

Proposal to Conduct Services for
SAN DIEGO UNIFIED PORT DISTRICT
ENVIRONMENTAL SHORELINE EROSION PROTECTION DEMONSTRATION PROJECT

Submitted to:

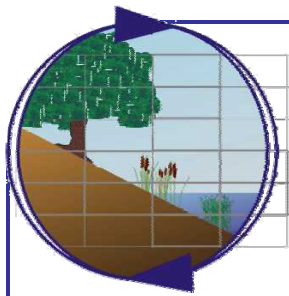
San Diego Unified Port District
Environmental Services Department
3165 Pacific Highway
San Diego, CA 92101
Attn: Eileen Maher

Submitted by:

Merkel & Associates, Inc.
5434 Ruffin Road
San Diego, CA 92123
Attn: Keith Merkel

May 4, 2009





Merkel & Associates, Inc.

5434 Ruffin Road, San Diego, CA 92123

Tel: 858/560-5465 • Fax: 858/560-7779

e-mail: associates@merkeline.com

M&A #09-037-01

May 4, 2009

Eileen Maher
San Diego Unified Port District
Environmental Services Department
3165 Pacific Highway
San Diego, California 92101

**Proposal to Conduct Services for
SAN DIEGO UNIFIED PORT DISTRICT
ENVIRONMENTAL SHORELINE EROSION PROTECTION DEMONSTRATION PROJECT
Environmental Projects Benefiting San Diego Bay**

Dear Ms. Maher:

This proposal has been prepared by Merkel & Associates in response to your RFP for projects benefiting San Diego Bay that would be beyond compliance and mitigation and thus could be funded through the Port's environmental fund. The proposed project is the restoration of eroding shorelines in a demonstration of technologies that would provide for increased habitat value associated with the stabilization of shorelines. This proposal strongly supports some of the pivotal objectives of the San Diego Bay INRMP by providing test examples of softened shoreline conditions that could be used in retrofitting existing armored shores or in lieu of standard armoring methods where future protection of shorelines is required. The proposal also includes techniques to protect existing marshlands from erosion due to wave environments in the bay that are no longer balanced by the inputs of fine sediments from the watersheds and which stand to be exacerbated with global warming concerns.

This grant request is for \$193,353 from the environmental fund with a overall total cost of \$257,804. The 25% cost difference would be made up by matching in-lieu services provided by Merkel & Associates. The project would be conducted over a 5-year period that includes, one year for design, environmental, and permitting, a second year for construction and establishment, and a final three years for performance monitoring and assessment. Work would be conducted under my direct oversight as the project principal and lead ecologist for the work. M&A would be supported by the coastal engineering expertise of TerraCosta Consulting Group with Mr. Walt Crampton serving as the project engineer for the demonstration projects.

Work would be conducted at four sites selected for their suitability for the project and their lack of encumbrance in obligatory shoreline restoration needs. A total of eight shoreline treatments are to be completed at these sites.

We look forward to your review and hope to be able to provide these necessary demonstration services to the Port and its Environmental Committee. If you have questions, please contact me at the above address and phone or by email at kmerkel@merkeline.com.

Sincerely,

Keith W. Merkel
Principal Consultant

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I. INTRODUCTION

Merkel & Associates, Inc. (M&A) is a certified Small Business Enterprise (SBE) and a California Public Utilities Commission-certified Woman Business Enterprise (WBE). M&A is a small environmental consulting firm based in San Diego that specializes in biological resources and regulatory issues. M&A provides its clients with a full range of biological capabilities in terrestrial, freshwater aquatic, and marine environments and has worked with federal, state, and local agencies, other consulting firms, and private enterprise.

With offices in California, Oregon, and Hawaii, M&A operates with a staff of over 30 employees distributed across three technical divisions: marine and aquatic resources, terrestrial biology, and environmental restoration. M&A is headquartered in San Diego and over the many years of providing environmental services, the firm has developed a real corporate stewardship interest in the health and well being of the coastal wetlands of San Diego and has a long history with investment in the protection and improvement of the ecological health of Mission Bay and San Diego Bay, as well as the various tributaries to these environments.

