ANALYSIS OF
MODIFIED SALTWATER ALTERNATIVE
BUENA VISTA LAGOON ENHANCEMENT PROJECT

The Final Environmental Impact Report (Final EIR) for the Buena Vista Lagoon Enhancement Project (Enhancement Project) was completed in September 2017. During the deliberation on the certification of the Final EIR in November 2018, the San Diego Association of Governments (SANDAG) Board of Directors (BOD) heard public testimony from property owners who own land critical for the implementation of the Enhancement Project. The BOD heard testimony from the public and postponed action to explore the development of a proposal that would reflect modifications requested by the property owners while continuing to meet SANDAG's key project objectives.

Those efforts resulted in a proposal, which is a variation of the Saltwater and Hybrid alternatives previously analyzed in the Final EIR, that reflects public desire and agency input while still achieving the stated project objectives. This document provides the reader with project information about the proposal, referred to as the Modified Saltwater Alternative, and provides a discussion of environmental impacts and benefits associated with this alternative as compared to those alternatives identified in the Final EIR. Impacts are specifically compared to those described for the Freshwater, Saltwater, and Hybrid alternatives in the Final EIR to confirm that **implementation of the Modified Saltwater Alternative would not result in any new significant or substantial increase in the severity of any adverse impacts as previously identified in the Final EIR.**

Per the California Environmental Quality Act (CEQA) Guidelines (Section 15088.5), "significant new information" that would necessitate recirculation of an EIR includes a feasible project alternative or mitigation measure considerably different from others previously analyzed that would clearly lessen the environmental impacts of the project, but the project proponent declines to adopt it. The Modified Saltwater Alternative is considered a feasible variation of an alternative already analyzed in the Final EIR (see *South of Market Community Action Network v. City and County of San Francisco* (2019) for additional information). The Modified Saltwater Alternative includes a feasible combination of elements from the Saltwater and Hybrid alternatives as analyzed in the Final EIR and in response to public testimony from critical property owners. There are no new significant impacts associated with the Modified Saltwater Alternative. SANDAG, as the lead agency under CEQA, has reviewed the requirements for recirculation of an EIR prior to Certification under Section 15088.5 of the CEQA Guidelines and has concluded that no "significant new information" has been added compared to the alternatives identified in the Final EIR and therefore, recirculation of the Final EIR is not required.

The following information is provided to support this conclusion.

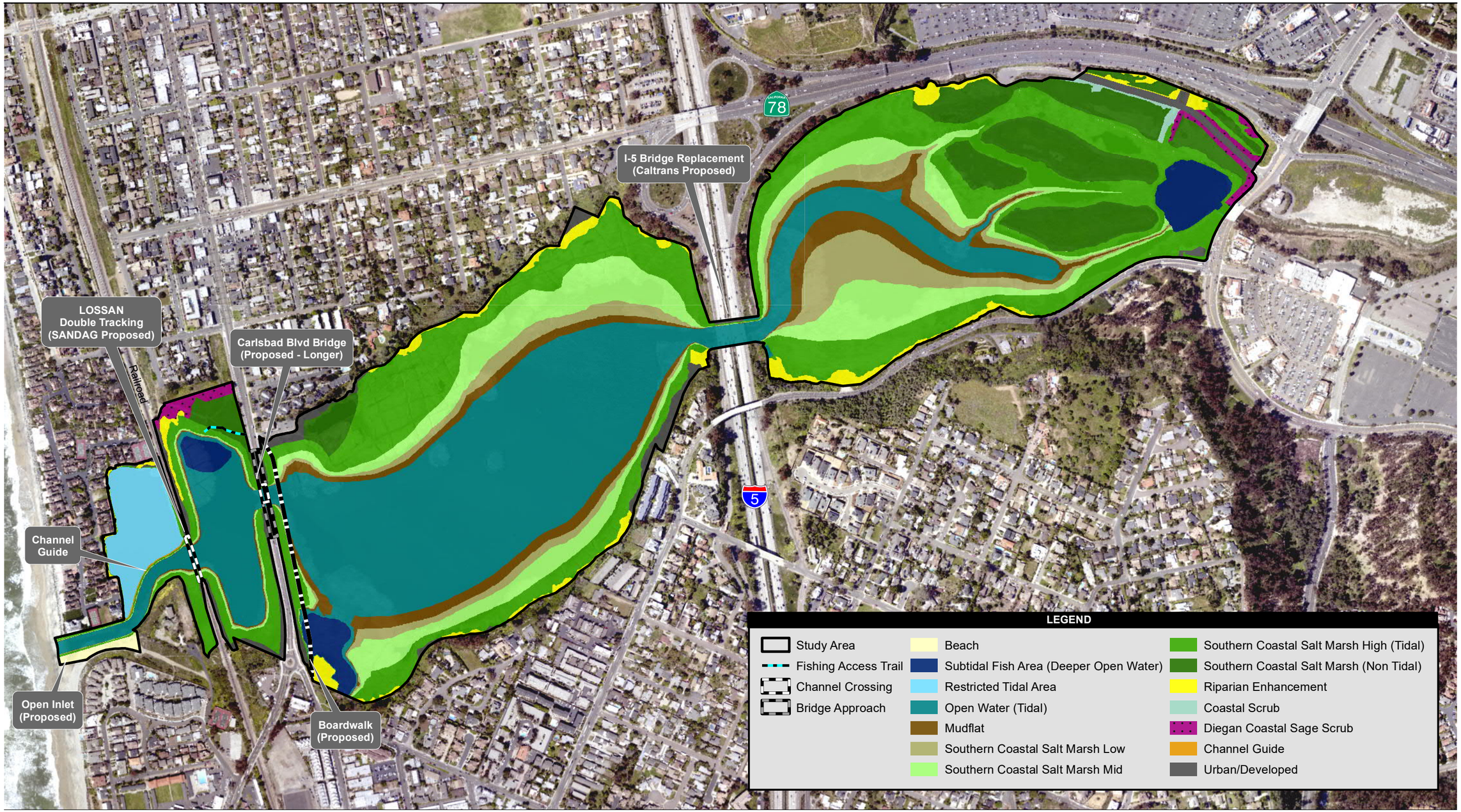
DESCRIPTION OF THE MODIFIED SALTWATER ALTERNATIVE

OVERVIEW

As outlined below, the Modified Saltwater Alternative would generally combine the project elements of the Saltwater Alternative east of Interstate 5 (I-5) and the project elements of the Hybrid Alternative west of I-5, with many elements remaining the same as those proposed in the Final EIR (Figure 1).

The Modified Saltwater Alternative would retain the following elements as discussed in the Final EIR:

- Pedestrian Boardwalk between the Nature Center and Maxton Brown Park
- Channel Guide in Weir Basin (similar to that of Hybrid Alternative, Option A, with an increase of the top elevation of the channel guide and a hydraulic structure for water exchange)
- Construction methods, standard construction practices, and project design features
- Construction access, haul routes, and staging areas
- Construction monitoring program
- Removal of the existing weir
- New tidal inlet construction
- Expansion of channel extending under Carlsbad Boulevard, requiring replacement of the existing bridge
- Channel and infrastructure improvements
- Coordination and construction of the channels and hydraulic connections crossing under the proposed I-5 and LOSSAN bridge structures improvements
- Three deeper areas for fish and fishing recreation
- Freshwater marsh vegetation removal
- Revegetation of graded areas within the lagoon to facilitate recovery of habitat
- Option for an overdredge pit



Source: SANDAG & SanGIS; AECOM; Anchor QEA 2019.

600 300 0 600 Feet

Scale: 1:7,200; 1 inch = 600 feet

Figure 1
Proposed Modified Saltwater Alternative Habitat Distribution

Path: P:_6061\60612239_BVLEP_TO9\900-CAD-GIS\920 GIS\map_docs\mxd\working\Proposed_Modified_Saltwater_Alternative_Habitat_Distribution.mxd, 10/11/2019, AugelloP

This page intentionally left blank.

- Materials disposal and placement sites for beneficial sand reuse
- Post-project inlet maintenance
- Monitoring and adaptive management activities to maintain ecological functions of lagoon
- An endowment to perpetually cover post construction management and monitoring efforts

The Modified Saltwater Alternative would differ in the amount and location of the following project elements as compared to the alternatives discussed in the Final EIR. However, these are not new or substantially changed features; rather, they are modified from elements proposed as part of other alternatives analyzed in the Final EIR:

- Proposed habitat distribution
- Sediment removal
- Materials disposal/reuse
- Overdredge pit capacity

SPECIFIC ELEMENTS OF MODIFIED SALTWATER ALTERNATIVE

The Modified Saltwater Alternative would result in a saltwater regime; emphasizing lower elevation salt marsh habitats and subtidal/open water west of I-5 and mid to upper salt marsh habitat in the I-5 Basin east of the interstate. The modifications were derived by generally combining portions of the proposed Saltwater Alternative in the I-5 Basin with the Hybrid Alternative grading configuration west of I-5, as previously identified in the Final EIR. To accomplish the proposed grading configuration, the Modified Saltwater Alternative would result in a greater volume of sediment removal than that proposed under either individual alternative (Saltwater or Hybrid) in the Final EIR. The increased removal of sediment would result in a proportional increase in the amount of material that must be disposed of or reused, which would require an overdredge pit with a larger capacity relative to the Saltwater and Hybrid alternatives, if that disposal option is selected. Likewise, the larger volume of sediment removal from the lagoon would result in a greater volume of material that would be exported. Depending on the disposal approach, the additional volume of excavated sediment would mostly be disposed nearshore or offshore at LA-5. The Modified Saltwater Alternative would yield about 5–8% more suitable beach sand than the Saltwater Alternative and would yield less sand than the Hybrid Alternative. The use of an overdredge pit for disposal would not result in material being sent to LA-5.

The required change in elevations and water levels throughout the various basins would modify the habitat distributions from those originally proposed in the Final EIR. The Modified Saltwater Alternative would result in more consistent expanses of open water with less intervening times of exposed mudflats.

