SUMMARY OF SEDIMENT DISPOSAL OPTIONS

FOR RESTORATION OF THE

HUNTINGTON BEACH WETLANDS

Prepared for

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EXECUTIVE SUMMARY

Feasible sediment disposal options for the Huntington Beach (HB) wetlands are identified and potential order-of-magnitude costs are estimated and presented herein. Options include on-site reuse, and off-site placement or disposal. A soils investigation of existing information for all the marshes within the HB wetlands, a Phase I Site Assessment (a separate submittal), and a sediment sampling and testing effort for Talbert Marsh were conducted to identify existing sediment grain sizes and potential contamination of marsh sediments. These data were used to identify potential opportunities and constraints to sediment disposal and/or reuse.

Material within the unrestored HB wetlands is silts and clays in the upper layers to depths of 10 to 15 feet below ground in most areas, and sand in lower layers. The material is suitable for on-site reuse based on grain size. Material in bars in Talbert Marsh is beach sand and their removal is assumed to occur as part of restoration. The investigations indicate that sand within the flood bars in Talbert Marsh is ocean-derived and relatively clean of bacteria or other potential contaminants, and can therefore be reused on-site and/or placed on the beach or in the ocean as nourishment. Additional future testing should occur for permitting and final engineering design.

Five sediment reuse and/or disposal scenarios are considered and construction costs are estimated. Scenarios 1, 2 and 3 assume beneficial reuse of the sand at Talbert Marsh for fill on-site, beach nourishment, and nearshore discharge, respectively. Scenarios 4 and 5 assume the sand is disposed of offsite at an offshore dump site and an upland landfill, respectively. The least costly scenarios involve either on-site reuse or beneficial reuse on the beach or in the nearshore. Scenarios involving offsite disposal in the ocean or at upland landfills are the highest cost options.

Costs and quantities of material that may be excavated from within the marshes that are not yet restored have not been estimated because alternatives are yet to be identified. Costs for this type of earthwork will be estimated as part of alternatives analyses. It is assumed that earthwork within these marshes will likely be a balance of cut and fill. Generally, the costs for this type of earthwork are relatively low, comparable to or lower than the costs to remove sand from Talbert Marsh described in Scenarios 1 and 2.

Clearing Talbert Marsh of sand and reusing it for beach nourishment is the recommended option as it will accomplish the dual objectives of improving tidal hydraulics and habitat within the marsh, and will renourish the beach while minimizing project costs.

TABLE OF CONTENTS

TABLES

FIGURES

1.0 INTRODUCTION

Huntington Beach (HB) wetlands are a relic wetland area in the vicinity of the former Santa Ana Rivermouth. The wetlands have degraded over time due to impacts of development, infrastructure, refuse disposal, oil drilling, gas extraction and other activities on or adjacent to the site. Approximately 180 acres of the former larger wetland remain and consists of degraded salt marsh, seasonal ponds, and coastal dune habitat, and 25 acres of restored habitat at Talbert Marsh. The Huntington Beach Wetlands Restoration Plan (HBWRP) area, shown in Figure 1, extends from the Santa Ana River to Beach Boulevard, and includes flood control channels and the Talbert Marsh inlet.

The Huntington Beach Wetlands Conservancy (HBWC) plans to restore the entire 180 acres of wetland area by reconfiguring the site as needed to provide for tidal connections and improved tidal conveyance to the site from the sea. Site modifications will require excavation of existing sediments at certain locations at the marsh and disposal and/or beneficial reuse of the material either on- or off-site. The purpose of this summary of sediment disposal options is to evaluate the existing sediment within the wetland area and the restored marsh for grain size and potential contamination to determine their potential for reuse or disposal. The intent of this study is to identify any potential issues at a first-order that may be significant fatal flaws to restoration.

2.0 SCOPE OF WORK

The scope of work for this summary is to:

- Evaluate potential disposal options for surplus dredged and/or excavated material associated with restoration and enhancement activities. Potential disposal options include the offshore ocean, the nearshore ocean, the beach, and on-site as habitat areas. Off-site disposal may also need to be considered for planning options.