The firm has been instrumental in pioneering monitoring programs for eelgrass, designing and implementing coastal wetland and dune habitat restoration projects, and supporting shoreline stabilization projects using new methodologies. These include such project designs as the armorflex protected West Ski Island atoll in Mission Bay with an internal beach, the lowered gradient beach at South Grand Caribe Island, and the wave protection dike for the D-Street Marshlands that protect this mitigation site from the Sweetwater River Channel wave, flow, and wake environment. In addition, M&A has been an aggressive contributor to erosion remediation in fluvial systems using bio-engineering and modified engineering solutions for biological benefits. This work has led to the firm

becoming well known for soft solutions to stream erosion issues.

With the firm's demonstrated interest in San Diego Bay and building on past work with shoreline stabilization, M&A sees the next critical need in pushing the INRMP agenda forward is the need for technology developments and demonstrations with respect to enhancing the ecological values of protected shorelines. As a result, Merkel & Associates is pleased to submit this proposal to the San Diego Unified Port District (District) to design, permit, implement, and monitor pilot environmental shoreline retrofit demonstration projects around San Diego Bay in support of the San Diego Bay Integrated Natural Resources Management Plan (INRMP) objectives of enhancing existing armored shorelines and implementing more environmentally suitable shoreline protections against erosion where practical.

M&A has committed to contributing 25% of the overall cost of the project work in the form of in-lieu services for design, permitting, environmental documentation, and monitoring over the project term. M&A will also be seeking to obtain product donations from manufacturers to limit the material costs for the program.

It is the goal of M&A to develop and demonstrate cost effective, functionally proven, ecologically beneficial shoreline alternatives to standard shoreline armoring methods for application in San Diego Bay. The proposed work is specifically intended to target lower energy bay environments rather than high-energy environments. A separate and much larger undertaking to perform pilot efforts on open bay shorelines facing deeper water environments would remain unaddressed by this project. However, it is anticipated that the present effort would kick-start the larger effort requiring more significant partnerships between the major land stewards and interest organizations.

II. PROJECT NARRATIVE

PROJECT NEED

Many of the key objectives of the San Diego Bay INRMP revolve around improving the ecological resource values of the shoreline interface area, while maintaining the intended protection of the economically and sometimes ecologically valuable adjacent areas. The INRMP calls for development of incentives to retrofit existing shoreline environments with more environmentally friendly and productive alternatives. The plan also calls for consideration and use of improved shoreline protection alternatives that favor native species and habitat benefits. However, nowhere in the Bay have environmental shoreline stabilization methods been proven and few have been performed on the eastern Pacific coastline where large tide ranges result in increased design constraints. As a result, it will be difficult for project proponents and engineers to embrace new shoreline protection methods where data are not available to support their effectiveness. For this reason, absent successful demonstrations of effectiveness of such treatments, they will never be embraced as an alternative to classical rip rap and bulkheads.

Elsewhere in the INRMP, objectives are established for protecting existing coastal wetlands and expanding these resources where possible. However, coastal wetlands fringing the bay are diminishing at a rapid rate due to shoreline erosion derived principally from wind waves and vessel wakes. Absent the historic sediment influxes from coastal drainages, these marshland losses are irretrievable and will continue to result in significant wetland losses into the future. Protection against erosion of these bay marsh interface areas is essential if existing wetlands are to be sustained. However, such protections must be designed to integrate well with the natural landscape.

This proposed project would begin to address the need for sound demonstration projects of

various shoreline stabilization projects designed to curb shoreline erosion while providing improved interface habitat values. The program proposed here is the first step towards achieving the goals of the INRMP regarding shoreline protection in an ecologically friendly manner and retrofitting of shorelines to gain improved natural fringes. It is important to note that this effort is intended to explore protection option in relatively benign environments where wave environments are not typically severe. This effort would not address the more energetic open areas of the Bay where even greater need for demonstration projects exists. However, the present proposed action would serve as a logical springboard to this larger effort and would explore options that may be suited to applications at over 30% of the Bay shoreline.