The discussion below details the specific differences between the Freshwater, Saltwater, and Hybrid alternatives as identified in the Final EIR and the Modified Saltwater Alternative.

Proposed Habitat Distribution

The proposed habitat distribution for the Modified Saltwater Alternative would be influenced by the changes to grading/dredging necessary to achieve the saltwater regime west of I-5 and the hybrid regime to the east. The proposed habitat distribution is shown in Figure 1 and resulting acreages for specific habitats are provided in Table 1. The modified habitat distribution would be similar to the habitats resulting from the Saltwater and Hybrid alternatives as considered in the Final EIR, but reflective of the type of hydrologic condition as created on each side of the interstate as now proposed by the Modified Saltwater Alternative. Suitable habitat for sensitive species would be changed and/or converted as a result of the Modified Saltwater Alternative. While this change may include a direct increase or decrease in the total acreage of a specific habitat type post-enhancement, it is similar to the acreages proposed by the alternatives already included in the Final EIR. The table in Attachment 1 summarizes the direct permanent changes to suitable habitat for special-status species. Maintenance and adaptive management, as described in the Final EIR, would also be a part of the modified alternative.

Sediment Removal

An increased volume of sediment would need to be removed from the lagoon to achieve the proper elevations and channel dimensions necessary for the Modified Saltwater Alternative. A comparison of the volume of sediment removal for the alternatives analyzed in the Final EIR and the Modified Saltwater Alternative is provided in Table 2. The Modified Saltwater Alternative would require exporting an additional 104,000 cubic yards (cy) of sediment compared to the next greatest amount under the Hybrid Alternative. Vegetation removal required for the Modified Saltwater Alternative would be the same as the Saltwater Alternative. Construction methods for sediment removal would be the same as described in the Final EIR.

Table 1
Existing and Proposed Habitat Distribution (Acreages)

Habitat Type	Existing Condition	Freshwater Alternative	Saltwater Alternative	Hybrid Alternative (Options A/B)	Modified Saltwater Alternative
Beach	0.6	1.3	0.8	0.8/0.8	0.8
Coastal and Valley Freshwater Marsh	96.2	24.7	--	10.2/10.2	--
Coastal Scrub	0.6	0.6	0.5	0.7/0.7	0.5
Deep Open Water	--	4.5	4.0	5.0/5.0	6.4
Diegan Coastal Sage Scrub	<0.1	0.6	0.8	0.8/0.8	0.8
Diegan Coastal Sage Scrub: Baccharis-Dominated	1.3	1.6	1.3	1.3/1.3	1.3
Disturbed Habitat	0.7	--	--	--	--
Eucalyptus Woodland	0.5	--	--	--	--
Freshwater Habitat Transition Zone	--	9.2	--	--	--
Mudflat	--	--	20.0	4.7/4.9	13.7
Nonnative Grassland	2.4	--	--	--	--
Nonnative Riparian	4.2	--	--	--	--
Open Water	106.8	133.4	51.0	99.3[2]/98.6	76.7[3]
Proposed Cattail Maintenance Area	--	32.9	--	30.5/30.5	--
Riparian Enhancement	--	4.5	6.6	4.6/4.6	6.5
Southern Coastal Salt Marsh (Nontidal)	14.8	14.8	23.2	17.9/17.9	22.7
Southern Coastal Salt Marsh High	--	--	55.0	26.5/26.5	57.5
Southern Coastal Salt Marsh Low	--	--	33.2	6.3/6.5	16.9
Southern Coastal Salt Marsh Mid	--	--	35.4	20.3/20.6	28.0
Southern Willow Scrub	2	2.2	--	2.2/2.2	--
Urban/Developed	8.7	8.0	6.5	7.3/7.3	6.5
Totals[1]	**238.3**	**238.3**	**238.3**	**238.3/238.3**	**238.3**

[1] Totals may not add up equally due to rounding and slight differences in project study area.
[2] Includes 0.1 acre of channel guide, which will be under the surface of the water a portion of the time.
[3] Includes 0.1 acre of channel guide and 5.9 acres of restricted tidal area.

Table 2
Comparison of Material Removal Volumes

	Freshwater Alternative		Saltwater Alternative		Hybrid Alternative		Modified Saltwater Alternative	
	Vegetation	**Sediment**	**Vegetation**	**Sediment**	**Vegetation**	**Sediment**	**Vegetation**	**Sediment**
Initial Volume Removed during Construction (cubic yards)	**129,000**	**562,000**	**211,000**	**781,000**	**148,500**	**833,000**	**211,000**	**937,000**
I-5 Basin	29,500	188,000	92,000	320,500	29,500	188,000	92,000	320,500
Coast Highway Basin	89,500	290,500	103,500	293,000	103,500	488,000	103,500	488,000
Railroad Basin	9,500	62,500	14,000	101,000	14,000	95,000	14,000	95,000
Weir Basin	500	21,000	1,500	67,000	1,500	62,000	1,500	33,500

Materials Disposal/Reuse

The increased volume of sediment that would be removed from the lagoon would result in a respective increase in the volume of sediment that must be disposed. Similar to the alternatives in the Final EIR, the Modified Saltwater Alternative has two approaches to handle the removed sediment. Approach 1 would dredge materials in areas designated for lower elevations and dispose of those dredged materials on nearby beaches, the nearshore, or offshore based on their characteristics (e.g., proportion of sand and grain size). Approach 2 would construct an overdredge pit[1] to provide capacity for on-site disposal of finer-grained material and generate material that could be reused within the littoral zone, on the beach, or on the nearshore. Table 3 provides the earthwork quantities under each of the disposal and reuse scenarios as included in the Final EIR and for the Modified Saltwater Alternative.

[1] An overdredge pit would excavate an area of the lagoon that contains high proportions of sand at depth, which would be placed on the beach and nearshore sites as the pit is excavated. That pit would then be backfilled with finer-grained materials excavated from the lagoon basins that would otherwise need to be disposed of off-site. As a result, finer-grained materials would be encapsulated on-site and no off-site disposal would be required.

Table 3
Earthwork Quantities by Disposal Approach

Export	Freshwater Alternative (cubic yards)		Saltwater Alternative (cubic yards)		Hybrid Alternative (cubic yards)		Modified Saltwater Alternative (cubic yards)	
	Approach 1	Approach 2	Approach 1	Approach 2	Approach 1	Approach 2	Approach 1	Approach 2
Beach (Oceanside and/or North Carlsbad)	49,000	175,000	110,000	232,500	129,500	255,000	119,000	245,000
Nearshore (Oceanside)	30,000	387,000	49,000	548,500	51,000	578,000	33,000	692,000
LA-5	483,000	0	622,000	0	652,500	0	785,000	0
Total Export	**562,000**	**562,000**	**781,000**	**781,000**	**833,000**	**833,000**	**937,000**	**937,000**

Approach 1: Dispose of dredged materials on nearby beaches, the nearshore, or offshore
Approach 2: Construct overdredge pit to provide capacity for on-site disposal of finer-grained material and generate material for reuse within the littoral zone, on the beach, or in the nearshore

Overdredge Pit Capacity

Similar to the alternatives analyzed in the Final EIR, the Modified Saltwater Alternative would include the option for creation of an overdredge pit to allow for disposal of poor-quality material and to provide more material suitable for beneficial reuse on local beaches than Approach 1. To accommodate the increased volume of sediment removal under the modified alternative, the overdredge pit would be expanded by a depth of 6 feet compared to the overdredge pit considered in the Final EIR. The diameter of the overdredge pit (1,100 feet) would remain the same. The expanded overdredge pit would accommodate a fill volume of 798,000 cy.

Construction of the enlarged overdredge pit would take about 25 months, an increase of about 1 to 2 months compared with the Saltwater Alternative. However, this increased time would be within the 30-month construction time period estimated and used for analysis in the Final EIR.

ENVIRONMENTAL ANALYSES AND IMPACTS

Implementation of the Modified Saltwater Alternative would not result in any new significant environmental impacts, nor would impacts be substantially increased in severity beyond that disclosed in the Final EIR. For disclosure of anticipated impacts associated with the Modified Saltwater Alternative, a brief discussion by issue area is provided below. This discussion is derived from the information in Chapters 3 and 4 of the Final EIR and focuses on impacts and benefits that would result compared to baseline conditions and where impacts or benefits would differ between the analysis in the Final EIR and Modified Saltwater Alternative. To facilitate review, this analysis follows the same issue area order as Chapter 3 of the Final EIR.

LAND USE/RECREATION

Similar to the Freshwater, Saltwater, and Hybrid alternatives discussed in Section 3.1 of the Final EIR, no permanent conversion of lands to other uses would occur with implementation of the Modified Saltwater Alternative and that alternative would not conflict with or be incompatible with surrounding land uses.

The Final EIR identifies a significant land use impact under the Saltwater and Hybrid alternatives due to the creation of an open ocean inlet and the resulting periodic interruption in beach access between Carlsbad and Oceanside due to unsafe conditions that would occur at times of high-water volume and velocity and inconsistencies with access-related land use policies. These impacts would also occur with implementation of the Modified Saltwater Alternative as it too requires creation of an open tidal inlet. Mitigation Measure Land Use-1 as identified in the Final EIR requires the construction of a pedestrian crossing to span the inlet and allow beachgoers to continue to travel north-south along this stretch of beach. As outlined in the Final EIR, with implementation of Mitigation Measure Land Use-1, safe public access would be available across the proposed inlet and the land use/recreation impacts would be reduced to less than significant; however, significant unmitigated visual impacts would occur, as discussed later.

As disclosed in the Final EIR, the placement of sand on the material placement sites could temporarily affect beach access due to the necessary location of a pipeline across beach areas for materials placement activities. This temporary impact would also occur with implementation of the Modified Saltwater Alternative. Mitigation Measure Recreation-1 as identified in the Final EIR would reduce the impact to less than significant by requiring that pipeline segments be covered with sand at consistent intervals to facilitate pedestrian beach access. This mitigation would also be required for the Modified Saltwater Alternative.

