

CHAPTER 5

Alternatives

5.1 CEQA Requirements

The identification and analysis of alternatives to a project is a fundamental aspect of the environmental review process under the California Environmental Quality Act (CEQA). The Public Resources Code (PRC) Section 21002 establishes the need to address feasible alternatives in an EIR. The *CEQA Guidelines* provides direction regarding the consideration and discussion of project alternatives in an EIR in Section 15126.6 as follows:

An EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation. An EIR is not required to consider alternatives which are infeasible.

The *CEQA Guidelines* emphasize that the selection of project alternatives be based primarily on the ability to avoid or substantially lessen significant impacts relative to a project, “even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly.” The *CEQA Guidelines* further directs that the range of alternatives be guided by a “rule of reason,” such that only those alternatives necessary to permit a reasoned choice are addressed. In selecting project alternatives for analysis, potential alternatives must be feasible. *CEQA Guidelines* Section 15126.6(f)(1) states that:

Among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries ... and whether the proponent can reasonably acquire, control or otherwise have access to the alternative site.

Beyond these factors, *CEQA Guidelines* Section 15126.6(e) requires the analysis of a “no project” alternative. Based on the alternatives analysis, an environmentally superior alternative is to be identified. If the environmentally superior alternative is the No Project (No Build) Alternative, then the EIR is required to identify an environmentally superior alternative among the other alternatives.

5.2 Proposed Program Alternatives Background

5.2.1 Final Conceptual Restoration Plan (CRP)

The Los Cerritos Wetlands Final Conceptual Restoration Plan (CRP) (Moffatt & Nichol, 2015) developed three restoration design alternatives for habitat enhancement and improved public access for the Los Cerritos Wetlands Complex. The alternatives (minimum alteration, moderate alteration, and maximum alteration) include varying degrees of alterations to existing site conditions under a range of sea-level rise scenarios.

