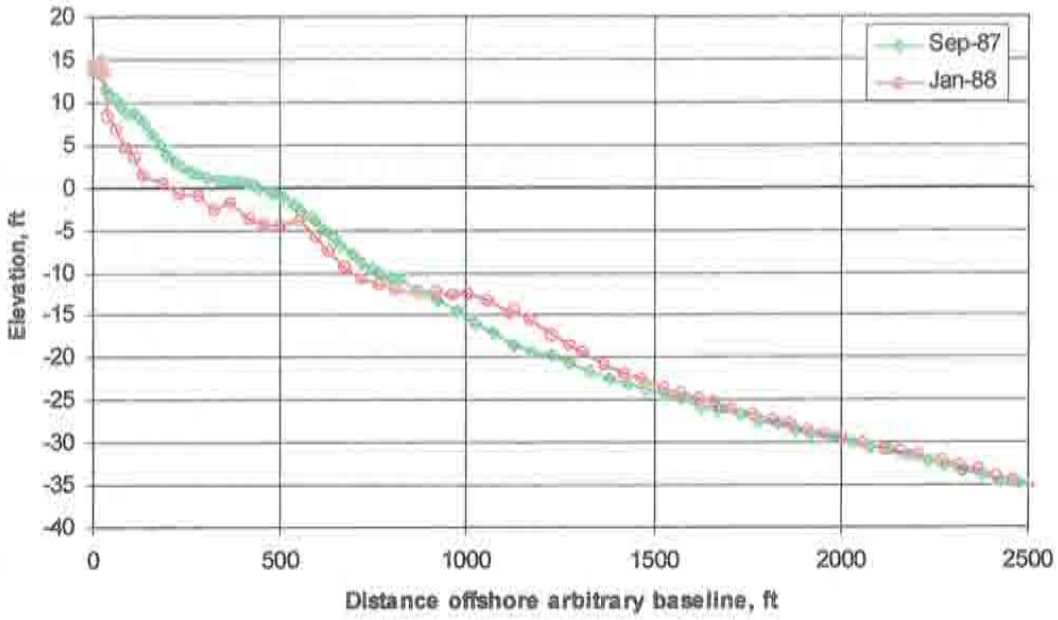
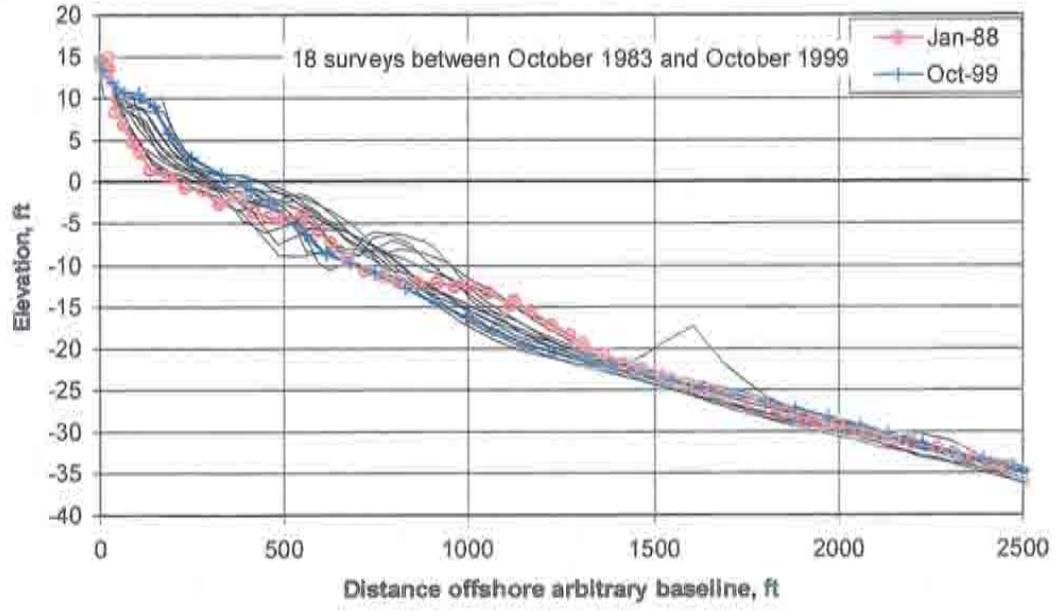
Figure B-19





January 1988 Storm Erosion of the Sand Berm at Del Mar (upper) and the Profile Envelope (lower)

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Figure B-20

APPENDIX C

COBBLE BERM DESIGN GUIDELINES

Prepared By: Dr. Craig Everts

Appendix C
Cobble Berm Design Guidelines

C-1.0 Introduction

There is little difference between a natural and an artificial gravel, cobble, and/or boulder (gcb) berm in function. Artificial gcb berms are flexible in the sense the gcb is easily placed and can be easily removed. A comparatively small gcb volume is needed to provide the same level of protection as a large sand replenishment volume. Gcb berms have a relatively small footprint because their foreshores stand high and steep. Post-placement losses due to net offshore transport tend to be low. Sand beaches are commonly associated with natural gcb berms in Southern California; so sandy recreational beaches would be wholly compatible with artificial ones. In southern and eastern Britain, shingle berms and sandy beaches are managed with short groins (Foxley and Shave, 1983). Natural sorting, and low longshore shingle transport rates, combine to contain shingle at the upper part of the beach. Consequently, alongshore shingle movement is limited to the berm, while sand easily passes downcoast of the retention devices at lower elevations (Nicholls, 1991).

C-2.0 GBC Berm Sedimentation and Design Guidelines

A conceptual model of sediment movement on a foreshore composed of and underlain by gcb helps explain why the prototype berms accreted, eroded, or remained stable. The active surface of the bermface is the foreshore. Energy remaining after a wave is transformed in passing across the shoreface and shore platform is expended in a comparatively short distance on the foreshore as swash. Over a tide cycle, the magnitude of that expenditure increases greatly as the water surface rises. It declines as it falls. Uprush begins as a bore when a wave surges upward or after a wave has broken in front of or on the foreshore. A bore carries considerably more momentum flux than sine waves of the same height. Momentum is lost as the uprush proceeds due to gravity, friction and infiltration losses into the underlying berm. At some point this upward-directed flow slows, reverses, and returns as backwash. Depending on the amount of seepage loss, the backwash gains momentum as it returns downslope, moving more as sheetflow than as a bore.

Uprush and backwash forces vary in both magnitude and position on the foreshore. Gcb transport is affected by:

(1) shear stresses due to drag, lift, and acceleration (hydrodynamic forces),
(2) gravity acting on individual clasts and mostly dependent on the foreshore slope, and

(3) reaction or resisting forces from neighboring clasts that vary with the packing and size distribution of the clasts.

A clast is displaced if the hydrodynamic forces acting upon it exceed the gravity and reaction forces trying to keep it in place. Hydrodynamic forces during runup almost always exceed those of the backwash cycle. Opposing hydrodynamic and gravity forces in the uprush phase of the swash cycle and the additive hydrodynamic and gravity forces in the backwash phase are what maintains foreshore stability. One way to envisage that stability is to consider conditions that favor erosion and accretion represented by, Φ, the ratio of the integrated uprush and backwash forces

$$\Phi = \frac{\int(\tau_u - g)dt}{\int(\tau_b + g)dt} \qquad (1)$$

in which $\int$ represents forces integrated over an entire tidal cycle,

τ = sum of all hydrodynamic forces, here considered to be the bed shear stress above the threshold stress required to initiate motion,

u and b are subscripts that represent uprush and backwash conditions, respectively, and g = gravity force.

The reaction force, not included in Equation 1, is a function of the "smoothness" of the foreshore surface. A smooth surface would exist where the range of sizes is wide so smaller particles fill the voids between larger clasts. A rough surface and one with high reaction forces would be composed of a narrow range of sizes that inhibit rolling and sliding. If $\Phi > 1$, the foreshore is accretional. When it is <1, it is erosional. In addition, when it equals one it is stable. Equation 1 indicates net displacement declines as the slope of the foreshore approaches its "equilibrium" for the swash regime acting upon it.

Measured prototype berm behavior provides us with a useful resource when attempting to establish the relative importance of gcb size, the porosity of a gcb berm, the crest and foundation elevations of a gcb berm, the gcb volume of the berm, and the gcb volume on and within the shore platform using Equation 1. These are the variables that can be controlled, at least to some extent, in design and later in the maintenance phase of an artificial gcb berm project. Table C-1 is a summary of prototype berm characteristics and behavior. These data coupled with other information on swash processes provides a means to develop guides to engineer a protective, experimental gcb berm at Surfers Point.

Table C-1
Summary of Prototype Sand, Gravel, Cobble, and Boulder Berm Characteristics and Behavior

Predominant Grain or Clast:	Sand (Del Mar)	Gravel (Cardiff)	Cobble (Batiquitos Lagoon and South Carlsbad)	Boulder (Emma Wood State Beach)
Morphology				
1. Crest elevation, feet above mllw	9 - 11	14 - 15	16 - 17	+12.5
2. Bermface slope, rise/run	0.06 to 0.07 winter 0.08 to 0.09 summer	0.28-0.30	0.25	0.20
3. Porosity, hydraulic conductivity	Low, estimate 0.2 to 0.4 cm/sec	Higher, estimate 5-15 cm/sec	High, estimate 10-50 cm/sec	Low, measured 0.2 to 0.5 cm/sec
4. Bermface-shore platform intercept, ft (mllw)	Sand berm is at +9 to + 11	-4 to +4	-4 to +10	0 to +1.5 (winter 2000 elevation)
Dynamics				
1. Long-term net change	About -1 ft/yr (1980-1999)	Net retreat of shoreline -2.6 ft/yr (1980-1999); net advance of bermface about 5 ft/yr (1996-1999)	Net advance +0.6 ft/yr (1980-1999)	Estimated stable in recent years
2. Seasonal	Advance summer, retreat winter, average seasonal volume change is about 20 cyf above mllw	Advance summer, retreat winter, average seasonal volume change is 10-12 cyf; average seasonal retreat and advance is 19 ft	Retreat summer, advance winter, average seasonal volume change is 1.5 to 2 cyf; average seasonal retreat and advance is 4.6 ft	Unknown
3. Storm	Lost 40 cyf in January 1988 and -15 cyf in the 1997-98 ENSO winter	Advanced 10 ft during the 1997-98 ENSO winter	Advanced almost 70 ft in the 1982-83 ENSO winter and gained about 12 cyf	Unknown
Survey coverage	18 surveys between October 1983 and October 1999	8 surveys between May 1996 and October 1999	36 surveys between 1934 and 1999	No repetitive surveys available

C-3.1 Wave Forcing

Waves are the driving force for all gcb sediment movement on the foreshore although under extreme conditions currents may move gcb in other environments. For example, when the channel at Batiquitos Lagoon was artificially opened in 1990, cobbles in the size range 5 to 15 centimeters began moving unidirectionally in a water depth of 1 foot at a threshold flow velocity of 5.2 feet per second. Once moving, the cobbles remained in transit above flow velocities of 4 feet per second.

Waves are transformed as they pass from deep water across the shoreface, through the outer breaker line, and across the surf zone (shore platform), until they finally reach the base of the foreshore where they are converted to runup. While longshore gcb transport can be minimized by specifying the orientation of the artificial berm to most closely approximate the propagation direction of incident waves at its base, incident waves cannot be modified to substantially improve Φ (Eq. 1). However, it is useful to consider temporal variations in the height of waves reaching the coast in order to make reasoned judgments concerning the distinctive seasonal berm behaviors such as the different reversible advances and retreats of the cobble versus gravel and sand bermfaces (Table C-1).

Incident waves vary on all scales of time, but infrequent and energetic storm waves, or very large swell, are of most interest because they cause the most change on a gcb berm. A correlation between the steepness of the incident waves, the fall speed parameter, and erosion and accretion on all types of beach has been widely reported, i.e., Larson and Kraus (1992). Wave steepness is H_{so}/L_o, and the dimensionless fall speed parameter is H_{so}/wT, where H_{so} = deep-water significant wave height, L_o = deep-water wavelength, w = sediment fall velocity, and T = wave period.

In linear theory, the relationship between deep-water wave length and wave period is $L_o = (g/2\pi)T^2$. Consensus is elusive concerning the cutoff steepness value between erosion and accretion, but the pattern is one of an increased tendency for erosion as wave steepness increases. Sherman (1991) found steep storm waves (H_o/L_o >0.01) carried gravel off beaches with inconsequential sand content in Ireland, producing a concave-up profile. He also found swell with steepnesses (H_o/L_o <0.007) caused onshore transport and a rebuilding of the berm. The tendency for a gcb foreshore to erode declines as the sediment fall velocity increases. Runup is highest for long period and hence, lower steepness waves. Nicholls and Webber (1988) report swell waves produce the highest runup on shingle beaches in Christchurch Bay, Britain, and Jensen and Sorensen (1988) consider wave period to be as important as wave height in designing a berm breakwater to resist wave attack

Many recent investigations indicate low frequency motions that are closely related to incident wave groups dominate the swash zone. This energy, generated within groups offshore, remains grouped in the surf and swash zones. In the swash zone this group energy is concentrated in the infra-gravity band at frequencies about one order lower than those of the incident waves. The behavior of these bound long waves and their interaction with individual breakers is not fully understood, but to those who observe almost any foreshore with some attention will see a few high runups and many lesser ones. Guza et al., (1984) report on field observations of swash oscillations to incident wave conditions, and found wave breaking prevents the magnitudes of swash oscillations at incident wave frequencies from increasing past a certain level that depends on foreshore slope. They also found motions at surf beat frequencies dominate the swash spectrum on dissipative beaches.

The largest waves are typically depth-limited at the base of southern California berms with depth controlled by wave setup, the astronomical tide, and the elevation of the sand-gcb intercept. The highest and most energetic waves reach the foreshore at high tide. Wave setup can substantially increase the water surface elevation at the foreshore by 0.2 to almost 0.4 times the rms wave height in deep water (Neilsen, 1990, and

Table C-2
Wave Characteristics, Severe Storms That Impacted North San Diego Beaches and Surfers Point Between 1934 and 1991

Date of Storm	Deep Water Wave Characteristics			Surfers Point dpth=30' mllw	Batiquitos dpth=41' mllw	San Elijo dpth=32.5' mllw	Maximum Astronomical Tide Elevation at LA outer harbor, ft (mllw)
	Hs (ft)	T (sec)	Direction (deg)	Nearshore Significant Wave Height, ft			
1/20/43	16.2	10.8	180	10.5	7.2	4.5	
3/13/52	11.7	11.7	250	3.8	8.7	9.6	
1/6/53	16	19.2	260	8.3	12.1	13.1	
1/27/58	18.1	14	270	12.7	12.3	13.6	
4/5/58	25.1	18	293	3.4	9.3	11.3	
2/10/60	18.3	19	294	2.5	6.8	8.2	
2/10/63	19.5	14	269	13.7	13.3	14.6	
3/7/69	15.6	15	284	2.9	6.4	8.8	
12/7/69	14.4	14	276	8.5	3.6	3	
1/16/78	18.6	17	284	9.9	9.3	11.6	4.84
3/20/80	15.6	15	255	9.5	11.1	11.8	5.14
1/23/81	21.5	16	269	17.3	16	18.3	5.26
1/29/81	15.4	18	265	11.3	13.4	12.7	4.58
12/1/82	20.4	11	293	1.2	3.3	3.6	6.93
1/27/83	21	21	283	11.2	12.7	12.4	6.92
2/13/83	17.1	17	275	13.7	13.8	15.6	5.74
3/2/83	23.6	19	262	12.2	17.9	19.3	5.12
11/13/84	15.5	17	262	8	11.8	12.7	5.4
12/3/85	21.4	17	265	15.7	18.6	17.6	4.74
2/1/86	24	19	276	23.2	19.4	21.8	4.87
2/15/86	24	17	253	13.3	19.4	20.6	4.43
3/11/86	21	17	286	11.2	10.5	13.1	5.28
3/6/87	15.6	15	260	9.1	9.7	10.8	4.57
1/17/88	33.1	15	265	26	23.4	22.2	6.73
12/3/89	15	17	275	14.5	12.1	13.7	5.11
3/2/91	16	17	280	12.2	10.2	13.8	5.33
12/29/91	16	17	270	13.9	14.1	15.3	5.39

Hanslow and Neilson, 1993). The sand-gcb intercept changes elevation seasonally and during a storm (Table C-1). In most years, it and the shore platform progressively rise from April or May through November or December when cross-shore sand transport is landward, and progressively fall after November or December until they reach their storm-season minimum in April or May. As a consequence, the potential depth is greatest in mid- to late winter when the foreshore is usually most vulnerable.

The January 17 to 18, 1988 storm is a case in point. As an example, at Batiquitos Lagoon the peak astronomical tide elevation reached 8 feet above mllw when the significant wave heights offshore in a depth of 41 feet were

about 23 feet (Table C-2). During this storm the setup might have been 5 to 9 ft above the astronomical tide elevation at the foreshore. Since the elevation of the shore platform at its contact with the berm was about -4 feet (Table C-1), the water depth at the base of the foreshore could have been as high as 17 to 21 feet and the water surface elevation 13 to 17 feet above mllw. This is about the crest elevation of the cobble berm without runup.

Cobbles were carried over the berm in large numbers during the time of highest water and despite the wave energy expended on the berm, several cubic yards per foot of cobbles were deposited on its crest. This storm was clearly an exceptional event with extreme runup elevations. Ahrens and Seelig (1996), using data collected from gravel beaches, concluded the 2% runup level was equal to the berm crest elevation under more ordinary circumstances. Powell (1988) came to a similar conclusion after observing 3,000 waves. He found the berm crest was overtopped by less than 3% of them.

The 1982-83 cluster storms and the 1988 storm added long-term volume to the cobble berms while winter storms of lesser intensity and episodes of summer swell caused reversible seasonal changes but no net change. Figure C-1 illustrates the relative difference in wave intensity in water depths of about 30 to 40 ft and the astronomical tide for the larger storms that impacted the coast of north San Diego County and Surfers Point between 1934 and 1991. Note the abnormally high tides for the accretional events. From this figure one might conclude that water surface elevation is as important as wave energy in causing a net increase in the volume of a gcb berm.

C-3.2 Clast Size

Berm performance is clearly dependent on the mass of its clasts. Mass is proportional to the cube of its mean size. As shown in Table C-1, the cobble berm at south Carlsbad and Batiquitos Lagoon behaves in an unlike way in comparison to the gravel berm at San Elijo Lagoon and the nearby sand berm at Del Mar. The sand and gravel berms accrete in the summer and erode in the winter whereas the cobble berm accreted in the winter and eroded in the summer. Sediment volumes involved in these seasonal fluctuations were 15 to 20 cubic yards per foot for the sand berm, 5 to 10 cubic yards per foot for the gravel berm, and about 2 cubic yards per foot for the cobble berm.

Volume displacements caused by severe storms or clusters of storms similarly declined as the clast size increased. In January 1988, the sand berm lost 40 cubic yards per foot and the cobble berm gained 2 cubic yards per foot. In the 1997-98 El Niño winter, the sand berm lost 15 cubic yards per foot, the gravel berm

gained about 3 cubic yards per foot, and the cobble berm was unaffected because it was covered with beach fill. The behavior of the boulder berm at Emma Wood State Beach is unknown, but it is not unreasonable to assume, all else being equal including its porosity, that it would be more stable than the cobble berm at south Carlsbad and Batiquitos Lagoon. At Emma Wood, the largest boulders are found on the lower half of the berm and concentrated in the upper two feet of the shore platform. All evidence indicates they rarely move.

Investigations of the effect of clast shape on berm stability have not produced consistent results. Einstein and Abbot-Palmer both used "hiding" factors to describe the movement of sediment particles across surfaces composed of different size and considered size distributions and surface roughness to be important controls on the movement of sediment across a rough surface. Similarly, Bradbury et al, (1990) in a series of random wave tests, concluded gross shape and roundness, together with packing, had an important effect on the stability of armor units. They found the damage caused by plunging waves on a rock revetment of equal dimension units was almost twice as great if the rock was very round than if it was tabular. For surging waves they found the damage was over six times as great for the very round versus the tabular units. Conversely, using data sets from different sources, Van der Meer et al. (1996) concluded that differences between various rock types, roundnesses, angularities, and length/thickness ratios, had little or no influence on the stability of a rubble mound structure. A test in the laboratory on the start of damage showed rock composed of many elongated or flat rocks was just as stable as a more uniformly shaped rock. Hardly any difference was found between rounded and angular rocks although after the structure began to unravel, rounded rock unraveled at a faster rate.

Slope is a fundamental aspect of movable structures in the littoral zone. In all the physical model tests reported in Berm Breakwaters (1988), a symposia proceedings volume, the stable beach at equilibrium was "s"-shaped. The steepest slope was in the upper center of the breakwater as it is in the boulder berm Emma Wood, the cobble berm at Batiquitos Lagoon, the gravel berm at Cardiff, and the sand berm at Del Mar. Breakwater profiles became milder near the still water line where they typically approached horizontal. In the compound gcb berms and sandy shore platforms in southern California, the same situation prevails, but the intercept between the two different material surfaces is usually sharp.

C-3.3 Infiltration and Porosity

Porosity and its derivative, permeability, are fundamental controls on the stability of a gcb berm. Swash flow volumes are progressively reduced by the speed at which fluid moves into an unsaturated berm, defined by its hydraulic conductivity, and the uprush and backwash seepage volumes the berm can accommodate. The extent of this infiltration is dependent upon (1) the internal structure of the berm below the foreshore surface and (2)

the location of the boundary between unsaturated and saturated sediment with respect to that surface. When voids in a gcb berm are charged with sand the permeability of the berm declines and its stability suffers accordingly. A clean (vs. sand filled) gcb berm will have a hydraulic conductivity several orders of magnitude larger than a berm composed of fine or medium sand. Porosity also affects the level of wave energy absorption on the foreshore and the extent to which fine-grained sediment is fluidized. Both of these factors are minor, however, compared to the impact of porosity on infiltration.

On permeable slopes, while the runup may not be greatly reduced, infiltration significantly diminishes the depth of the backwash. In turn, this greatly affects the backwash bed shear stress (Eq. 1) and the occurrence of accretion or erosion. Laboratory studies indicate the behavior of a berm may take on some of the characteristics of its smaller, void-filling constituent. Holmes et al. (1996), for example, found the beach profile that evolved with a mixed size population was about the same as it was when the finer component was modeled alone. The coarse material had little effect on the transport of the fines and there was little evidence of armoring. Yet, when the coarser component was modeled alone, the profile evolved to a very different shape.

Berm performance at south Carlsbad and Batiquitos Lagoon are certainly in agreement with this observation. When voids in the upper part of the berm were unfilled (hydraulic conductivity k=10+ cm/sec) the berm was stable or accreted during the most severe storms. After sand was artificially placed on top of it and its voids were sand charged (k=0.01 to 0.5 cm/sec), a scarp formed and it began eroding during storms that earlier would have had no effect on its stability. In all cases but one, shingle berms in north San Diego County eroded after sand was artificially placed atop them. Sand slumping from a higher elevation may have covered the berm crest in the exception as well. Losses following artificially-induced sand-charging tended to decline from a maximum at the berm crest to no loss at an elevation of about +6 feet, i.e., the steepest part of the bermface was eroded. No episodes of accretion were detected after the berms were sand-charged, including seasonal accretion during the winter unlike the seasonal winter cycle of accretion noted before they were sand-charged.

Slope controls the forces acting on a foreshore clast (Eq. 1) and in turn, the balance between the sum of the uprush and backwash forces dictates the slope. Porosity may be more important than clast size in this process as noted by Jensen and Sorensen (1988) who reported a tendency for uprush forces to exceed gravity and reaction forces on laboratory slopes composed of angular rubble or rip-rap stone that were steeper than 4:1. Because infiltration muted the backwash force there was a net upward movement of material when a milder slope was tested. Their "clean" laboratory slope was similar to the 4:1 berm slope that existed from the mid 1980's to the mid 1990's at Batiquitos Lagoon where the larger clasts were in the 2 to 15 pound range (0.2 to

0.5 foot size range) and at least the upper few feet of shingle was free of sand above an elevation of about 9 ft in 1990.

In contrast, the slope of the Emma Wood State Beach berm is 5:1 even though its clasts are in the cobble-boulder range with the largest sizes weighing 100 to 400 pounds (maximum 2.5 feet in long axis length). At Emma Wood, voids below the uppermost course of cobbles and boulders are sand-charged. Unfilled voids at Emma Wood might have hydraulic conductivities of k=50+cm/sec, but the void-filled berm has an hydraulic conductivity of 0.1 to 0.5 cm/sec.

The slope of the homogeneous sand berm at the San Dieguito River mouth is 12:1 where the hydraulic conductivity k=0.02-0.04 cm/sec and the grain mass averages 0.00005 lb (0.2 mm grains).

A low water table provides a greater storage volume on a rising than a falling tide and aids the infiltration process. This suggests that there is greater potential for accretion on the middle and upper foreshore as the water surface rises and a greater potential for erosion as it falls. When the berm is saturated, the uprush and backwash retain their flow volume, severely limiting infiltration. Backwash flow may be augmented by ground water outflow.

Where the hydraulic conductivity is large, the water level rises and falls within the berm nearly in phase with the tide as reported by Nicholls and Webber (1988). They measured water level changes in a shingle barrier in Britain and found the seepage elevation was about equal to the tide elevation, and the internal water surface remained nearly horizontal as the stage of the tide changed. Conversely, when a gcb berm is sand-charged, the elevation of the intercept between the water table and the beach surface will fall more slowly than the surface water level so water will flow out of the berm at low tide. Kang and Neilson (1996) found the water table overheight above the still water line amounted to 62% of the runup height almost irrespective of grain size on a sandy foreshore. If this observation holds for gcb berms, the implication is that runup and backwash infiltration on the upper 40 of so percent of the runup surface will never be compromised by near-surface saturation.

On a rising tide the tendency for accretion would progressively rise and reach a maximum near the 60% runup distance. The location of the water table, of course does not affect the infiltration potential of the berm. Kang and Neilson (1996) suggest filtration velocities of 0.45k for sand during a rising tide, which is compatible with the hydraulic conductivity Gorian and Associates found for the sand at Surfers Point.

Porosity in a gcb berm also allows energy to penetrate into the body of the deposit and thus dissipate a bit of the wave energy since it is not concentrated on an impermeable berm surface. Hudson recognized this feature by assigning a higher stability factor to a rubble mound structure as the number of porous armor layers increased. Deguchi et al. (1996) compared permeable and impermeable laboratory berms and found wave heights on permeable shingle slopes were lower than on impermeable slopes, and that the ratio declines in inverse proportion to slope. For example, they found that on a 5:1 slope, the wave height on a permeable slope was 0.8 the height on an impermeable slope. Shingle size was found not to be a factor, and they noticed no difference in the reflection coefficient using different shingle sizes with the same slope; all were less than 30%. Conversely, Packwood (1983) found runup on an impermeable slope and on a berm composed of fine sand with an hydraulic conductivity of 0.01 cm/sec (porosity of 0.3) to be almost the same. Deguchi et al. (1996) found the maximum runup height on an impermeable slope to be about equal to the incident wave height.

C-3.4 Berm Crest Elevation

As shown in Table C-3, crest elevations correlate with sediment size in the berms of north San Diego County. The crest of the Batiquitos Lagoon cobble berm was a consistent 13.5 foot elevation during the 25 year period of foreshore stability between 1957 and 1982 when it may have been sand-charged, but not subject to severe wave attack. Its crest elevation increased to 16 feet during the stormy El Niño winter of 1982-83 and increased again to 17.5 feet in the January 1988 storm.