Therefore, with adoption of Mitigation Measures Land Use-1 and Recreation-1, the impacts related to land use and recreation for the Modified Saltwater Alternative would be the same as those disclosed for the Freshwater (temporary only), Saltwater (permanent and temporary), and Hybrid (permanent and temporary) alternatives in Section 3.1 of the Final EIR.

HYDROLOGY

Temporary impacts to lagoon hydrology from implementation of the Modified Saltwater Alternative would be similar to those discussed for the Freshwater, Saltwater, and Hybrid alternatives in Section 3.2 of the Final EIR. The Modified Saltwater Alternative would have similar compliance requirements with storm water permits (i.e., Municipal Permit, Construction

General Permit, Standard Urban Storm Water Mitigation Plan/Hydromodification Management Plan), as well as conformance to proper best management practice (BMP) design, implementation, and maintenance mandated by permits and associated regulations. The Modified Saltwater Alternative would require a greater amount of sediment removal to properly alter the elevations of the lagoon to achieve desired habitats, so temporary hydrology impacts during construction may be slightly increased but would be controlled by compliance with regulatory requirements.

Similar to the analysis for the Saltwater and Hybrid alternatives, implementation of the Modified Saltwater Alternative would alter drainage patterns and saltwater circulation within the lagoon would increase with the open inlet, improved channel network and flow regimes, and increased tidal flow. The hydrology throughout the lagoon would be enhanced through sediment and vegetation removal and overall flood conditions would be improved. Compared with existing conditions, the Modified Saltwater Alternative flood elevation would decrease by approximately 4 to 5 feet in the lagoon area to the west of the I-5 bridge, and by about 8 feet in area east of the I-5 bridge during a 100-year storm under the current sea level condition, as shown in Table 1 of Attachment 2. Additional fluvial results modeled under existing and future scenarios with the 100-year storm event for the Modified Saltwater Alternative and other alternatives analyzed in the EIR are included in Table 2 of Attachment 2. Like the Saltwater and Hybrid alternatives, compliance with applicable regulatory requirements and implementation of appropriate BMPs would ensure the Modified Saltwater Alternative would not result in a substantial alteration to existing drainage patterns that would cause substantial scour or erosion, increased runoff flow rates or volume resulting in flooding or an exceedance of drainage system capacity, increased exposure to water-related hazards, or placement of structures that would impede flood flows. Fluvial velocities would be similar to the Saltwater Alternative and would be below 1 foot per second, except in the defined channel running through basins, which would require slope protection. Permanent hydrology impacts and benefits would be similar to those described for the Saltwater and Hybrid alternatives in the Final EIR.

OCEANOGRAPHY/COASTAL PROCESSES

The inlet configuration proposed by the Modified Saltwater Alternative would not result in substantial changes to beach erosion, the littoral system, risk of damage to coastal structures, or other coastal processes in a manner different than described in the Final EIR for the Hybrid or Saltwater alternatives. The volume of material available for beneficial reuse at local beaches and/or for nearshore or offshore disposal could be accommodated at the placement sites considered in the Final EIR. Permanent and temporary impacts related to oceanography and coastal processes would remain less than significant as disclosed in Section 3.3 of the Final EIR.

WATER AND AQUATIC SEDIMENT QUALITY

The Modified Saltwater Alternative would result in additional grading/dredging and/or ground disturbance than with the Freshwater, Saltwater, or Hybrid alternatives as shown in Table 2 (approximately 104,000 additional cy or 12% more than the Hybrid Alternative). The project design features and construction practices incorporated into the Final EIR to reduce the potential for water quality impacts would also be implemented with the Modified Saltwater Alternative, such as the use of a cutterhead dredge or cofferdam/dikes/dewatering, as applicable. The potential for temporary impacts to water quality due to the potential release of pollutants or sedimentation that can occur with sediment excavation and contouring within the lagoon would be identical in nature for the Modified Saltwater Alternative but could be slightly increased over those described in the Final EIR due to increased volume of sediment removal and increased construction time (1–2 months longer for dredging activities). Thus, the significant impact identified regarding turbidity during construction would also result with the Modified Saltwater Alternative and could result in slightly increased levels of turbidity. However, Mitigation Measures Water Quality-1 and 2, as detailed in the Final EIR, which ensure compliance with regulatory requirements intended to address turbidity and manage water levels during construction, would also be applicable to the Modified Saltwater Alternative. These mitigation measures would adequately address and reduce potential impacts as they would be similar in nature and cause as the alternatives analyzed in the Final EIR. Therefore, after mitigation, temporary impacts related to water and aquatic sediment quality would remain similar to the Freshwater, Saltwater, and Hybrid alternatives.

Long-term water quality benefits of the Modified Saltwater Alternative are expected to be similar to that of the Saltwater Alternative as detailed in the Final EIR, including improvements to lagoon-wide circulation through tidal exchange, which would reduce sedimentation, decrease residence time and bacteria levels of water in the lagoon, curtail invasive vegetation growth, and reduce stagnant water relative to existing conditions.

BIOLOGICAL RESOURCES

Similar to the Freshwater, Saltwater, and Hybrid alternatives, temporary impacts to existing vegetation within the lagoon (beach, coastal and valley freshwater marsh, open water, coastal scrub, and Diegan coastal sage scrub) (identified in Final EIR Tables 3.5-3, 3.5-7, and 3.5-11) would result from the dredging and excavation within the lagoon basins to create the appropriate elevations for the proposed habitat distribution under the Modified Saltwater Alternative. The direct loss of these habitats during construction would be considered significant and unmitigable. As detailed in Attachment 1, post-implementation suitable habitat of the Modified Saltwater Alternative is most comparable to the habitat distribution of the Saltwater Alternative (Final EIR

Table 3.5-10), with an increase in suitable habitat for light-footed Ridgway's rail (27.8 acres), western snowy plover (13.9 acres), Belding's savannah sparrow (124.0 acres), and coastal California gnatcatcher (0.7 acre). Minor loss of suitable habitat would result for California least tern (-9.8 acres) and least Bell's vireo and southwestern willow flycatcher (-2.2 acres). However, once established, the beneficial and high-quality habitat created as a result of the Modified Saltwater Alternative would be similar to those of the Saltwater and Hybrid alternatives.

The Final EIR identified a permanent impact to light-footed Ridgway's rails for the Freshwater and Hybrid alternatives due to ongoing cattail maintenance with the potential for mortality of birds. However, like the Saltwater Alternative, there are no proposed cattail maintenance areas under the Modified Saltwater Alternative. Thus, the significant permanent impact would not occur for the Modified Saltwater Alternative.

Impacts to sensitive species associated with the implementation of the Modified Saltwater Alternative would be the same as described in the Final EIR as the nature of construction and extent of grading/dredging are similar to the analyzed alternatives. Short-term direct impacts to southwestern spiny rush would result from project implementation, and short-term direct and indirect impacts to migratory and nonresident wildlife species (light-footed Ridgway's rail, Belding's savannah sparrow, and nesting birds) would occur due to mortality, increased risk of predation, and noise. As required in the Final EIR, Mitigation Measure Biological Resources-1 would avoid impacts to southwestern spiny rush through plant salvage. Impacts due to risk of mortality to light-footed Ridgway's rail and Belding's savannah sparrow, and take of nests for breeding birds would be reduced to below a level of significance through the restriction of grubbing and vegetation removal to outside the breeding season, and flushing birds in suitable habitat prior to grading during the remainder of the year (Mitigation Measures Biological Resources-2 and 3). Short-term indirect impacts associated with increased predation due to lighting would be mitigated to below a level of significance through Mitigation Measures Biological Resources-4 and 5, which require predator control and shielding of lighting.

Similar to the Saltwater and Hybrid alternatives, noise control would be required on construction equipment through Mitigation Measures Biological Resources-6 and 7 and would reduce noise levels during construction. However, there is still the potential for indirect unmitigated impacts to sensitive species due to dredge equipment during the breeding season, similar to impacts identified for the Saltwater and Hybrid alternatives. The increased construction timeframe for the Modified Saltwater Alternative relative to the other alternatives is not of the duration to substantially worsen this impact and is within the overall construction period (30 months) used for analysis within the Final EIR.

As required for the Saltwater and Hybrid alternatives, the Modified Saltwater Alternative would also require periodic maintenance at the ocean inlet. Thus, permanent and temporary impacts related to biological resources would remain the same as disclosed for the Saltwater and Hybrid alternatives in Section 3.6 of the Final EIR.

The long-term biological benefits from the Modified Saltwater Alternative would be greater than current conditions and the No Project Alternative as described in the Final EIR. Habitat distributions are shown in Figure 1 for the Modified Saltwater Alternative. Habitat acreage is provided in Table 1 as compared to other the other alternatives and suitable for supporting sensitive species are shown in Attachment 1. The quality of overall habitat is anticipated to increase as the lagoon is converted to a saltwater system and vegetated with native salt marsh habitats. As described for the Saltwater Alternative, the Modified Saltwater Alternative would also remove encroaching freshwater marsh vegetation and halt the conversion of open water to monotypic freshwater marsh that is currently reducing fish habitat and circulation within the lagoon. Increased circulation and flushing would result in a healthier benthic community and more foraging opportunities for birds. The foraging opportunities would be increased in quantity, quality, and diversity resulting in a long-term and sustained benefit for avian populations.

