

COASTAL CONSERVANCY

Staff Recommendation
March 29, 2012

TIJUANA RIVER VALLEY HISTORICAL ECOLOGY STUDY

Project No. 12-008-01
Project Manager: Karen Bane

RECOMMENDED ACTION: Authorization to disburse up to \$440,000 to the San Francisco Estuary Institute for the Tijuana River Valley Historical Ecology Study.

LOCATION: Tijuana River Valley from U.S. International Border to the Pacific Ocean

PROGRAM CATEGORY: Resource Enhancement

EXHIBITS

Exhibit 1: [Project Location and Site Map](#)

Exhibit 2: [Project Letters](#)

RESOLUTION AND FINDINGS:

Staff recommends that the State Coastal Conservancy adopt the following resolution pursuant to Sections 31111 and 31251-31270 of the Public Resources Code:

“The State Coastal Conservancy hereby authorizes the disbursement of up to four hundred forty thousand dollars (\$440,000) to the San Francisco Estuary Institute (SFEI) to prepare the Historical Ecology Study (the Study) of the Tijuana River and Estuary. Prior to the disbursement of any Conservancy funds, SFEI shall submit for review and approval of the Executive Officer of the Conservancy a work program and budget, and the names and qualifications of any contractors that it intends to employ in the Study.”

Staff further recommends that the Conservancy adopt the following findings:

“Based on the accompanying staff report and attached exhibits, the State Coastal Conservancy hereby finds that:

1. The proposed project is consistent with the current Project Selection Criteria and Guidelines.
 2. The proposed project is consistent with Chapter 6 Sections 31251-31270 of Division 21 of the Public Resources Code, regarding enhancement of coastal resources, and with Section 31111 of the Public Resources Code regarding preparation of plans and feasibility studies.
 3. The proposed project is identified in several Local Coastal Programs as requiring action to resolve existing or potential resource protection problems.
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4. The San Francisco Estuary Institute is a nonprofit organization existing under section 501(c)(3) of the United States Internal Revenue Code, and whose purposes are consistent with Division 21 of the Public Resources Code.”

PROJECT SUMMARY:

Staff recommends that the Conservancy authorize the disbursement of up to \$440,000 to the San Francisco Estuary Institute (SFEI) for the Tijuana River Valley Historical Ecology Study (the Study). SFEI, in collaboration with the Tijuana River National Estuarine Research Reserve (TRNERR) and the Southern California Wetlands Recovery Project (WRP), will synthesize historical ecological, hydrological, and geomorphic data to reconstruct conditions of the Tijuana River Valley prior to major modification and produce an illustrated technical report describing the findings and implications for sustainable wetland restoration and management.

Recent work indicates that historic ecology data can be invaluable information for designing sustainable, adaptive restoration projects. Historic ecology investigations are not intended to dictate a return to the past since coastal ecosystems have been significantly altered and will continue to transform with predicted climate changes,. Rather, knowledge about how systems naturally performed prior to major modification provides clues to how restoration and management of our remaining resources may be the most resilient and sustainable. For example, the historic ecology investigation in Ventura County revealed a habitat type that was no longer present but, when incorporated into the restoration design, would improve the ability of the Ormond Beach Wetlands to migrate with sea level rise and indicated a different alignment for certain geomorphic features. Not only will this revised restoration design be more sustainable and resilient to climate change, but also, it turns out, will be at a lower cost to implement and maintain.

The Tijuana River Valley is recognized as an estuary of national and international importance; therefore, it is critical that ongoing projects benefit from the insight possible from an historic ecology investigation. Data collection will take advantage of the broad array of archival sources available that describe the former character of the area, including Spanish-era documents, early American surveys, landscape and aerial photography, and cartographic records. Given the important and unique bi-national setting of the Tijuana River Watershed, to the extent allowed by available data, SFEI will also assess historical conditions for the downstream-most portion of the river valley as it extends into Tijuana, Mexico. Products will include a detailed map of historical habitat patterns in the Tijuana River Valley and a report describing ecological and hydrogeomorphic gradients and associated drivers (e.g., flow patterns, riparian community distribution, changes in channel plan form and shoreline location at the river mouth, and estuarine conditions such as lagoon closure dynamics and seasonal variations in salinity). The overarching goal of this process is to piece together the complex story of the early Tijuana River Valley, using historical clues to gain perspective on both the landscape-scale patterns and local variability expressed by the system to guide effective restoration and minimize project implementation and maintenance costs.