Table C-3
Berm Crest Elevations in North San Diego County

Location	South Carlsbad and Batiquitos Lagoon	Cardiff	Del Mar
Median size of clasts or grains	Cobbles 0.2 to 0.5 ft	Gravel (0.05 to 0.2 ft)	Fine sand (0.2 mm)
Berm crest elevation, ft (mllw)	13.5 to 17.5 before sand-charging; 13.5 after sand-charging	About 14	About 10

C-3.5 Berm Base Elevation

Beach processes control the elevation where the shore platform intercepts the berm. This elevation is dependent on the volume of sand in the littoral sediment lens, winter storm conditions that carry it seaward from the upper profile to a temporary depositional site in deeper water, and summer conditions when it is transported onshore again. As shown in Table C-4, the limiting elevation of that intercept was found in post-storm surveys. The fourth column in the table shows the limiting width of the erosional shore platform and hence the outer limit of

the source area and the limiting depth within which shingle is available for onshore transport during the winter at south Carlsbad and Batiquitos Lagoon.

Table C-4
Characteristics of the Berm-Shore Platform Intercept in North San Diego County

Location	Survey Interval	Scour Limits of the Berm-Shore Platform, ft (mllw)	Maximum Scour Depth at Outer Edge of Shore Platform, ft (mllw)
South Carlsbad and Batiquitos Lagoon cobble berm	1957-1999 (36 surveys)	-4 (January 1988)	About -10 ft; 500-ft from the berm-shore platform intercept (January 1988)
Cardiff gravel berm	May 1996-October 1999 (8 surveys)	-5 (May 1998)	-5 ft; 200-ft from the berm-shore platform intercept (May 1998)
Del Mar sand berm	October 1983-October 1999 (18 surveys)	0 (Many surveys)	-5 ft; 400 ft from the berm-shore platform intercept (January 1988)

Base elevations of the cobble and gravel berms in north San Diego County are unknown. Scour limits shown in Table C-4 are minimums; these berms and shore platforms have not been trenched to discern subsurface composition. At Emma Wood State Beach, the base of the boulder berm was about 4 feet below the elevation of the berm-shore platform intercept elevation of 0 to +1.5 feet.

C-3.6 Berm Volume

A large shingle berm provides a cushion against its complete removal during an erosive event. In addition, it may provide a greater level of stability by providing a larger volume within which swash fluids can be stored and released during a storm. It is not possible to estimate the dependence of berm stability on berm volume with information that is currently available. However, as shown in Table C-5, changes in the volume of the various berms in north San Diego County provide useful clues concerning gains and losses that are associated with extreme storm events, the location where these losses occurred, reversible seasonal fluctuations in gcb volume, and where the gcb was temporarily added or removed.

Table C-5
Sediment Displacements On Berms in North San Diego County

Location	South Carlsbad and Batiquitos Lagoon (cobble berm)	Cardiff (gravel berm)	Del Mar (sand berm)
Maximum volume change due to an extreme storm, cyf	+10 to +12 (accretion in the ENSO winter of 1982-83); -4 to -5 (erosion of the sand-charged berm between October 1999 and May 1999	Not available in the short 1996-1999 survey period	-40 to -50 (erosion during the January 1988 storm)
Location of change on the berm	Accretion and erosion near and at the berm crest	See above	entire berm lost
Average and maximum seasonal gain or loss of berm volume, cyf	Average = 2 Maximum = 5	Average = 8-10 Maximum = 14 (based on 8 surveys in 4 years)	Average = 10-13 Maximum = 30
Location of change on berm	Typically uniform between +5 and +15 ft	Typically between -2 and +14 or 15 ft	Typically between 0 and +10 ft

The cobble berm at Batiquitos Lagoon contained over 50 cubic yards per foot in October 1983, and its crest was over 125-ft wide. The berm was not backed by an impermeable barrier such as a seacliff. The largest accretional event added less than 25% to its volume and the maximum loss was noted to be only 10% of its 1983 volume.

The two more narrow shingle berms nearby in south Carlsbad are backed by an impermeable bank or seacliff. In the decade before beach fill was placed atop them they contained less than 10 cubic yards per foot of gcb, and they experienced no accretional episodes, including the 1988 storm that added 3 cubic yards per foot to the Batiquitos berm. Where gcb sizes are less, the ratio between gcb-berm accretion and erosion volumes and the total volume of the berm are higher than at Batiquitos.

C-3.7 Local Availability of Gravel, Cobbles and Boulders

Accretion on a gcb berm requires a source of material seaward of or upcoast of the berm. Erosion requires a depository for the displaced material seaward of or downcoast of the berm. Cross-shore and alongshore displacements occur on many scales of time. The most important are seasonal and storm intervals. Substantial longer-term net changes due to gcb entering or leaving the vicinity of the berm-shore platform system are less frequent and more difficult to quantify. In most cases, entering or exiting gcb must cross or reside temporarily within the bounds of the shore platform before it reaches or after it leaves the berm.

C-3.7.1 Exchange Between Berm and Shore Platform

Prototype evidence suggests that most changes in berm volume are the result of short-distance, shore-normal exchanges with the shore platform. Seasonal displacements changed the volume of the berm in the same pattern all along south Carlsbad and Batiquitos Lagoon, which indicates that these displacements must have been in a shore-normal direction. If they were predominantly alongshore, upcoast transects would have showed a loss of sediment while downcoast profiles would have indicated gain.

To be transported in any environment, gcb must be on the surface. The only surface that is always exposed is the berm face. Therefore gcb could move on or off the berm any time. The same cannot be said of the shore planform. The seasonal cyclicity of accretion and erosion there and the seasonal directionality of gcb exchanges to and from it suggest different modes of cobble and gravel transport. Seasonally, about 2 cubic yards per foot of cobbles are exchanged between the berm and shore platform at Batiquitos Lagoon. In the summer, cobbles eroded from the berm are spread across the 200 to 400 foot wide (maximum) inner surface of the shore platform (see Table C-4, column 4). The concentration is perhaps 10 and 20 cobbles per column square foot of accretional surface. When exposed and concentrated as the sand is winnowed in the winter and carried offshore, the surface will be 40 to 100 % covered with cobbles. At the same time winter winnowing produces a cobble cover on the surface of the shore platform, sand is carried offshore, and cobble transport is onshore in the form of rolling, sliding, or tumbling of individual clasts over a sand-cobble shore platform surface.

Gravel transport directions are out of phase with cobble transport, but in phase with sand transport. Gravel moves off the berm onto an erosional shore platform in the winter and onshore in the summer when the shore platform is accretional. Cobbles are sorted from sand on the shore platform in the winter when they move onshore and sand moves offshore. In contrast, gravel moves onshore with sand in the summer, suggesting the two size fractions move en mass to the berm where gravel is preferentially deposited. The gravel berm, although its volume changes less, behaves more like the Del Mar sand berm than the south Carlsbad, Batiquitos Lagoon berm.

Onshore cobble transport in the winter is understandable, but the reason why cobbles are eroded from the berm in the summer is less easy to discern. One might offer that as the cobble berm at lower elevations becomes charged with sand during the summer it becomes more susceptible to erosion. However, there appears to be no hint of a relationship between the May shore platform-berm intercept elevation and the quantity of cobbles that were removed from the Batiquitos Lagoon berm the following summer.

Sand levels drop in the winter and the shore platform-berm intercept elevation is seasonally low in the spring. An inverse relationship between summer erosion and the May sand level is not indicated in the lower left quadrant of Figure C-2. Similarly, abnormally high winter berm face advances (upper right quadrant in Figure C-2) are not obviously related to abnormally low sand levels in October. The correlation coefficient is a low 0.5 for the least squares fit of the data in Figure C-2. A scatter plot showing the magnitude of seasonal berm face movements and the magnitude of the seasonal change in the sand level at the berm-shoreface intercept also exhibit no discernible pattern as shown in Figure C-3. The correlation coefficient for this fit is also only 0.5.

C-3.7.2 Net Loss or Gain in the Berm-Shore Platform System

Gcb must enter the berm-shore platform system from offshore, upcoast or downcoast, or from landward of the berm or beneath the littoral sediment lens. Source data concerning gcb in the Ventura region will be developed in a later stage of the Surfers Point investigation. Source information from north San Diego County may assist in that effort. Alongshore sources are not likely to have been important in north San Diego County because the shingle berms have not shifted location in the past century and shingle has not accumulated at the downcoast end of the Oceanside Littoral Cell. Shingle contributions from seacliffs are possible. In this consideration, the flux would have equaled the rate of seacliff retreat times the height of the cliff from its base to crest times the concentration of shingle in the cliff.

Another possible source of shingle is the shoreface or contributions from beneath the shore platform and shoreface. In the Surfers Point area, the shoreface is the delta of the Ventura River, which is likely to be cobble, and boulder-covered. The amount that is contributed to the active littoral sediment lens from beneath the shoreface is equal to the downwearing rate of the shoreface times its plan area times the concentration of shingle in the underlying deposit. Off Surfers Point, the cobbles and boulders may be exposed in all seasons, and perhaps only covered when the river discharges large quantities of sand. In north San Diego County, shingle would have to be exposed during the summer season when shoreface sand is moved landward. If the shingle moves landward it would probably do so in small hops as it is uncovered then covered again until it finally reaches the shore platform and became a part of the seasonal exchange volume.

Jet probe measurements provide a glimpse of the pattern and distribution of shingle distributions in the littoral zone at Batiquitos Lagoon and Del Mar near the San Dieguito River. Results at the two places exhibit many similarities that suggest shingle exchange probably occurs seasonally on the shore platforms out to a maximum 200 to 400 feet from the base of the shingle and sand berms, but no further.

Moffatt & Nichol, Engineers (1992) reported the results of a 1992 jet probing along three lines between the shoreline and a depth of 26 feet (mllw) at Batiquitos Lagoon. Probes were either 6 or 10 feet long depending on the past sweep elevation based on surveys. All three probe ranges exhibited similar conditions. Probing at close spacing showed a well defined, generally clean veneer of sand over a shingle surface that was difficult to penetrate with a high-pressure water jet. In shallow water, where the overlying sand lens was thin and the shingle surface could be touched through expanded probe holes, an armored pavement was believed to exist that was difficult to disturb by hand. Clasts varied in size from 5 to 70 millimeters and the stones were similar to those found on the adjacent berm. Shingle beneath this pavement was mixed in high concentrations with sand. On 20 December 1992, the sand lens was absent from the base of the shingle berm to a point 94 feet offshore, a typical winter scour profile on that shore platform. As illustrated in Figure C-4, the sand thickness increased to a maximum 6 feet in water depths of 5 to 10 feet.

The period when onshore transport from the outer portion of the shoreface is most-likely to occur is late summer after sand has moved seasonally onshore. This is also the time period when long-period swells are most common. The probability of incipient motion at any water depth increases as the wave period increases. Shingle-sand mixing indicative of an exchange between the berm and the surf zone was observed on all three probe lines on the 250-ft ribbon of inner shore platform. Further offshore the armored shingle surface was at the base of the profile envelope where it appears it has not been greatly disturbed since 1934. The thickness of the sand lens was found to be approximately equal to the maximum vertical dimension of the 1934-1999 sweep zone suggesting that the shingle pavement is the scour limit and that there is little if any onshore flux of shingle from outside the surf zone even though a source of shingle exists offshore.

Most shingle off the Del Mar coast is beneath the 16 year (1983-1999) shoreface sand envelop or absent on the shore platform and shoreface. This suggests that no substantial source of shingle exists offshore of this stretch of coast. In July 1993, the beach and shoreface out to a depth of about 30 feet was probed in the vicinity of the mouth of the San Dieguito River by Moffatt & Nichol, Engineers (1994). At the time of the survey, the river was open. Shingle with a larger gravel than cobble component (size range < 1 centimeters to 13 centimeters, long axis length) was found south of the river beneath a thin (<6 foot) sand layer and beneath the 16-year sand scour limit. The shingle was concentrated along a surface that, like the armored plane encountered at Batiquitos Lagoon, was difficult to penetrate. Bedrock was not encountered in places where the ancestral river had cut a deep channel at lower stands of sea level. In contrast, north of this ancient channel, bedrock is covered by a thin layer of sand with shingle present only in deep crevasses within the bedrock, suggesting, as expected, that the shingle is not stable on flat bedrock surfaces. Gravel dominated the shingle mass near the coast and coarsened to cobbles further offshore, which implied that the coarser shingle offshore is stable in its present position.

The shingle size distribution and rolling potential were determined for two 0.8 cubic foot samples taken from shallow places in the San Dieguito River channel. The long, middle, and short, clast axes were measured to the nearest 0.1-centimeter. In all size fractions, the rolling potential (middle to short axis ratio) was in the range 2.0 to 3.3, averaging about 2.6 in one sample and 2.2 in the other. These clasts are not good rollers. Clasts roll about their long axis and rolling becomes more efficient as the ratio of the middle to short axis approaches one.

C-3.8 Alongshore gcb Transport

Shingle and boulder alongshore transport rates have not been measured in southern California, and there are few guides to assist us in predicting the rate of gcb transport parallel to shore at Surfers Point. Consequently, estimates of gbc fluxes must be made from qualitative observations, indirect evidence of gcb transport rates, and relating the process to the current understanding the alongshore transport mechanism for sand. The following observations are noted:

1. Most gcb moves on the foreshore because that is the only place in the littoral zone where gcb is exposed to wave forces for long periods of time.
2. Since the foreshore is only a small segment of the longshore transport conduit only a portion of the incipient wave energy is expended there.
3. By the time that energy reaches the foreshore it has been transformed and refracted such that its alongshore component is greatly reduced.
4. The threshold shear stress needed to mobilize a gcb clast is much greater than for a sand grain so only the higher energy events move gcb.

Most estimates of alongshore shingle transport suggest it is 2 to 5% of corresponding sand transport rates when calculated using the CERC formula. At Emma Wood State Beach, cobble-size revetment stone was found from its upcoast point of origin. Since deep-water waves almost always approach the Ventura coast from west of shore-normal, the potential exists for relatively high gcb transport to the east at Surfers Point. Evidence concerning alongshore shingle transport in north San Diego County also provides useful clues to estimate the potential for alongshore gcb transport at Surfers Point.

Several indirect lines of evidence indicate cobbles and gravel do not move preferentially downcoast at a measurable rate in north San Diego County.

1. The contiguous south Carlsbad and Batiquitos Lagoon deposit has not moved in the past 150 years. Historic records place the material where it is today.
2. Shingle was mined at Penasquitos Lagoon in the latter part of the 19th century, shipped by rail to Old Town San Diego where it was used for street paving. The source deposit has not yet been replenished with material from upcoast.
3. While the net alongshore sand transport direction is north to south in north San Diego County, there has been no accumulation of shingle at La Jolla Shores or in the heads of Scripps or La Jolla Submarine Canyons as would be expected if it moved preferentially south like sand. The amount of shingle at La Jolla Shores or in the underwater canyons is less than elsewhere either at the back of the beach of offshore.
4. Shingle placed on Oceanside beach when the harbor was excavated in the mid-1960's has not gathered at the north side of Agua Hedionda Lagoon, nor did the channel between the jetties fill with shingle as would have happened if it had moved in a net north-to-south direction.
5. Many small protrusions of the coast (small natural headlands) have retained shingle out to their ends, but these deposits tend not to be true fillets in the sense they are not triangle-shaped. Most are linear and of near-uniform width.
6. Last, between south Carlsbad and Solana Beach there are at least eight quite permanent cobble or gravel berms that are not remarkable by their alignment as shown in Table C-6, nor by the presence of a retention structure.

Table C-6 is based on an analysis of oblique aerial photographs taken between 1988 and 1995. The presence and location of eight discrete "permanent" shingle berms, and conversely, those reaches where shingle berms were usually absent were identified. The purpose of this effort was to determine whether the shingle berms were spatially fixed, if they were all aligned parallel to one another, or if their orientations exhibited a pattern, such as an alongshore gradation in orientations.

Cumulatively, the eight shingle berms occupy between 40 and 50% of the study coast. They were found to be permanent over the study interval. Other shingle patches appeared in 1995, but they were small and non-continuous in comparison to the lengths of the more permanent berms. The eight relatively fixed shingle berms are not all aligned in the same direction, nor is there an alongshore pattern in their orientations. Referenced to the Batiquitos shingle berm, the other seven-berm alignments varied in a seemingly random pattern of from between 6.5 degrees more to the east and 16.5 degrees more to the west. About half were retained by fixed structures, all at the south ends of the shingle deposits.

Thus while it appears there may be a slight preferred south shingle transport direction, it is not correlated to berm orientation and one must look to another explanation for the shingle berm orientations. Only the alignment at south Cardiff is readily apparent. This gravel berm is against Tabletop Point and within a curved segment of shoreline at the ocean end of San Elijo Lagoon where wave refraction plays a major role in its orientation.

Table C 6
Quasi-Permanent Shingle Berms Between South Carlsbad and Solana Beach

Coastal Reach North to South	Shore Alignment, Degrees True	Angle Referenced to South Batiquitos Berm, Degrees	Remarks
South Carlsbad	159	-2.5	Contiguous with Batiquitos berm
Batiquitos Lagoon	161.5	0	Largest shingle berm in north San Diego County; not retained by a structure
North Leucadia	168.5	+7	Not retained by a structure
North of Beacon's	158.5	-3	Retained by a structure
South of Beacon's	155	-6.5	Retained by a small structure
Moonlight and south of Moonlight Beach	167.5	+6	Very small retention structure
South of Swami's Beach	155	-6.5	Not retained by a structure
South Cardiff	178	+16.5	Retained by Tabletop Point and in the embayment formed at the ocean end of San Elijo Lagoon

Alongshore shingle transport on an artificially altered berm can be very high. After Batiquitos Lagoon was artificially opened in 1990, for example, cobbles moved toward the opening from both sides on a 4:1 (horizontal/vertical) foreshore at 1 to 2 feet per second under the action of 4-foot plunging and spilling waves arriving at a 10-degree angle to the base of the berm. An estimated 5 or 10% of the surface of the foreshore near the still water line was in motion at mid-tide. The amount increased with a rising water surface and most movement occurred alongshore during the uprush phase of the swash cycle. Nearer the open outlet, the angle between the breaking waves and the berm face was even greater. The lagoon mouth closed completely within two weeks after 1,500 to 3,000 cubic yards of shingle moved into it. The reason for this large alongshore movement was the up to 45-degree angle that breaking waves made with the berm and not the size of the waves. As the artificially created opening angle declined, the rate of shingle transport declined as well.

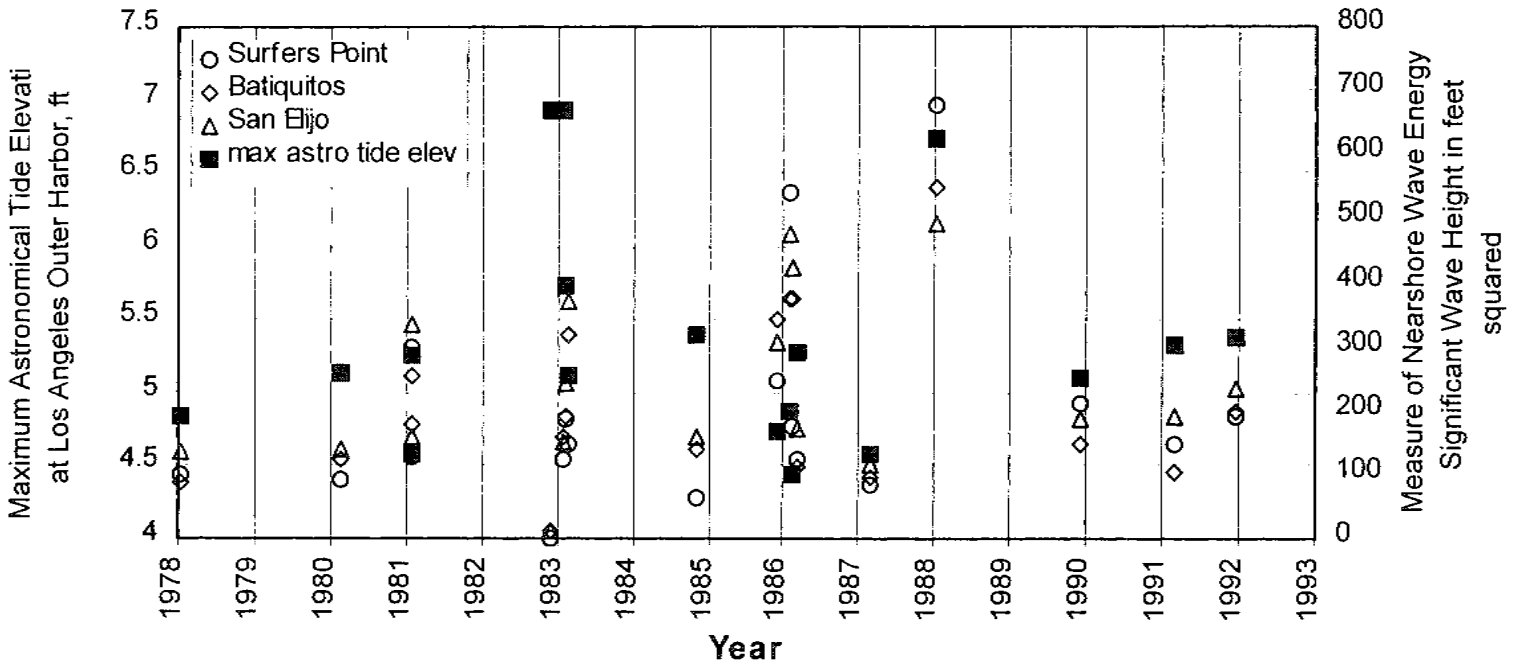
C-4.0 Design Guidelines

The preceding discussion suggests some general guidelines to follow in the design of the artificial gcb berm along the Surfers Point backshore. Table C-7, which summarizes these guides in the context of that effort, is a combination of two sources of information: a conceptual model based on observations and literature resources and general input from measurements of local prototype gcb berms.

Table C-7

Summary of Guides for the Design of an Artificial Gravel-Cobble-Boulder Berm to Protect Surfers Point

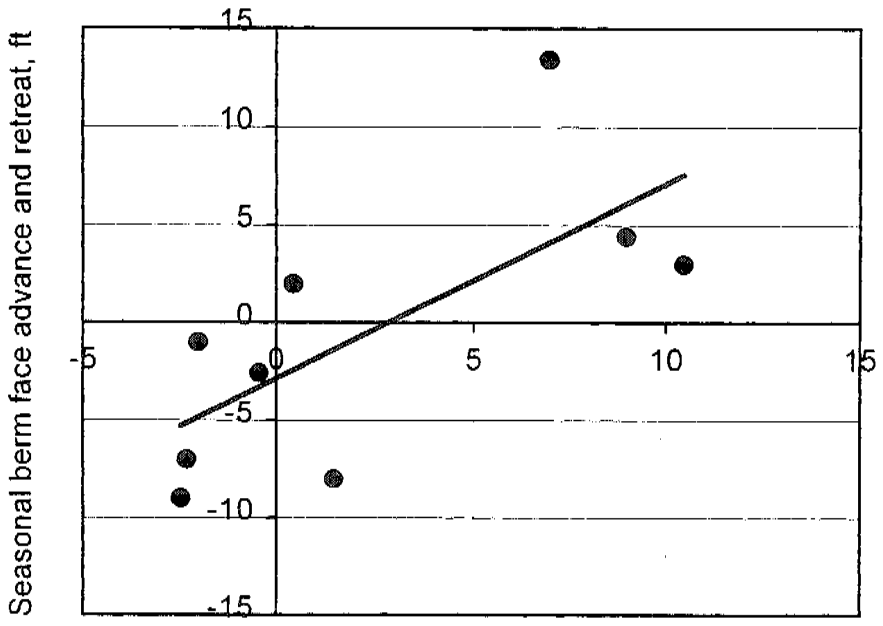
Design Parameter	Design Considerations
1. Sediment size	Bigger is better; mass is proportional to the cube of axis length (size) and berm stability will partially increase with size; small gravel and sand that is more easily moved is not recommended;
2. Size distribution	A more uniform size distribution is preferred over a wide range of sizes; smaller clasts fill voids and create a pavement-like surface that may promote the transport of larger clasts upon it, reducing berm stability and encouraging the loss of the larger bermfill
3. Sediment angularity	Natural large gravel, cobbles, and boulders, are rounded and should be used to create a berm that mimics natural gcb berms in southern California; angularity is probably not a first-order stability factor
4. Berm porosity	To enhance berm stability, the bermfill should be limited to cobbles and/or boulders without including sand or small gravel that could fill the voids in the larger clasts and reduce swash infiltration into the berm
5. Berm volume	Bigger is again better to provide a cushion against losses; volume should be the sum of the anticipated maximum reversible seasonal fluctuation in volume, reversible extreme storm losses; net alongshore losses; net cross-shore losses, and a safety factor
6. Crest elevation of berm	Some overtopping during the most extreme storms increases the stability of the berm when it is most needed; the crest elevati should reflect this need; the crest should not abut a higher, impermeable, vertical surface at the backbeach line; if the backbea line is a high vertical wall consider angling the horizontal berm surface upward to prevent or reduce uprush reflections
7. Base elevation of berm	The lower surface of the berm should be at or below the scour limit of the fronting shore platform; this elevation is the cumulative sum of the most severe storm scour and the maximum reversible seasonal scour superimposed on the long-term net decline (if applicable) in the elevation of the shore platform over its life
8. Toe protection	If the recommended depth cannot be attained, for example due to constructability associated with the water table; a gcb scour apron should be placed out from the toe of berm to prevent undermining, or the berm volume should be increased such that during an extreme storm that material will slough off the foreshore and protect the toe
9. Berm slope	The construction slope should be equal to or slightly milder than the anticipated wave-reworked slope
10. Berm alignment	Align the berm to reduce the alongshore component of wave energy flux on the berm to zero; this will reduce the alongshore transport of bermfill to a minimum, but because alongshore gcb transport is not steady it will very likely not reduce it to zero
11. Alongshore boundary of berm	Select the boundary between the west beach (west end is river jetty) and east beach (east end is as designated by the project) at the best combination of (1) the tip of Surfers Point near its historic eastern limit of migration, (2) where the two best-estimate berm alignments (10 above) intersect, and (3) the best straight-line intersection of the outer edges of the parking lots or bicycle paths that flank the two beaches
12. Need for gcb retention device(s)	To reduce longshore losses of bermfill, consider a retention structure at Surfers Point between the west and east beaches; the angle between the two berm alignments will be rather large and although the proper alignments will reduce longshore gcb transport to a minimum, it will still occur.
13. Gcb berm maintenance	Coarse gravel, cobbles, and boulders will be lost during the life of the project; losses will be proportional to the size of the bermfill, the amount of fine material that enters the bermfill voids, storminess, and whether a retention structure is employed to limit alongshore losses; consequently, a maintenance plan to nourish the berm should be prepared and implemented, especially one that allows for opportunistic bermfill if and when it becomes available
14. Artificial berm compatibility with sand replenishment	The artificial gcb berm is not incompatible with artificial sand replenishment; sandy beach fill, however, should not be placed atop the gcb berm, or directly in front of it when the intercept of the (sand) shore platform against the berm is high, such as it typically is in the late summer and autumn
15. Monitoring	This is a pioneering effort; not everything we would like to know is known, for example, the amount of natural sand charging is imperfectly understood and we cannot predict with certainty how it will affect the performance of the Surfers Point berm; the project should be perceived as an experiment and for that reason special attention should be given to post-construction monitoring



Wave Energies Expended on North San Diego County Berms and at Surfers Point During Severe Storms

NOBLE CONSULTANTS, INC.