PROJECT SITES AND ACTIVITIES

To explore various shoreline treatment options, several areas have been identified along the Bay that support conditions that are well suited to implementation of pilot projects. These areas are defined as being controlled by the Port and not within commercial lease areas, lacking significant infrastructure above the shorelines, suffering from moderate to significant wave or vessel wake erosion, or having been armored with a classical armoring methodology that could be retrofitted.

Sites meeting these criteria include the western and southern shorelines of South Grand Caribe Isle, the northwest D-Street Fill fringing marsh along the Sweetwater River Flood Control Channel, the inside crescent of the Coronado Golf Course in Glorietta Bay, and levees of the Chula Vista Wildlife Island.

The sites would be treated using a variety of methods that hold promise for shoreline protection applications. These include some that have been employed elsewhere with success in somewhat differing applications, as well as some that have not been applied previously. The projects are intended as demonstration

projects, however, they remain experimental in nature and thus sites have been identified where a failure of a particular method would do no



San Diego Bay Shoreline Study Site Distribution

harm with respect to lost upland or risks to infrastructure. Projects are intended to be paired with comparable natural shoreline areas and monitored to assess the performance of the treatment, for 1) physical factors including protection against erosion, scour impact at transitions, and wave reflectivity; 2) ecological factors, vegetation development, invertebrate and fish community presence, and bird utilization; and 3) efficiencies of use, including initial capital cost, footprint area as a function of transition height (toe to top), and maintenance requirements.

For those treatments that prove suitable for broader application, general technical drawings will be prepared to provide guidance for separately engineered designs.

The proposed work is anticipated to require completion of an environmental document, contemplated as a CEQA negative declaration or exemption through the Port. It is also anticipated that coastal permitting will be required through the Port for the tests. Finally,

the project will require issuance of a Corps permit under section 404 of the Clean Water Act and section 10 of the Rivers & Harbors Act. The sites and treatments have been selected in a manner that would not be expected to result in any detriment to existing environmental conditions. However, failed treatments would become a potential blight and should be removed. As a result, this proposal incorporates a request for funds to subsidize removal of some treatments, should this be determined to be necessary. If no removals are required, the funds would be used to expand effective treatments where they provide clear benefit to do so.

The proposed work is to be performed over a 5-year period. The schedule for work includes a period of one year for completion of site survey, project designs, environmental documentation, and permitting. During the second year, work would be undertaken to install the shoreline treatments, conduct planting where applicable to the treatments, and establish the monitoring program. During this year, the process for site preparation and implementation will be documented and treatment specific costs will be developed. An installation report will be completed for this phase of work. The monitoring program will extend for a period of three years to assess the conditions of the shoreline as discussed above. Monitoring will be performed quarterly to capture seasonal changes in site conditions, recognizing that different conditions may exist in the biological as well as physical environments during these periods. Monitoring reports will be prepared at the end of each monitoring year.

The proposed work is to be undertaken by the staff of Merkel & Associates and TerraCosta Consulting Group (TCG). Merkel & Associates has committed to providing in-lieu services equaling 25% of the overall project budget. This committed match may be further offset by obtaining project sponsorship in the form of material donations from various geosynthetic product manufacturers whose products are intended to be used in the demonstration

ENVIRONMENTAL SHORELINE EROSION PROTECTION DEMONSTRATION PROJECT

projects. Because these are generally new applications of existing products, it is anticipated that manufacturers may donate materials since successful demonstrations may result in potential market expansion in the future.