GEOLOGY/SOILS

Implementation of the Modified Saltwater Alternative would require excavation of more material than discussed for the alternatives in Section 3.5 of the Final EIR. In total, approximately 937,000 cy of sediment would be removed from the lagoon basins and tidal channels. This volume is approximately 375,000 cy, 156,000 cy, and 104,000 cy more than required for the Freshwater, Saltwater, and Hybrid alternatives, respectively. The required excavation and the depth of overdredge pit are greater for the Modified Saltwater Alternative than the alternatives analyzed in the Final EIR; however, the resulting potential for geologic impacts would be similar due to the similarity in materials being excavated, project design features, and engineering standards/codes that dictate design standards that would ensure standards are met to avoid or minimize geologic impacts. Thus, no additional or more severe impacts to geology and soils would result from the Modified Saltwater Alternative than described in the Final EIR.

Similar to the discussion for the alternatives in the Final EIR, appropriate dredged materials would be placed on the Oceanside and North Carlsbad sites on or near the beach, which are areas constantly subjected to natural erosion and coastal processes that repeatedly disturb the on-site geologic materials. Like the other alternatives, no structures would be constructed at the placement sites and slopes do not exist at the sites that would increase risks associated with geologic conditions due to material placement.

CULTURAL RESOURCES

There are known cultural resources in proximity to the lagoon. Similar to the alternatives analyzed in the Final EIR, the Modified Saltwater Alternative could potentially disturb unknown cultural resources through the use of land-based equipment for soils and/or vegetation removal in the densely vegetated stable surfaces along portions of the lagoon margins outside of staging areas. This potential for cultural resource disturbance would be the same as that disclosed for all alternatives in Section 3.7 of the Final EIR. The required implementation of Mitigation Measures Cultural-1, 2, 3, and 4 to reduce and avoid potential impacts would be the same as identified in the Final EIR. Thus, no additional or more severe impacts to cultural resources would result from the Modified Saltwater Alternative than described in the Final EIR.

PALEONTOLOGICAL RESOURCES

Geologic formations with high and moderate paleontological sensitivity are located around the lagoon. Though excavation involves greater volumes than analyzed in Section 3.8 of the Final EIR, ground-disturbing activities under the Modified Saltwater Alternative would occur during dredging activities and would be limited to portions of the lagoon basins that are generally underlain by fill soils and alluvial deposits, which are not considered sensitive. Like the alternatives analyzed in the Final EIR, the Modified Saltwater Alternative could potentially disturb paleontological resources during exaction activities within an area containing River and/or Marine Terrace Deposits, which are designated as moderately to highly sensitive. The required implementation of Mitigation Measures Paleo-1 and 2 to reduce and avoid potential impacts would be the same as identified in the Final EIR. Thus, no additional or more severe impacts to paleontological resources would result from the Modified Saltwater Alternative than described in the Final EIR.

VISUAL RESOURCES

Construction of the Modified Saltwater Alternative would be similar to that described for the Freshwater, Saltwater, and Hybrid alternatives in Section 3.9 of the Final EIR as construction equipment and activities would be visible in various parts of the natural lagoon setting during the construction period. However, temporary visual impacts from excavation and grading activities would last slightly longer than those anticipated in the Final EIR as the additional excavation would require a longer construction period (1–2 months) but would still be completed within the overall construction time period assumed in the Final EIR. As identified for the alternatives in the Final EIR, Mitigation Measures Visual-1 and 2 would be implemented to reduce the short-term visual impacts; however, even with implementation of mitigation, it is not possible to fully mitigate the short-term impact. Under the Modified Saltwater Alternative, the short-term visual

construction impact would remain significant and unavoidable, as identified in the Final EIR, but would not be of an increased magnitude or longevity to be considered substantially more severe than the Freshwater, Saltwater, or Hybrid alternatives.

Similar to the Freshwater, Saltwater, and Hybrid alternatives, it is anticipated material could be placed on local beach placement sites in Carlsbad or Oceanside for beach nourishment. As described in the Final EIR, sand placement operations would temporarily degrade existing coastal views in the immediate area due to the presence of construction equipment on the scenic beach setting. This visual effect would have a slightly longer duration due to the increased volume of material available for placement with the Modified Saltwater Alternative. However, subsequent to beach replenishment operations, the materials placement site would be visually enhanced. Sand replenishment would widen the existing beach and generally cover areas of rocky or eroded beach. Operations would be short term overall and the daily construction area would travel along the beach, which would reduce the visual contrast to any one sensitive viewer. The end result would be enhancement of the scenic beach resource and no additional or more severe impacts to visual resources from material placement would result from the Modified Saltwater Alternative than described in the Final EIR.

The Final EIR identifies a pedestrian bridge over the new inlet for the Saltwater and Hybrid alternatives as mitigation for land use and safety impacts. The pedestrian bridge was found to create a significant and unavoidable visual impact. The pedestrian bridge would also be required as mitigation for the Modified Saltwater Alternative because it would create a new inlet with the same resulting land use impact (see discussion under Land Use/Recreation above) as identified for the Saltwater and Hybrid alternatives. The resulting visual impact from the pedestrian bridge as mitigation would be same as identified in the Final EIR and considered significant and unmitigable. Therefore, the permanent visual impact disclosed for the Saltwater and Hybrid alternatives in the Final EIR resulting from the pedestrian bridge mitigation would also occur with implementation of the Modified Saltwater Alternative.

TRAFFIC AND CIRCULATION

Construction traffic operations discussed for the Freshwater, Saltwater, and Hybrid alternatives in Section 3.10 of the Final EIR would also be applicable to those associated with the Modified Saltwater Alternative. More truck trips would be required as the volume of sediment removal would be greater and require additional transport to the local material placement site for beneficial reuse. Additionally, the construction period would be longer than anticipated for alternatives in the Final EIR, but within the same overall construction timeframe used for analysis. Specific trip generation numbers for each of the basins would vary, with some requiring more or less trips than analyzed in the Final EIR, generally dependent upon the amount of

sediment removal required per basin and per alternative. As shown in the Project Trip Generation tables in Section 3.10.3 of the Final EIR, various alternatives would generate different volumes of traffic per the amount of work required. However, none of the alternatives would create traffic in excess of the criterion used for analysis, which states that if a project would not add more than 50 trips in the peak hour, it would not have the potential to result in a significant impact (Section 3.10.2 of the Final EIR). Though the Modified Saltwater Alternative would require additional sediment removal (approximately 12% more than the Hybrid Alternative) and therefore generate additional traffic, the volume of increased trips would not be of the magnitude to exceed the traffic thresholds used in the Final EIR. The increased traffic generation associated with the Modified Saltwater Alternative would not create a new or substantially worsened traffic condition compared to the Final EIR alternatives. Project design features as outlined in the Final EIR would be incorporated into the Modified Saltwater Alternative to avoid or minimize other traffic effects.

Similar to the Saltwater and Hybrid alternatives, construction of the Carlsbad Boulevard bridge would affect pedestrian travel and recreational and commuter bicyclists. The multi-use pathway would be closed temporarily during construction and prohibit pedestrian travel, and bicycle traffic would be required to use a shared lane rather than having a separate bicycle lane; this would result in a temporary significant impact to pedestrian and bicycle facilities. Mitigation Measures Traffic-1 and 2 would be required to address the temporary decrease in performance and/or safety of bicycle facilities and Mitigation Measure Traffic-3 would address temporary impacts related to the loss of pedestrian access due to proposed Carlsbad Boulevard bridge improvements. The required implementation of Mitigation Measures Traffic-1, 2, and 3 would be the same for the Modified Saltwater Alternative to reduce and avoid potential impacts as identified in the Final EIR. As disclosed in the Final EIR for the Saltwater and Hybrid alternatives, impacts to pedestrian access would be reduced to less than significant with the implementation of Traffic-3; however, impacts to bicycle facilities would remain significant and unavoidable.

AIR QUALITY

As disclosed in the Final EIR, all alternatives would result in potentially significant temporary project-level and cumulative air quality impacts and expose sensitive receptors to substantial pollutant concentrations due to construction emissions, specifically nitrogen oxides (NO_x) and particulate matter. This exposure to pollutant emission would also occur for the Modified Saltwater Alternative.

Because construction methods and activities would be similar, air quality emissions would be comparable between the alternatives analyzed in the Final EIR and the Modified Saltwater

Alternative. As shown in Tables 3.11-5, 3.11-6, and 3.11-8 of the Final EIR, the Freshwater, Saltwater, and Hybrid alternatives would exceed the daily construction emission threshold for NO_x under both the LA-5 and the overdredge pit disposal scenarios. While the Modified Saltwater Alternative would have an increased volume and construction time related to sediment removal, the Final EIR analysis is based on a daily emission threshold. Thus, because the construction methods associated with sediment removal and disposal would be very similar between the alternatives on a daily basis (for example, all alternatives in the Final EIR would emit 553.39 pounds of NO_x per day under the LA-5 scenario), the NO_x daily exceedance would be comparable between the alternatives. The other pollutants would also not be increased on a daily basis in a manner that would exceed the threshold limits. The significant air quality impact related to the exceedance of the NO_x threshold identified in the Final EIR for the Freshwater, Saltwater, and Hybrid alternatives would also occur with the Modified Saltwater Alternative.

Similar to the alternatives described in the Final EIR, the construction of the Modified Saltwater Alternative would exceed a project-level air quality threshold (NO_x); thus, it would also result in the same significant cumulative impacts as identified in the Final EIR.

Like the Freshwater, Saltwater, and Hybrid alternatives, the staging area in the Railroad Basin would be located adjacent to residential receptors and the Final EIR analysis conservatively assumes that unhealthful pollutant concentrations could be generated at the staging area and result in a significant impact. Thus, this significant impact from exposure of sensitive receptors to substantial construction pollutant concentrations would also occur for the Modified Saltwater Alternative.

The construction emissions from the Modified Saltwater Alternative would be reduced through implementation of Mitigation Measures Air Quality-1, 2, 3, and 4, as required for the alternatives in the Final EIR. The air quality impact specific to the overdredge pit disposal option for the Freshwater Alternative would be reduced to less than significant with implementation of the mitigation measures. Similar to the Freshwater, Saltwater, and Hybrid alternatives, while the mitigation measures would minimize air quality emissions, the impacts related to exceedance of the NO_x daily threshold (LA-5 disposal option only for the Freshwater Alternative), cumulative air quality, and exposure of sensitive receptors to pollutant concentrations would remain significant.