- Prepare order-of-magnitude cost estimates,

- Identify disposal capacities, and potential permit requirements for each disposal option.

3.0 SEDIMENT CHARACTERISTICS AND DISPOSAL/REUSE OPTIONS

Wetland restoration may include areas extending from the restored Talbert Marsh at the east end of the project area, westward through Brookhurst Marsh, Magnolia Marsh and Newland Marsh at Beach Boulevard. Figure 2 shows the project area. As such, soil and sediment existing within these areas may potentially be removed for restoration. The team compiled existing data of soil conditions at the marshes, and obtained new data of sediment grain size and bacteria levels at Talbert Marsh. The data and options for sediment reuse and/or disposal are presented by location below.

3.1 RESTORED TALBERT MARSH

Talbert Marsh was restored in 1990. The marsh has experienced significant shoaling since that time. Shoaling at the marsh significantly retards tidal flows and results in attenuation of the tidal range that exists at the marsh as documented in the hydrology study done for this project (M&N, 2004). The muted tidal range affects habitat by limiting tidal elevations and the corresponding areas and locations of habitat colonization. Tidal muting affects water quality by limiting tidal exchange and flushing within the wetland, causing aging of seawater within the marsh, residence of contaminants, and gradual seawater degradation. An opportunity exists to remove some or all of the sand deposited in the marsh since its construction to increase the tide range and tidal flushing. Improved hydrology at the marsh will also improve the opportunity for enhancement and restoration of marshes within the HB wetlands that are more distant from the ocean.

Sand has accumulated in bars formed by deposition of ocean-derived (littoral) sediment. Flooding (incoming) tides carry sand that is in suspension within the surf zone into the tidal inlet to Talbert Marsh. Flood-tidal currents transport the sand through the tidal inlet into the marsh where it is deposited as tidal flows spread out and the flow velocity drops off within the wetland basin. This process leads to formation of flood-tide deltas, or flood bars, within wetlands on the inland end of ocean tidal inlets. Figure 3 shows a schematic illustration of flood-bar formation.

These features are common to coastal wetlands in Southern California. The flood bars' size, configuration and location depend on the area available for shoaling, and the ability of ebb-tidal flows from the wetland to scour the bar and return some of the sediment to the sea. Typically, flood bars reach a dynamic equilibrium of size, shape and volume that is dictated by the rate of sediment delivery by flooding tides and sediment removal by ebbing tides. This assumes that the marsh has sufficient area for formation of the bar, and sufficient tidal prism (volume of seawater within the marsh between mean spring high and low tides) to scour sediment and prevent progressive infilling of the marsh by sand.

Talbert Marsh appears to be a potential exception to formation of an equilibrium flood bar as it may be gradually filling with sand. The area for flood bar formation is relatively small, precluding formation of a "classic" flood bar, so sediment has simply deposited in linear bars extending upstream from the tidal inlet. Aerial photographs since its construction show that shoaling is very extensive within the marsh and has buried former mudflats, and cordgrass and pickleweed areas. As shown in Figure 4, sedimentation has formed several shoals rather than one, and they extend upstream to Brookhurst Street. The volume of shoaling that has occurred since construction is estimated at approximately

20,000 cubic yards based on computer automated drafting analysis comparing changes recorded in a 2004 survey for this project to the original design condition.

The shoaling rate and pattern is not well defined, and it is not clear whether continued shoaling will occur at the existing rate. However, continued shoaling decreases the tidal prism of Talbert Marsh as it fills with sand and may reduce the overall tidal prism of the system to below that capable of sustaining an open tidal inlet. Removing the sand as a component of restoration would restore the scouring capability of Talbert Marsh, and coupled with re-creating increased tidal prism throughout the rest of the HB wetlands system could lead to a more stable and self-sustaining tidal inlet. Therefore, the potential restoration concept at Talbert Marsh is initially more defined than options at the other HB wetlands, and as such, sediment at the site was sampled and test for grain size and bacteria content.