The pilot demonstration project proposed here would provide a big step towards the reality of softening the shoreline edges of San Diego Bay and there are already identified immediate applications where such opportunities could be integrated as leases are renewed and shoreline repairs are undertaken. As a result, it is intended that the project be well advertised and presentations be made in a number of forums where information exchange can best occur. For the project, it is intended that the following deliverables be prepared and presented as is most appropriate:

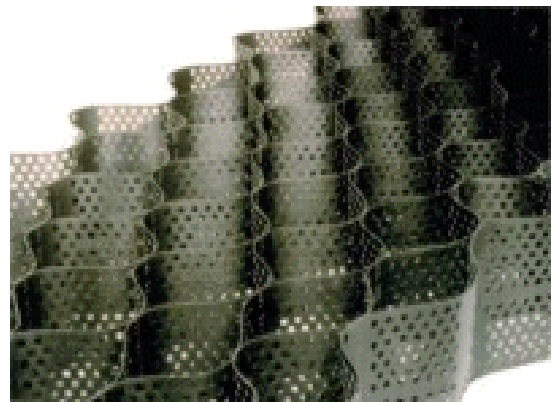
- Quarterly progress reports will be prepared and provided to the Port;
- A design presentation will be made to the Port staff outlining the recommended treatments for different areas and the underpinning logic to their use;
- An implementation report with photos and a presentation of the report will be made to the Committee;
- An annual report will be prepared at the end of each monitoring year;
- A draft final report will be prepared and submitted to the Port staff;
- A final report with all required copies will be prepared and submitted after receipt of comments on the draft;
- A final presentation on the results will be prepared and presented to the Committee or Board as requested by the Port staff, and;
- A display exhibit will be prepared for presentation in the Port lobby or at exhibitions including outreach and technical meeting opportunities.

The specific treatments to be employed in the demonstration project include:

- 1) the use of open cellular concrete mats that would be placed across the high shore to low shore interface zone to trap and hold sediment so as to allow for plant growth and greater sediment retention. A product like ArmorFlex, or ArmorLoc would be used;



- 2) the use of geoweb type products that result in tight vertical cells divided by geosynthetic fabric would be used in a manner similar to that of the cellular concrete mats. This product may be used as a sloping confinement or a stacked slope structure depending upon gradients and energy concerns. The cells would then be planted or filled with suitable soils to support benthic communities and bird foraging;



- 3) the use of variable slope gradients across the intertidal with beach cobble or containment stone to dissipate energy at critical shore zones. This alternative may be used in conjunction with planting and geotextile elements to develop a suitable interface zone. It may also be combined with lowering the elevation of adjacent lands to improve actual shoreline gradients. In practice this may be performed in developed areas with limited space by incorporation of a seawall bulkhead at the high splash zone elevations thus lowering the slope gradient for the shoreline.

The individual treatments to be employed will be tailored to the specific needs of the four sites during the design period. During this period, various combinations and multiple treatments will be selected. It is anticipated that two demonstration project treatments and an untreated area will be used at each of the sites for a total of eight modified shoreline areas. The recent completion of shoreline armoring along the golf course in Glorietta Bay will allow the testing of treatments to modify existing armored shorelines for environmental improvements. The other sites are presently eroding shores that would benefit from protection; however, their continued failure does not pose an immediate risk of unacceptable degradation.



South Grand Caribe Isle shoreline erosion scarps



Chula Vista Wildlife Island levee erosion



Glorietta Bay shoreline at Coronado Golf Course



D-Street Marsh erosion along Sweetwater Channel

III. QUALIFYING EXPERIENCE

M&A has a proven track record on Port District projects and has provided environmental resources support to the District under multiple contracts. The firm has considerable experience managing and implementing minor and major projects focused at restoration or enhancement of coastal marine environments. In addition, the firm has considerable experience in completing bio-engineering work, including design and construction of such projects. This work has generally been performed in conjunction with TCG as the project engineers. TCG is well known for its experience with coastal shoreline protection projects including seawalls, revetments, and stable slope designs. TCG has conducted considerable shoreline design and geotechnical work within San Diego Bay and thus provides a depth of experience with the wave climate, soils and geotechnical conditions of the Bay, as well as design performance standards for San Diego Bay shoreline protection projects.