Figure C-1



Bermface Advances and Retreats
Versus the Seasonal Beginning Sand
Level at the Base of the Berm

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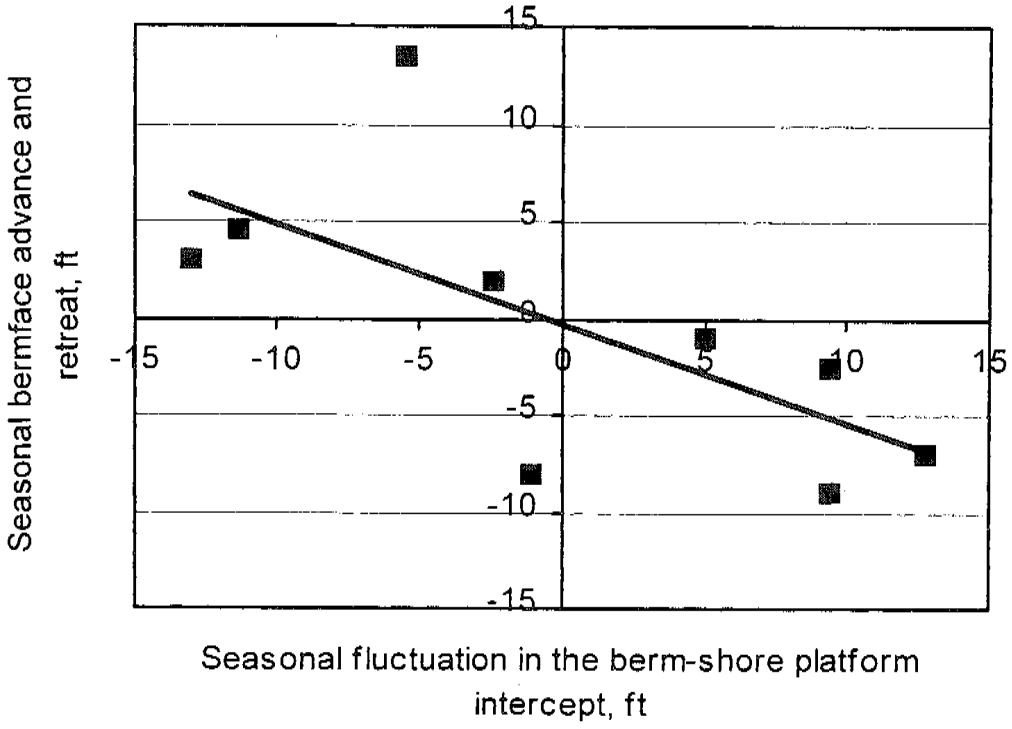
Figure C-2



Bermface Advances and Retreats Versus the Range of the Seasonal Sand Level at the Base of the Berm

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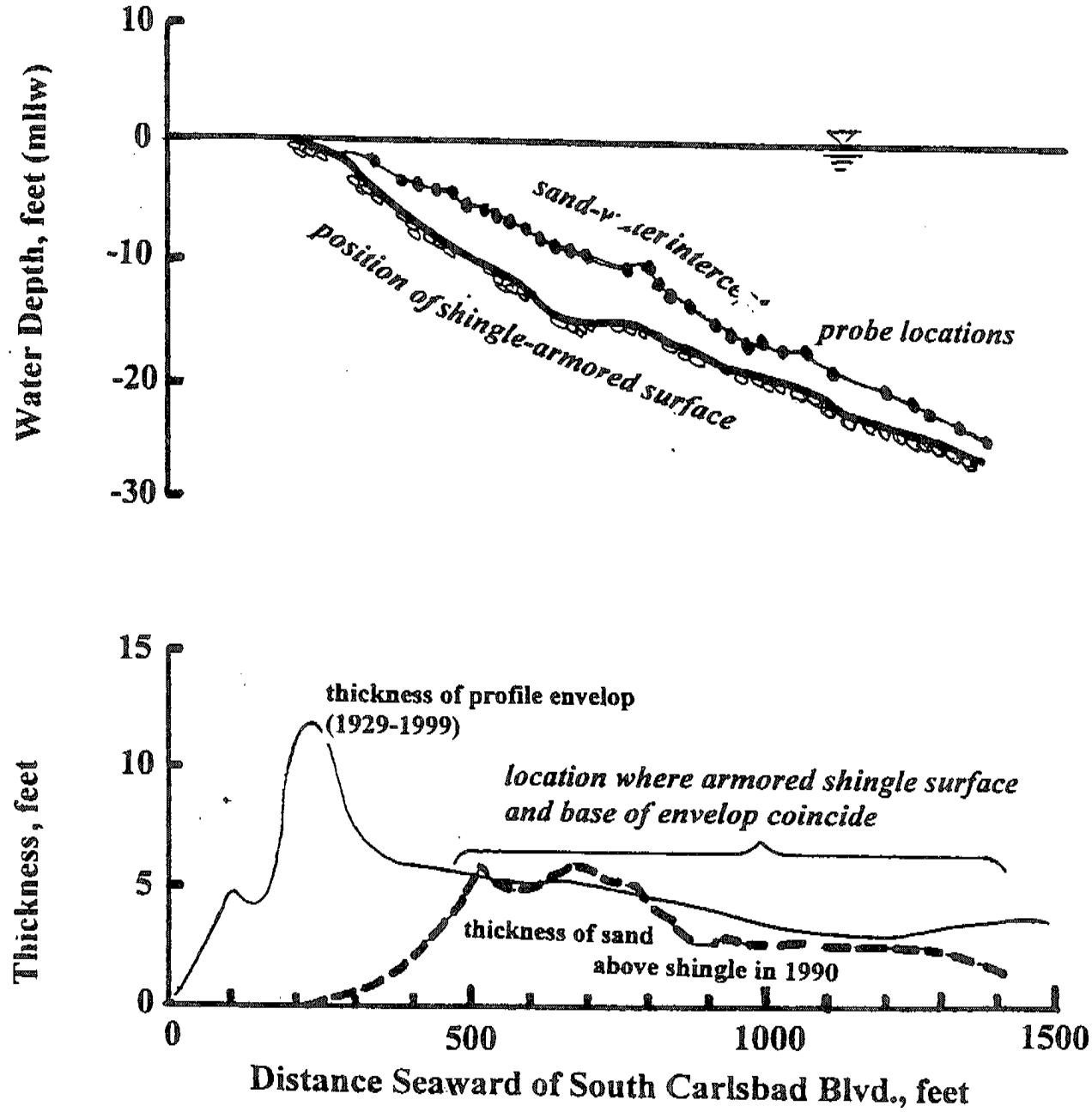
Figure C-3



Shingle Distribution Within and Beneath the Littoral Sediment Lens at Batiquitos Lagoon

NOBLE CONSULTANTS, INC.

Figure C-4

APPENDIX D

EVALUATION OF EMMA WOOD STATE BEACH

Prepared By: Gorian & Associates, Inc.

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March 27, 2000

Noble Consultants, Inc.
2201 Dupont Drive, Suite 620
Irvine, California 92715

Work Order: 2278-0-0-10
Log Number: 20105

Subject: **EVALUATION OF EMMA WOOD STATE BEACH FOR THE PROPOSED REMEDIATION AT SURFERS POINT PARK, CITY OF SAN BUENAVENTURA.**

References: See Attached List

INTRODUCTION

We are pleased to present the results of our recent investigation of Emma Wood State Beach. This investigation was undertaken to provide input for the design of the stabilization of the beach at Surfers Point Park. Emma Wood State Beach is a natural cobble beach to the north of Surfers Point Park, which appears to have performed well in the past.

It has been estimated that approximately 9% of the Ventura County coastline is composed of a cobble substrate and that the portion of the coast along the Ventura River delta represents about 37% of the total (Ferren, et al., 1990). The section of the exposed coastline adjacent to Emma Wood Group Camp is thought to be relatively stable.

The beach was investigated to evaluate the size distribution of the cobbles and sands, the slope gradients of the beach, and the depth (extent) of the cobbles. This field investigation was conducted on February 17, 2000 at a time of month when the tides were more extreme, (-1.4 feet to +6.4 feet). The investigation also happened to coincide with a stormy period and which had high surf, resulting in a well-developed winter beach profile. The findings of this investigation are to be used as a model for the proposed remediation at Surfers Point Park.

SCOPE OF SERVICES

All phases of the investigation were conducted by or under the direct supervision of a State licensed geotechnical engineer and in accordance with our agreement with Noble Consultants, Inc., dated February 2, 2000. This investigation included the following:

Archival Review
Review of reference materials pertaining to the subject site and the surrounding areas.

Field Investigation
Four (4) elevation profiles were measured along the beach at Emma Wood State Beach near the trailhead to Seaside Wilderness Park.

The beach surface was photographed along three different profiles to evaluate the size distribution of the cobbles exposed on the surface of the beach.

Eight (8) pits were excavated with a backhoe to explore the subsurface distribution of beach deposits. The pits were located along two of the profiles (Elevation Profiles 2 and 3) to study vertical and lateral variations. The exploratory operations were monitored and logged by a geologist from our office. Bulk samples were obtained for laboratory testing.

Laboratory Testing
A program of laboratory testing was performed to evaluate the geotechnical properties of selected soil samples obtained during the exploratory operations. The testing included grain-size distribution analysis and specific gravity tests.

Report Preparation
The results obtained from the field and laboratory programs were reviewed. Our findings are presented in this formal report and includes:

- A description of the beach deposits, as encountered during the subsurface exploration, including logs of the exploratory trenches (Appendix A).
- Map of the study area showing locations of the measured profiles (Plate 1) and a graphical presentation of the profiles depicting the locations of exploratory trenches (Plate 2).
- A description of the laboratory testing program, including test results (Appendix B).

SITE LOCATION AND DESCRIPTION

Access to Emma Wood State Beach is provided from the Emma Wood State Beach Group Camp via Main Street. The Group Camp is located on the south side of the U.S. 101 (Ventura Freeway). Access to the beach is provided from a parking lot via footpaths, which cross over or under railroad tracks that parallel the coastline.

The study beach is located west of the current mouth of the Ventura River on the Ventura River delta (Figure 1). At the time of the study (February 2000), the beach in this area consisted of a low tide terrace composed of sand with boulders, a lower beach face composed of sand with few cobbles and boulders, and an upper beach face composed chiefly of cobbles and boulders. A pronounced berm crest was present. Beyond this, the back beach consisted of cobbles and boulders with local vegetation. Farther from the shore was a back-beach swale tributary to an estuary, beyond which is a relatively level vegetated flood plain (Figure 2).

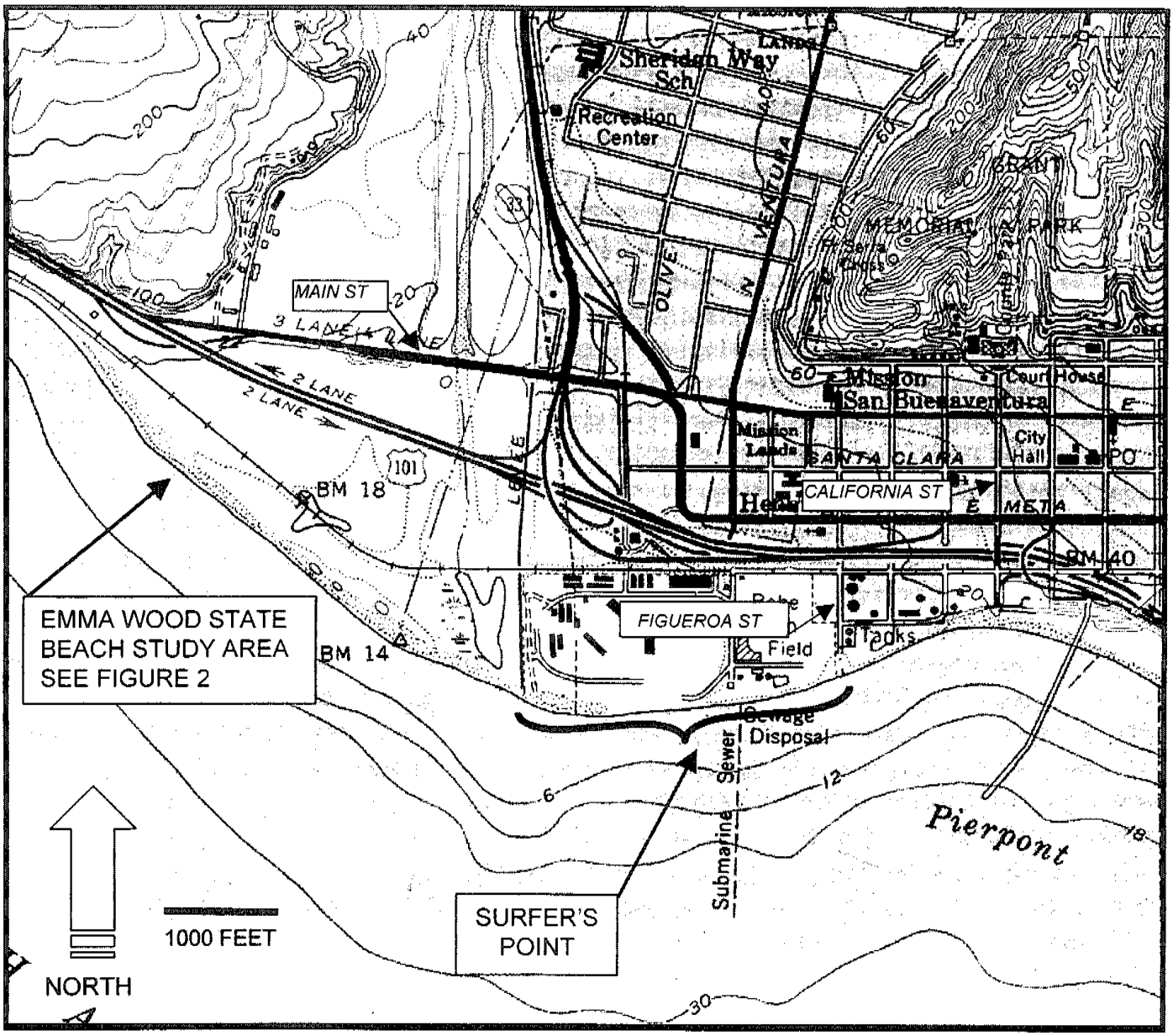

Figure 1. Portion of Ventura 7.5 minute quadrangle showing location of study area.

CHARACTERIZATION OF EMMA WOOD STATE BEACH

General

The coastline adjacent to the group camp at Emma Wood State Beach faces to the southwest and is characterized by a relatively steep beach profile composed largely of cobbles and boulders. At the time of the investigation, the beach varied from slightly sinuous to strongly cuspate. The cuspate appearance was noted to have formed within the cobble surface as a result of recent storms. Movement of the surface cobbles was apparent.

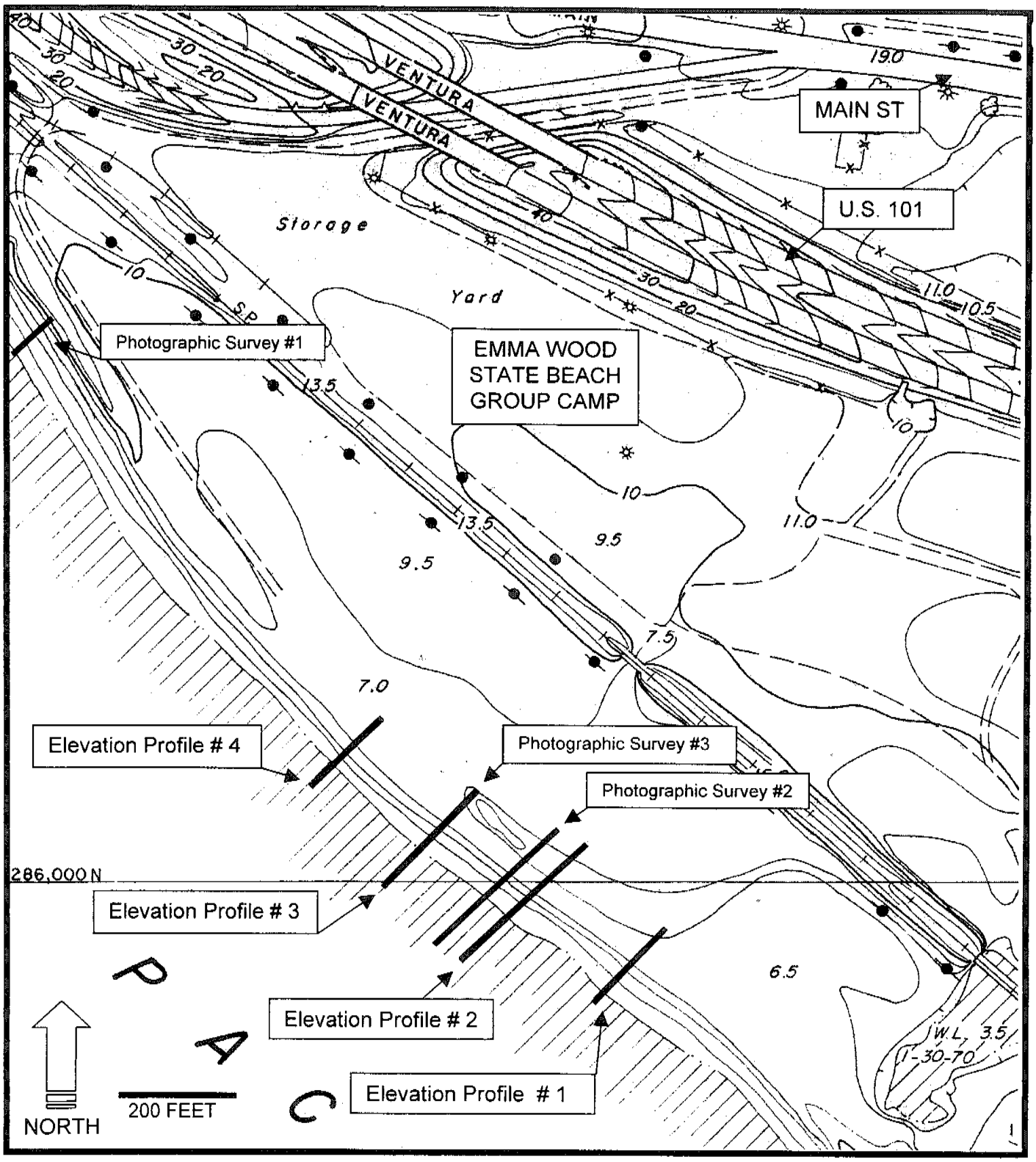

Figure 2. Portion of Ventura County Public Works map no. 284-1602-2 showing location of beach elevation profiles.

Beach Elevation Profile

Four (4) elevation profiles were measured along the beach at Emma Wood State Beach at locations shown on Figure 2. Each profile was aligned approximately perpendicular to the shoreline. Horizontal distance was approximated by a tape measure draped along each profile and relative elevation was determined using an electronic manometer (Stanley Compulevel).

The beach profile adjacent to the group camp has a relief of 12½ to 13 feet between the low tide terrace (at low-low tide) and the berm crest. The low tide terrace consists of a very low gradient (<60:1), relatively broad (90+ feet) boulder field. Above the low-tide terrace is the shore-face with a slope ratio of 5:1 (horizontal to vertical). The shore face (low-tide terrace to berm crest) is about 60 to 70 feet wide. The four elevation profiles are presented on the attached Beach Elevation Profile Sheet, Plate 1.

Low Tide Terrace

The boulders exposed in the low tide terrace are often partially buried in cobbles and the exposed surfaces covered with algae. The boulders do not exhibit a strongly preferred orientation, but the long axes of the boulders tend to either lie parallel to the low-tide terrace or are slightly imbricated and tilted offshore. Sand is not extensive, but increases toward the shore face where sand flats are common. Water is present in channels and pools in the boulder field at low tide. One pit (P-5/ L-1) was excavated on the low tide terrace at low-low tide (-1.4 feet). The surface to a depth of 1½ feet consisted of self-supported gravel, cobbles, and boulders (some of the boulders were larger than 2 feet). The blanket of gravel, cobbles, and boulders mantled fine to medium sand with shell and shell fragments.

Lower Shore Face

Above the low-tide terrace is the shore-face with a slope ratio of 5:1 (horizontal to vertical). A mosaic of sand and boulders characterizes the lower shore-face. The extent of the sand is highly variable depending on wave and tidal dynamics ranging from extensive sand sheets up to 25 ft wide punctuated with cobbles and boulders to patches of sand in a boulder field.

The boulders on the lower shore face tend to be relatively large and have a strongly preferred orientation with the long axis inclined toward the offshore. A few overturned boulders were noted along the lower shore-face (algae not on up side), but these were rare. Two pits were excavated on the shore face (P-3/L-1, P-1/L-2), one near Elevation Profile No. 2, and the other on Elevation Profile No. 3. Both pits exposed a 4-6 inch thick cap of fine to medium sand mantling a 2 to 3 foot-thick blanket of self-supporting cobbles and boulders with a sand and gravel matrix. Several of the exposed boulders are greater than 2½ feet in long dimension and project through the superficial sand cover. Near Elevation Profile No. 2, the cobble and boulder blank mantles fine to medium sand. At Elevation Profile No. 3, the cobble and boulder blanket rests on an abrasion platform developed on brown silt interpreted to represent alluvium of the Ventura River (see the attached cross sections, Plate 2).

Upper Shore Face

The surface of the upper shore-face and berm-crest are mantled chiefly with cobbles and boulders often with little or no matrix. Size increases toward the lower shore-face. Boulders in the lower portion of the upper shore-face have a preferred orientation (similar to the lower shore-face) with the long axes of the boulders tilted offshore. The cobbles and boulders in the upper shore-face and berm crest are characteristically rounded to well rounded, but bladed or oblate in shape. Where bedding in the sandstone clasts is distinct, the long axes of the clasts tend to parallel bedding (short dimension perpendicular to bedding). Impact marks and chipping (spalling) are commonly observed. Driftwood and flotsam are minor constituents of the upper shore-face.

Four (4) pits were excavated in the upper shore-face (P-2/L-1, P-3 /L-1, P-4/L-1, and P-2/L-2). The pits exposed matrix to self-supporting pebbles, cobbles, and boulders with local lenses of medium to coarse lithic sand with angular shell fragments. Bimodal distribution and imbrication of clasts was noted locally. The cobbles/boulder/gravel/sand mixture on the upper shore-face along Elevation Profile No. 2 was present to the depth explored, 9 feet. Deeper exploration was not possible due to caving conditions. On Elevation Profile No. 3, the deposits were 3¼ feet thick at the berm crest and were found to rest on a horizontally interbedded fine sand and silt interpreted as alluvial deposits of the Ventura River.

Rock Type Composition

The cobbles and boulders are composed chiefly of hard sandstone originating from the alluvial fan deposit of the Ventura River. The sandstone material is consistent with geologic formations that border the Ventura River back to its headwaters. Granitic rocks, limestone, and concrete compose some of the cobbles and boulders. These compositions appear to have been artificially introduced. Driftwood, shells, miscellaneous debris, and some globs of asphalt are also common on the beach.

Cobble Shape Distribution

The cobbles on the beach were noted to be approximately ellipsoidal (saucer) in shape. A cobble shape survey was conducted at the beach which involved noting the dimensions (i.e. length, width and thickness) of a total of 52 randomly selected rocks of varying sizes. In general, the shape was found to be approximately round in two dimensions, but the third dimension noticeably thinner. The third dimension was found to be on the order of ½ of either of the other two dimensions. Detailed results of this survey are presented in Appendix C. Assuming that the rocks are ellipsoidal in shape, the average volume for different sizes, were calculated and this data was used to develop gradation curves of the surface material from the photographs.

Cobble And Grain Size Distribution

Cobble and grain size distribution was evaluated from photographs for the larger size material and from sieve analyses for the smaller size material.

Actual samples of the sands and finer portions of the matrix from Emma Woods Beach and two samples of the beach sand at Surfers Point were obtained. Laboratory sieve analyses were performed. The results of these sieve analyses are presented in Appendix B.

The majority of the surface materials on the beach were cobble size and larger, therefore size distribution of this material (i.e., gravel, cobbles, and boulders) was evaluated using the photographs of the beach surface along three profiles. For each photograph, the particles were individually counted and grouped into one of three categories: less than 6 inches, 6 to 12 inches and greater than 12 inches. Using the average volumes (based on ellipsoidal shape) and assuming an average specific gravity, the weight of each category was determined. The results of the analysis for each of the three profiles are presented in the gradation curves presented in Appendix C. Data from each photograph is presented on the curves in order to show the variation and range of data.

Permeability Estimates

Permeability estimates of the beach sand and finer grained deposits were evaluated from the gradation curves using the Hazen Formula. The results are presented in Appendix C. In general, the beach sands and finer grained materials were found to have permeabilities ranging from 0.1 to 0.5 cm/sec. The courser materials were found to have permeabilities of 4 and greater cm/sec.

Specific Gravity and Density

The specific gravity and density of a small sampling of native sandstone cobble was evaluated. The test procedure and results are presented in Appendix B. The average specific gravity and density was found to be 2.59 and 161 pounds per cubic foot, respectively.

Additional Findings Regarding The Group Camp Beach

Several observations provide evidence of the stability and age of the cobble-boulder deposits on the shore-face. First, modern debris was found in the subsurface including a zip-tie at a depth of 2½ feet (P-4/L-1) and a piece of rubber tire at the base of the cobble-boulder deposit at a depth of 3½ feet below the berm crest on Elevation Profile No. 3 (P-3/L-3). These findings suggest that the upper few feet of the cobble-boulder mantled shore-face was reworked in modern times.

In addition, non-native rock types and concrete are present on the surface of the beach that can be traced to the northwest (2,200 feet) to a rip-rap source placed as coastal protection for the railroad corridor. These findings suggest that Emma State Beach is a dynamic modern feature where cobbles and boulders are being reworked and moved along the coast. An additional finding is that the cobble-boulder beach locally mantles and protects erodible alluvial deposits. Where exposed, the alluvial deposits, containing little to no cobble, are undergoing coastal bluff retreat.

oOo

We appreciate this opportunity to be of service. Please call if you have any questions concerning this report or require any additional information.

Respectfully submitted,
GORIAN AND ASSOCIATES, INC.

Rudy M. Pacal
Principal Geotechnical Engineer

Attachments:

	Appendix A	Logs of Subsurface Exploration
	Appendix B	Laboratory Testing
	Appendix C	Gradation Curves Evaluated From Photographs
	Plate 1	Beach Elevation Profiles
	Plate 2	Beach Profile Cross Sections

Distribution: Addressee (5)

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California Division of Mines and Geology Preliminary Report 14, 1973. Geology and Mineral Resources Study of Southern Ventura County, California.

Ferren, Jr., W.R., Capelli, M.H., Parikh, A., Magney, D.L., Clark, K., and Haller, J.R., 1990, Botanical resources at Emma Wood State Beach and the Ventura River Estuary, California: inventory and management, Environmental Research Team, The Herbarium, Department of Biological Sciences, University of California, Santa Barbara Environmental Report No. 15, 310 p.

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Noble Consultants, Inc., November 1, 1999. Statement of Qualifications, Preliminary Coastal Engineering Services, Surfers' Point Managed Shoreline Retreat for the City of San Buenaventura.

Surfers Point Park Conceptual Plan for Managed Shoreline Retreat, July 1998. Coastal Resources Grant Program Assistance Application for Part A, Grant-Energy Assistance.