3.1.1 Grain Size

Four sediment samples were taken at Talbert Marsh and one at Huntington State Beach on August 7, 2004 near the tidal inlet to analyze sediment grain size for potential reuse at the beach and/or disposal elsewhere. This analysis is cursory and more detailed sampling and grain size analysis would be required for final engineering design of beach or ocean placement. Figure 5 shows the sediment sampling locations. Sampling was done at exposed sand bars at low tide within the main Talbert Channel below Brookhurst Street Bridge, and at bars extending from the tidal inlet into the center of Talbert Marsh. Sampling was done at the surface of the bars, and at depths of approximately 18 inches.

Attachment A shows the sediment gradation curves of the sediment. Sediment gradation curves indicate the percent of sediment passing through a particular sieve mesh size. The material can be classified as gravel, sand, silt or clay depending on the percentage of particles within specified size ranges. The curves are for samples taken at depths of 18 inches on sand bars at sites 1, 2 and 3, and at the surface and at a depth of 18 inches at site 4. Site 4 differs from sites 1, 2 and 3 as it represents former mudflat partially buried by a relatively thin layer of sand.

Material sampled on the bars is almost entirely medium to fine-grained sand. Sediments appear to be uniform in grain size at sample sites 1, 2 and 3, and they match the sand grain size existing at the beach (sample site 5). The surface sample at site 4 was sandy also, and ranged from slightly coarser sand to fine sand. These data suggest that the sand at Talbert Marsh is ocean-derived as is typical of flood bars.

The deeper sample at site 4 was sandy clay, indicating it is a former mudflat that was covered by a thin layer of sand. The mudflat material was derived from historic wetland processes over time. It was partially buried by littoral sand after Talbert Marsh was restored and the new tidal inlet opened.

3.1.2 Bacteria Content

Other recent studies of high ocean water bacteria concentrations causing closure of Huntington City and State Beaches in 1999 have suggested Talbert Marsh as a potential source (U.C. Irvine, 2000). Also, the Orange County Health Care Agency (OCHCA) recently performed a study of sediments in the lower Santa Ana River and the nearshore ocean in the vicinity of the Talbert Marsh tidal inlet to quantify bacteria concentrations. The study identified bacteria in the sediments suggesting the Santa Ana River as a possible source to the ocean. As such, the OCHCA agreed to perform this limited study of Talbert Marsh to provide a first-order understanding of sediment bacterial contamination. It is assumed that this sediment is not contaminated with other constituents due to the constant marine influence and lack of direct contamination sources at this site as indicated in the Phase I Site Assessment.

The OCHCA sampled approximately the same four locations at the marsh on August 26, 2004 and tested the sediment for bacteria at their laboratory using the same protocol (membrane filter test with standard dilution) as applied in their study of the SAR. Sample sites 1 and 3 possessed very low levels of bacteria as shown in Table 1. Site 2 also was low in bacteria at a depth of approximately 10 inches below ground, but the surface sample did show an elevated bacteria level. These results indicate that bacteria exist in the sediment, but levels of total coliform, fecal coliform, and enterococcus are generally well below AB411 state standards for water quality and correspond to natural background levels for sandy marine substrates. The sample sites were characterized by shallow, dark-toned anaerobic subsurface layers preclusive of bacteria growth.