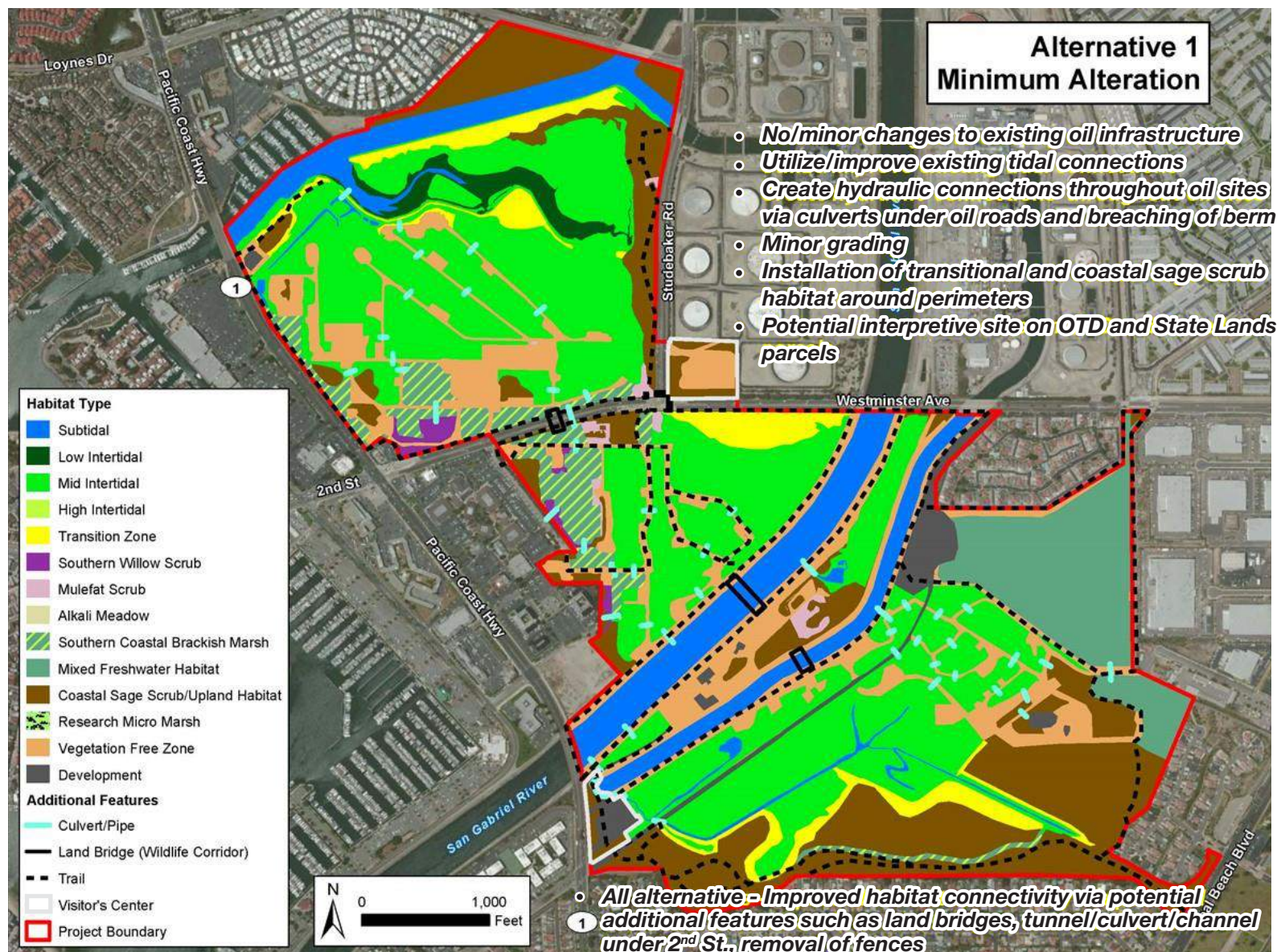
5.2.1.1 CRP Alternatives

Alternative 1 (Minimum Alteration)

The vision for Final Alternative 1 was to enhance habitat diversity through the preservation of existing wetlands habitats and the conversion of upland and unvegetated areas to wetlands and wetlands-associated habitats (**Figure 5-1, CRP Alternative 1 – Minimum Alteration**). Existing ground elevations would be utilized as much as possible to maintain existing wetlands habitats and expand coastal salt marsh habitat. Tidal exchange would be improved, but this would be done through the enhancement of existing channels/pipes and the addition of small channels and pipes where needed to provide hydraulic connectivity. For the most part, oil infrastructure would be maintained throughout the site with restoration work planned around the existing infrastructure. From a temporal standpoint, this alternative would seek to provide a wide range of wetland and associated upland habitats in the near-term with a decreased range of habitats remaining in the future based on current projections of sea-level rise. Transitional and upland habitats would be provided along the perimeters. Potential interpretive sites would be provided on the parcel at the northeast corner of Westminster Avenue and Studebaker Road and/or the State Lands Commission parcel (Moffatt & Nichol, 2015).

Alternative 2 (Moderate Alteration)