APPENDIX A

LOGS OF SUBSURFACE EXPLORATION

GORIAN & ASSOCIATES, INC.
Applied Earth Sciences

Project: Emma Wood State Beach, Group Camp
Method of Excavation: Backhoe with 24" Bucket
Trench Width 2 ft
Surface Elevation: N/A Logged by: JPQ

TRENCH: P.1,L.1
Work Order: 2278-0-0-10
Report Log No.: 20105
Date: 02/17/2000

Depth (ft)	Undisturbed	Bulk	Blow Counts	Moisture Content (% dry weight)	Dry Density (pcf)	Penetrometer (tsf)	USCS	Soil/ Lithology	Description	Remarks
0							GP		: Cobbles with boulders. Some twigs. Clasts oblate to bladed.	
							GP/ SP		: Cobbles with boulders, some medium to coarse sand with angular shell fragments. Clasts chiefly self-supporting, oblate to bladed, and aligned parallel with the beach face. Sand matrix composed of subrounded to angular lithic fragments and an estimated 5 to 15% angular shell fragments. Local lenses of fine to medium sand.	Sample from 2' biased towards matrix. 3' sample representative of coarse fraction.
5							GP		: Cobbles with boulders. Clasts oblate to bladed, self-supported with a fine to medium sand matrix.	
									Total Depth 9', terminated due to extensive caving.: Groundwater at 8½', Caving common.	
10										

GORIAN & ASSOCIATES, INC.
Applied Earth Sciences

TRENCH: P.2,L.1

Project: Emma Wood State Beach, Group Camp
Method of Excavation: Backhoe with 24" Bucket
Trench Width 2 ft
Surface Elevation: N/A Logged by: JPQ

Work Order: 2278-0-0-10
Report Log No.: 20105
Date: 02/17/2000

Depth (ft)	Undisturbed	Bulk	Blow Counts	Moisture Content (% dry weight)	Dry Density (pcf)	Penetrometer (tsf)	USCS	Soil/ Lithology	Description	Remarks
0							GP		: Cobbles with boulders, self-supported, no matrix. Approximately 10% clasts greater than 1'. Clasts chiefly oblate or bladed.	
							GP/ SP		: Cobbles with boulders and some medium to coarse sand with shell fragments. Clasts chiefly self-supporting, oblate to bladed, and aligned parallel with the beach face. Sand matrix composed of subrounded to angular lithic fragments and an estimated 5 to 15% angular shell fragments. Interbeds or lenses of fine to medium sand 3" to 4" thick inclined parallel with beach face.	
5									Total Depth 6', terminated due to extensive caving.: Groundwater at 5½', Caving common.	
10										

GORIAN & ASSOCIATES, INC.
Applied Earth Sciences

TRENCH: P.3,L.1

Project: Emma Wood State Beach, Group Camp
Method of Excavation: Backhoe with 24" Bucket
Trench Width 2 ft
Surface Elevation: N/A
Logged by: JPQ

Work Order: 2278-0-0-10
Report Log No.: 20105
Date: 02/17/2000

Depth (ft)	Undisturbed	Bulk	Blow Counts	Moisture Content (% dry weight)	Dry Density (pcf)	Penetrometer (tsf)	USCS	Soil/ Lithology	Description	Remarks
0							GW		: Gravel, cobbles and boulders with some sand. Clasts are matrix supported and exhibit bimodal distribution (<6" or >1'). Boulders imbricated and tilted towards ocean. Estimate 5% angular shell fragments in medium sand matrix.	
									Total Depth 3½', terminated due to extensive caving.: Groundwater at 3', Caving extensive.	
5										
10										

GORIAN & ASSOCIATES, INC.
Applied Earth Sciences

Project: Emma Wood State Beach, Group Camp
Method of Excavation: Backhoe with 24" Bucket
Trench Width 2 ft
Surface Elevation: N/A Logged by: JPQ

TRENCH: P.4,L.1
Work Order: 2278-0-0-10
Report Log No.: 20105
Date: 02/17/2000

Depth (ft)	Undisturbed	Bulk	Blow Counts	Moisture Content (% dry weight)	Dry Density (pcf)	Penetrometer (tsf)	USCS	Soil/ Lithology	Description	Remarks
0							SP		: Off-shore thickening wedge of medium sand with gravel.	
							GW		: Gravel, cobbles and boulders with some medium to coarse sand. Clast to matrix supported. Overall, poorly sorted (well-graded) and massive. Bimodal distribution of clasts <6" or >1'). Boulders imbricated and tipped toward off-shore. Few fine sand lenses, otherwise matrix consisting of medium sand with 10-15% angular shell fragments. Zip-tie (plastic debris) at depth of 2½'.	
									Total Depth 4', terminated due to extensive caving.: Groundwater at 3½', Caving common.	
5										
10										

GORIAN & ASSOCIATES, INC.
Applied Earth Sciences

Project: Emma Wood State Beach, Group Camp
Method of Excavation: Backhoe with 24" Bucket
Trench Width 2 ft
Surface Elevation: N/A Logged by: JPQ

TRENCH: P.5,L.1
Work Order: 2278-0-0-10
Report Log No.: 20105
Date: 02/17/2000

Depth (ft)	Undisturbed	Bulk	Blow Counts	Moisture Content (% dry weight)	Dry Density (pcf)	Penetrometer (tsf)	USCS	Soil/ Lithology	Description	Remarks
0							GP		: Cobbles and boulders with some sand. Clast supported. Few boulders >2'. Bottom of clasts exhibit black ?organic coating (?Asphalt).	
							SP		: Fine to medium sand with shell.	
									Total Depth 4', terminated due to extensive caving.: Water both at surface and throughout explored depth, Caving extensive.	
5										
10										

GORIAN & ASSOCIATES, INC
Applied Earth Sciences

Project: Emma Wood State Beach, Group Camp
Method of Excavation: Backhoe with 24" Bucket
Trench Width 2 ft
Surface Elevation: N/A Logged by: JPQ

TRENCH: P.6,L.1
Work Order: 2278-0-0-10
Report Log No.: 20105
Date: 02/17/2000

Depth (ft)	Undisturbed	Bulk	Blow Counts	Moisture Content (% dry weight)	Dry Density (pcf)	Penetrometer (tsf)	USCS	Soil/ Lithology	Description	Remarks
0							SP		: Surface to approximately 4" depth: Fine to medium sand. Boulders protrude from the underlying unit and commonly exceed 2'.	
							GW		: Gravel, cobbles and boulders with some sand. Clasts self-supporting and typically lay with their long-axis near horizontal. Numerous shell fragments.	
							SP		: Fine to medium sand, possibly with gravel and cobbles (clasts may have caved from unit above).	
									Total Depth 3½', terminated due to extensive caving.: Seepage below surface, Caving extensive.	
5										
10										

GORIAN & ASSOCIATES, INC.
Applied Earth Sciences

TRENCH: P.1,L.2

Project: Emma Wood State Beach, Group Camp
Method of Excavation: Backhoe with 24" Bucket
Trench Width 2 ft
Surface Elevation: N/A
Logged by: JPQ

Work Order: 2278-0-0-10
Report Log No.: 20105
Date: 02/17/2000

Depth (ft)	Undisturbed	Bulk	Blow Counts	Moisture Content (% dry weight)	Dry Density (pcf)	Penetrometer (tsf)	USCS	Soil/ Lithology	Description	Remarks
0							SP		: Fine to medium sand. Boulders to 2½' protude from underlying unit.	
							GW		: Gravel, cobbles and boulders with some sand. Clast supported. Matrix consists of medium to coarse sand with angular shell fragments.	
		■					ML		: Brown silt.	
									Total Depth 4½': Seepage below surface, Caving extensive.	
5										
10										

GORIAN & ASSOCIATES, INC
Applied Earth Sciences

Project: Emma Wood State Beach, Group Camp
Method of Excavation: Backhoe with 24" Bucket
Trench Width 2 ft
Surface Elevation: N/A
Logged by: JPQ

TRENCH: P.2,L.2
Work Order: 2278-0-0-10
Report Log No.: 20105
Date: 02/17/2000

Depth (ft)	Undisturbed	Bulk	Blow Counts	Moisture Content (% dry weight)	Dry Density (pcf)	Penetrometer (tsf)	USCS	Soil/ Lithology	Description	Remarks
0							SW		: Medium sand with some gravel, cobbles and boulders to 2'. Asphalt(?) staining 1½' depth. No matrix at surface that is covered chiefly with cobbles.	
							GW		: Gravel and cobbles with some medium sand. Clast supported. Red to black asphalt(?) staining.	
									Total Depth 2½', terminated due to caving: Groundwater at 2', Caves	
5										
10										

GORIAN & ASSOCIATES, INC.
Applied Earth Sciences

TRENCH: P.3,L.2

Project: Emma Wood State Beach, Group Camp
Method of Excavation: Backhoe with 24" Bucket
Trench Width 2 ft
Surface Elevation: N/A
Logged by: JPQ

Work Order: 2278-0-0-10
Report Log No.: 20105
Date: 02/17/2000

Depth (ft)	Undisturbed	Bulk	Blow Counts	Moisture Content (% dry weight)	Dry Density (pcf)	Penetrometer (tsf)	USCS	Soil/ Lithology	Description	Remarks
0							GW		: Gravel and cobbles with some sand and few boulders to 18". Interbeds clast or matrix supported. Matrix medium sand with angular shell fragments. Tire fragment at 3½'.	
							SP		: Fine to medium sand.	
							SM		: Horizontally, thinly interbedded silt and medium sand. Few gravel at base.	
							SP		: Fine sand.	
5							ML		: Olive to black silt.	
									Total Depth 8½'. Minor seepage, Caves.	
10										

APPENDIX B

LABORATORY TESTING

General

Laboratory test results on selected bulk samples are presented below. Tests were performed to evaluate the physical and engineering properties of the encountered earth materials, including grain-size distribution and specific gravity.

Grain-Size Distribution

Grain-size distribution analyses were performed on several bulk samples using sieve analysis. Since the majority of the materials on the beach were cobble size and larger, it was impractical to perform laboratory gradation tests on complete samples. Therefore, samples of the sands and finer portions of the matrix were obtained at Emma Woods Beach. In addition two surface samples of the beach sand at Surfers Point Beach were also obtained.

The sieve analyses were performed by drying out the sample and passing it through a series of sieves, ranging in size from 75 mm to 0.074 mm. The bucket sample (P-1/L-1 at 3.0') contained material larger than the 75 mm size sieve. This material was weighed separately and then included in the distribution analysis. Results of the sieve analyses were used to evaluate the percentage and gradation of gravel and sand. These results are presented in the attached gradation curves. Since we could not physically include the cobble-size material in the sieve analyses, the bucket sample was artificially altered to include material greater than 12 inches in diameter in percentages by weight ranging from 5% to 50%. These results are also presented in the gradation curves attached to this appendix.

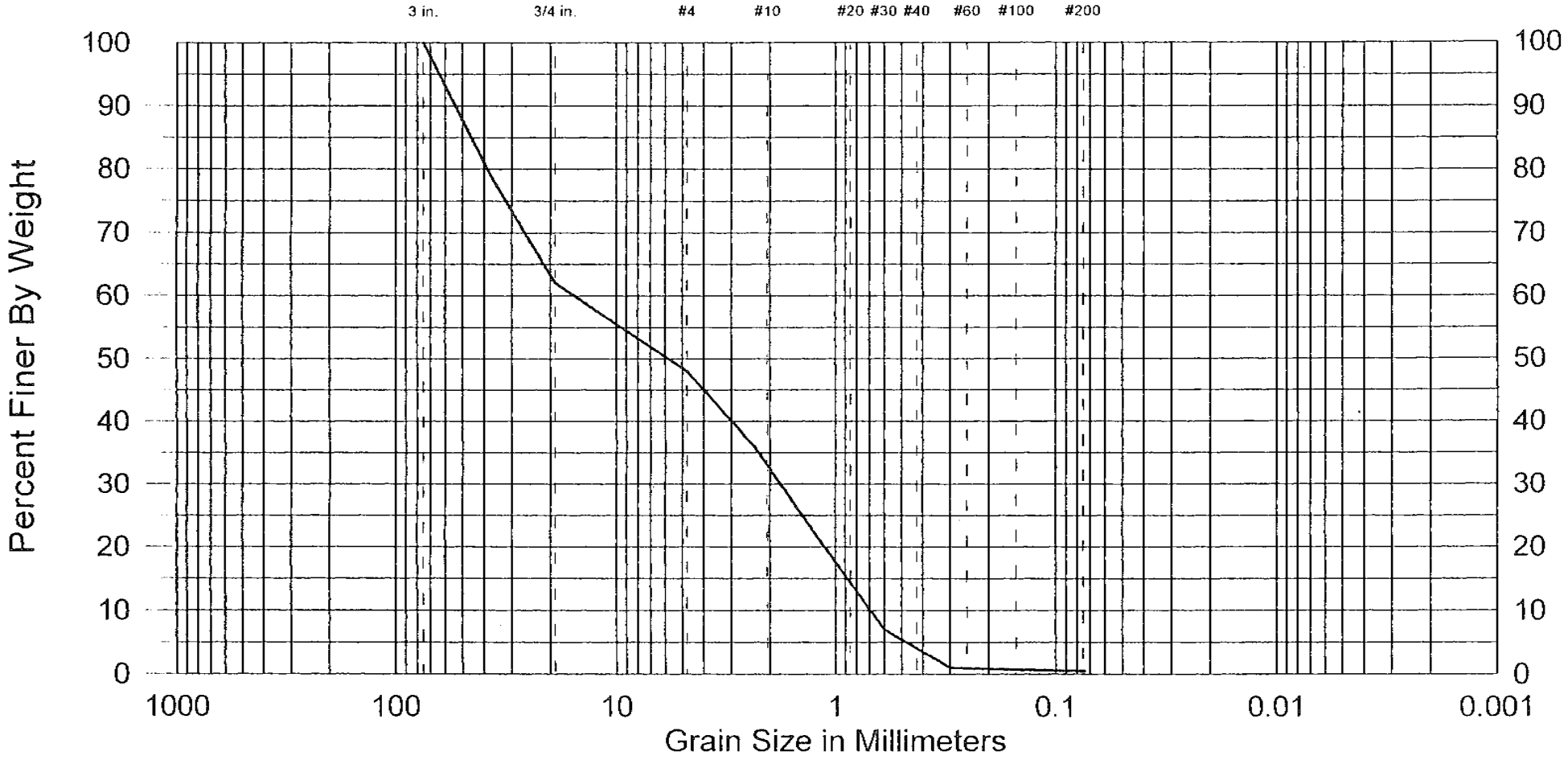
Specific Gravity

Specific Gravity tests were performed on six (6) individual rocks. The tests were performed by weighing the rock on a scale out of water and then while submerged in a bucket of water. These weights were used to calculate the approximate specific gravity, given the temperature at the time of the test. The calculated specific gravity was then used to determine the density and volume of each rock. The results are presented in the table below.

Rock No.	Specific Gravity	Density (pcf)	Volume (cu. in.)
1	2.60	162.2	76.2
2	2.55	159.1	74.9
3	2.61	162.9	36.1
4	2.56	159.7	44.4
5	2.51	156.6	40.3
6	2.69	167.8	83.4

GRADATION CURVE

U.S. Standard Sieve Size



BOULDERS	COBBLES	GRAVEL		SAND			SILT OR CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE	

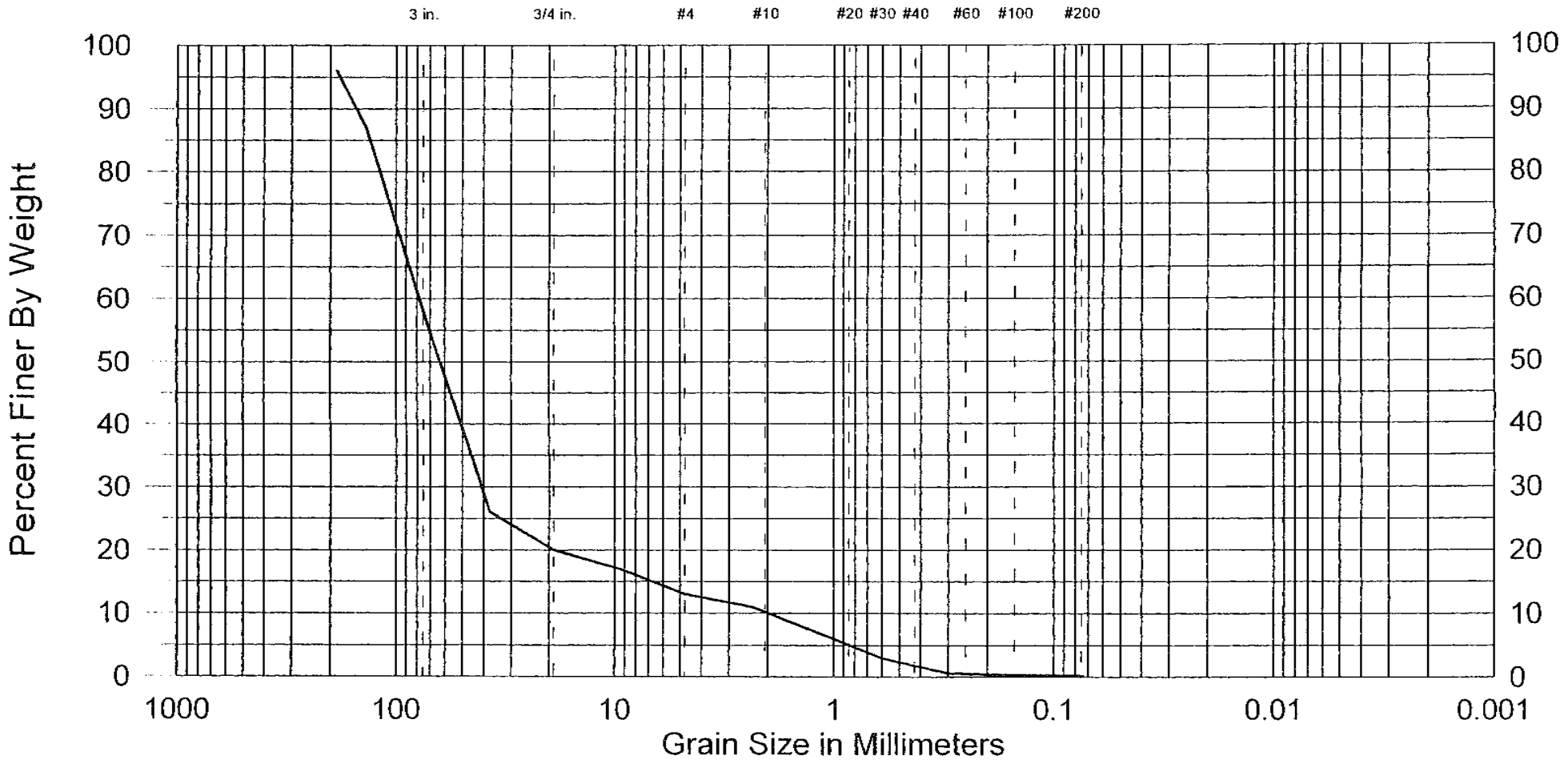
BORING	DEPTH	CLASSIFICATION
P-1/L-1	2'-3'	

Work Order: 2278-0-0-10

Gorian and Associates, Inc.

GRADATION CURVE

U.S. Standard Sieve Size



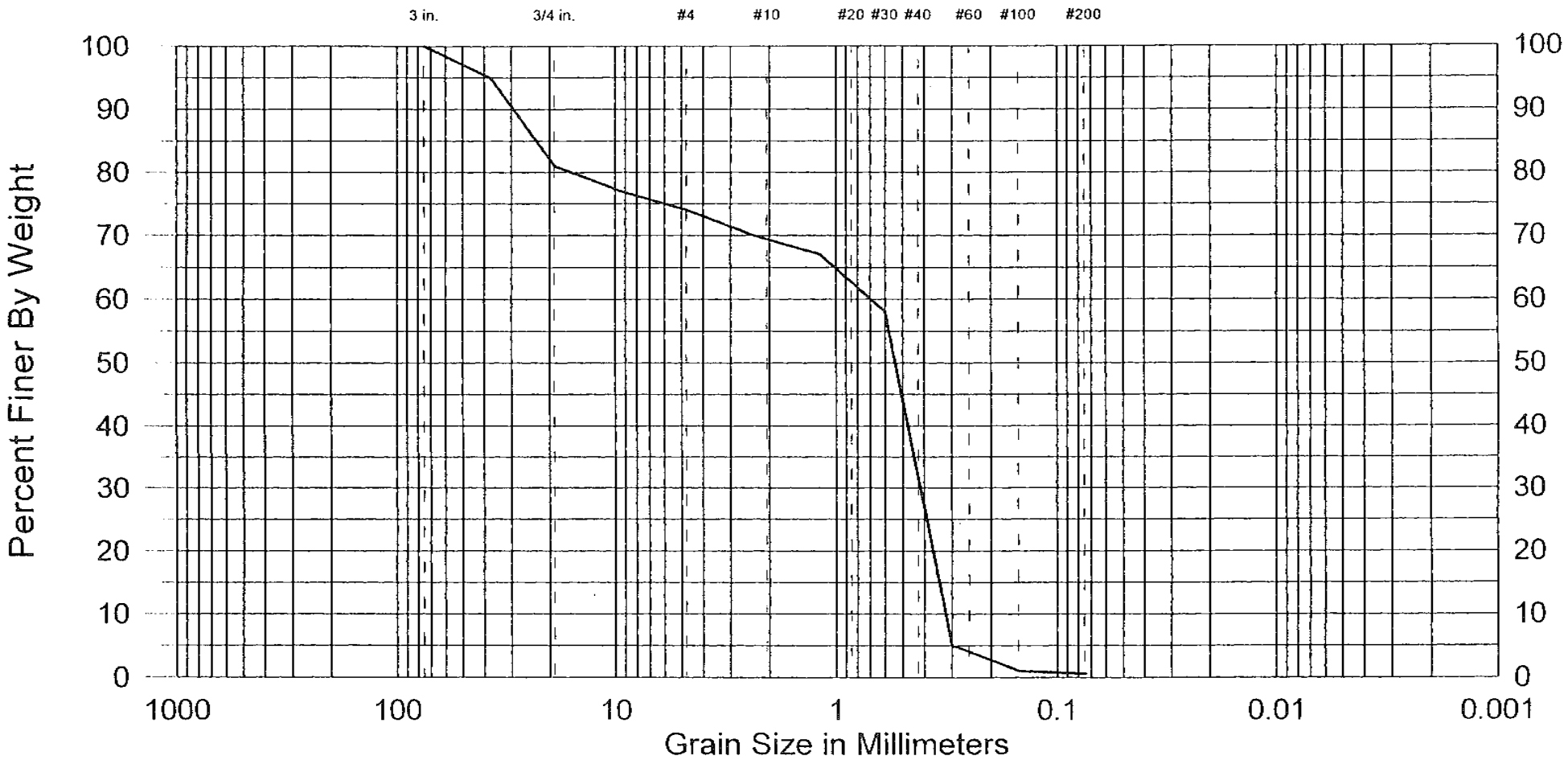
BOULDERS	COBBLES	GRAVEL		SAND			SILT OR CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE	

BORING	DEPTH	CLASSIFICATION
P-1/L-1	3'	

Work Order: 2278-0-0-10

Gorian and Associates, Inc.

GRADATION CURVE



BOULDERS	COBBLES	GRAVEL		SAND			SILT OR CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE	

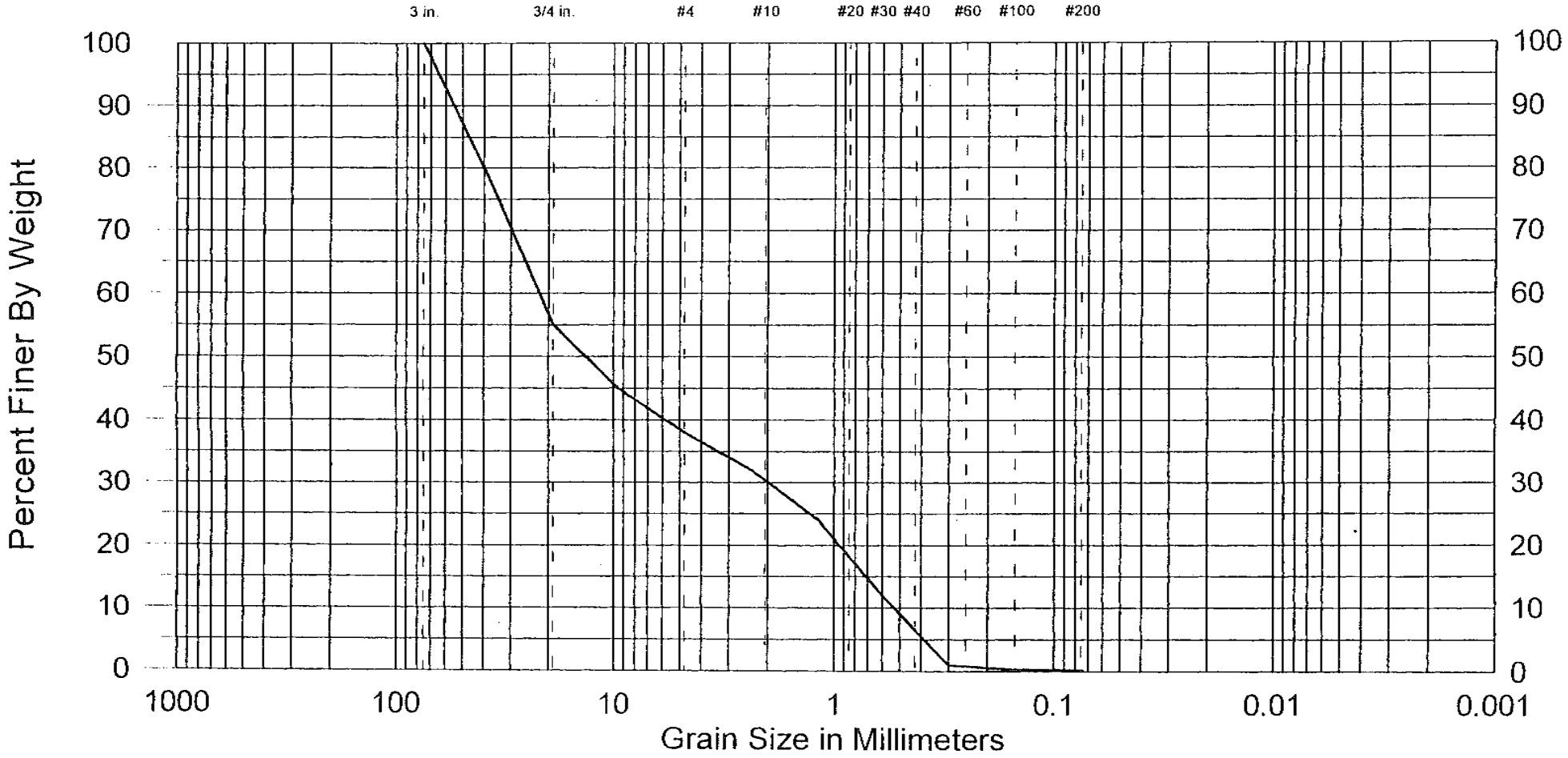
BORING	DEPTH	CLASSIFICATION
P-1/L-1	8'	

Work Order: 2278-0-0-10

Gorian and Associates, Inc.