Table 1. Talbert Marsh Bacteria Sediment Sampling Results

Sample Stations	Sample Depth	Water Lab Number	Total Coliform (CFU/10g sediment)	Fecal Coliform (CFU/10g sediment)	Enterococcus (CFU/10g sediment)
1	Surface	04.WB.00124	<20	<20	20
	10 inches under the surface	04.WB.00125	<20	<20	<20
2	Surface	04.WB.00126	30	20	***330***
	10 inches under the surface	04.WB.00127	<9	<9	<9
3	Surface	04.WB.00130	<9	<9	20
	10 inches under the surface	04.WB.00131	140	100	20
4	Surface	04.WB.00128	430	***600***	***4800***
	10 inches under the surface	04.WB.00129	<20	<20	<20
AB 411 Water Quality Standard for Body Contact Water Samples			**10,000**	**400**	**104**

The primary exception to this condition was sample site 4 that exceeded state standards for fecal coliform and enterococcus, and site 2 exceeded the state standard for enterococcus. Site 4 was at the former mudflat that is partially buried by sand, immediately adjacent to the existing vegetated marsh. Sediment below the surface layer was not dark-toned, and was aerobic and conducive to bacteria growth or persistence. Site 2 may have been influenced by surface phenomena such as bird loafing and excretions.

These comparisons of bacteria content in sediments with state standards are relative since the standards are for body contact with water, not for sediment. However, they provide a rough indication whether a potential acute or chronic problem with bacteria exists with sand at the marsh. These preliminary results show that sand at the flood bar in Talbert Marsh generally does not possess chronic or acute high bacteria content and is therefore suitable for beneficial reuse at the beach, particularly considering the fact that sand will be excavated and mixed at the marsh causing initial dilution of bacteria concentrations, and then placed at the coast and will rapidly disperse thereby further reducing bacteria concentrations. Additional confirmatory testing will be required as part of permitting or final design for construction.

3.1.3 Potential Disposal and/or Reuse Options

Sediment within the Talbert Marsh flood bar is generally suitable for placement at either Huntington State Beach or Newport Beach. Sand in the bars away from the vegetated wetland is nearly identical in grain size to that at the beach indicating it is littorally-derived and appropriate for replacement in the littoral zone. The sand is also low in bacteria content, like the existing beach, and is therefore compatible with recreational beach use.

The only caveat to using the material for beach nourishment is that material should only be taken from the central sand bar area and main channel with the flood bars, and not along the higher vegetated portions or within higher vegetated areas of Talbert Marsh. Sand near vegetated marsh areas may possess unsuitable grain sizes and relatively high bacteria concentrations and should remain in place undisturbed. The color of deeper sands in the flood bars is presently dark and could potentially present an aesthetic issue for beach nourishment. This issue is typically not prohibitive and does not present a health or beach quality problem, and can be addressed through proper planning, design, and community outreach. Sand excavated or dredged from wetland areas and used for beach nourishment is typically dark and “bleaches out” fairly rapidly when exposed to oxygen and the ocean environment (e.g., Batiquitos Lagoon dredging and beach nourishment in 1995, and subsequent maintenance dredging and nourishment through the present).

Sandy material from Talbert Marsh could also be used to create nesting islands or beaches within any of the other marshes at HB wetlands. The material could be used in a material mix for other features, such as levees or berms throughout the wetlands, but this may not be the best and most beneficial use of the former beach sand. None of the material requires off-site disposal as it is apparently not contaminated with bacteria (or other contaminants as indicated by the Phase I Site Assessment report the this project by Geosyntec Consultants in 2004), and as such should be reused on-site to the greatest extent for beneficial reuse and to minimize project costs. If a material surplus exists after project design for construction, brokering or providing the material to off-site projects would also be appropriate. The material could also be hauled off-site to a conventional landfill, but this is not preferred due to costs, as estimated in following sections.

3.2 UNRESTORED REMAINING MARSHES

The remaining marshes that have yet to be restored within HB wetlands are addressed together below as they are in a similar condition, the quality and detail of available data are similar, and they may lend themselves to a common restoration approach (although potentially phased to consider constraints of land ownership and funding). The information below pertains only to qualitative evidence of sediment type as derived by soil exploration borings. Information of potential sediment contamination is addressed in the Phase I Site Assessment prepared by the project team (Geosyntec, 2004). The data presented in the Site Assessment indicates no significant potential for soil contamination throughout the unrestored marshes of the HB wetlands. Contamination could have potentially occurred from past oil drilling activities on the sites, and possibly other industrial or agricultural activities.