TCG has lead the efforts to develop natural looking seawall design using sculpted colored and stained erodible concrete. This work has been evolved to a standard for open coastal seawalls where aesthetics of the wall are a paramount priority. Working with M&A, large seawalls such as the one below the Point Loma Treatment Plant, have been designed to integrate ledges and overhangs to promote cliff nesting and roosting areas for seabirds.

Recent work that is particularly relevant to the present proposal and which has been performed by M&A in conjunction with TCG includes both shoreline erosion protection projects as well as watercourse bio-engineering projects. M&A's capacity and experience performing enhancement and restoration programs in the Port is also highlighted in this summary.

A-8 Anchorage Debris Survey and Debris Removal

Client: Ninyo & Moore/SDUPD

Contact: Eileen Maher (SDUPD)

Phone: (619) 686-6254

Work Period: January to September 2006

In January 2006, M&A performed surveys to search for and remove contaminated debris at the A-8 Anchorage site in San Diego Bay. Sidescan sonar was used to identify target areas that caused sonar returns during the survey.

Focused assessments were then performed at 152 of the target sites. Divers searched for, and identified, the items that caused the sonar returns. Divers described the debris items observed, giving special attention to any items that may have contained petroleum products or other contaminants.

Removal efforts resulted in the removal of an estimated 3,800 pounds of debris. Most of the items removed were known or believed to have contained petroleum products or other contaminants. Removed items included batteries; a portable fluid storage container; fuel, propane, and fluid storage tanks; outboard and inboard engines; generators; and other miscellaneous debris.



Escondido Creek Watershed Erosion Inventory and Bio-engineering Stabilization Project

Client: Supplemental Env. Project (SEP) with Regional Water Quality Control Board

Contact: Mr. Frank Melbourn

Phone: (858) 467-2973

Work Period: 2006-present

In response to storm water erosion and sediment release from an active construction site in the Escondido Creek watershed, a private developer was fined by the Regional Board. The developer opted to support a settlement that incorporated a Supplemental Environmental Project (SEP) that provided real world value to the watershed through pursuits of an identification of erosion problems within the watershed, development of methodologies to rapidly assess the problems and a bio-engineering tool kit that could be employed to take corrective actions differing from hard engineering typically associated with channel lining. In addition, the SEP included selection of an eroding area to perform a pilot demonstration project of the methods.

M&A, in conjunction with the San Elijo Lagoon Foundation identified the most erosive location on the creek for completion of the test project. This site included an 18-foot high eroding scarp on a sharp bend in the creek. During design, it was discovered that the City of Escondido's sewer outfall was located only a few feet behind and half way up the scarp face. This posed a significant risk to the City and an emergency repair was required. The City joined into the M&A and TCG demonstration project and provided some supplemental funding and oversight, taking responsibility for protection of their pipeline. The project was modified slightly to provide the City the required comfort that the project would adequately protect their pipeline, while still allowing for the intended demonstration

of environmentally beneficial slope stabilization.

The project was designed, engineered, constructed and is being monitored by the M&A/TCG team. Early in the project's life, it has already been hit by two major storms that have eroded other segments of the creek but left the project unaffected. The project has rapidly provided riparian vegetation coverage on a bank that has been a significant source of sediment loading the San Elijo Lagoon for many years. The project is to be completed at the end of a 5-year monitoring effort.

**Bio-Engineering Stabilization of Severe Erosion
On Escondido Creek, San Diego County**



South Grand Caribe Isle Interim Restoration Plan.

Client: Anchor Environmental/SDUPD
Contact: Mr. Michael Whelan
Phone: (949) 347-2783
Work Period: 2005-2006

South Grand Caribe Isle is planned for a wetland restoration project by the Port and will serve as mitigation for bay fill projects in the future. While the work for South Grand Caribe restoration was pending funding and development of mitigation agreements, opportunistic needs for clean sand arose with the construction of the Cambell Shipyard habitat cap and the draft plans for restoration were revised to accommodate an interim borrow site project. As an element of this work the beach on the western boundary was addressed to remove a developed scarp that resulted in concentrating runoff and creation of erosion scours at the top of a 3-foot scarp. To remove this problem, the top elevation of the beach slope was lowered by two feet and the beach gradient at the upper edge of the site was flattened by pulling the slope back into the site in a manner that continued the natural beach slope. This work was performed in 2006 and has held without scarp development since that period.