The products will provide multiple benefits. First, the Study will inform multiple restoration and management projects in the Tijuana River Valley. This will be particularly relevant for the implementation of the Tijuana River Valley Recovery Strategy, which was developed by the

Tijuana River Valley Recovery Team and was recently endorsed by the San Diego Regional Water Quality Control Board. The Valley is the focus of a binational collaboration to manage sediment, trash and flooding and restore the river and estuary. While this work has been ongoing for decades, the formation of the Tijuana River Valley Recovery Team has galvanized the public owners and managers to take a holistic approach across jurisdictions. The Study will provide a foundation as the members continue design of estuary restoration, embark upon restoration and management of the braided river and valley-wide sediment management to address sedimentation in the valley and erosion of the barrier beach. This project will provide a landscape-scale understanding of historical ecological conditions and hydrological dynamics in this important watershed, creating a framework in which scientists and managers may contextualize current conditions and envision creative options for future restoration and management.

Second, historical ecology data can also serve as a powerful place-based education and outreach tool, serving to communicate the history and importance of the river valley to the broader community and furthering discussion about the future of the system. In particular, these data are an important component of community member involvement on both sides of the U.S.-Mexico border. Since the story of the river precedes and thus transcends the border, historical ecology findings may be used as a tool to conceptualize the river as an ecological whole, helping forge cross-border partnerships and collaborations.

Third, as the southwestern-most watershed in California, it also provides a valuable opportunity for understanding the natural dynamics of low-rainfall coastal systems, providing an important reference point for climate change adaptation strategies in other parts of the state.

Finally, the Study adds to a suite of historic ecology investigations in other major coastal wetlands in Southern California, which the agency members of the Southern California Wetlands Recovery Project want to integrate with contemporary and projected, future conditions of wetlands in a framework for setting regional and project-specific restoration goals. This endeavor has been proposed in an application to the NOAA National Estuarine Research Reserve Science Collaborative (as a partnership between TRNERR, SFEI, and the Southern California Coastal Water Research Project).

SFEI is a nonprofit organization established by a broad range of public and private organizations to fill the niche between environmental science and environmental management/policy. SFEI is a center for developing new tools and methods for environmental assessment for use throughout the state. Over the past 12 years, SFEI has pioneered the use of historical ecology using new techniques for historical research, analysis and mapping to help both natural resource managers and the broader public to understand landscape changes in the San Francisco Bay Area and, increasingly, coastal California.

Site Description: The Study is focused on the western-most portion of the Tijuana River Watershed where the Tijuana River and its tributary drainages flow for the final time across the U.S.-Mexico International Border and into the Pacific Ocean. It is the only estuary in Southern California with its historic extent entirely in public ownership; this means that it has the space to migrate and adapt to climate change impacts well beyond 2100. It has been recognized as an estuary of national and international importance (International Ramsar Convention on Wetlands 2005) for

its relatively intact wetland habitat, support of species of concern, and conservation of threatened ecological communities. The Tijuana River National Estuarine Research Reserve alone provides habitat for nine federally listed bird species, including the California least tern, salt marsh bird's beak, and the Belding's Savannah sparrow. It also provides substantial recreational opportunities to the public. The Reserve and the TRVRP provide an integrated network of trails for residents from inland communities to access the river and beach. Significant work has been and continues to be done to eliminate and control invasive plants, sediment and trash.

Project History: The Conservancy has invested approximately \$25,000,000 in the Tijuana River Valley and Estuary since 1980. In the Tijuana River National Estuarine Research Reserve, the Conservancy's involvement has progressed from an acquisition program, which added 383 acres of private inholdings to the Reserve, to a restoration program, which included Oneonta Slough in 1997, 20-acre Model Marsh in 2000, launch of an invasive plant control program in 2001, Goat Canyon Basins in 2006, feasibility study for restoring the 250-acre southern arm in 2008, and an ongoing study of fine grained sediment disposal in the surf zone. In the Tijuana River Valley Regional Park, the Conservancy has assisted with acquisitions, the Habitat and Trails Plan and an update of the Reclamation Plan for the Nelson Sloan Quarry.

With partners in Mexico, the Conservancy has supported efforts to control wastewater, sediment and trash such as EcoParque in 1991 (a low-energy system that cleans wastewater generated by 10,000 people, about 900,000 gallons a day, reuses it to irrigate landscaping and generates finished compost in high demand by area farmers) and a watershed diagnostic of Laureles Canyon in 2006, which has guided community-based source control projects and urban policy changes implemented with significant investment from local, state and federal agencies in Mexico. Conservancy staff continues to collaborate with these partners through the Tijuana River Valley Recovery Team convened in 2007 by the San Diego Regional Water Quality Control Board.