3.2.1 Brookhurst Marsh

Records of soil borings do not exist within Brookhurst Marsh, but borings have been drilled along the Huntington Beach Channel. The log of one boring that was drilled in 1991 for the County of Orange along the Huntington Beach Channel between Magnolia and Brookhurst Streets was examined for this study. The boring is on the north levee between the channel and the marsh. No laboratory grain size information exists in the form of gradation curves, but visual field classifications of soil types are identified on the boring logs. The data indicate that the top 5 feet of the levee soil is fill (silty clay and sandy silt), with the top 3 feet being clay. The material is alluvial silt from 5 feet depth below the levee crest to a depth of 11 feet. Fine sand exists from depths of 11 feet below ground to a depth of 41 feet (bottom of borehole). This general vertical section of soil stratigraphy is consistent throughout the HB wetlands.

3.2.2 Magnolia Marsh

Eight soil borings were performed adjacent to Magnolia Marsh in the 1970's, 1990's, and 2001 for multiple purposes. As with the Brookhurst Marsh soil boring data, no laboratory grain size data exist in the form of gradation curves, but visual field classifications of soil types are identified on the boring logs. Four borings were drilled at the crest of the south levee near the power plant, four were drilled along the crest of the north levee and one was drilled along Pacific Coast Highway. The data indicate that the top 13 to 15 feet of soil below levee crest is fill and alluvial silt and clay, with material below 15 feet being fine sand to the depths of the borings which was 50 feet (Shannon & Wilson, Inc., 1973; GeoSoils, Inc., 1991; and Southern California Edison, 2001).

3.2.3 Newland Marsh

Three soil borings were taken near Newland Marsh, with only one located within the project site boundary and two located along the north and east peripheries. As with the Brookhurst and Magnolia Marshes soil boring data, no laboratory grain size data exist in the form of gradation curves, but visual field classifications of soil types are identified on the boring logs. The borings are on north levee of the Huntington Beach Channel and show sand/silt/clay fill for the top 5 to 7 feet below ground, with silt down to 12 to 13 feet below ground, and sand to depths of 30 to 40 feet borings (GeoSoils, Inc., 1991).

3.2.4 Potential Disposal and/or Reuse Options

Soil boring data indicate that the earthen flood channel levee at Brookhurst and Magnolia Marshes (and the former levee at Newland Marsh) is material that can be reused to build other similar levees or elevated areas at the marshes. The upper 10 feet of alluvial material is also fine-grained and could be reused similarly. Deeper excavations would reach sand that could be used for beach nourishment or nesting island construction. None of the material requires off-site upland or offshore ocean disposal as it is apparently not contaminated, and as much can be reused on-site as needed for beneficial reuse and to minimize project costs. If a material surplus were to exist after project design for construction, brokering or providing the material to off-site projects could also be an option. The material could also be hauled off-site to a conventional landfill or barged to an offshore dump site, but these options are not preferred due to costs, as presented in the following section.

4.0 ORDER-OF-MAGNITUDE COST ESTIMATES AND DISPOSAL CAPACITIES

Cost estimates were generated for planning purposes to understand the range of possible actions to address the wetland sediment as part of restoration. This analysis provides order of magnitude costs for material disposal and disposal capacities of various options. Restoration alternatives are to be addressed in subsequent work. Five material removal and/or reuse scenarios were considered to generate order-of-magnitude cost estimates. Offshore or ocean placement of material is only applicable for Talbert Marsh. All scenarios, except number 5, assume that material to potentially be excavated from the other marshes remains on-site as beneficial reuse. Scenario 5 assumes material excavated from the marshes is hauled off-site to an upland landfill. The scenarios include:

Scenario 1: Remove all sandy material from Talbert Marsh using a clamshell dredge and reuse it on-site in berms, mounds and/or islands throughout the remaining marsh areas to be restored. The cost for this is specified.