GLOBAL CLIMATE CHANGE, GREENHOUSE GAS EMISSIONS, AND SEA LEVEL RISE

Construction emissions for the Freshwater, Saltwater, and Hybrid alternatives are disclosed in Section 3.12 of the Final EIR, and construction emissions under the Modified Saltwater Alternative would be incrementally greater as discussed above under Air Quality, but not of the

magnitude to create additional or worsened global climate change impacts. As shown in Table 3.12-2 of the Final EIR, the Saltwater Alternative would have the highest amount of temporary construction-related greenhouse gas (GHG) emissions with a total of 5,918 metric ton (MT) CO_2-equivalents (CO_2e) over the construction period for the LA-5 disposal approach and 6,020 MT CO_2e for the overdredge pit approach. These emission totals do not approach the threshold of 10,000 MT CO_2e per year used in the Final EIR analysis. Also, the permanent GHG emission impact determination is based on the combined amortized construction-related and operational emissions and would total 193 MT CO_2e per year for the Saltwater Alternative, which does not approach or exceed the County of San Diego threshold of 900 MT CO_2e per year. While the Modified Saltwater Alternative would have increased emissions due to the greater volume of excavation required (increase of approximately 12%), the coordinating increase in emissions would not be substantial enough to exceed the temporary or permanent GHG emission thresholds used in the Final EIR analysis. Similar to the analysis for the Freshwater, Saltwater, and Hybrid alternatives in the Final EIR, there would be no significant permanent and temporary impacts related to global climate change and GHG emissions under the Modified Saltwater Alternative.

Buena Vista Lagoon will be subject to climate change regardless of the alternative implemented. Like the Saltwater and Hybrid alternatives, the Modified Saltwater Alternative would include the I-5 Basin and areas of higher elevation habitats (non-tidal salt marsh and transitional areas) intended to accommodate sea level rise through transition from upland to wetland under sea level rise future conditions.

NOISE

Grading/dredging, material placement, and other construction noise associated with the Modified Saltwater Alternative would be the same as that described in Section 3.13 of the Final EIR for the other alternatives. Although more material would be removed and require a slightly longer construction period (1–2 months), the noise from the construction equipment would be similar to noise generated by equipment identified in Section 3.13. As disclosed in the Final EIR for all alternatives, 24-hour operations could occur, and both nighttime dredging impacts and material placement impacts would be significant. Mitigation Measures Noise-1 and 2 as identified in the Final EIR would be required for all alternatives, including the Modified Saltwater Alternative, to minimize construction equipment noise generation. Even with implementation of these measures, nighttime construction outside of allowed hours would result in significant impacts. The increased construction time period necessary for the Modified Saltwater Alternative would not be a long enough duration to consider the impact substantially worsened beyond the impacts disclosed in the Final EIR and is within the overall construction time period used for analysis. Like the alternatives in the Final EIR, noise impacts from nighttime dredging and materials placement would remain significant and unavoidable.

PUBLIC SERVICES AND UTILITIES

As discussed in Section 3.14 of the Final EIR, enhancement activities within the lagoon for all alternatives would require the grading/dredging, removal, and backfill of large quantities of material. The quantity of material associated with the Modified Saltwater Alternative would be 937,000 cy, an approximate 12% increase from the Hybrid Alternative, which would require the next greatest volume of material removal of 833,000 cy. The nature of these construction activities and resulting lagoon enhancements would not require substantial use of public utilities and would not result in the development of the types of facilities that could result in the need for new systems, supply, or infrastructure. There would not be a substantial increase in the amount of construction debris, and additional strain would not be placed on local landfill facilities. Permanent and temporary impacts to public services and utilities associated with the Modified Saltwater Alternative would remain similar as those disclosed in the Final EIR.

PUBLIC HEALTH AND SAFETY

As disclosed in the Final EIR, significant impacts to public recreational safety would result from operation of the Saltwater and Hybrid alternatives with the new inlet crossing of the beach that could create a safety threat to recreational users during certain tidal conditions of high water volume and velocities. The same impact would result from the new inlet associated with the Modified Saltwater Alternative. As outlined in the Land Use/Recreation section of the Final EIR, Mitigation Measure Land Use-1 would require a pedestrian bridge to be constructed at a feasible location to allow safe and convenient access across the inlet. This mitigation would also be required for the Modified Saltwater Alternative. Additionally, Mitigation Measure Safety-1 would also be required as detailed in the Final EIR to help reduce the potential public safety impact associated with a new inlet. While that mitigation would substantially improve public safety, the overall inherent danger of the new inlet during certain conditions would remain for swimmers and those choosing not to utilize the pedestrian bridge. Thus, as identified in the Final EIR for the Saltwater and Hybrid alternatives, public safety impacts associated with operation of the new tidal inlet under the Modified Saltwater Alternative would remain significant and unavoidable even with the incorporation of Mitigation Measures Land Use-1 and Safety-1.

Enhanced lagoon conditions resulting from the Modified Saltwater Alternative are anticipated to be better for vector control than under current conditions due to the conversion of the hydraulic regime to saltwater and tidal influence. Like the Saltwater and Hybrid alternatives, and to a lesser extent the Freshwater Alternative, implementation of the Modified Saltwater Alternative would facilitate the control of vectors at the lagoon and reduce the public health and safety risk associated with vector-borne diseases.

CUMULATIVE IMPACTS

Chapter 5 of the Final EIR identified potential cumulative impacts that could occur from the incremental effects of implementation of the Enhancement Project. As discussed, the Enhancement Project would have significant cumulative impacts to biological resources (temporary), visual resources (temporary), traffic (temporary), air quality (temporary), and noise (temporary). If the Modified Saltwater Alternative is implemented, the increase in sediment removal (approximately 12% increase), and associated materials to be disposed would have an incrementally greater contribution to these significant cumulative impacts but would not be of the magnitude to substantially worsen the cumulative effect identified in the Final EIR and cumulative impacts would cease at the end of the construction periods.

SUMMARY OF ENVIRONMENTAL EFFECTS

Impacts identified in the Final EIR for all project alternatives and those identified for the Modified Saltwater Alternative in this memorandum are summarized by issue area in Table 4. Table 4 also includes reference to the mitigation measures required per the Final EIR and the level of significance after implementation of mitigation.

In summary, impacts resulting from implementation of the Modified Saltwater Alternative are as follows:

- Less than significant – Hydrology; Oceanography/Coastal Processes; Geology/Soils; Global Climate Change, Greenhouse Gas Emissions, and Sea Level Rise; and Public Services and Utilities.

- Less than significant with mitigation – Land Use/Recreation; Water and Aquatic Sediment Quality; Biological Resources (temporary and long-term/permanent impacts related to sensitive bird species); Cultural Resources; Paleontological Resources; and Traffic and Circulation (temporary impacts to pedestrian facilities).

- Significant and unavoidable – Biological Resources (temporary impacts to sensitive vegetation communities and to light-footed Ridgway's rails); Visual Resources; Traffic and Circulation (temporary impacts to bicycle facilities); Air Quality (temporary during construction); Noise (temporary during construction); and Public Health and Safety.

It should be noted that impacts resulting from implementation of the Modified Saltwater Alternative are not considered new nor would they substantially increase the severity of adverse impacts as previously identified for the alternatives in the Final EIR.

Table 4
Summary of Impacts and Mitigation Measures

Activity	Significant Environmental Impacts and Significance Determination by Alternative					Final EIR Mitigation Measures	Level of Significance after Mitigation
	No Project Alternative	Freshwater Alternative	Saltwater Alternative	Hybrid Alternative	Modified Saltwater Alternative		
LAND USE/RECREATION							
Enhancement Activities	Less than Significant	Less than significant	Inconsistencies with access-related land use policies due to the restricted north-south beach accessibility that would result from the construction and operation of an open inlet under the Saltwater Alternative are considered substantial, and **impacts would be significant**. The new inlet crossing of the beach would periodically create a new safety threat to recreational users and the **impact would be significant.**	Inconsistencies with access-related land use policies due to the restricted north-south beach accessibility that would result from the construction and operation of an open inlet under the Hybrid Alternative are considered substantial, and **impacts would be significant.** The new inlet crossing of the beach would periodically create a new safety threat to recreational users and the **impact would be significant.**	Inconsistencies with access-related land use policies due to the restricted north-south beach accessibility that would result from the construction and operation of an open inlet under the Modified Saltwater Alternative are considered substantial, and **impacts would be significant.** The new inlet crossing of the beach would periodically create a new safety threat to recreational users and the **impact would be significant.**	Saltwater, Hybrid, and Modified Saltwater alternatives Only: **Mitigation Measure Land Use-1**	With implementation of Mitigation Measure Land Use-1, safe public access would be available across the proposed inlet at all times and the impact would be **less than significant.**
Materials Disposal/ Reuse	No Impact	The placement of the pipeline along the beach area could restrict access for some beach users wanting to cross from the back-beach area and would cause a temporary	The placement of the pipeline along the beach area could restrict access for some beach users wanting to cross from the back-beach area and would cause a temporary displacement of public recreation	The placement of the pipeline along the beach area could restrict access for some beach users wanting to cross from the back-beach area and would cause a temporary displacement of public recreation activities due to access limitations and temporary **impacts**	The placement of the pipeline along the beach area could restrict access for some beach users wanting to cross from the back-beach area and would cause a temporary displacement of public recreation	Freshwater, Saltwater, Hybrid, and Modified Saltwater alternatives: **Mitigation Measure Recreation-1**	With implementation of Mitigation Measure Land Use-1, safe public access would be available across the beach at all times and the impact would be **less than**