GRADATION CURVE

U.S. Standard Sieve Size



BOULDERS	COBBLES	GRAVEL		SAND			SILT OR CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE	

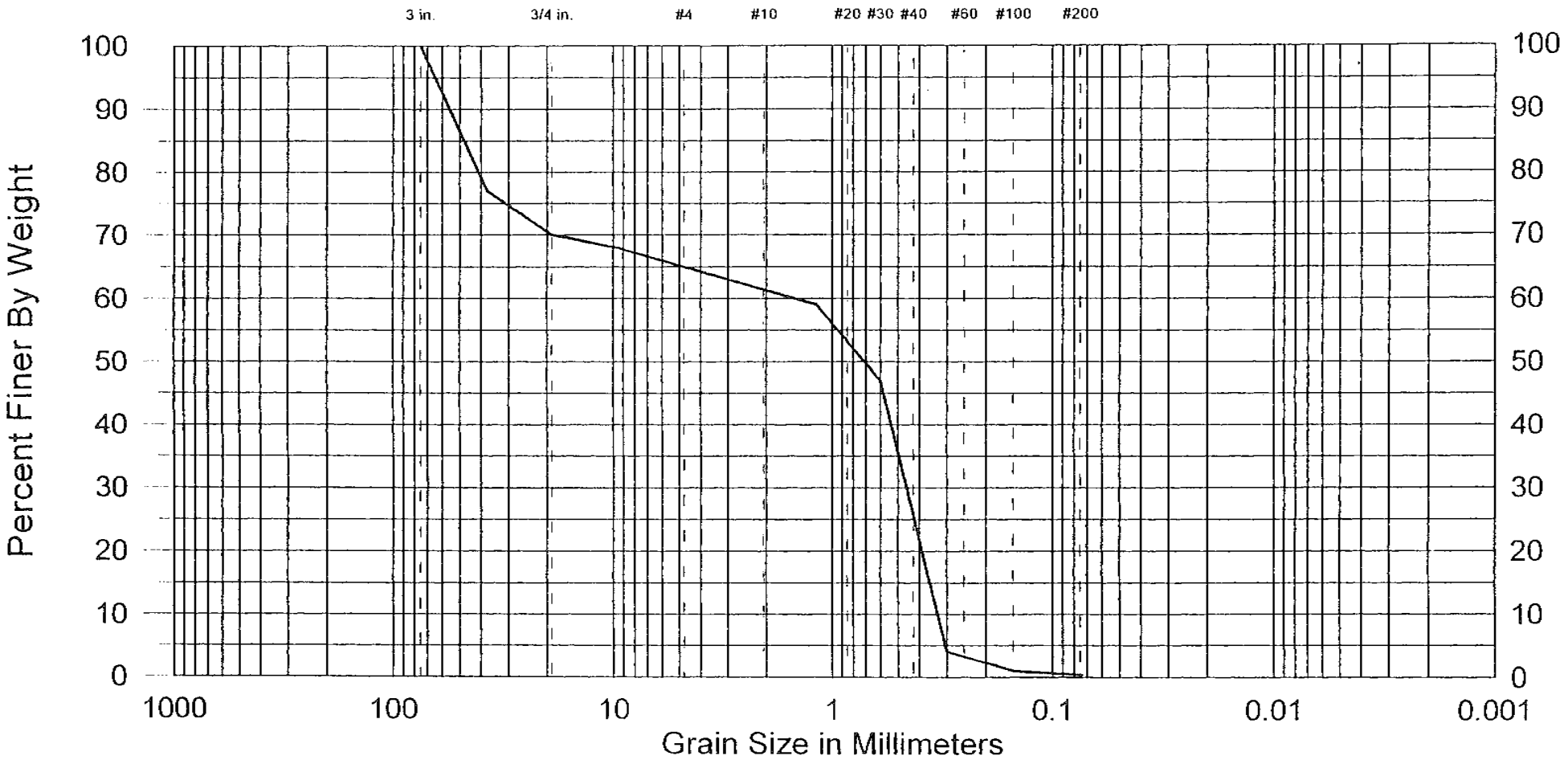
BORING	DEPTH	CLASSIFICATION
P-3/L-1	1'-3'	

Work Order: 2278-0-0-10

Gorian and Assc .tes, Inc.

GRADATION CURVE

U.S. Standard Sieve Size



BOULDERS	COBBLES	GRAVEL		SAND			SILT OR CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE	

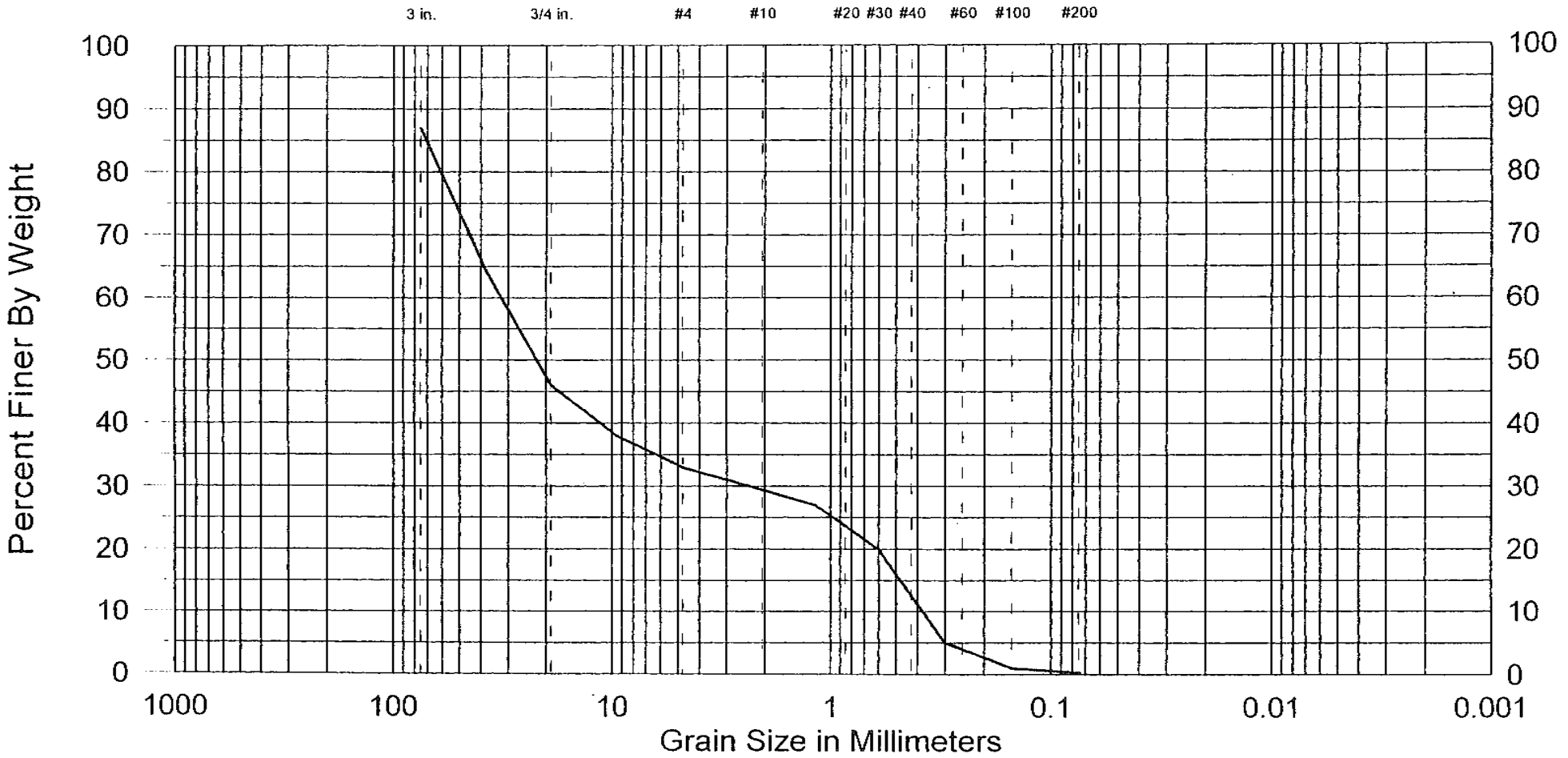
BORING	DEPTH	CLASSIFICATION
P-5/L-1	2'-3'	

Work Order: 2278-0-0-10

Gorian and Associates, Inc.

GRADATION CURVE

U.S. Standard Sieve Size



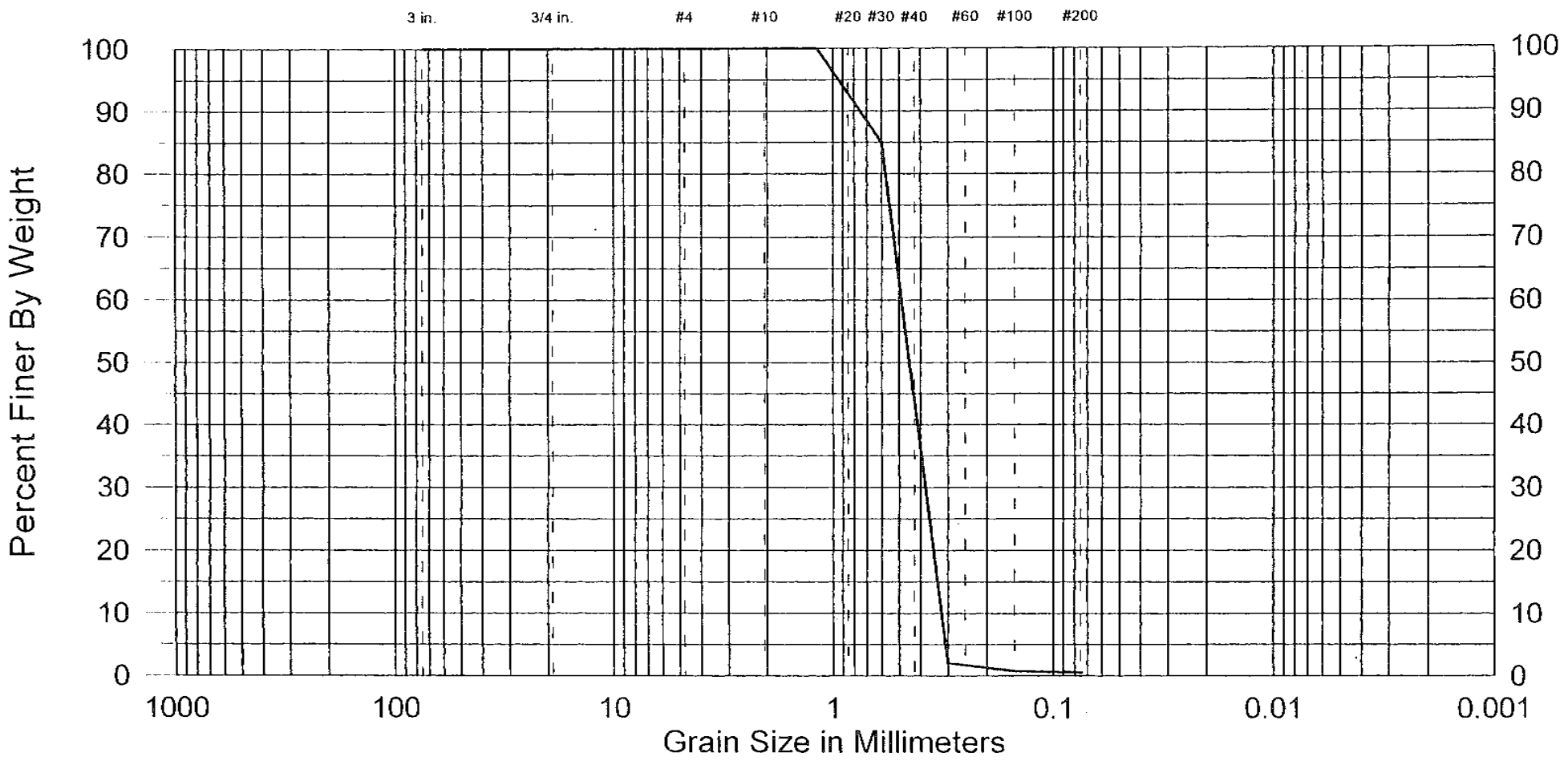
BOULDERS	COBBLES	GRAVEL		SAND			SILT OR CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE	

BORING	DEPTH	CLASSIFICATION
P-6/L-1	2.5'-3.5'	

Work Order: 2278-0-0-10

Gorian and Asso[illegible]es, Inc.

GRADATION CURVE



BOULDERS	COBBLES	GRAVEL		SAND			SILT OR CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE	

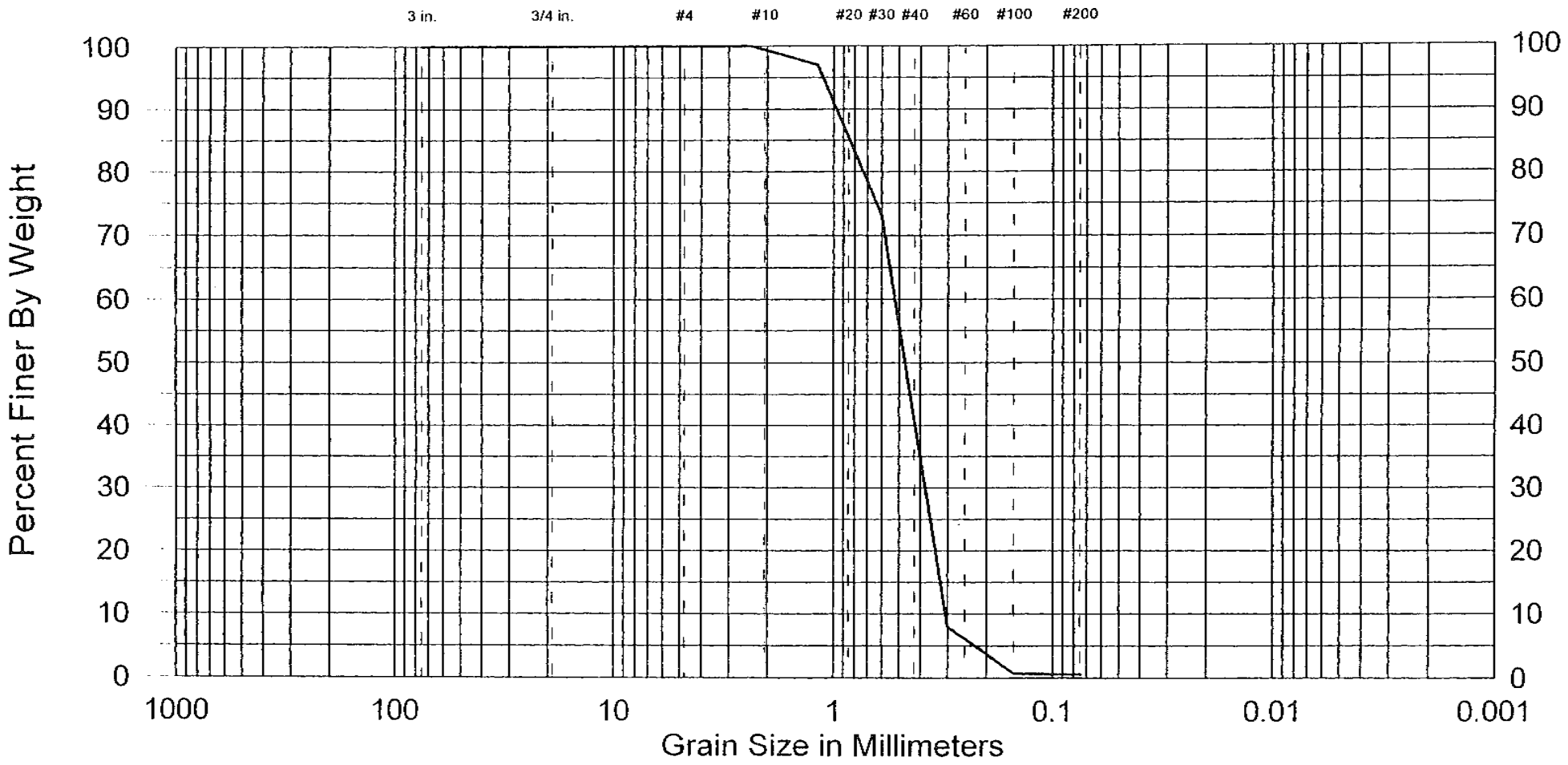
BORING	DEPTH	CLASSIFICATION
P-6/L-1	Surface	

Work Order: 2278-0-0-10

Gorian and Associates, Inc.

GRADATION CURVE

U.S. Standard Sieve Size



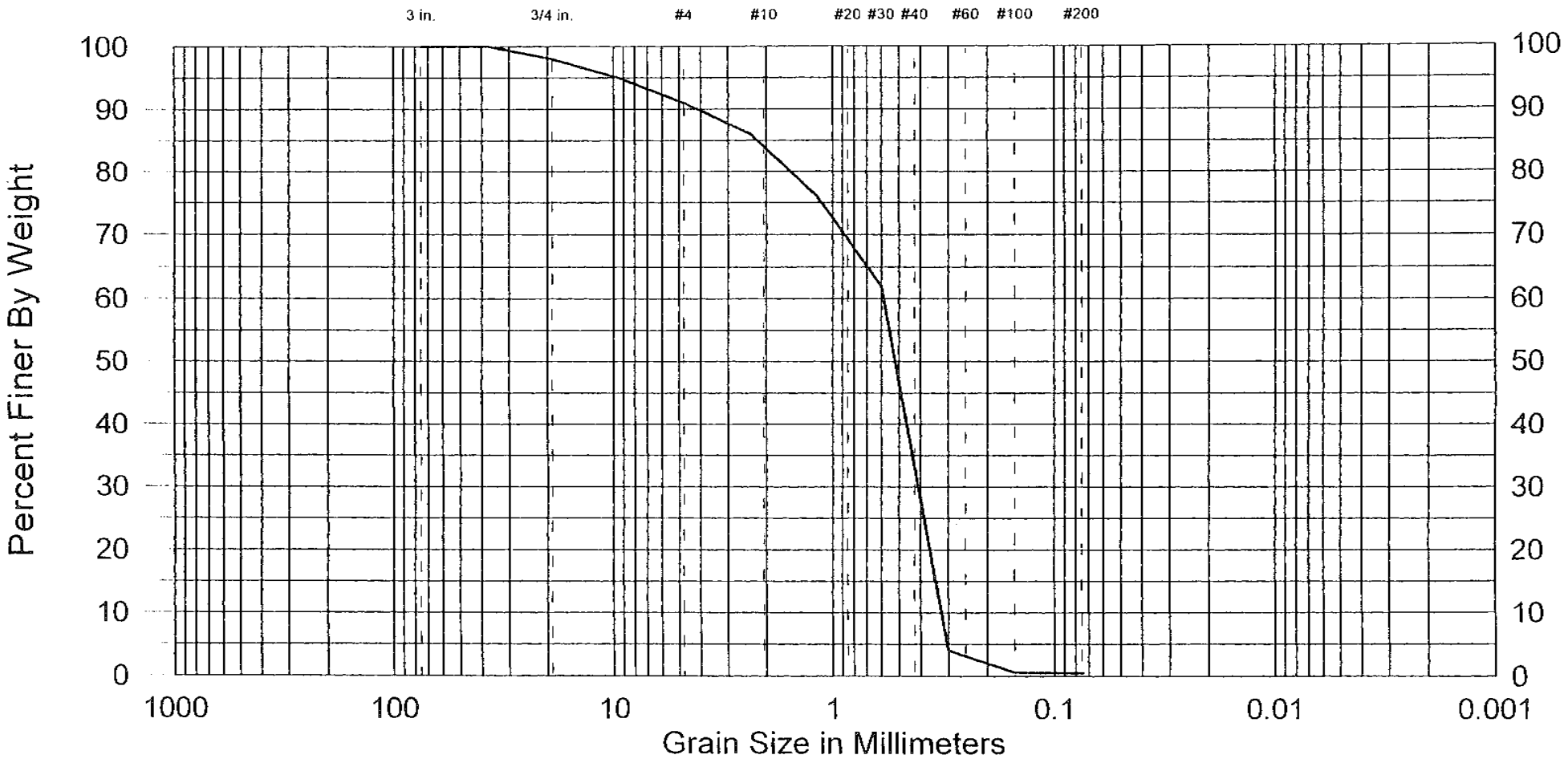
BOULDERS	COBBLES	GRAVEL		SAND			SILT OR CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE	

BORING	DEPTH	CLASSIFICATION
Upper Surfrider		

Work Order: 2278-0-0-10

Gorian and Asso. es, Inc.

GRADATION CURVE



BOULDERS	COBBLES	GRAVEL		SAND			SILT OR CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE	

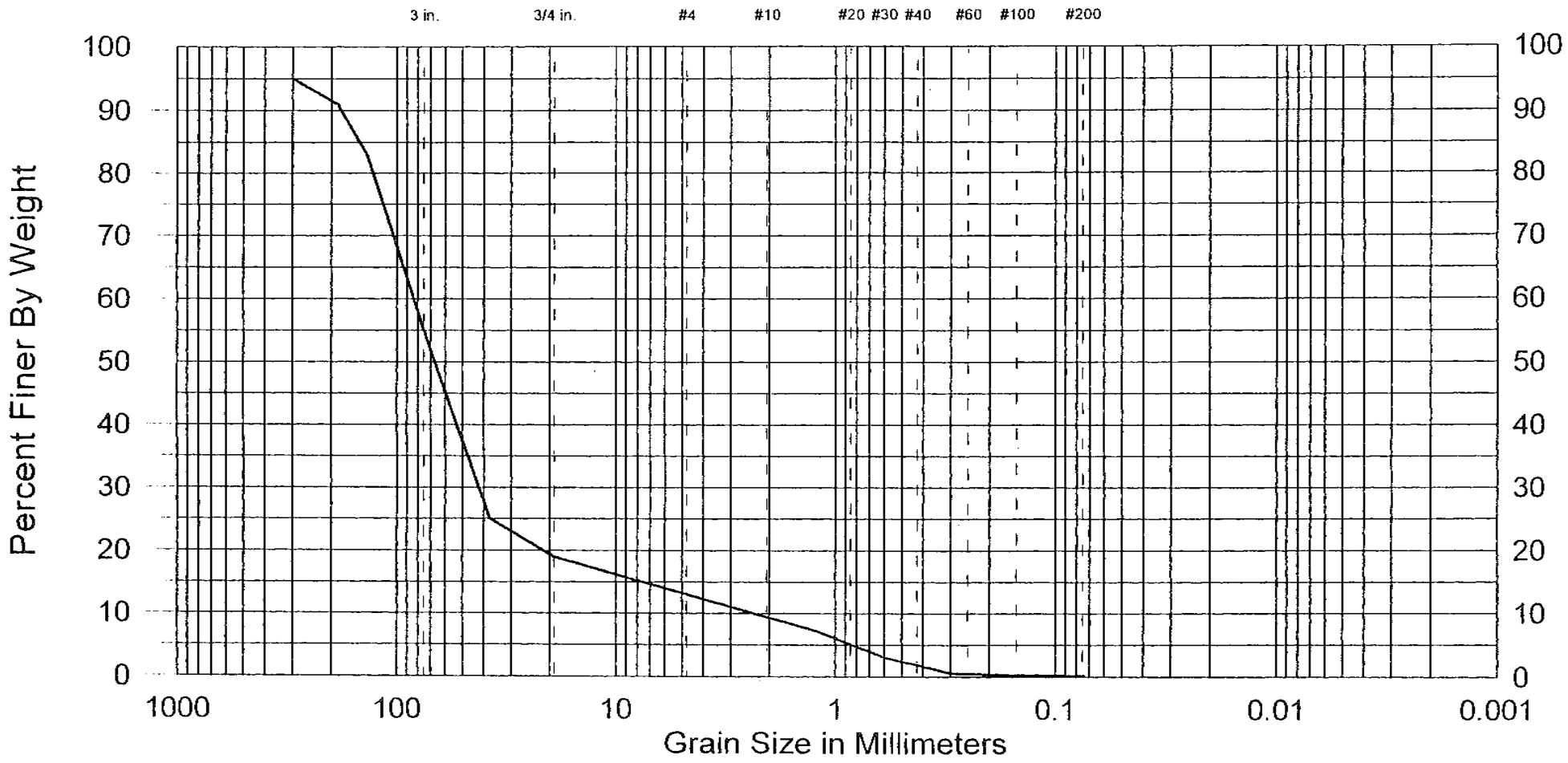
BORING	DEPTH	CLASSIFICATION
Lower Surfrider		

Work Order: 2278-0-0-10

Gorian and Associates, Inc.

GRADATION CURVE

U.S. Standard Sieve Size



BOULDERS	COBBLES	GRAVEL		SAND			SILT OR CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE	

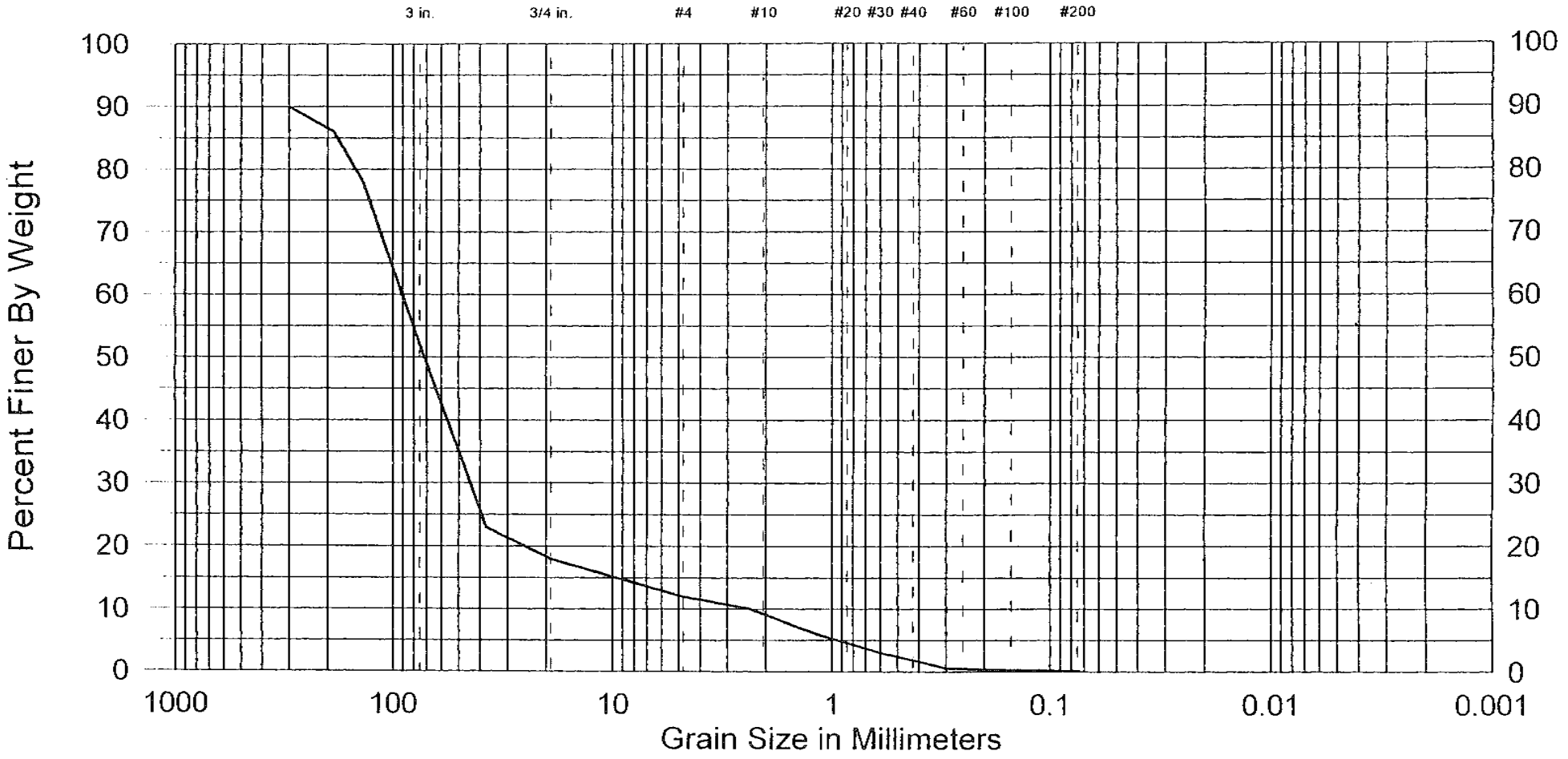
BORING	DEPTH	REMARKS
P-1/L-1	3'	Assumed 5% of sample was greater than 12" in Dia.

Work Order: 2278-0-0-10

Gorian and Assc ..es, Inc.