Material removed within the marshes to be restored for channels or pools would also be reused on-site. The cost of this item can be itemized after alternatives are identified and berm removal quantities are quantified. Typically unit earthwork costs for relatively small cut and fill operations such as those envisioned at these marshes would be lower than other types of earthwork, and on the order of $5 per cubic yard.

Scenario 2: Remove all sandy material from Talbert Marsh using a clamshell dredge and discharge it all on the beach near the site. This scenario assumes material is discharged either at the beach just north of the tidal inlet (in summer as prevailing currents would likely transport it northwest away from the inlet) or at one mile upcoast or downcoast (in winter) to increase the dispersion of sand and reduce the chances of it returning to the inlet. The cost for this is itemized.

Material removed within the marshes to be restored for channels or pools would also be reused on-site. The cost of this item can be itemized after alternatives are identified and berm removal quantities are quantified. As indicated above, these earthwork costs are relatively low.

Scenario 3: Remove all sandy material from Talbert Marsh using a small dredge and discharge it all to the nearshore zone off of the site. This scenario assumes material is discharged through a dredge discharge line to a water depth of approximately 20 feet just north of the site. The cost for this is specified.

Material removed within the marshes to be restored for channels or pools would also be reused on-site. The cost of this item can be itemized after alternatives are identified and berm removal quantities are quantified. As indicated above, these earthwork costs are relatively low.

Scenario 4: Remove all sandy material from Talbert Marsh using a small dredge and discharge it all offshore of the site. This scenario assumes material is discharged through a dredge discharge line to a barge offshore of the site, and then barged to the offshore discharge site LA-3. The cost for this is itemized.

Material removed within the marshes to be restored for channels or pools would also be reused on-site. The cost of this item can be itemized after alternatives are identified and berm removal quantities are quantified. As indicated above, these earthwork costs are relatively low.

Scenario 5: Remove all sandy material from Talbert Marsh using a clamshell dredge and dispose of it off-site at a conventional landfill using trucks. The cost for this is specified.

Material removed within the marshes to be restored for channels or pools would also be disposed of at a conventional landfill. The cost of this item can be itemized after alternatives are identified and berm removal quantities are quantified. The cost for this option will be relatively high, with unit costs approximately equal to those for Talbert Marsh sediment.

The costs for each scenario are itemized in the Attachment C and are summarized in the matrix below. The least expensive scenarios consist of those with the material being reused on-site or being discharged at the beach or nearshore zone. The most expensive scenarios involve off-site disposal either offshore or at an upland landfill. The most attractive options involve beneficial reuse of material for beach or nearshore nourishment to contribute sediment back to the littoral zone.

Table 2. Material Disposal Costs

MATERIAL DISPOSAL OPTIONS	COSTS
1. On-Site Reuse of Material at the Wetlands	$645,000
2. Reuse of the Material for Beach Nourishment	$496,000
3. Reuse of the Material for Nearshore Nourishment	$488,250
4. Off-Shore Material Disposal	$1,218,000
5. Off-Site Material Disposal at a Landfill	$942,500

Other possible disposal options exist such as trucking material to the Port of Long Beach. It should be noted that the Port of Long Beach does not have a schedule for their need for the material associated with a project. They indicate they would not be able to receive the material prior to two years in the future. This period may be sooner than the wetland project could come on-line as this time period may be required for the future phases of environmental review and permitting, and final engineering for construction that must occur prior to the start of construction.

The disposal options considered in this study have the capacity to receive the entire volume of 20,000 cubic yards of material possibly requiring reuse or disposal. The project team estimates that the site can accommodate the entire material volume if it were reused on-site as a perimeter dike around the wetlands that have not yet been restored.

5.0 PERMIT REQUIREMENTS

The project will require permits from several agencies with jurisdiction over the activity. The same permit requirements apply to any of the actions described above. Coordination with and approval by NOAA Fisheries (formerly the National Marine Fisheries Service) and the U.S. Fish & Wildlife Service will also have to occur as part of the permitting effort. Permit requirements are specified below.