Activity	Significant Environmental Impacts and Significance Determination by Alternative					Final EIR Mitigation Measures	Level of Significance after Mitigation
	No Project Alternative	**Freshwater Alternative**	**Saltwater Alternative**	**Hybrid Alternative**	**Modified Saltwater Alternative**		
		displacement of public recreation activities due to access limitations and temporary **impacts would be significant.**	activities due to access limitations and temporary **impacts would be significant.**	**would be significant.**	activities due to access limitations and temporary **impacts would be significant.**		**significant.**
HYDROLOGY							
Enhancement Activities	Flooding performance would worsen and **impacts to hydrology would be significant.**	Less than Significant	Less than Significant	Less than Significant	Less than Significant	No mitigation measures are required.	The flooding impact under the No Project Alternative would **remain significant.**
Materials Disposal/ Reuse	No Impact	Less than Significant	Less than Significant	Less than Significant	Less than Significant	No mitigation measures are required.	Not Applicable
OCEANOGRAPHY/COASTAL PROCESSES							
Enhancement Activities	No Impact	Less than Significant	Less than Significant	Less than Significant	Less than Significant	No mitigation measures are required.	Not Applicable
Materials Disposal/ Reuse	No Impact	Less than Significant	Less than Significant	Less than Significant	Less than Significant	No mitigation measures are required.	Not Applicable
WATER AND AQUATIC SEDIMENT QUALITY							
Enhancement Activities	The continued degradation compared to existing conditions and the proposed Enhancement Project alternatives would result in a **significant impact to**	As the lagoon is listed as a CWA Section 303(d) impaired waterbody for sedimentation/siltation, the potential temporary turbidity impacts generated by lagoon	As the lagoon is listed as a CWA Section 303(d) impaired waterbody for sedimentation/siltation, the potential temporary turbidity impacts generated by lagoon enhancement activities would be considered	As the lagoon is listed as a CWA Section 303(d) impaired waterbody for sedimentation/siltation, the potential temporary turbidity impacts generated by lagoon enhancement activities would be considered **potentially significant.**	As the lagoon is listed as a CWA Section 303(d) impaired waterbody for sedimentation/siltation, the potential temporary turbidity impacts generated by lagoon enhancement activities would be considered	Freshwater, Saltwater, Hybrid, and Modified Saltwater alternatives: **Mitigation Measures Water Quality-1**	Freshwater, Saltwater, Hybrid, and Modified Saltwater alternatives: **Less than significant** The No Project Alternative impact would **remain significant.**

Activity	Significant Environmental Impacts and Significance Determination by Alternative					Final EIR Mitigation Measures	Level of Significance after Mitigation
	No Project Alternative	Freshwater Alternative	Saltwater Alternative	Hybrid Alternative	Modified Saltwater Alternative		
	water quality.	enhancement activities would be considered **potentially significant.**	**potentially significant.**		**potentially significant.**	**Water Quality-2**	
Materials Disposal/ Reuse	No Impact	Less than Significant	Less than Significant	Less than Significant	Less than Significant	No mitigation measures are required.	Not Applicable
BIOLOGICAL RESOURCES							
Enhancement Activities	Temporary direct impacts to light-footed Ridgway's rail and Belding's savannah sparrow **are considered significant.** Temporary direct impacts on sensitive birds **are considered significant.** Long-term/permanent direct impacts to light-footed Ridgway's rail and sensitive birds **are considered significant.**	Temporary, direct impacts to beach, coastal and valley freshwater marsh, open water, coastal scrub, and Diegan coastal sage scrub: *Baccharis*-dominated, **are considered significant.** Temporary direct and indirect impacts to light-footed Ridgway's rail and Belding's savannah sparrow **are considered significant.** Temporary direct and indirect impacts on sensitive birds **are considered significant.**	Temporary, direct impacts to beach, coastal and valley freshwater marsh, open water, coastal scrub, and Diegan coastal sage scrub: *Baccharis*-dominated, **are considered significant.** Temporary direct and indirect impacts to light-footed Ridgway's rail and Belding's savannah sparrow **are considered significant.** Temporary direct and indirect impacts on sensitive birds **are considered significant.**	Temporary, direct impacts to beach, coastal and valley freshwater marsh, open water, coastal scrub, and Diegan coastal sage scrub: *Baccharis*-dominated, **are considered significant.** Temporary direct and indirect impacts to light-footed Ridgway's rail and Belding's savannah sparrow **are considered significant.** Temporary direct and indirect impacts on sensitive birds **are considered significant.** Long-term/permanent direct impacts to light-footed Ridgway's rail and sensitive birds due to cattail maintenance **are considered significant.**	Temporary, direct impacts to beach, coastal and valley freshwater marsh, open water, coastal scrub, and Diegan coastal sage scrub: *Baccharis*-dominated, **are considered significant.** Temporary direct and indirect impacts to light-footed Ridgway's rail and Belding's savannah sparrow **are considered significant.** Temporary direct and indirect impacts on sensitive birds **are considered significant.**	Freshwater, Saltwater, Hybrid, and Modified Saltwater alternatives: **Mitigation Measures Biological Resources-1** **Biological Resources-2** **Biological Resources-3** **Biological Resources-4** **Biological Resources-5** **Biological Resources-6** **Biological Resources-7** **Biological**	Temporary impacts to light-footed Ridgway's rail, Belding's savannah sparrow and sensitive birds related to mortality from increased population concentrations, and nighttime light **would become less than significant.** Long-term/permanent impacts to light-footed Ridgway's rail and sensitive species **would become less than significant.** Temporary impacts to sensitive vegetation communities and

Activity	Significant Environmental Impacts and Significance Determination by Alternative					Final EIR Mitigation Measures	Level of Significance after Mitigation
	No Project Alternative	**Freshwater Alternative**	**Saltwater Alternative**	**Hybrid Alternative**	**Modified Saltwater Alternative**		
		Long-term/permanent direct impacts to light-footed Ridgway's rail and sensitive birds due to cattail maintenance **are considered significant.**				**Resources-8**	to light-footed Ridgway's rail **would remain significant and unavoidable.**
Materials Disposal/ Reuse	No Impact	Less than Significant	Less than Significant	Less than Significant	Less than Significant	No mitigation measures are required.	Not Applicable
GEOLOGY/SOILS							
Enhancement Activities	No Impact	Less than Significant	Less than Significant	Less than Significant	Less than Significant	No mitigation measures are required.	Not Applicable
Materials Disposal/ Reuse	No Impact	Less than Significant	Less than Significant	Less than Significant	Less than Significant	No mitigation measures are required.	Not Applicable
CULTURAL RESOURCES							
Enhancement Activities	No Impact	The potential exists to encounter currently unknown cultural deposits during mobilization and use of land-based equipment for soils and/or vegetation removal in the densely vegetated stable surfaces along portions of the lagoon margins outside of	The potential exists to encounter currently unknown cultural deposits during mobilization and use of land-based equipment for soils and/or vegetation removal in the densely vegetated stable surfaces along portions of the lagoon margins outside of staging areas, resulting in **potentially significant impacts**	The potential exists to encounter currently unknown cultural deposits during mobilization and use of land-based equipment for soils and/or vegetation removal in the densely vegetated stable surfaces along the lagoon margins outside of staging areas, resulting in **potentially significant impacts on cultural resources.**	The potential exists to encounter currently unknown cultural deposits during mobilization and use of land-based equipment for soils and/or vegetation removal in the densely vegetated stable surfaces along portions of the lagoon margins outside of staging areas, resulting in **potentially significant impacts**	Freshwater, Saltwater, Hybrid, and Modified Saltwater alternatives: **Mitigation Measures Cultural-1 Cultural-2 Cultural-3 Cultural-4**	**Less than significant**

Activity	Significant Environmental Impacts and Significance Determination by Alternative					Final EIR Mitigation Measures	Level of Significance after Mitigation
	No Project Alternative	Freshwater Alternative	Saltwater Alternative	Hybrid Alternative	Modified Saltwater Alternative		
		staging areas, resulting in **potentially significant impacts on cultural resources.**	**on cultural resources.**		**on cultural resources.**		
Materials Disposal/ Reuse	No Impact	Less than Significant	Less than Significant	Less than Significant	Less than Significant	No mitigation measures are required.	Not Applicable
PALEONTOLOGICAL RESOURCES							
Enhancement Activities	No Impact	Although located in a previously disturbed area, due to the assigned resource sensitivity, excavation of the geologic materials could result in **direct, potentially significant impacts to paleontological resources.**	Excavation activities within an area containing River and/or Marine Terrace Deposits under the Saltwater Alternative could result in **direct, potentially significant impacts to paleontological resources.**	Excavation activities within an area containing River and/or Marine Terrace Deposits under the Hybrid Alternative could result in **direct, potentially significant impacts to paleontological resources.**	Excavation activities within an area containing River and/or Marine Terrace Deposits under the Modified Saltwater Alternative could result in **direct, potentially significant impacts to paleontological resources.**	Freshwater, Saltwater, Hybrid, and Modified Saltwater alternatives: **Paleo-1 Paleo-2**	**Less than significant**
Materials Disposal/ Reuse	No Impact	No Impact	No Impact	No Impact	No Impact	No mitigation measures are required.	Not Applicable
VISUAL RESOURCES							
Enhancement Activities	Less than Significant	Due to the construction activities in the natural lagoon setting that would be highly visible to the public and sensitive viewers	Due to the construction activities in the natural lagoon setting that would be highly visible to the public and sensitive viewers for a substantial duration,	Due to the construction activities in the natural lagoon setting that would be highly visible to the public and sensitive viewers for a substantial duration, the Enhancement Project	Due to the construction activities in the natural lagoon setting that would be highly visible to the public and sensitive viewers for a substantial duration,	Freshwater, Saltwater, Hybrid, and Modified Saltwater alternatives: **Visual-1 Visual-2**	Visual impacts due to construction would remain **significant and unavoidable.**