GRADATION CURVE

U.S. Standard Sieve Size



BOULDERS	COBBLES	GRAVEL		SAND			SILT OR CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE	

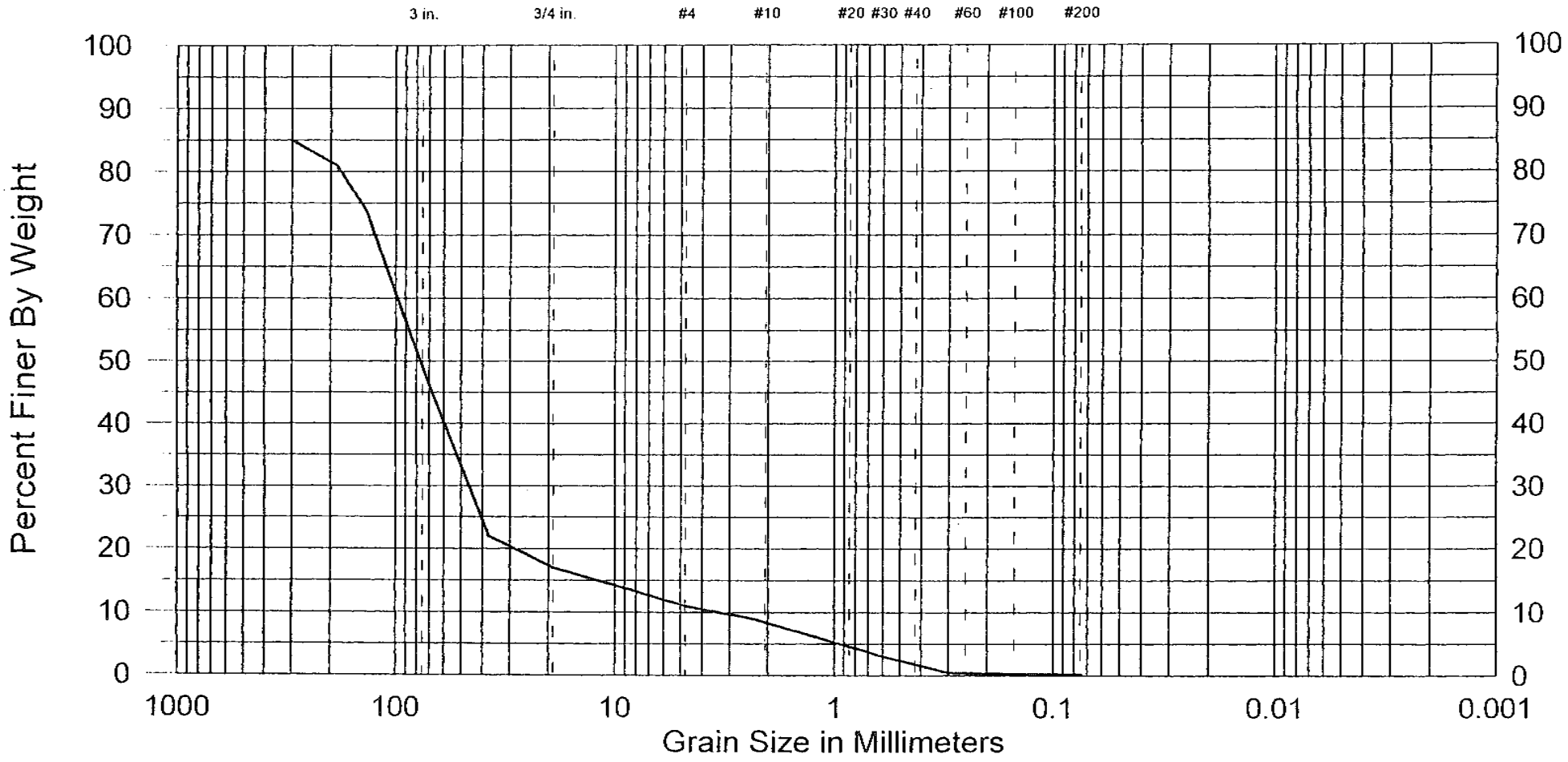
BORING	DEPTH	REMARKS
P-1/L-1	3'	Assumed 10% of sample was greater than 12" in Dia.

Work Order: 2278-0-0-10

Gorian and Associates, Inc.

GRADATION CURVE

U.S. Standard Sieve Size



BOULDERS	COBBLES	GRAVEL		SAND			SILT OR CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE	

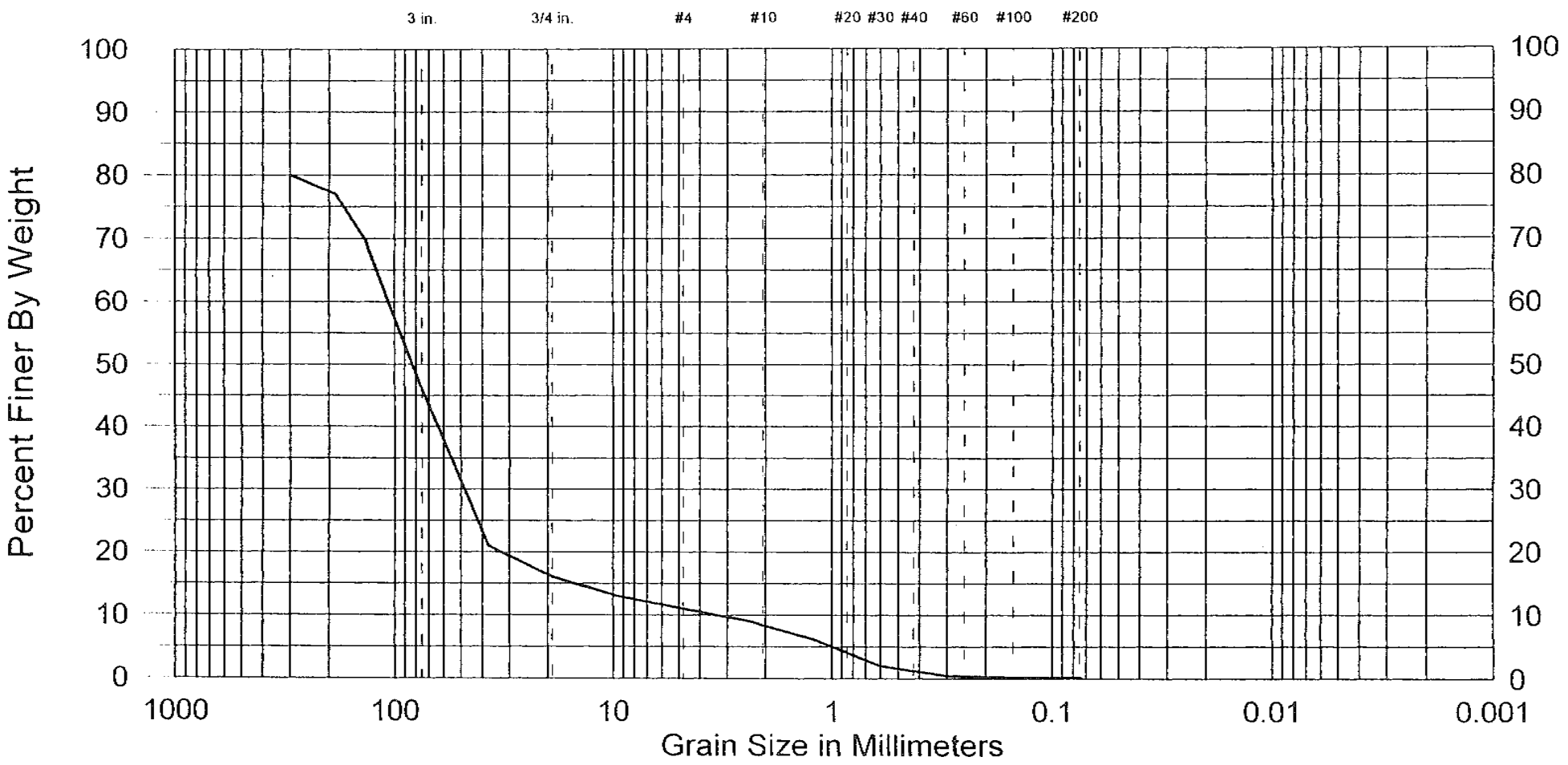
BORING	DEPTH	REMARKS
P-1/L-1	3'	Assumed 15% of sample was greater than 12" in Dia.

Work Order: 2278-0-0-10

Gorian and Asso tes, Inc.

GRADATION CURVE

U.S. Standard Sieve Size



BOULDERS	COBBLES	GRAVEL		SAND			SILT OR CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE	

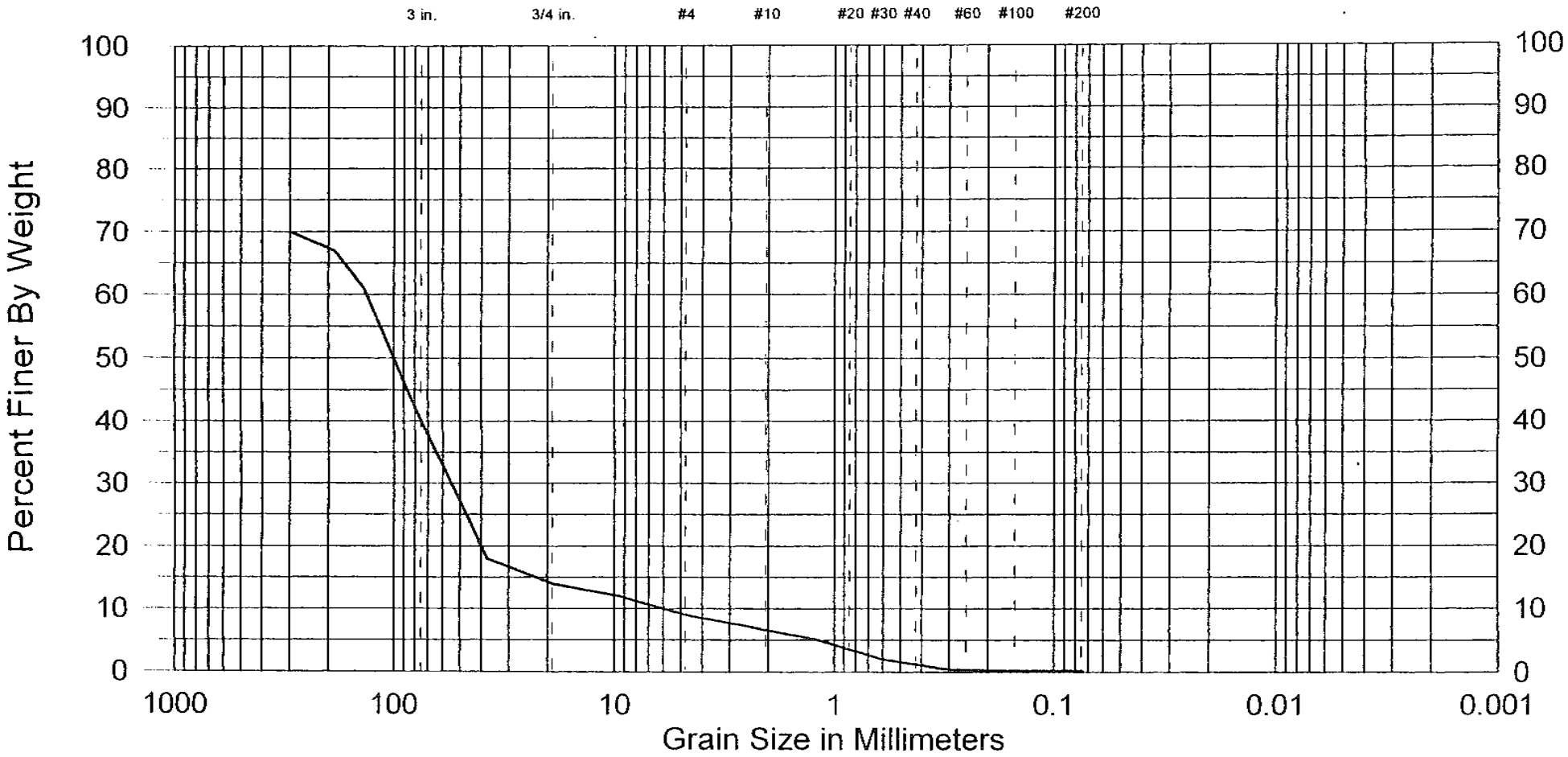
BORING	DEPTH	REMARKS
P-1/L-1	3'	Assumed 20% of sample was greater than 12" in Dia.

Work Order: 2278-0-0-10

Gorian and Associates, Inc.

GRADATION CURVE

U.S. Standard Sieve Size



BOULDERS	COBBLES	GRAVEL		SAND			SILT OR CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE	

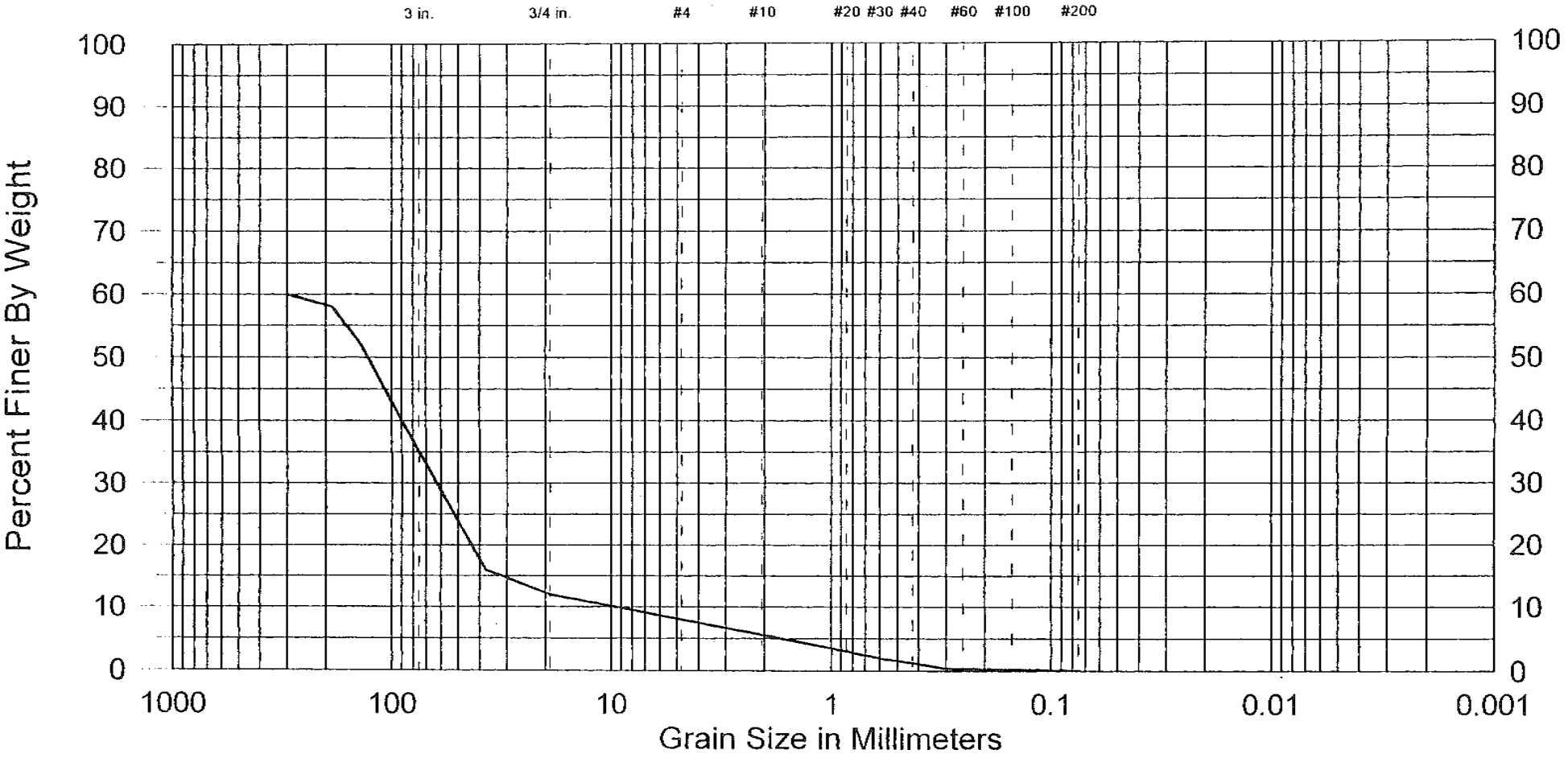
BORING	DEPTH	REMARKS
P-1/L-1	3'	Assumed 30% of sample was greater than 12" in Dia.

Work Order: 2278-0-0-10

Gorian and Asso .es, Inc.

GRAD. .ON CURVE

U.S. Standard Sieve Size



BOULDERS	COBBLES	GRAVEL		SAND			SILT OR CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE	

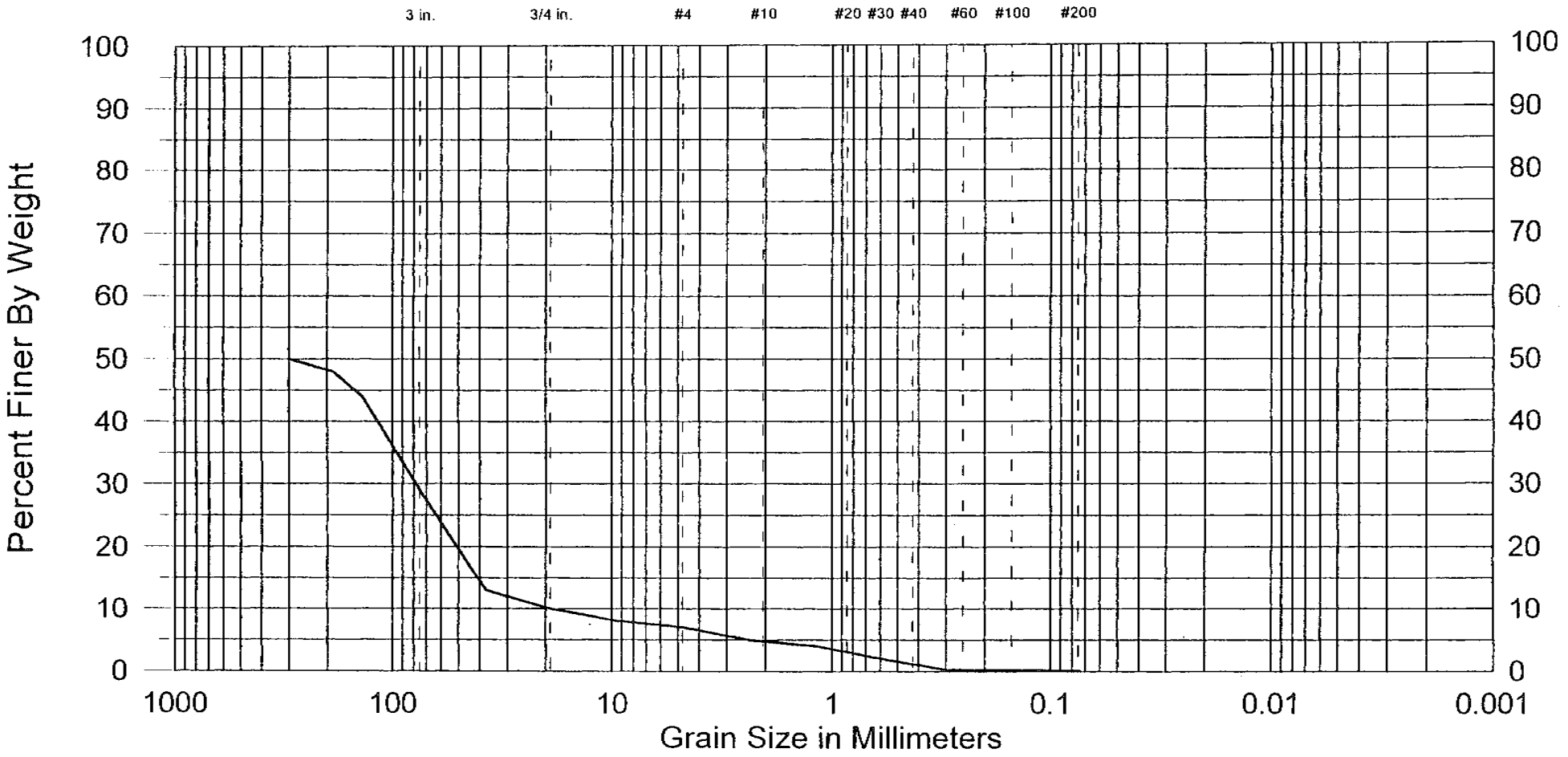
BORING	DEPTH	REMARKS
P-1/L-1	3'	Assumed 40% of sample was greater than 12" in Dia.

Work Order: 2278-0-0-10

Gorian and Associates, Inc.

GRADATION CURVE

U.S. Standard Sieve Size



BOULDERS	COBBLES	GRAVEL		SAND			SILT OR CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE	

BORING	DEPTH	REMARKS
P-1/L-1	3'	Assumed 50% of sample was greater than 12" in Dia.

Work Order: 2278-0-0-10

Gorian and Asso es, Inc.

APPENDIX C

GRADATION CURVES EVALUATED FROM PHOTOGRAPHS

Cobble Shape Survey

A cobble shape survey was conducted at the beach which involved noting the dimensions (i.e. length, width and thickness) of a total of 52 randomly selected rocks of varying sizes. The table presenting the measurements observed is attached to this appendix. The rocks were then grouped into three categories based on the largest dimension: less than 6 inches, 6 to 12 inches, and greater than 12 inches. An average ratio was calculated for each category by dividing the small dimension by the average of the larger dimensions, and this ratio was used to determine the average thickness for the rocks in each category. Assuming that the rocks are ellipsoidal in shape, the average volume for each category was then calculated. The shape and corresponding volumes were used in the photographic grain size analyses to convert observed sizes to weights.

Gradation Curves Evaluated From Photographs

Gradation curves were also calculated and prepared for the cobble sizes observed in the three photographic surveys. The results of the cobble shape survey were used to help calculate the approximate weights for the sizes observed. The gradation curves obtained from the photographs are attached to this appendix.

Permeability Estimates

Permeability estimates of the beach sand and finer grained deposits were evaluated from the gradation curves using the Hazen Formula. The Hazen Formula is based on the D10 grain size. The formula is

$$k(cm/sec) = C_1 D_{10}^2$$

D_{10} is the effective grain diameter that 10 percent of the material by weight is finer than and C_1 is a constant that varies between about 90 to120. The results are attached to this appendix.

EmmaRocks

Emma Woods Beach - Cobble Shape Survey 17-Feb-00

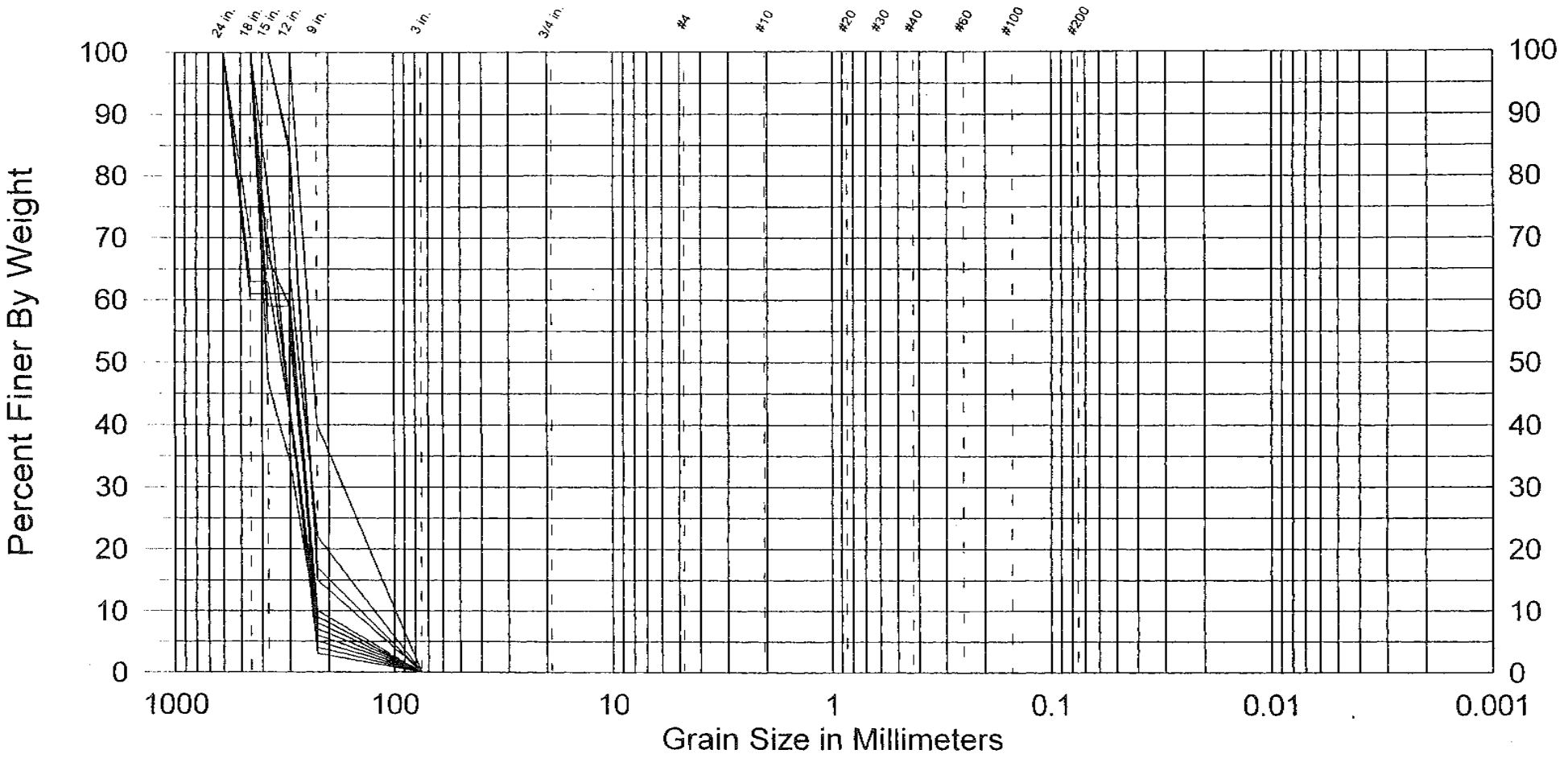
52 Rocks Total - Dimensions in inches

Length	Width	Thickness	Small Dimension Divided by Average Large Dimension		
31	20	16		0.63	
29	15	15		0.68	
			Sum	1.31	**0.65 Average Ratio**
23	12	6		0.34	
22	14	13		0.72	
22	16	8		0.42	
21	10	9		0.58	
21	10	10		0.65	
20	6	5		0.38	
18	16	14		0.82	
18	14	5.5		0.34	
16	14	12		0.80	
16	12	8		0.57	
16	15	10		0.65	
16	11	8		0.59	
16	9	5.5		0.44	
13	18	4		0.26	
13	13	5.5		0.42	
12	9	4.5		0.43	
			Sum	8.42	**0.53 Average Ratio**
11	9	5		0.50	
10	10	5		0.50	
10	8	2.5		0.28	
9.5	11	6		0.59	
10	6	5		0.63	
10	8	4		0.44	
8	7.5	3		0.39	
8	8	5		0.63	
8	8	2.5		0.31	
7.5	7	3		0.41	
7	6	5		0.77	
7	6	3.75		0.58	
			Sum	6.02	**0.50 Average Ratio**

	Emma Woods Beach - Cobble Shape Survey Continued				
			Small Dimension Divided by		
Length	Width	Thickness	Average Large Dimension		
5	5	2	0.40		
5	2.5	1.75	0.47		
6	5	1.5	0.27		
4.75	2.75	1.5	0.40		
4.5	4.25	2.5	0.57		
4.5	3	1	0.27		
4	3	1.25	0.36		
4	3	1	0.29		
4	2.5	1.5	0.46		
3	3	0.5	0.17		
3	2	1.25	0.50		
3.5	2	1	0.36		
3.5	1.5	0.04	0.02		
3	3.5	2	0.62		
2.5	2.5	0.5	0.20		
2.75	2	1	0.42		
2	1.25	0.87	0.54		
3	2	0.87	0.35		
2.25	1.25	0.75	0.43		
1.25	1.25	0.62	0.50		
1.25	1	0.75	0.67		
1.12	1	0.75	0.71		
			Sum	8.95	0.41 Average Ratio

GRADA..ON CURVE

U.S. Standard Sieve Size

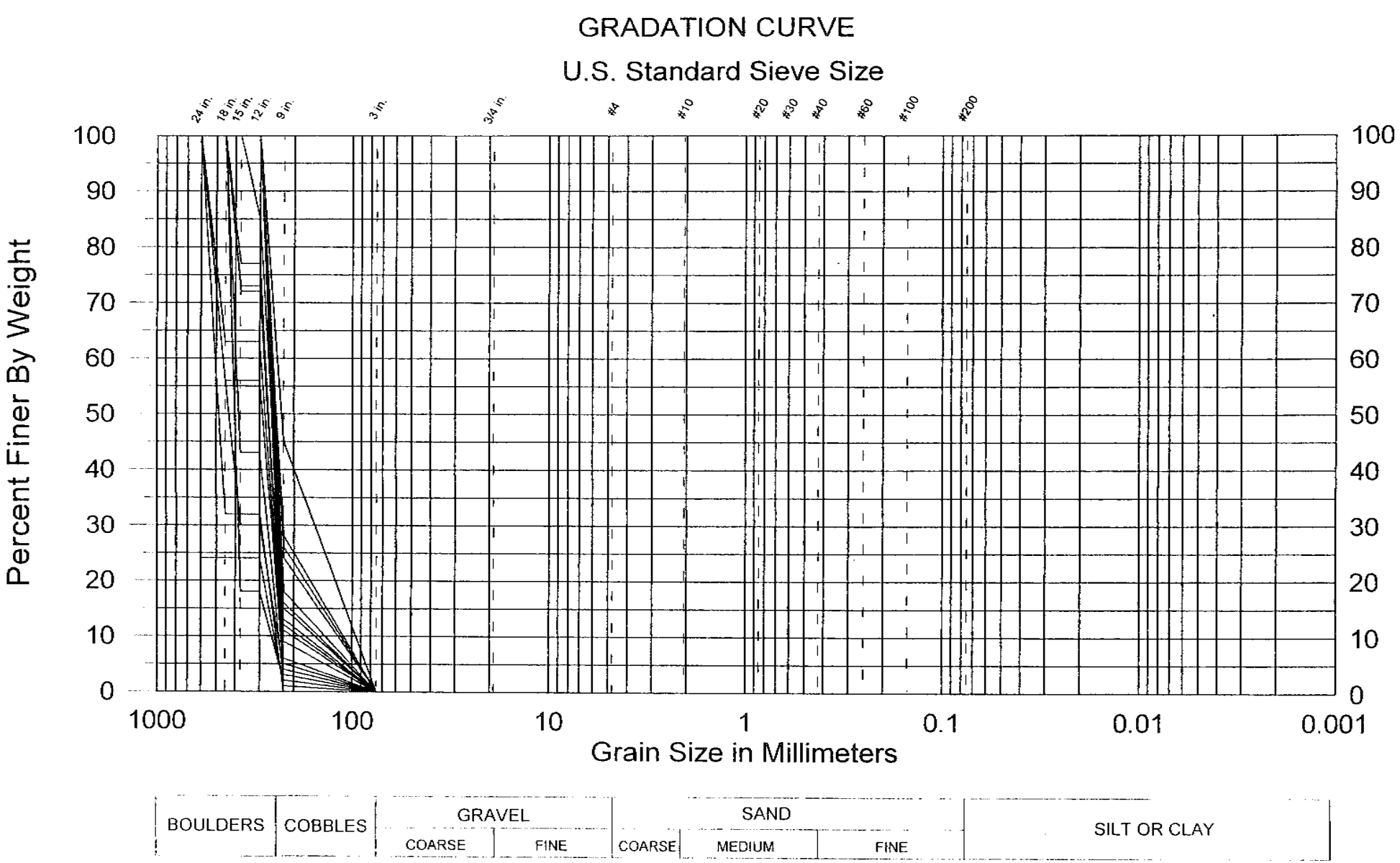


BOULDERS	COBBLES	GRAVEL		SAND			SILT OR CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE	

Photographic Survey #1

Work Order: 2278-0-0-10

Gorian and Associates, Inc.