South Grand Caribe Isle West Side Beach Scarp Remediation



West Ski Island Reconstruction Project, Mission Bay, San Diego

Client: City of San Diego Park & Rec. Dept.
Contact: Mr. Thomas Cartier
Phone: (619) 533-3054
Work Period: 1999-2000

Because the completion of shoreline projects is substantially demonstrated by longevity of the work an order M&A design project has been included in this experience section.

In response to erosion of West Ski Island due to boat wakes, the City of San Diego faced the decision to remove the island completely or save it. The island was determined to be important both recreationally and as an off-shore roosting area. To ensure that the island could be maintained with a viable beach that did not require maintenance, M&A reviewed the needs and designed a lagoon inside of the island and an island that was armored on the outside by cellular concrete mats (Armorflex). The interior of the island was dredged out and material was placed to create a crescent shaped atoll around a deeper lagoon with a gently sloping beach. The beach and entrance was oriented to the west to capture winds and wind waves, to maintain a healthy clean sand condition. The island was then planted with native dune vegetation. Over the past decade, the island has remained in its intended condition with eelgrass growing in the deeper lagoon, the beach being used recreationally, and the shoreline supporting night roosting by a variety of birds. No maintenance of the island or beach has been required since construction.



IV. OBJECTIVES OF GRANT PROPOSAL

The objectives of this grant proposal are to provide design, implementation, and monitoring services to implement demonstration projects for shoreline erosion protection that incorporate more ecologically beneficial characteristics in support of moving towards implementation of multiple objectives of the San Diego Bay INRMP, including:

- Seek an improvement in the habitat value of developed shorelines and marine structures and their functional contribution to the ecosystem;
- Support the development of a Shoreline Stabilization and Restoration Plan by providing techniques for adding habitat value to structures as they need to be replaced;
- Protect existing natural functions and arrest erosion and accretion problems around the Bay.

To accomplish these objectives, the proposed grant has established milestones for performance. These include the following:

- Complete site characterization and shoreline plans within 6-months of grant award;
- Complete environmental review and permitting of project within 12-months of grant award;
- Complete installation, planting, and establishment period within 24-months of grant award;
- Complete performance monitoring and assessment quarterly through 60-months of grant award.

The milestones outlined will be tracked with the submittal of reports and presentations described in the project narrative. The project work would be tracked and managed as a standard consulting services contract allowing for good auditability by the Port.

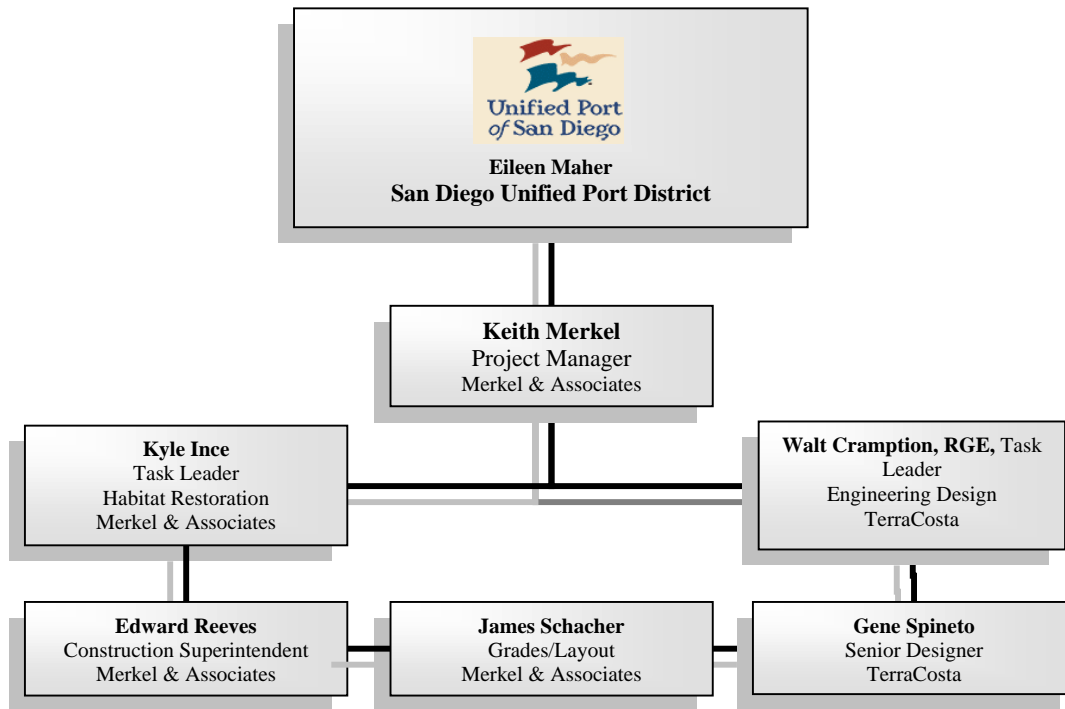
DATE OF PROPOSAL:

May 4, 2009

M&A #09-037-01

CLIENT: PORT OF SAN DIEGO PROJECT: ENVIRONMENTAL SHORELINE EROSION PROTECTION DEMONSTRATION PROJECT		TASK 1		TASK 2		TASK 3		PROJECT TOTALS	
		Project Design Env. Review Permitting		Project Implementation Services		Monitoring, Assessment Reporting			
		YEAR 1		YEAR 2		YEAR 3-5			
PART I DIRECT SERVICES									
ITEM	RATE	HRS	COST	HRS	COST	HRS	COST	HRS	COST
PROJECT PRINCIPAL ECOLOGIST (MERKEL)	218.00	56	\$ 12,208	40	\$ 8,720	48	\$ 10,464	144	\$ 31,392
PROJECT COASTAL/GEOTECH ENGINEER (CRAMPTON)	185.00	40	\$ 7,400	24	\$ 4,440	24	\$ 4,440	88	\$ 16,280
SENIOR BIOLOGIST (INCE)	107.00	120	\$ 12,840	80	\$ 8,560	96	\$ 10,272	296	\$ 31,672
SENIOR DESIGNER (SPINETO)	130.00	120	\$ 15,600	80	\$ 10,400	96	\$ 12,480	296	\$ 38,480
PROJECT COORDINATOR	94.00	32	\$ 3,008	24	\$ 2,256	24	\$ 2,256	80	\$ 7,520
FIELD SURVEYOR	82.00	40	\$ 3,280	40	\$ 3,280	48	\$ 3,936	128	\$ 10,496
CONSTRUCTION SUPERINTENDENT	82.00		\$ -	320	\$ 26,240	24	\$ 1,968	344	\$ 28,208
RESTORATION LABOR CREW (3-MAN CREW)	174.00		\$ -	320	\$ 55,680	24	\$ 4,176	344	\$ 59,856
TOTAL DIRECT LABOR		408	54336	928	\$ 119,576	384	\$ 49,992	1720	223904
PART II OTHER DIRECT COSTS									
ITEM		AMT	COST	AMT	COST	AMT	COST	AMT	COST
SURVEY EQUIPMENT LEASE	100.00	6	\$ 600	5	\$ 500	6	\$ 600	17	\$ 1,700
GEOTEXTILES/CONFINEMENT SYSTEMS/MATERIALS	2400.00	0	\$ -	8	\$ 19,200		\$ -	8	\$ 19,200
EQUIPMENT RENTAL/PLANT COSTS/DEBRIS DISPOSAL	500.00	0	\$ -	24	\$ 12,000		\$ -	24	\$ 12,000
PRINTING & REPRODUCTION	200.00	1	\$ 200	1	\$ 200	3	\$ 600	5	\$ 1,000
TOTAL ODCs			\$ 800		\$ 31,900		\$ 1,200		\$ 33,900
***GRAND TOTAL FOR 8 BEACH PLOTS ON 4 BEACHES**			\$ 55,136		\$ 151,476		\$ 51,192		\$ 257,804
MERKEL & ASSOCIATES LABOR CONTRIBUTION DEDUCTION FROM PROJECT TOTAL COSTS						25% REDUCTION		\$ 64,451	
REQUESTED PORT ENVIRONMENTAL FUND GRANT FUNDING								\$ 193,353	