The proposed Study will inform the ongoing projects and possible future ones receiving the Conservancy's technical and financial support. This project will build on the *Historical Wetlands of the Southern California Coast – An Atlas of US Coast Survey T-Sheets, 1851-1889* (Atlas), produced last year with Conservancy funding, which provided new information about Southern California coastal wetlands, indicating that historical wetland types and distributions were in some cases quite different from previous assumptions and demonstrating that this information can be directly useful to decision-making about coastal wetland restoration. It will extend the detail of the Atlas over a broader period of time and inland from the immediate coastline through more intensive local studies. It will be consistent with the approach developed in previous Conservancy projects such as Ventura County Historical Ecology Study, the Ballona Creek Historical Ecology Study and the North San Diego County Lagoons Ecology Study. These projects are directly benefiting major Conservancy and other agency-funded restoration projects such as the Santa Clara River Parkway, Ormond Beach, Ballona Wetlands, and San Elijo Lagoon projects.

PROJECT FINANCING

Coastal Conservancy	\$440,000
<u>TRNERR (proposed)</u>	<u>\$50,000</u>
Total Project Costs	\$490,000

The anticipated source of Conservancy funds will be the fiscal year 08/09 appropriation of the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 (Proposition 84). This funding may be expended, in accordance with the Conservancy’s enabling statutes, “for the protection of San Diego Bay and adjacent watersheds” as specified in section 75060(f) of the Public Resources Code. "San Diego Bay and adjacent watersheds" includes all coastal and bay watersheds within San Diego County. (Pub. Res. Code § 75072.6) Consistent with Proposition 84, this Study will provide information necessary to protect the beaches, bays and coastal waters of the San Diego Bay and County for future generations. (Pub. Res. Code § 75003(d)) As discussed below, the project is consistent with Chapter 6 of Division 21.

CONSISTENCY WITH CONSERVANCY’S ENABLING LEGISLATION:

The proposed authorization will help to accomplish the objectives of Chapter 6 (Sections 31251-31270) of Division 21 of the Public Resources Code, by facilitating the identification, prioritization, planning and implementation of wetland restoration and enhancement opportunities in coastal southern California.

Pursuant to Section 31251, the Conservancy may award grants to nonprofit organizations for the purpose of enhancement of coastal resources through corrective measures that will enhance the natural and scenic character of identified coastal resource enhancement areas. Pursuant to Section 31111, the Conservancy may award grants to nonprofit organizations for planning and feasibility studies that will implement provisions of Division 21. The proposed grant to SFEI is consistent with these authorities because the Study will aid in the future restoration of Tijuana River and its estuary, a coastal resource enhancement area.

Section 31251.2.(a) enables the Conservancy to fund projects that are partly outside the coastal zone in order to enhance coastal resources within the coastal zone. The proposed Study will gather and synthesize data about the Tijuana River watershed that explains the biological and physical processes within the Tijuana River Valley. The information may inform enhancement projects in Mexico and the U.S. that will enhance the “natural and scenic” character of the Tijuana River Valley which is largely within the California Coastal Zone.

Section 31253 permits the Conservancy to provide up to the total cost of any coastal resource enhancement project. The amount of funding provided for this project shall be determined by the total amount of funding available for coastal resource enhancement projects, the fiscal resources of the applicant, and the urgency of the project relative to other eligible coastal resource enhancement projects, and the application of other factors prescribed by the Conservancy for the purpose of determining project eligibility and priority in order to more

effectively carry out the provisions of this division. The amount of Conservancy funding for the Study is appropriately based on the cost of previous historical ecology studies, the project's large geographic scope, the detailed data gathering and interpretation process, and the importance of the information for other Conservancy restoration projects.

CONSISTENCY WITH CONSERVANCY'S 2007 STRATEGIC PLAN GOAL(S) & OBJECTIVE(S):

Consistent with **Goal 5, Objective A** of the Conservancy's 2007 Strategic Plan, the proposed project will assist in the development of restoration plans for the Tijuana River and the Tijuana Estuary.