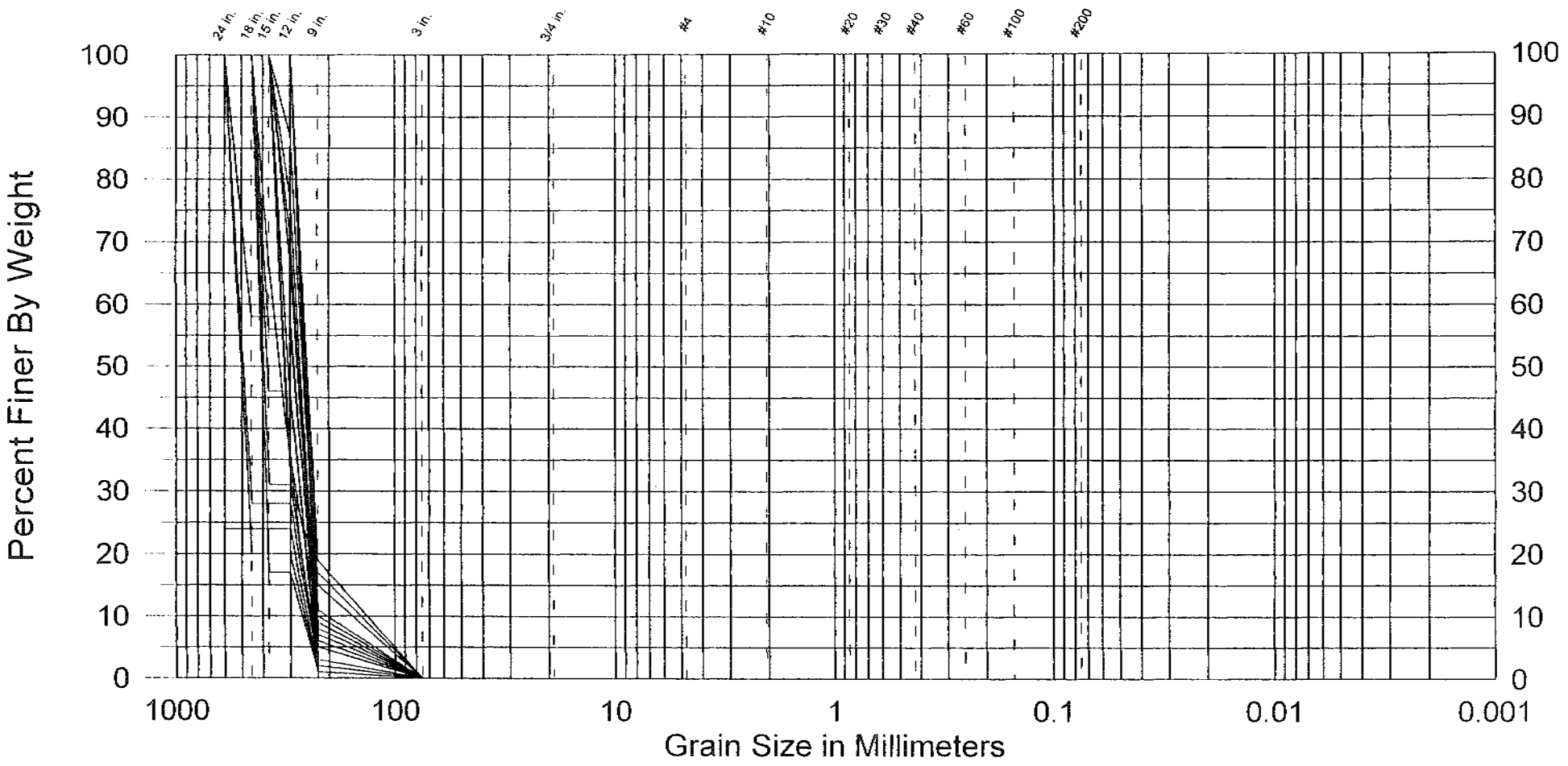
Photographic Survey #2

Work Order: 2278-0-0-10

Gorian and Asso(es, Inc.

GRADATION CURVE

U.S. Standard Sieve Size



BOULDERS	COBBLES	GRAVEL		SAND			SILT OR CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE	

Photographic Survey #3

Work Order: 2278-0-0-10

Gorian and Associates, Inc.

Emma Woods and Surfrider Beach Gradation Curves

PERMEABILITY by the HAZEN FORMULA

$K(cm/sec) = C_1 \times D_{10}^2$

C_1 varies from about 90 to 120 — Assume C = 105

Location	Depth	D10 in cm	k cm/sec
P1/L1	2 to 3 ft	0.07	0.5145
P3/L1	1 to 3 ft	0.052	0.2839
P6/L1	2.5 to 3.5 ft	0.038	0.1516
P5/L1	2 to 3 ft	0.032	0.1075
P1/L1	8 ft	0.031	0.1009
P6/L1	Surface	0.031	0.1009
Upper Surfrider	Surface	0.03	0.0945
Lower Surfrider	Surface	0.031	0.1009
P1/L1 as is in bucket	3 ft	0.2	4.2000
P1/L1 with 5% rock added >12 inches	3 ft	0.21	4.6305
P1/L1 with 10% rock added >12 inches	3 ft	0.22	5.0820
P1/L1 with 15% rock added >12 inches	3 ft	0.3	9.4500

Gorian Job Number 2278-0-0-10

27-Mar-00

APPENDIX E
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Appendix E

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Appendix J

Noble Consultants, Inc.
Project Monitoring Report for Surfers Point Cobble Nourishment Project

NOBLE CONSULTANTS, INC.

PROJECT MEMORANDUM

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City of San Buenaventura
Surfers Point Cobble Nourishment Project
Job Number 605-33

REGISTERED PROFESSIONAL ENGINEER
JON T. MOORE
No. 25673
Exp. 12/31/05
CIVIL
STATE OF CALIFORNIA

To: Richard Parsons
From: Jon Moore
Date: January 20, 2003
RE: Project Monitoring
Cc: Rick Raives
File

INTRODUCTION

This memorandum presents an updated review of the Surfers Point Cobble Nourishment Pilot Project. Monitoring of the project has been ongoing since October 2000 when gravel, boulder, and cobble (GBC) material was used to nourish a section of eroding shoreline. An interim account of observations and project performance was first summarized in our July 25, 2001 memorandum.

The following sections provide an updated assessment of project performance based upon all data that has been collected to date.

PROJECT HISTORY

Figure 1 shows the approximate limits of the west and east cobble nourishment sections that were constructed between September 11, 2000 and October 27, 2000, respectively. The west nourishment section consisted of placing approximately 6,000 cubic yards of GBC over a 450-foot long shoreline segment (between Station 16+00 to Station 21+50) seaward of the eroded section near the bike path and the Ventura County Fairgrounds parking lot. The source of the nourishment material was an opportunistic byproduct of excavation in the Ventura River performed by the County Flood Control District. The GBC was delivered to the project site by truck and graded to a final slope of 5 to 1. The material placement was patterned after the naturally occurring GBC berm at Emma Wood State Beach.

The east GBC nourishment section was preceded by removal of approximately 350 tons of rubble and relic debris from the existing beach face. Due to a limited availability of GBC at the time, only about 1,000 cubic yards of material was placed along a 350-foot section (between Station 21+50 to Station 25+00). Consequently, the nourishment volume resulted in inadequate coverage, insufficient layer thickness, and over steepened finished grade. Fill slopes within the east nourishment section were on the order of 3 to 1.

A monitoring effort was established in order to evaluate the performance of the pilot program. The program consisted of topographic surveys at regular intervals and more frequent visual observations. Pre-and-post nourishment surveys were conducted on August 31, 2000 and October 29, 2000, respectively, to establish baseline conditions. Beginning in December 2000, surveys were conducted on a monthly basis through April 2001 to measure changes over the

winter storm season. Subsequent to the July 25, 2001 memorandum, surveys have been performed on October 15, 2001, December 19, 2001, January 28, 2002, April 22, 2002, October 8, 2002, and January 2, 2003. Benner and Carpenter, Inc have completed all topographic survey work. Their surveys extend from the bike path landward of the cobble nourishment berm to the approximate Mean Lower Low Water Line. Elevations were recorded using the grade break method. Surveys were scheduled during times of lowest tide in order to facilitate access to the sub-tidal areas. In addition to the periodic surveys, visual observations of the project areas were made on a monthly basis.

PROJECT PERFORMANCE ANALYSIS AND EVALUATION

Wave data from existing sources was reviewed to provide an indication of the oceanographical conditions that the nourishment has been subjected to since placement. Wave climate summaries prepared by Pacific Weather Analysis for the Oil Piers site[1] were utilized to best represent the coastal environment in the vicinity of Surfers Point. The available information consists of periodic meteorological reviews of wave climate, deep-ocean buoy information, and meteorological weather charts as deemed relevant to conditions in the eastern Santa Barbara Channel. Available descriptions of wave conditions that occurred during the course of the Surfers Point cobble nourishment project are reproduced below.

Wave Climate

Within the Southern California Bight, the wave climate is generally categorized into two distinct patterns for summer and winter. During summer months (June to October), waves mostly consist of local wind swell generated by northwesterly winds along the California coast and southwesterly swells associated with extratropical cyclones of the southern hemisphere. Waves occurring during the winter months (December to March) are generated predominantly by extratropical cyclones of the northern hemisphere. Wind swells are occasionally present but exist only as a secondary wave train.

October 2000-December 2000

With nearly 3 inches of rain, this was a rather wet October for the Ventura County region. Swells were also above normal, exceeding 5 feet on 7 days during the last third of the month. Seas, generated by 25 to 30 knot winds, reached 6 to 8 feet in height on October 10.

The weather pattern turned dry in November with several days of strong northwest winds in the outer channel and several days of Santa Ana winds in the eastern channel. Westerly winds of 20 to 25 knots generated 5 to 6-foot seas on November 9.

In December, benign weather conditions with gentle winds and below-normal swells were reported during most of the month. No rain was recorded in this month. One exception to the swell conditions occurred on December 22 when a west-north-west swell produced waves in excess of 20 feet offshore of Point Conception.

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[1] Noble Consultants, Inc., 2002. "Mobil Seacliff Oil Piers Beach Monitoring Program."

January 2001- February 2001

Relatively quiet weather conditions continued until January 8, when typical winter patterns set in. Westerly seas and swells, which combined to generate 8-foot to 10-foot waves on January 9 were followed by a southeaster with heavy rain on January 10 and 10-foot to 12-foot swells ensued on the following day. After another southeaster on January 12, gentle to moderate winds prevailed for the rest of the month. There were several days of moderate swells, the highest of which were 6 to 8 feet on January 22.

Six frontal passages occurred with 8 days of southeast winds during the month of February. Recorded rainfall in the coastal area ranged from 5 to 6 inches. The strongest southeaster occurred on February 13 with winds peaking at about 40 knots. Two westerly wind events with wind speeds of 25 knots and 6-foot seas were reported on February 6 and 22, respectively. Long period swells were benign, as they never exceeded 3 feet in height for 11 straight days. The highest swell with wave heights reaching 7 to 8 feet occurred on February 20.

March 2001-April 2001

During these two months, heavy rains and strong northwest winds were recorded. In March, strong northwest winds in the outer Santa Barbara channel accounted for several days of medium to high wind swells. The roughest wave conditions occurred on March 9th when strong westerlies blew all the way down the channel. In April, rough seas occurred on the 7th and the 21st subsequent to strong westerlies and heavy rain falls. The last rainfall recorded was on April 20th at about one half inch.

May 2001-October 2001

During these six months, wave conditions were benign and southern hemisphere swells were minimal although some relatively large swells did occur in May. The highest wind swells occurred on June 10th through the 12th when strong northwest winds blew in the outer channel. The month of July was foggy and cold with brisk sea breezes.

Waves continued to be benign throughout September and October. The only tropical storm to occur during this season did bring in some low swell on September 8th. Five days in late September brought in moderate wind swells.

November 2001 to February 2002

November and December were the only months where winter type weather occurred. Even during these two months, only a moderate amount of rainfall occurred; about 3 inches of rain fell in November and about 2 inches in December. However, intense Pacific storms did generate medium to high swells. Breakers greater than 10 feet in height occurred in the project area on November 21st and December 21st, respectively. During December, wind swells were above normal due to strong westerlies that extended into the eastern channel. A dramatic shift in the weather pattern occurred during the second week of January as a high pressure system intensified

over the eastern half of the Pacific resulting in a storm track far to the north. This weather pattern continued throughout the rest of the winter season with minor interruptions. This resulted in a rather dry January to March period. The only day of strong westerlies occurred on February 17th in the eastern end of the channel and there were no southeasters recorded.

March 2002 – December 2002

For the most part, conditions over this period were relatively benign. However, four notable occurrences of sea and swell occurred on March 14, November 8, December 16-18, and December 20-21. Data recorded by the Scripps Institute of Oceanography at their Goleta Point buoy indicated that significant wave heights in the eastern Santa Barbara Channel were about 12 feet with peak periods varying between 14 and 16 seconds. The November and December events were also coincident with predicted astronomical high tides of over 6.0 feet, MLLW.

Beach Surveys

Figures 2 and 3 show comparative photographs of the west and east nourishment sections over the past two years. These figures are presented to supplement the beach surveys and the cobble nourishment photographs depicted in the July 25, 2002 memorandum. As may be seen in Figure 2, the west cobble nourishment section has remained relatively intact. However, settlement and readjustment of GBC has occurred at the eastern end of the nourishment section. More significant changes to the profile occurred in December 2002 as a result of the exposure to multiple high tides and more energetic surf.

Figure 4 illustrates the sand fluctuations that have occurred to date. The GBC nourishment appears to have negligible impacts to sediment movement and deposition. Furthermore, based upon visual observations and the March 2002 photograph illustrated in Figure 2, the breaking waves at Surfers Point also appear to have maintained their characteristic shape and size.

Figures 5 through 7 show representative profiles of the west nourishment section computed from the topographic surveys. Figures 8 through 10 are profiles within the east nourishment section. The profiles indicate that minimal redistribution of the GBC has occurred within the central section of the west nourishment section whereas changes have been more pronounced within the east half and at the west end . Conversely, the east GBC nourishment slope has experienced more substantial erosion. As shown in Figures 8 through 10, recession of the top of berm has been on the order of 5 to 15 feet.

Beach Survey Analysis and Data Reduction

In an effort to both qualitatively and quantitatively evaluate the performance of the entire west and east GBC nourished shoreline, the pre-and-post nourishment surveys were analyzed further. The surveys conducted on August 31, 2000 (pre-nourishment survey), October 29, 2000 (post-nourishment survey), December 13, 2000 (2-month post-nourishment survey), October 15, 2001

(12-month post nourishment survey), January 28, 2002 (15-month post-nourishment survey), October 8, 2002 (24-month post-nourishment survey), and January 2, 2003 were reduced to a grid using linear triangulation and analyzed to determine the changes in volumetric density within the west and east project area sections. The results of this analysis are presented in Figure 11.

Figure 11 presents the changes in volumetric density (in cubic yards per lineal foot of beach width) across the entire project area relative to the December 13, 2000 survey. The December 13, 2000 survey was chosen to best represent the initial GBC nourished planform as the east section was not completed until the end of October 2000 and the two-month gap between the completion of the west nourishment section and the survey allowed for the initial equilibration of the profile resulting from the loss of non-GBC sized material. Therefore, the change in volumetric density subsequent to the December 2000 survey is considered to be a more realistic simulation of the actual changes exhibited at the site.

Upon review of Figure 11, it is evident that profile changes within the west nourishment section have been confined to the east and west ends of the nourishment section. The central portion of the nourishment area has remained essentially intact. Volume changes at the boundaries to date have totaled about 5 cubic yards per lineal foot. The indication of gains that are inferred to have occurred between the October 15, 2001 and January 28, 2002 surveys are estimated to be due, in part, to sediment fluxes that buried and exposed the lower portion of the profile (see Figure 4).

More substantial changes have occurred within the eastern nourishment section. Volumetric changes are estimated to vary between 5 and 11 cubic yards per lineal foot. Shoreline recession has exceeded the limits of the debris removal and area of initial GBC placement. The maximum erosion has occurred at Station 23+00 (see Figure 9).

Volume Remaining in West Cobble Nourishment Project Area

The time history of the volumetric changes across the western section of the GBC nourished shoreline was calculated for the representative surveys and compared to the initial placement volume. The placement volume was estimated from truck delivery records during construction. Pre-construction and post-construction surveys suggest that a beach profile recession on the order of 2 cubic yards per lineal foot occurred between the time of the pre-nourishment survey and GBC placement.

Figure 12 summarizes the results of the volume analysis in terms of percentages remaining within the project area. As shown in the figure, an initial loss of about 12 percent occurred shortly after construction. This change is believed to be reflective of an initial adjustment period when non-cobble (GBC) sized material was winnowed from the initial placement volume through wave and tidal action. Between the December 2000 and October 2001 surveys GBC volume changes were negligible; however, the large volume of sand that accreted during this same time period may have acted to mask the loss of some material.

As of October 2002, the survey data indicates that about 70 percent of the initial nourishment volume remained within the project area. The high tide events and storm swell that occurred in

November and December 2002 resulted in additional changes to the GBC section that totaled about 10 percent of the initial nourishment volume. The trend line shown in Figure 12 indicates that the GBC profile has diminished at an average annual rate of about 15 precent including the initial adjustment period. This rate will fluctuate depending on storm frequency and the coincidence of high surf with spring tides. In 2002, the total volume change amounted to about 25 percent of the initial nourishment volume or 1,500 cubic yards.

The percent of volume remaining within the eastern portion of the project area was not calculated. The shoreline recession that has occurred, as shown in Figure 11, is believed to be attributable to a number of factors. As previously discussed, the initial placement volume and finished slope was inadequate. The erosion may have been further exacerbated by the removal of construction debris prior to GBC placement. Despite the undesirable characteristics of that material, it was providing a measure of shoreline stabilization. Visual reconnaissance of the site has also confirmed that the eastern nourishment section is exposed to higher wave energy. The natural topography in that area extends further seaward, and the segment is downcoast of the wave shelter provided by Surfers Point. As a result of this combination of factors, GBC material has been observed to migrate in the offshore and downcoast directions. However, it is estimated that the majority of the GBC material has been relocated seaward of the initial nourishment section. Less quantity is estimated to have moved downcoast. Based upon visual observations, it is estimated that little or no GBC has yet migrated east of the Figueroa Street storm drain outlet.

SUMMARY AND CONCLUSIONS

The following comments and conclusions are made at this time:

1. During the first year of monitoring, the wave climate was relatively benign. Thus, no significant changes to the GBC nourishment section occurred within the western section. Changes observed that have occurred over the past year were associated with four episodes of coincident storm swell and spring tide. The most significant changes occurred as a result of the December 2002 events.

2. The west cobble nourishment section, placed at an initial slope of 5 to 1, has thus far been effective to prevent erosion of the landward improvements. Most of the changes to the nourishment profile have occurred in the eastern portion of the segment. These adjustments are attributable to winnowing of the sand fraction from the cross section, the natural profile equilibration process (larger sizes of placed GBC material have accumulated at the toe of the nourishment slope), and exposure to high tides and surf.

3. The GBC placed on a steeper slope within the east nourishment section was not effective. This result is considered to be a consequence of insufficient nourishment volume placed at a steeper slope, the latent effects of the debris removal process, and exposure to more energetic surf. Wave runup and overtopping occurred regularly within this section during high tide and surf conditions.

4. The migration of GBC nourishment material is believed to have occurred mostly in the offshore direction and to a less extent downcoast. Little or no GBC is believed to have migrated east of the Figueroa Street storm drain.

5. The GBC nourishment appeared to have no impact on sand movements within the littoral zone. Moreover, based on visual observations, the GBC nourishment appeared to have no impact on the shape, size and consistency of the local surf conditions.

6. As of January 2, 2003, approximately 60 percent of the initially placed GBC volume remains within the western nourishment section. Accounting for initial losses of sand sized material shortly after initial placement, the monitoring results indicate that the western GBC nourishment section dissipated in 2002 at a rate of approximately 1,500 cubic yards.

In summary, the first two years of observations of the GBC nourishment at Surfers Point have reinforced our opinion that when properly placed, the methodology has considerable potential as a methodology to mimic a natural form of shoreline stabilization. In addition, the pilot project has successfully protected a threatened segment of bicycle path and parking lot to this point in time. Erosion damages would have occurred had no GBC been placed.

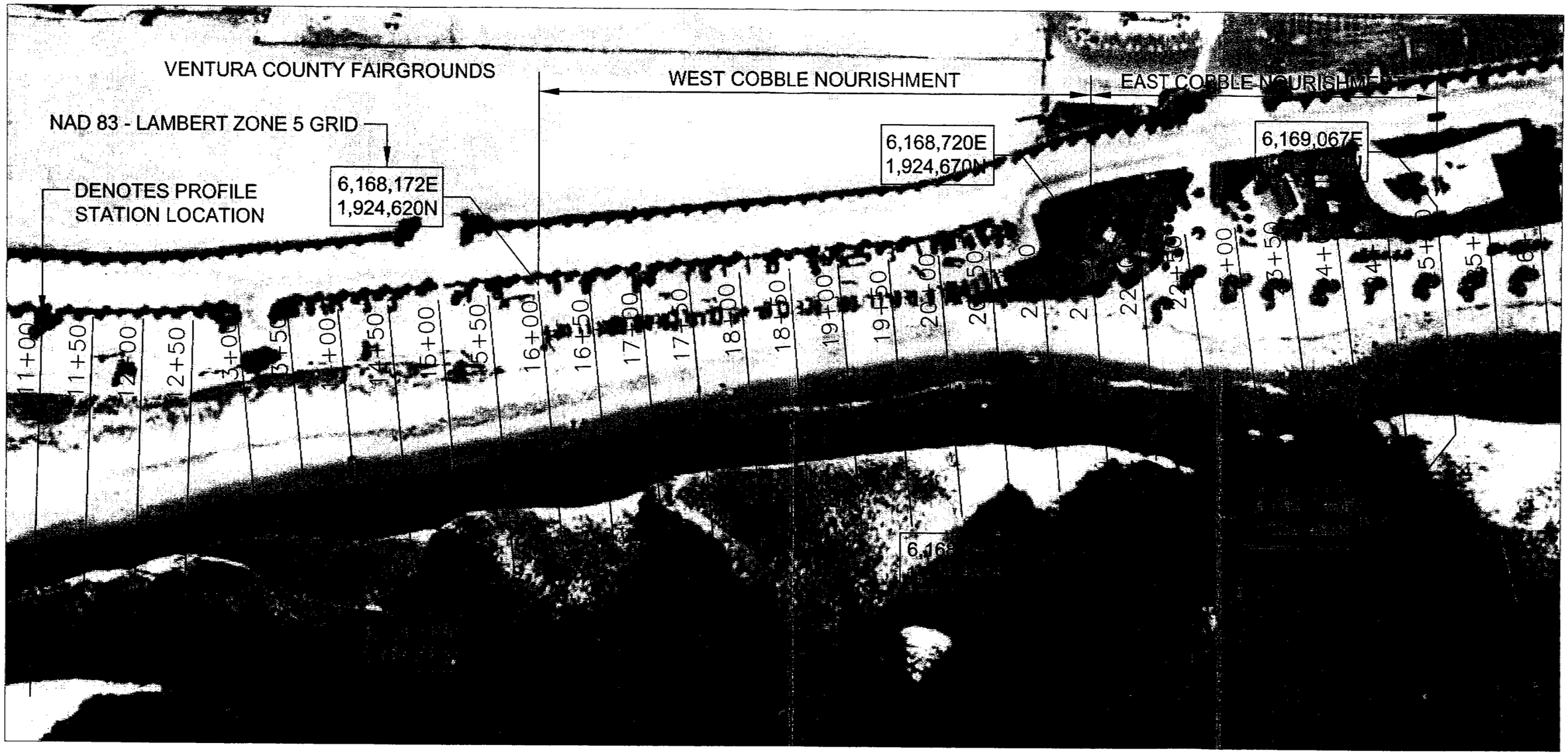
The two nourishment sections have demonstrated the importance of slope, volume, and shoreline orientation. Slopes steeper than 5 to 1 are considered to be unstable. The eastern Surfers Point Park area is exposed to more energetic surf and a higher rate of alongshore transport when compared to the western Fairgrounds section. Consequently, additional GBC placed at Surfers Point Park would benefit from appropriately designed retention structures. At a minimum, re-nourishment of both the western and eastern sections is recommended to replace GBC displacement that has occurred over the past two years.