Activity	Significant Environmental Impacts and Significance Determination by Alternative					Final EIR Mitigation Measures	Level of Significance after Mitigation
	No Project Alternative	**Freshwater Alternative**	**Saltwater Alternative**	**Hybrid Alternative**	**Modified Saltwater Alternative**		
		for a substantial duration, the Enhancement Project would result in **short-term significant impacts to visual resources. during construction** The temporary presence of nighttime lighting within the lagoon would be a change from the existing nonlit night environment, and the **temporary light and glare impact would be potentially significant.**	the Enhancement Project would result in **short-term significant impacts to visual resources. during construction.** The temporary presence of nighttime lighting within the lagoon would be a change from the existing nonlit night environment, and the **temporary light and glare impact would be potentially significant.** Mitigation Measure Land Use-1 would require a pedestrian bridge to be constructed for the Saltwater and Hybrid alternatives and would result in a **long-term, significant, unmitigable visual impact.**	would result in **short-term significant impacts to visual resources. during construction** The temporary presence of nighttime lighting within the lagoon would be a change from the existing nonlit night environment, and the **temporary light and glare impact would be potentially significant.** Mitigation Measure Land Use-1 would require a pedestrian bridge to be constructed for the Saltwater and Hybrid alternatives and would result in a **long-term, significant, unmitigable visual impact.**	the Enhancement Project would result in **short-term significant impacts to visual resources. during construction** The temporary presence of nighttime lighting within the lagoon would be a change from the existing nonlit night environment, and the **temporary light and glare impact would be potentially significant.** Mitigation Measure Land Use-1 would require a pedestrian bridge to be constructed for the Saltwater and Hybrid alternatives and would result in a **long-term, significant, unmitigable visual impact.**		Nighttime lighting impacts would remain **significant and unavoidable.** Saltwater, Hybrid, and Modified Saltwater alternatives only: There is no feasible mitigation to reduce visual impacts from the pedestrian bridge; thus, Mitigation Measure Land Use-1 would result in **significant, unmitigable visual impacts.**
Materials Disposal/ Reuse	No Impact	Temporary lighting may be required at both the placement sites and along the pipeline. **The temporary and intermittent use**	Temporary lighting may be required at both the placement sites and along the pipeline. **The temporary and intermittent use of night lighting for**	Temporary lighting may be required at both the placement sites and along the pipeline. **The temporary and intermittent use of night lighting for construction activities**	Temporary lighting may be required at both the placement sites and along the pipeline. **The temporary and intermittent use of night lighting for**	Freshwater, Saltwater, Hybrid, and Modified Saltwater alternatives:	**Less than significant**

Activity	Significant Environmental Impacts and Significance Determination by Alternative					Final EIR Mitigation Measures	Level of Significance after Mitigation
	No Project Alternative	Freshwater Alternative	Saltwater Alternative	Hybrid Alternative	Modified Saltwater Alternative		
		of night lighting for construction activities would be potentially significant.	**construction activities would be potentially significant.**	**would be potentially significant.**	**construction activities would be potentially significant.**	See **Mitigation Measure Visual-2.**	
TRAFFIC AND CIRCULATION							
Enhancement Activities	No Impact	Less than Significant	The Saltwater Alternative would result in **temporary significant impacts to bicycle facilities in the vicinity of the project area.** The Saltwater Alternative would result in t**emporary construction impacts to pedestrian facilities in the vicinity of the project area that would be significant.**	The Hybrid Alternative (Option A and Option B) would result in **temporary significant impacts to bicycle facilities in the vicinity of the project area.** The Hybrid Alternative would result in t**emporary construction impacts to pedestrian facilities in the vicinity of the project area that would be significant.**	The Modified Saltwater Alternative would result in **temporary significant impacts to bicycle facilities in the vicinity of the project area.** The Modified Saltwater Alternative would result in t**emporary construction impacts to pedestrian facilities in the vicinity of the project area that would be significant.**	Saltwater, Hybrid and Modified Saltwater alternatives: **Mitigation Measures Traffic-1 Traffic-2 Traffic-3**	Freshwater, Saltwater, Hybrid, and Modified Saltwater alternatives: Impacts to bicycle facilities would remain **significant and unavoidable.** Freshwater, Saltwater, Hybrid, and Modified Saltwater alternatives: Impacts to pedestrian facilities would become **less than significant.**
Materials Disposal/ Reuse	No Impact	Less than Significant	Less than Significant	Less than Significant	Less than Significant	No mitigation measures are required.	Not Applicable
AIR QUALITY							
Enhancement Activities/ Materials Disposal/ Reuse[1]	No Impact	Construction-generated NO_X emissions would exceed applicable mass emission thresholds, regardless of the	Construction-generated NO_X emissions would exceed applicable mass emission thresholds, regardless of the material	Construction-generated NO_X emissions would exceed applicable mass emission thresholds, regardless of the materials disposal scenario. Therefore,	Construction-generated NO_X emissions would exceed applicable mass emission thresholds, regardless of the material	Freshwater, Saltwater, Hybrid, and Modified Saltwater alternatives:	Freshwater Alternative (for overdredge pit disposal option): **less than significant**

Activity	Significant Environmental Impacts and Significance Determination by Alternative					Final EIR Mitigation Measures	Level of Significance after Mitigation
	No Project Alternative	**Freshwater Alternative**	**Saltwater Alternative**	**Hybrid Alternative**	**Modified Saltwater Alternative**		
		material disposal scenario. Therefore, construction of the Freshwater Alternative could violate an ambient air quality standard or contribute substantially to an existing violation and **impacts would be significant.** Because construction of the Enhancement Project would exceed the project-level air quality significance thresholds, the Freshwater Alternative would have a **cumulatively considerable contribution to the region's air quality.** The Freshwater Alternative could expose sensitive receptors to substantial	disposal scenario. Therefore, construction of the Saltwater Alternative could violate an ambient air quality standard or contribute substantially to an existing violation and **impacts would be significant** Because construction of the Enhancement Project would exceed the project-level air quality significance thresholds, the Saltwater Alternative would have a **cumulatively considerable contribution to the region's air quality.** The Saltwater Alternative could expose sensitive receptors to substantial construction pollutant concentrations, and this **impact would be significant.**	construction of the Hybrid Alternative could violate an ambient air quality standard or contribute substantially to an existing violation, and **impacts would be significant.** Because construction of the Enhancement Project would exceed the project-level air quality significance thresholds, the Hybrid Alternative would have a **cumulatively considerable contribution to the region's air quality.** The Hybrid Alternative could expose sensitive receptors to substantial construction pollutant concentrations, and this **impact would be significant.**	disposal scenario. Therefore, construction of the Modified Saltwater Alternative could violate an ambient air quality standard or contribute substantially to an existing violation and **impacts would be significant** Because construction of the Enhancement Project would exceed the project-level air quality significance thresholds, the Modified Saltwater Alternative would have a **cumulatively considerable contribution to the region's air quality.** The Modified Saltwater Alternative could expose sensitive receptors to substantial construction pollutant concentrations, and this **impact would be significant.**	**Mitigation Measures** **Air Quality-1** **Air Quality-2** **Air Quality-3** **Air Quality-4**	Freshwater (for LA-5 disposal Option), Saltwater, Hybrid, and Modified Saltwater alternatives: The NOx exceedance would remain **significant and unavoidable** Cumulative air quality impacts would remain **significant and unavoidable.** Pollutant concentration impacts to sensitive receptors would remain **significant and unavoidable.**

Activity	Significant Environmental Impacts and Significance Determination by Alternative					Final EIR Mitigation Measures	Level of Significance after Mitigation
	No Project Alternative	**Freshwater Alternative**	**Saltwater Alternative**	**Hybrid Alternative**	**Modified Saltwater Alternative**		
		construction pollutant concentrations, and this **impact would be significant.**					
GLOBAL CLIMATE CHANGE, GREENHOUSE GAS EMISSIONS, AND SEA LEVEL RISE							
Enhancement Activities/ Materials Disposal/ Reuse[1]	No Impact	Less than Significant	Less than Significant	Less than Significant	Less than Significant	No mitigation measures are required.	Not Applicable
NOISE							
Enhancement Activities	No Impact	Under the Freshwater Alternative, 24-hour operations could occur, and nighttime dredging **impacts would be considered significant.**	Under the Saltwater Alternative, 24-hour operations could occur, and nighttime dredging **impacts would be considered significant.**	Under the Hybrid Alternative (Options A and B), 24-hour operations could occur, and nighttime dredging **impacts would be considered significant.**	Under the Modified Saltwater Alternative, 24-hour operations could occur, and nighttime dredging **impacts would be considered significant.**	**Mitigation Measures Noise-1 Noise-2**	Nighttime operations would remain **significant and unavoidable**
Materials Disposal/ Reuse	No Impact	Nearshore and offshore placement requiring nighttime operation would result in **significant noise impacts.**	Nearshore and offshore placement requiring nighttime operation would result in **significant noise impacts.**	Nearshore and offshore placement requiring nighttime operation would result in **significant noise impacts.**	Nearshore and offshore placement requiring nighttime operation would result in **significant noise impacts.**		
PUBLIC SERVICES AND UTILITIES							
Enhancement Activities	No Impact	Less than Significant	Less than Significant	Less than Significant	Less than Significant	No mitigation measures are required.	Not Applicable