CONSISTENCY WITH CONSERVANCY'S PROJECT SELECTION CRITERIA & GUIDELINES:

The proposed project is consistent with the Conservancy's Project Selection Criteria and Guidelines, last updated on November 10, 2011, in the following respects:

Required Criteria

1. **Promotion of the Conservancy's statutory programs and purposes:** See the "Consistency with Conservancy's Enabling Legislation" section above.
2. **Consistency with purposes of the funding source:** See the "Project Financing" section above.
3. **Support of the public:** The project is supported by local stakeholders, land managers, and resource agencies (see Exhibit 2). The project will also generate substantial public interest, engagement, and education by including public participation in interviews and local presentations.
4. **Location:** The proposed project would be located partially within the coastal zone of the cities of Imperial Beach and San Diego.
5. **Need:** The Conservancy has provided leadership in the area of historical ecology and the application of historical information to contemporary projects. The project is unlikely to succeed without Conservancy funding, despite substantial interest among many agency staff. Opportunities to take advantage of supplemental federal funds would also be lost.
6. **Greater-than-local interest:** The proposed Study will inform sustainable, resilient restoration and management of an estuary of national and international importance (International Ramsar Convention on Wetlands 2005). Tijuana River Estuary is the only estuary in the Southern California Bight with its historic extent publicly protected such that it may be resilient well beyond 2100 in the face of climate change. Also, the Study will provide an important reference point for climate change adaptation strategies in other parts of the state by documenting the natural dynamics of a low-rainfall coastal system in the southwestern-most watershed in California.
7. **Sea level rise vulnerability:** The downstream-most portion of the project area is vulnerable to sea level rise. The proposed project will provide information directly applicable to

estuarine management with anticipated sea level rise, for example by identifying the surfaces occupied by distinct habitat types, historical sources of sediment, and temporal dynamics.

Additional Criteria

8. **Urgency:** To be most effective, the Study should take place in conjunction with the restoration planning already underway so it is important that the Study begins soon.
9. **Resolution of more than one issue:** The Study will provide information to help address local and regional wetland habitat distribution, water quality issues, and climate change adaptation.
12. **Innovation:** The Historical Ecology Program of SFEI is working with geomorphologists and historical researchers to transform the science of wetland restoration using new historical research, analysis and mapping techniques to reveal the ecology and morphology of rivers and wetlands before they were changed from anthropogenic forces.
13. **Readiness:** SFEI is ready to begin work immediately.
14. **Realization of prior Conservancy goals:** See “Project History” above
17. **Vulnerability from climate change impacts other than sea level rise:** The project will help implement a number of adaptation strategies of the Conservancy’s Climate Change Policy by developing an understanding of how low-rainfall, high-sediment coastal wetlands naturally supported coastal wetland functions. This information will support innovative wetland restoration designs (4d) that use local sediment supply (4b) and living shoreline elements (4n), with transitional zones for wetland migration and planned retreat (4c). In the absence of this fundamental research into the relationship between California coastal wetlands and local climatic controls (5), current projects will not have access to these new concepts and approaches.

COMPLIANCE WITH LOCAL COASTAL PROGRAMS:

The City of San Diego’s Tijuana River Valley Local Coastal Program Land Use Plan (1999) states that “it shifts the primary land use emphasis to preservation, enhancement and restoration of the natural features of the area, while still allowing for limited recreational and agricultural use.” The proposed project is consistent with the Plan because it will provide information essential to manage and restore the Valley based upon the natural processes and resources historically present.

The City of Imperial Beach General Plan and Local Coastal Plan (updated October 2010) LCP states, that “[t]he City recognizes and supports the importance of the Tijuana River Natural Estuarine Research Reserve both for its ecological and open space values” and intends to “[a]ssist in the implementing of the Estuaries Resource protection program.” Some of the actions the City anticipates include requiring buffer areas around developments near the estuary and controlling urban runoff. The proposed project is consistent with the Plan because it will provide new information about how the City can best contribute to protection of the Estuary.

COMPLIANCE WITH CEQA: The proposed Study is statutorily exempt pursuant to 14 California Code of Regulations, Section 15262 which states that a project involving only feasibility

or planning studies for possible future actions that have not yet been approved does not require the preparation of an environmental document under the California Environmental Quality Act (CEQA), but does require the consideration of environmental factors. The proposed Study consists of synthesizing diverse historical data about the coastal wetlands, analyzing their natural conditions and modification history, and producing an illustrated technical report describing the findings and implications for sustainable wetland restoration planning that has not been funded by the Conservancy (or approved by any other public entity). Furthermore, any wetland restoration plans and studies generated will consider environmental factors and will be subject to CEQA review and analysis prior to implementation. Upon approval, staff will file a Notice of Exemption for the project.