It is premature to conclusively rate the success or shortcomings of this pilot nourishment project. Monitoring of the GBC during more energetic storm events will continue to be an important observation. The most significant changes to date have occurred over the past two months. It is not known at this time if the profile changes that have been experienced thus far will be permanent or if any recovery will occur.

The historical evidence of the Emma Wood State Beach GBC berm's stability presents a strong case that similar successes can be obtained at Surfers Point. Therefore, it is recommended that the GBC nourishment program continue so that more quantitative design guidelines can be developed for beneficial use at Surfers Point and elsewhere.

We recommend that the site be renourished with GBC to restore the test profile. Material should be placed at a slope no steeper than 5:1.

Attachments: Figure 1 – Surfers Point Cobble Nourishment Plan
Figure 2 – West Nourishment Section



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Surfers Point Cobble Nourishment Plan - West and East Sections

NOBLE CONSULTANTS, INC.

Figure 1

NOVEMBER 2000:
POST NOURISHMENT

JANUARY 2002: NOTE LITTLE CHANGE

MARCH 2002: NOTE QUALITY OF SURF

OCTOBER 2002: NOTE SCARP AND
SETTLEMENT OF EAST SECTION

West Nourishment Section Looking West of Sta 23+00

NOBLE
CONSULTANTS, INC.

Figure 2

SEPTEMBER 2000:
PRE-NOURISHMENT

FEBRUARY 2001 POST NOURISHMENT: RE-DISTRIBUTED COBBLE FROM STA 24+00 CARRIED DOWNCOAST BY WAVES

MARCH 2002

OCTOBER 2002

East Nourishment Section Looking East Towards Pier

NOBLE CONSULTANTS, INC.

Figure 3

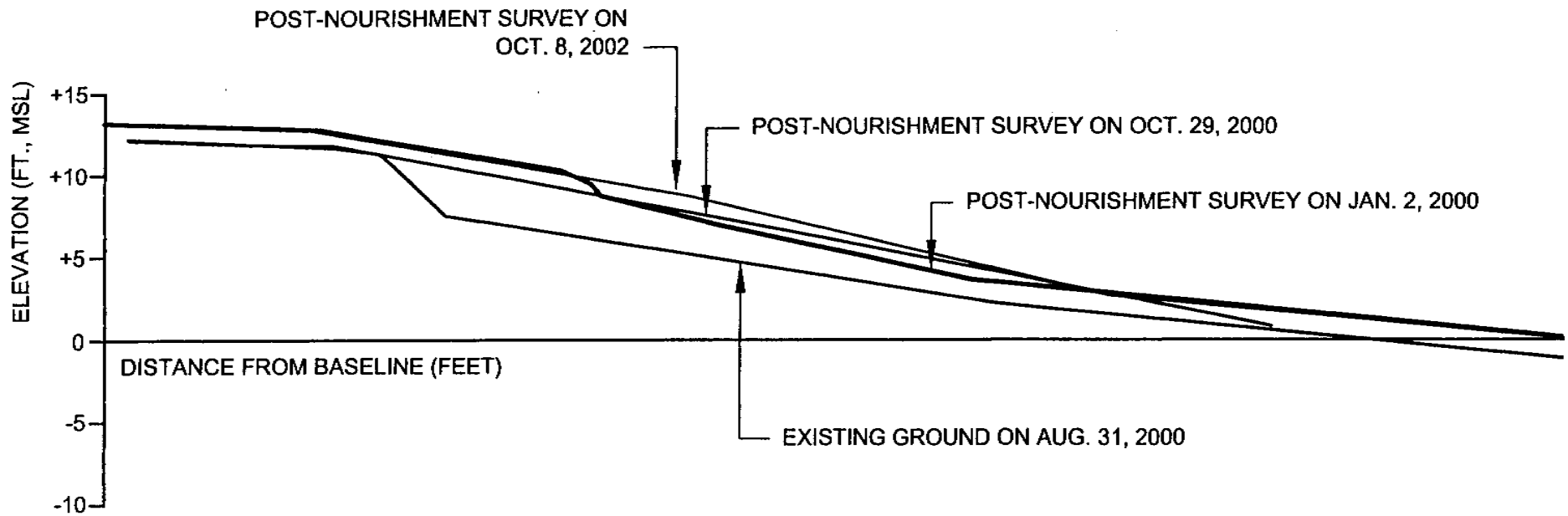
February 2001: Before Influx of Sediment from Ventura River

May 2001: Sediment Deposition After Influx from Ventura River

Sediment Movement and Deposition Seaward of Nourishment

NOBLE CONSULTANTS, INC.

Figure 4



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West Cobble Nourishment Profile - Station 17+00

Source: Benner and Carpenter, Inc., October 2002

NOBLE CONSULTANTS, INC.

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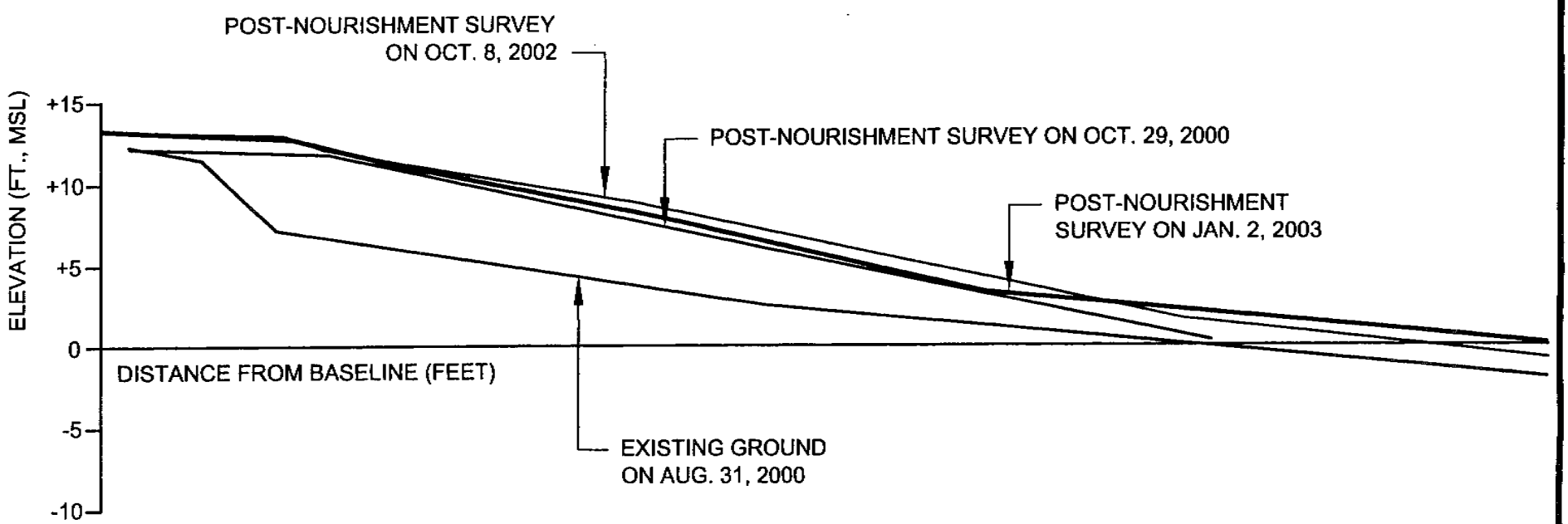

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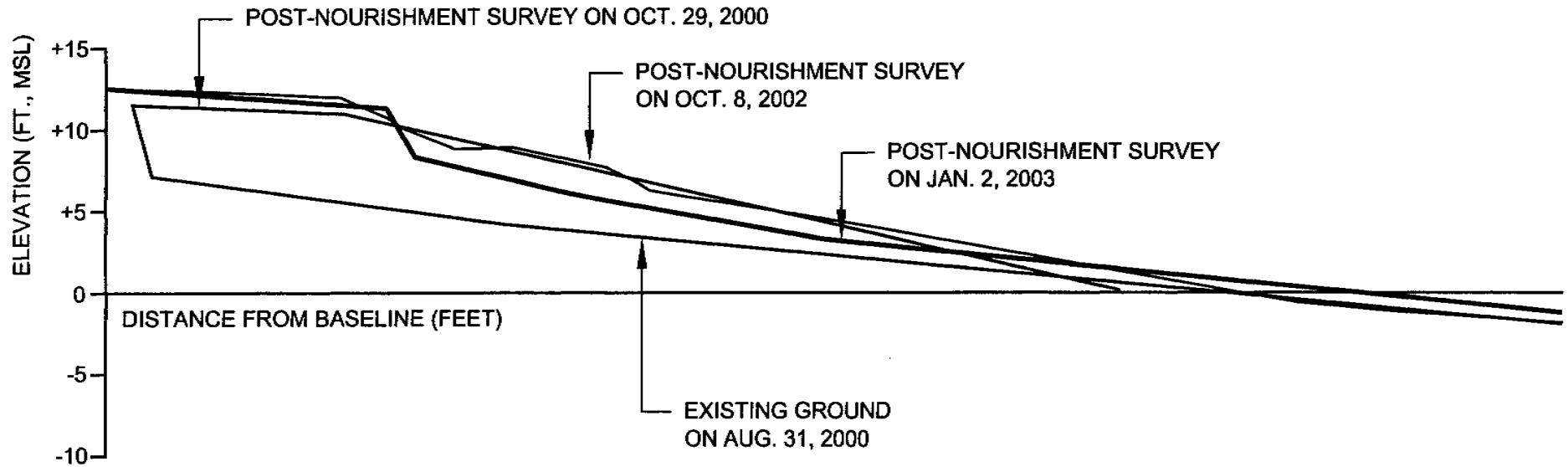
West Cobble Nourishment Profile - Station 18+50

Source: Benner and Carpenter, Inc., October 2002

NOBLE CONSULTANTS, INC.

Figure 6



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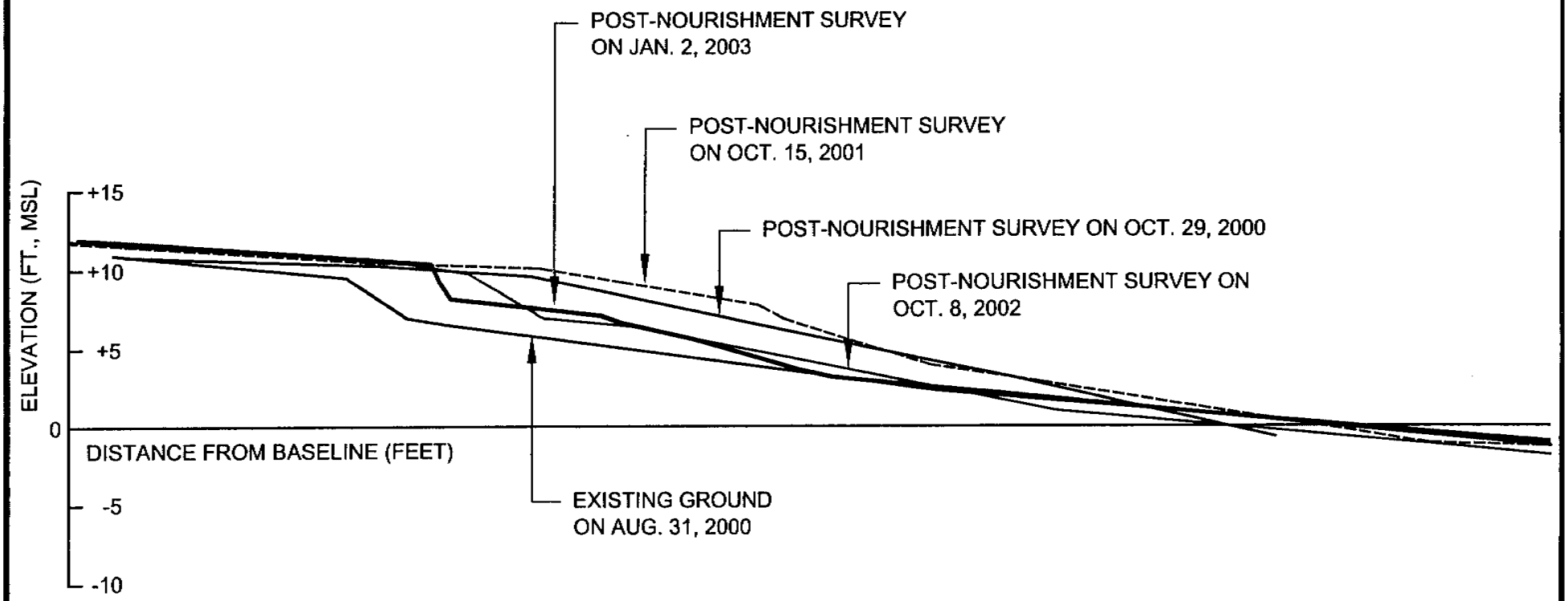
West Cobble Nourishment Profile - Station 20+00

Source: Benner and Carpenter, Inc., October 2002

NOBLE CONSULTANTS, INC.

Figure 7



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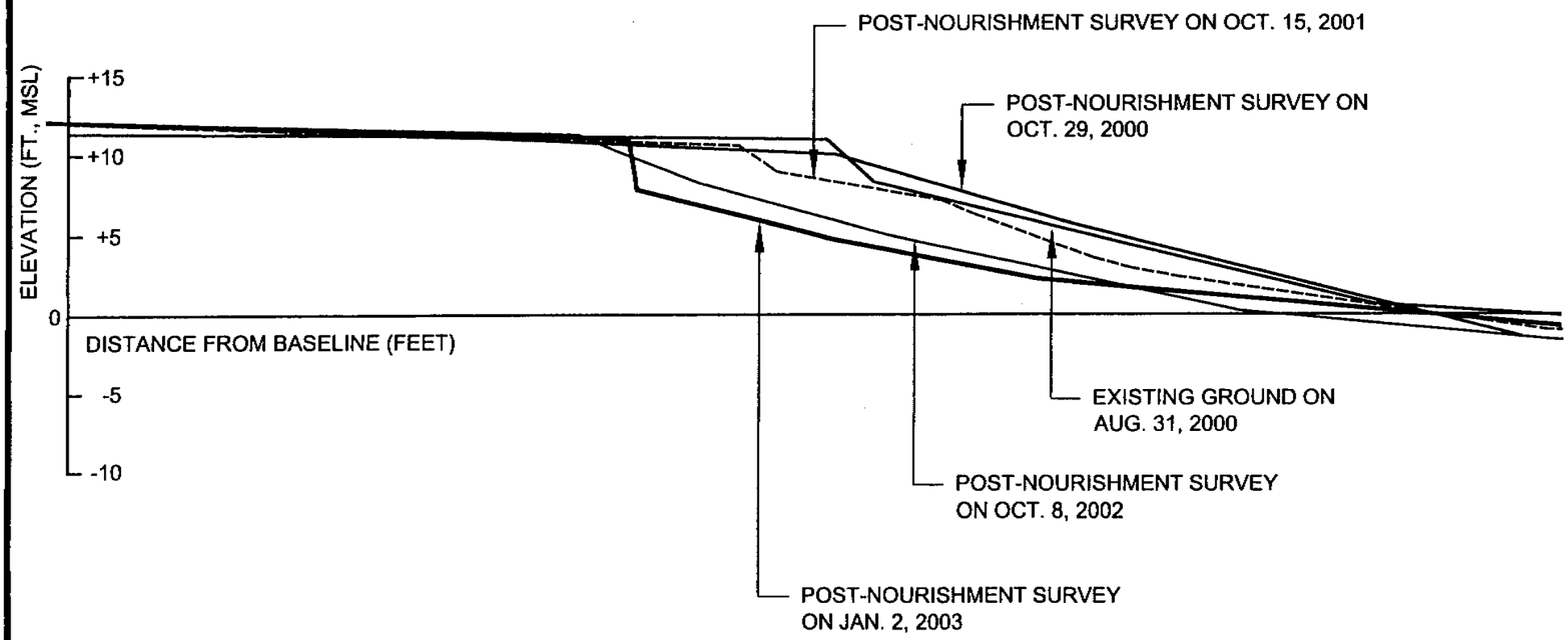
East Cobble Nourishment Profile - Station 22+00

Source: Benner and Carpenter, Inc., October 2002

NOBLE CONSULTANTS, INC.

Figure 8



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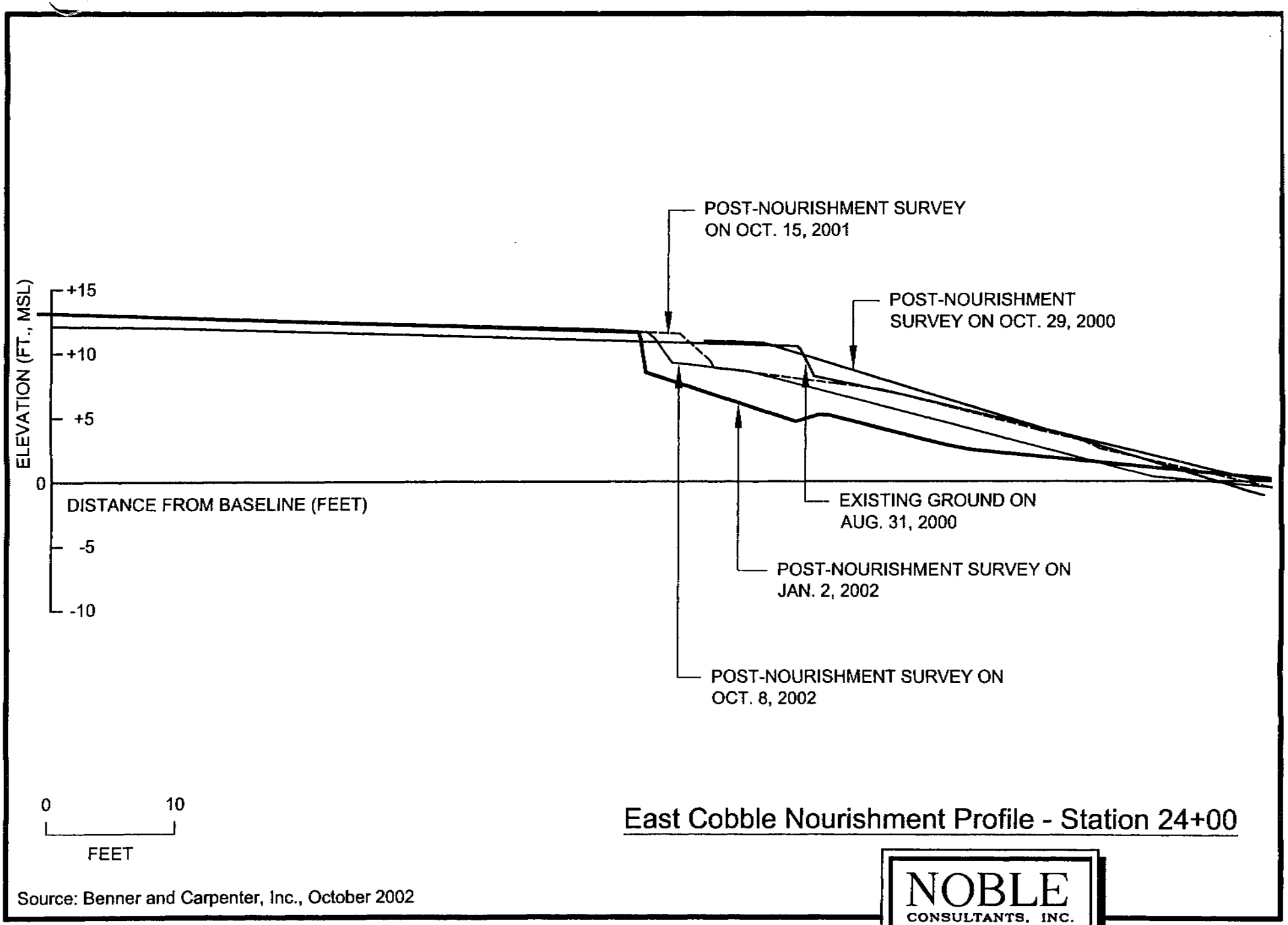
East Cobble Nourishment Profile - Station 23+00

Source: Benner and Carpenter, Inc., October 2002

NOBLE CONSULTANTS, INC.

Figure 9

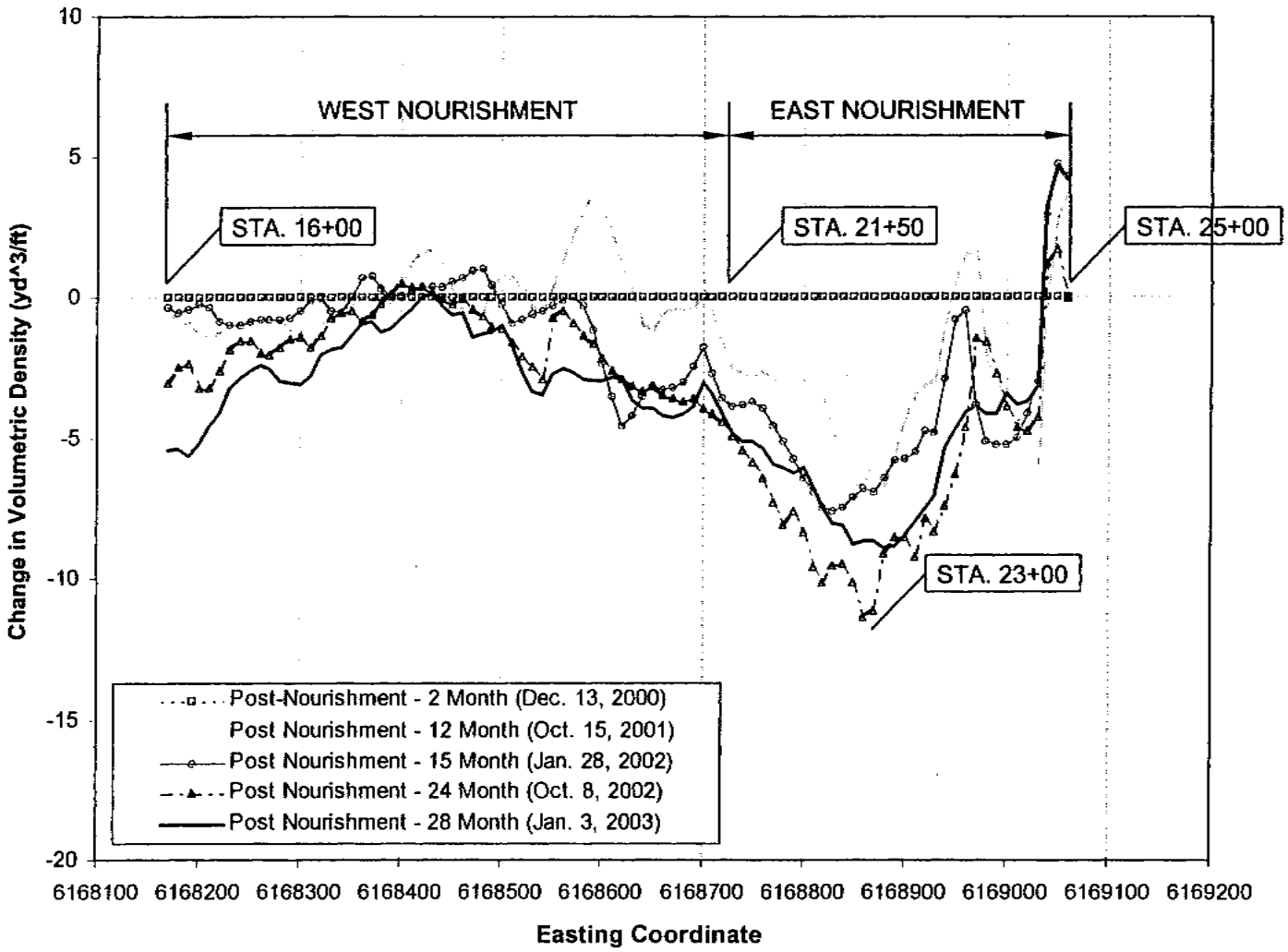


East Cobble Nourishment Profile - Station 24+00

Source: Benner and Carpenter, Inc., October 2002

NOBLE CONSULTANTS, INC.

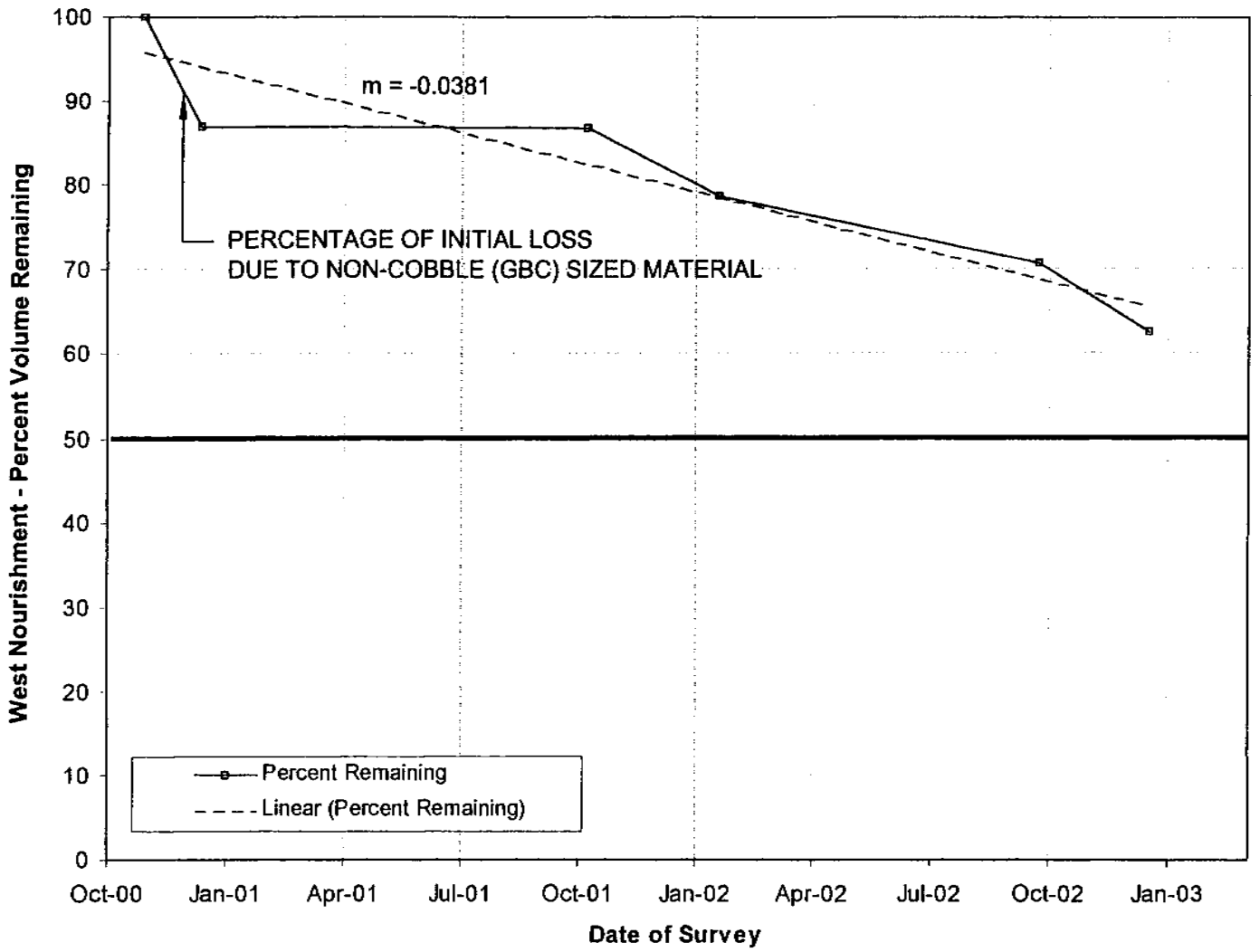
Figure 10



Surfers Point Cobble Nourishment - Volumetric Density Performance

NOBLE CONSULTANTS, INC.

Figure 11



West Cobble Nourishment - Percent Volume Remaining

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Figure 12