Sections 10 and 404 Permit from the U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers (USACE) has jurisdiction over "waters of the U.S." from the Clean Water Act, the Rivers and Harbors Act, and the National Environmental Policy Act (NEPA). The USACE issues a Sections 10 and 404 permit for construction in such waters, and placement of fill or dredging in waters of the U.S., respectively. The USACE analyzes the project under NEPA for environmental effects and can either prepare a Finding of No Significant Impact (FONSI) document for non-impacting projects, an Environmental Assessment (EA) for projects that may cause impacts but that are mitigable, or an Environmental Impact Statement (EIS) for projects to cause significant impacts that are not mitigable. This project will likely require an EA or EIS. The USACE also requires the RWQCB permit to be secured. Securing the Sections 10 and 404 permit can take up to twelve months and no fee is required.

California Environmental Quality Act

The project and will have to meet requirements of the California Environmental Quality Act (CEQA). CEQA requires projects of a certain magnitude and impact to be reviewed for environmental impacts. The type of document to be prepared depends on the degree of potential environmental impact identified in the CEQA Initial Study. A Negative Declaration (ND) is prepared for projects will not cause significant impacts, while a Mitigated Negative Declaration (MND) is required for projects that may cause significant impacts that can be mitigated. An Environmental Impact Report (EIR) is prepared for projects causing potentially significant impacts that cannot be mitigated. This project may be appropriate for a Mitigated Negative Declaration or an EIR. The time period for completion and certification of an MND is approximately four to six months depending on preparation and review periods. Public review is 30 days long. An EIR may take twice that time period to complete and certify.

Section 401C Certification from the Regional Water Quality Control Board

The Regional Water Quality Control Board (RWQCB) permits activities covered under Section 401 of the Clean Water Act. The RWQCB issues a Section 401C Certification for construction projects proposing fill or material removal in jurisdictional waters. The permit is a prerequisite for securing permits from federal agencies. The RWQCB considers whether existing water quality will be impaired by the project and requires conditions to minimize possible impacts, such as monitoring. They can also require mitigation if impacts are documented. Approximately three months is required to secure the permit assuming one month for clarification of the initial permit application, and two months to process the permit. A fee will also be required and varies depending on the proposed action.

Waste Discharge Requirements from the Regional Water Quality Control Board

The RWQCB also permit removal and discharge of sediments under Waste Discharge Requirements under the Clean Water Act. Approximately three months is also required to secure the permit and this permitting can occur concurrently with other RWQCB permits. A fee will also be required and varies depending on the proposed action.

Dewatering Permit from the Regional Water Quality Control Board

The RWQCB permits dewater activities under the Clean Water Act. As with the other RWQCB permits, approximately three months is required to secure the permit and this permitting can occur concurrently with other RWQCB permits. A fee will also be required and varies depending on the proposed action.

Stormwater Permits from the Regional Water Quality Control Board

The project will require the General Construction Activities Storm Water Permit from the RWQCB. The permit requires completion of a Notice of Intent to Discharge (NOI) form, and preparation and implementation a Storm Water Pollution Prevention Plan (SWPPP) mainly requiring adequate erosion control measures.

Coastal Development Permit from the City of Huntington Beach

The City has permitting authority over activities within the Coastal Zone according to their Local Coastal Program (LCP). The City will examine the project's consistency with the LCP, and potential effects to public access, recreation and the environment. The permit can take four to six months to secure, depending on the level of potential controversy or impact.

Coastal Development Permit from the California Coastal Commission

The California Coastal Commission (CCC) has jurisdiction over activities within the Coastal Zone, extending approximately one mile inland. They retain the right to appeal a local decision and can take action if deemed appropriate. The CCC examines the project's consistency with the Coastal Act, and potential effects to public access, recreation and the environment. If needed, the permit can also take four to six months to secure. Requirements to secure this permit are possession of the RWCQB permit and a certified CEQA document.