VI. PERSONNEL



- **Keith Merkel (Merkel & Associates)
Project Manager**

Mr. Keith Merkel would serve as the project principal for this work. Mr. Merkel has over 25 years of professional experience and has coordinated, conducted, or assisted in more than 4,000 biological investigations performed for a broad range of public and private clients. Mr. Merkel is a hands-on principal and has served as a senior scientist for such projects as the Batiquitos Lagoon Enhancement Project Long-term Monitoring Program, the Marine Resources Inventory and Eelgrass Survey for Mission Bay, the Famosa Slough Enhancement Plan, the Oakland Middle Harbor Enhancement Project, and over 50 investigations, analyses, and restoration programs within San Diego Bay.

Mr. Merkel is recognized as an expert in coastal resource management and restoration and for his keen understanding of the interrelationships of biological, physical, and chemical processes that structure ecological systems. He has experience with marine and

aquatic habitat ecological studies and habitat enhancement programs in nearly every coastal bay and estuary system from the U.S./Mexican Border to Morro Bay, in addition to systems in central and northern California, Oregon, Washington, and Alaska. In addition, Mr. Merkel is respected as a technical leader in the biological and regulatory community, earning strong support from agency staff, environmental groups, and technical experts.

- **Walter Crampton (TerraCosta)**

Mr. Crampton has over 40 years of experience in soil and foundation engineering for a variety of projects, including providing geotechnical support for EIRs. His overall responsibilities encompass design phases to final construction, including specifications and bid documents. Mr. Crampton has been involved in numerous project designs for habitat restoration, including numerous project conducted for the Port of San Diego.

- **Kyle Ince (Merkel & Associates)
Restoration Manager**

Mr. Ince has 20 years of professional experience. He has a strong biological analysis and habitat restoration background. He has worked throughout southern California and has managed the design, construction, maintenance, and monitoring for the restoration of hundreds of acres of wetland and upland habitat at over 50 different sites. He has conducted considerable biological review and habitat mitigation for the Port of San Diego.

VII. SUBCONSULTANTS

The proposed work is to be undertaken by the staff of Merkel & Associates and TerraCosta Consulting Group (TCG), with TCG providing engineering design. This role is one that that has functioned seamlessly over many years of collaboration with M&A on various projects. Over the past 15 years, TCG has served as the design engineer for over 30 habitat restoration or sensitive area access and erosion protection projects lead by M&A. These have included large-scale restoration projects to serve multiple separate projects. Such collaborative design work with M&A has been conducted for San Diego County, Department of Public Works, City of San Diego MWWD, City of San Diego Park & Recreation Department, and the Port of San Diego.

VIII. NON-PROFIT STATUS

Not applicable

IX. APPLICANT DISCLOSURE

No citations for environmental violations from any regulatory agency within the last five years have been issued to Merkel & Associates or TerraCosta Consulting Group.

X. AGREEMENT

Merkel & Associates, Inc. accepts the Port agreement, including the indemnification and insurance clauses as stated in the RFP and is ready to execute the agreement.

XI. CONFLICT OF INTEREST

Merkel & Associates, Inc. is not currently performing services of any kind for any person or entity that would conflict with the services to be provided to the Port under this agreement. Further, should M&A be selected pursuant to the RFP, no services would be performed for any person on entity which would conflict with the services to be provided under the RFP.

XII. ADDITIONAL INFORMATION