Activity	Significant Environmental Impacts and Significance Determination by Alternative					Final EIR Mitigation Measures	Level of Significance after Mitigation
	No Project Alternative	**Freshwater Alternative**	**Saltwater Alternative**	**Hybrid Alternative**	**Modified Saltwater Alternative**		
Materials Disposal/ Reuse	No Impact	No Impact	Less than Significant	Less than Significant	Less than Significant	No mitigation measures are required.	Not Applicable
PUBLIC HEALTH AND SAFETY							
Enhancement Activities	Potential for exposure to vector-borne disease in the nearby communities would increase under the No Project Alternative and **impacts to public health and safety would be significant.**	Less than Significant	Recreationalists could be tempted to cross the inlet in unsafe conditions as no other easily accessible north-south route is available along the beach. Thus, operation of the Saltwater Alternative with the new inlet could result in a substantial permanent increase in hazards for people swimming, walking, or otherwise recreating in the proposed lagoon inlet, and **impacts would be significant.**	Recreationalists could be tempted to cross the inlet in unsafe conditions as no other easily accessible north-south route is available along the beach. Thus, operation of the Hybrid Alternative with the new inlet could result in a substantial permanent increase in hazards for people swimming, walking, or otherwise recreating in the proposed lagoon inlet, and **impacts would be significant.**	Recreationalists could be tempted to cross the inlet in unsafe conditions as no other easily accessible north-south route is available along the beach. Thus, operation of the Modified Saltwater Alternative with the new inlet could result in a substantial permanent increase in hazards for people swimming, walking, or otherwise recreating in the proposed lagoon inlet, and **impacts would be significant.**	Saltwater, Hybrid, and Modified Saltwater alternatives: **Safety-1** Also, see Mitigation Measure Land Use-1.	Mitigation Measure Safety-1 would further reduce the public safety impact of the inlet but not to below a level of significance. Thus, public safety impacts associated with operation of the new tidal inlet would remain **significant and unavoidable**. Under the No Project Alternative, the potential for exposure to vector-borne disease would increase and **impacts to public health and safety would remain significant and unavoidable.**

Activity	Significant Environmental Impacts and Significance Determination by Alternative					Final EIR Mitigation Measures	Level of Significance after Mitigation
	No Project Alternative	Freshwater Alternative	Saltwater Alternative	Hybrid Alternative	Modified Saltwater Alternative		
Materials Disposal/ Reuse	No Impact	Less than Significant	Less than Significant	Less than Significant	Less than Significant	No mitigation measures are required.	Not Applicable

[1] Enhancement Activities/ Materials Disposal/Reuse considered together for impact calculation and analysis purposes.

Attachment 1

Modified Saltwater Alternative Existing and Post-Implementation Acreage of Suitable Habitat for Special-Status Wildlife Species

Attachment 1

Modified Saltwater Alternative Existing and Post-Implementation Acreage of Suitable Habitat for Special-Status Wildlife Species (acres)[1]

Special-Status Species	Vegetation Community	Existing Habitat	Habitat Acreage Post-Implementation			
			Freshwater Alternative	Saltwater Alternative	Hybrid Alternative (Option A/ Option B)[2]	Modified Saltwater Alternative
Light-footed Ridgway's rail	Coastal and valley freshwater marsh	96.2	24.7	0	10.2	0
	Freshwater habitat transition zone	0	9.2	0	0	0
	Proposed cattail maintenance area[3]	0	31.9	0	0	0
	Mudflat	0	0	20.0	4.7/4.9	13.7
	Transitional[3]	0	<0.01	0	0	0
	Southern coastal salt marsh nontidal	14.8	14.8	23.2	17.9	22.7
	Southern coastal salt marsh high	0	0	55.0	26.5	57.5
	Southern coastal salt marsh low	0	0	33.2	6.3/6.5	16.9
	Southern coastal salt marsh mid	0	0	35.4	20.3/20.6	28.0
	Total	**111.0**	**80.6**	**166.8**	**85.9/86.7**	**138.8**
Western snowy plover	Beach	0.6	1.3	0.8	0.8	0.8
	Mudflat	0	0	20.0	4.7/4.9	13.7
	Total	**0.6**	**1.3**	**20.8**	**5.5/5.7**	**14.5**
California least tern	Beach	0.6	1.3	0.8	0.8	0.8
	Open water	106.8	134.4	51.0	99.3[4]/98.4	76.7[5]
	Deep open water	0	0	4.0	5	6.4
	Mudflat	0	0	20.0	4.7/4.9	13.7
	Total	**107.4**	**135.7**	**75.8**	**109.8/109.1**	**97.6**
Least Bell's vireo and Southwestern willow flycatcher	Southern willow scrub	2.2	2.2	0	2.2	0
	Total	**2.2**	**2.2**	**0.0**	**2.2**	**0**
Belding's savannah sparrow	Mudflat	0	0	20.0	4.7	13.7
	Southern coastal salt marsh nontidal	14.8	14.8	23.2	17.9	22.7
	Southern coastal salt marsh high	0	0	55.0	26.5	57.5

Special-Status Species	Vegetation Community	Existing Habitat	Habitat Acreage Post-Implementation			
			Freshwater Alternative	Saltwater Alternative	Hybrid Alternative (Option A/ Option B)[2]	Modified Saltwater Alternative
	Southern coastal salt marsh low	0	0	33.2	6.3/6.5	16.9
	Southern coastal salt marsh mid	0	0	35.4	20.3/20.6	28.0
	Total	**14.8**	**14.8**	**166.8**	**75.7/76.2**	**138.8**
Coastal California gnatcatcher	Coastal scrub	0.6	0.6	0.5	0.7	0.5
	Diegan coastal sage scrub	0	0.6	0.8	2.1	0.8
	Diegan coastal sage scrub: *Baccharis*-dominated	1.3	1.6	1.3	0	1.3
	Total	**1.9**	**2.8**	**2.6**	**2.8**	**2.6**

[1] Numbers may not sum exactly due to rounding.
[2] Values are provided if they differ between Option A and Option B, as applicable.
[3] These habitat types would function biologically as coastal and valley freshwater marsh under the Freshwater Alternative. One acre of channel within the cattail maintenance area has been removed as channels may be too deep to provide foraging opportunity.
[4] Includes 0.1 acre of channel guide, which will be under the surface of the water a portion of the time.
[5] Includes 0.1 acre of channel guide and 5.9 acres of restricted tidal area.

Attachment 2

Water Surface Elevation Comparisons

Attachment 2
Maximum Flood Elevations under 2015 Mean Sea Level Conditions

Storm Return Period (Year)	Alternative	Maximum Water Elevation (ft, NGVD)			
		Weir Basin	Railroad Basin	Coast Highway Basin	I-5 Basin
100	Existing Conditions	12.0	12.1	12.1	15.8
	Freshwater Alternative	9.6	9.7	10.4	15.4
	Saltwater Alternative	7.0	7.3	7.7	8.2
	Hybrid Alternative, Option A	6.0	6.7	7.0	16.0
	Hybrid Alternative, Option B	6.0	6.7	7.0	16.0
	Modified Saltwater Alternative	7.0	7.4	7.7	8.1
50	Existing Conditions	10.2	10.2	10.3	13.3
	Freshwater Alternative	8.0	7.9	9.0	12.9
	Saltwater Alternative	5.4	5.7	6.0	6.5
	Hybrid Alternative, Option A	4.5	5.4	5.6	13.7
	Hybrid Alternative, Option B	4.5	5.3	5.6	13.8
	Modified Saltwater Alternative	5.2	5.7	6.0	6.3
10	Existing Conditions	7.7	7.7	7.8	8.9
	Freshwater Alternative	6.9	6.9	7.1	8.4
	Saltwater Alternative	3.5	3.6	3.8	4.0
	Hybrid Alternative, Option A	3.0	3.2	3.3	9.7
	Hybrid Alternative, Option B	3.0	3.2	3.3	9.7
	Modified Saltwater Alternative	3.3	3.7	3.8	3.9
5	Existing Conditions	6.9	6.9	6.9	7.4
	Freshwater Alternative	6.5	6.5	6.5	7.0
	Saltwater Alternative	3.1	3.1	3.2	3.3
	Hybrid Alternative, Option A	3.0	3.0	3.0	9.1
	Hybrid Alternative, Option B	3.0	3.0	3.0	9.2
	Modified Saltwater Alternative	3.0	3.1	3.2	3.3
2	Existing Conditions	6.1	6.1	6.1	6.2
	Freshwater Alternative	6.0	6.0	6.0	6.0
	Saltwater Alternative	2.8	2.8	2.9	2.9
	Hybrid Alternative, Option A	3.0	3.0	3.0	7.1
	Hybrid Alternative, Option B	3.0	3.0	3.0	7.1
	Modified Saltwater Alternative	3.0	3.0	3.0	3.0

ft NGVD = feet National Geodetic Vertical Datum

Attachment 2
Comparison of Fluvial Results Under Year 2015, Year 2050, and Year 2100 Mean Sea Level Conditions for the 100-year Storm Event

Sea Level Conditions	Alternative	Maximum Water Elevation (ft, NGVD)			
		Weir Basin	RR Basin	CH Basin	I-5 Basin
2015	Existing Conditions	12.0	12.1	12.1	15.8
	Saltwater Alternative	7.0	7.3	7.7	8.2
	Freshwater Alternative	9.6	9.7	10.4	15.4
	Hybrid Alternative, Option A	6.6	6.8	7.1	15.9
	Hybrid Alternative, Option B	6.6	6.8	7.1	15.9
	Modified Saltwater Alternative	7.0	7.4	7.7	8.1
2050	No-Project Conditions	12.7	12.8	12.9	16.9
	Saltwater Alternative	7.5	7.9	8.3	8.8
	Freshwater Alternative	9.6	9.7	10.4	15.4
	Hybrid Alternative, Option A	7.1	7.4	7.9	16.0
	Hybrid Alternative, Option B	7.1	7.4	7.9	16.0
	Modified Saltwater Alternative	7.6	8.0	8.4	8.8
2100	No-Project Conditions	13.1	13.2	13.3	17.0
	Saltwater Alternative	9.5	9.8	10.4	10.8
	Freshwater Alternative	10.0	10.2	10.6	15.4
	Hybrid Alternative, Option A	9.1	9.3	9.7	16.0
	Hybrid Alternative, Option B	9.1	9.3	9.7	16.0
	Modified Saltwater Alternative	9.7	10.0	10.6	10.9

ft NGVD = feet National Geodetic Vertical Datum