Encroachment Permit from the County of Orange

The County of Orange will require an encroachment permit for work to occur within the County's flood control easement that includes the flood channels and levees, and Talbert Marsh. The permit requires submittal of all project plans and engineering information, and takes from three to six months to secure.

Streambed Alteration Agreement from the State Department of Fish and Game

A 1600-1601 Streambed Alteration Agreement from the State Department of Fish and Game (CDFG) will be required by the CDFG to modify Talbert Marsh and the flood control channel berm. This agreement requires 3 to 6 months to secure, and will be required prior to USACE approval. Typically, the CDFG reviews the project, assesses impacts and benefits, and negotiates conditions as appropriate.

6.0 SUMMARY

Sediment disposal options for HB wetlands include on-site reuse, and off-site placement or disposal. A soils investigation of all the marshes within the HB wetlands, a Phase I Site Assessment (a separate submittal), and a sediment sampling and testing effort for Talbert Marsh were conducted to identify existing sediment grain sizes and potential contamination of marsh sediments. These data were used to identify potential opportunities and constraints to sediment disposal and/or reuse.

Sediments within the unrestored wetlands is silts and clays in upper layers to depths of 10 to 15 feet below ground in most areas, and is sand in lower layers. The material is suitable from a grain size standpoint for on-site reuse. Removal of sand bars in Talbert Marsh is assumed to occur as part of restoration. The investigations indicate that sand within the flood bars in Talbert Marsh is ocean-derived and relatively clean of bacteria or other potential contaminants, and can therefore be reused on-site and/or placed on the beach or in the ocean as nourishment. Additional confirmatory material testing should occur as part of future work phases.

Five sediment reuse or disposal scenarios are considered and construction costs are estimated. Scenarios 1, 2 and 3 assume beneficial reuse of the sand at Talbert Marsh for fill on-site within the marshes, for beach nourishment, and for nearshore discharge, respectively. Scenarios 4 and 5 assume the sand is disposed of offsite at an offshore dump site and an upland landfill, respectively. The least costly scenarios involve either on-site reuse or beneficial reuse of material on the beach or in the nearshore zone. Scenarios involving offsite disposal in the ocean or at an upland landfill cost are the most costly.

Costs and quantities of material that may be excavated from within the marshes that are not yet restored have not been estimated because alternatives are yet to be identified. Costs for this type of work will be estimated as part of alternatives analyses. It is assumed that earthwork within these marshes will likely be a balance of cut and fill. Generally, the costs for this type of earthwork are relatively low, comparable to or lower than the costs to remove sand from Talbert Marsh in Scenarios 1 and 2.

Clearing Talbert Marsh of sand and using it for beach nourishment is the recommended option as it will accomplish the dual objectives of improving tidal hydraulics and habitat at the marsh, and renourishing the beach, while minimizing project costs.

7.0 REFERENCES

GeoSoils, Inc., “Geotechnical Investigation, Huntington Beach Channel (Flood Control Facility No. D01),” 1991.

Geosyntec Consultants, “Environmental Site Assessment, Huntington Beach Wetlands, Orange County, California, August 2004.

Moffatt & Nichol, “Hydrologic and Hydraulic Baseline Report, Huntington Beach Wetlands,” August 2004.

Moore & Taber, “Foundation Investigation, Huntington Beach Channel (D01), Culverts and Utility Bridge,” 1966.

Shannon & Wilson, Inc., “Previous Foundation Investigation,” 1973.

Southern California Edison, Report of Foundation Investigation, Flood Control Channel Improvement at Bridge between Huntington Beach Generating Station and EPTC Tank Farm, 2001.

University of California Irvine, “Huntington Beach Water Quality Investigation Phase II: An Analysis of Ocean, Surf Zone, Watershed, Sediment and Groundwater Data Collected from June 1998 through September 2000,” 2000.

ATTACHMENTS