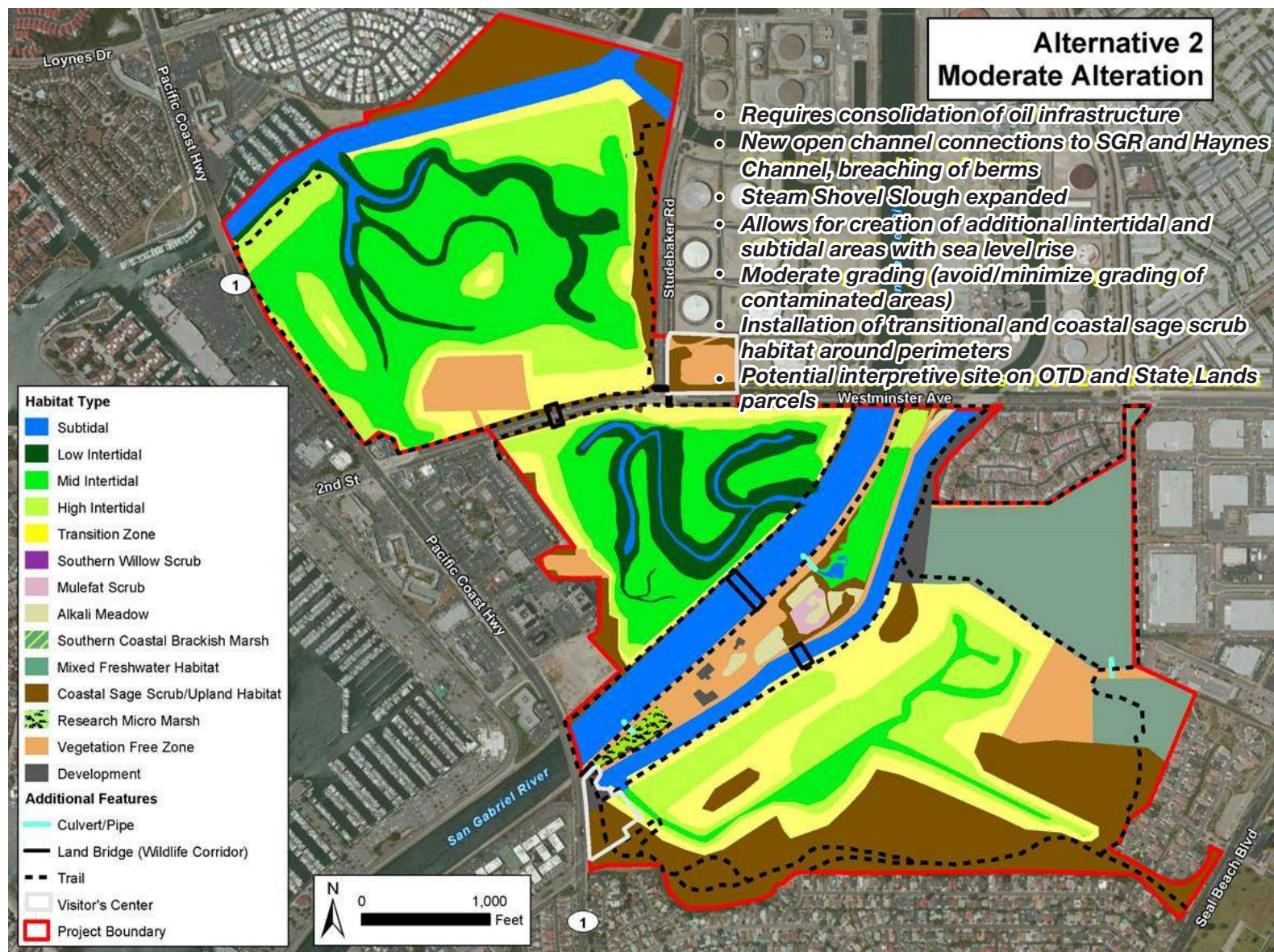
The vision for Final Alternative 2 would be to enhance habitat diversity through the preservation of existing wetlands habitats and the conversion of upland and unvegetated areas to wetlands and wetlands-associated habitats (**Figure 5-2, CRP Alternative 2 – Moderate Alteration**). Existing ground elevations would be utilized to maintain a large amount of the existing wetlands habitats and to expand coastal salt marsh habitat, but moderate levels of earthwork would also be conducted to expand coastal salt marsh under current sea levels. Tidal exchange would be improved primarily through the construction of small to moderate subtidal channels. The oil infrastructure would be consolidated throughout the site to allow more extensive areal restoration of coastal salt marsh. From a temporal standpoint, this alternative would seek to provide a limited range of wetland (coastal salt marsh) and associated upland habitats in the near-term with a decreased range of wetlands habitats (converting to low intertidal, mudflat, and subtidal) remaining in the future based on current projections of sea-level rise. Transitional and upland habitats would be provided along the perimeters. Potential interpretive sites would be provided on the parcel at the northeast corner of Westminster Avenue and Studebaker Road and/or the State Lands Commission parcels (Moffatt & Nichol, 2015).



SOURCE: Moffatt & Nichol, 2015

Los Cerritos Wetlands Restoration Plan Draft Program EIR

Figure 5-1
CRP Alternative 1 – Minimum Alteration



SOURCE: Moffatt & Nichol, 2019

NOTE: Figure 5-2: Habitat types listed include all those proposed for Alternatives 1-3. Alternative 2 does not include the restoration of Southern Coastal Brackish Marsh.

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Figure 5-2
CRP Alternative 2 – Moderate Alteration

Alternative 3 (Maximum Alteration)

The vision for Final Alternative 3 would be to enhance wetland habitat diversity through widespread conversion to coastal salt marsh habitat under current sea levels, thereby replicating the historical mix of wetland habitats found on the site in the late 1800s (**Figure 5-3, CRP Alternative 3 – Maximum Alteration**). Extensive grading would be conducted to maximize the areal coverage of coastal salt marsh habitats. Tidal exchange would be improved through the construction of moderate to large subtidal channels. The oil infrastructure would be consolidated throughout the site and flood protection would be maintained at existing levels throughout the site. From a temporal standpoint, this alternative would seek to provide a limited range of wetland (coastal salt marsh) and associated upland habitats in the near-term with a decreased range of habitats (conversion of high and mid marsh habitats to low marsh, mudflat, and subtidal habitats) remaining in the future based on current projections of sea-level rise. Transitional and upland habitats would be provided along some of the perimeter areas. A potential interpretive site would be provided on the parcel at the northeast corner of Westminster Avenue and Studebaker Road (Moffatt & Nichol, 2015).

5.2.1.2 Restoration Planning Process

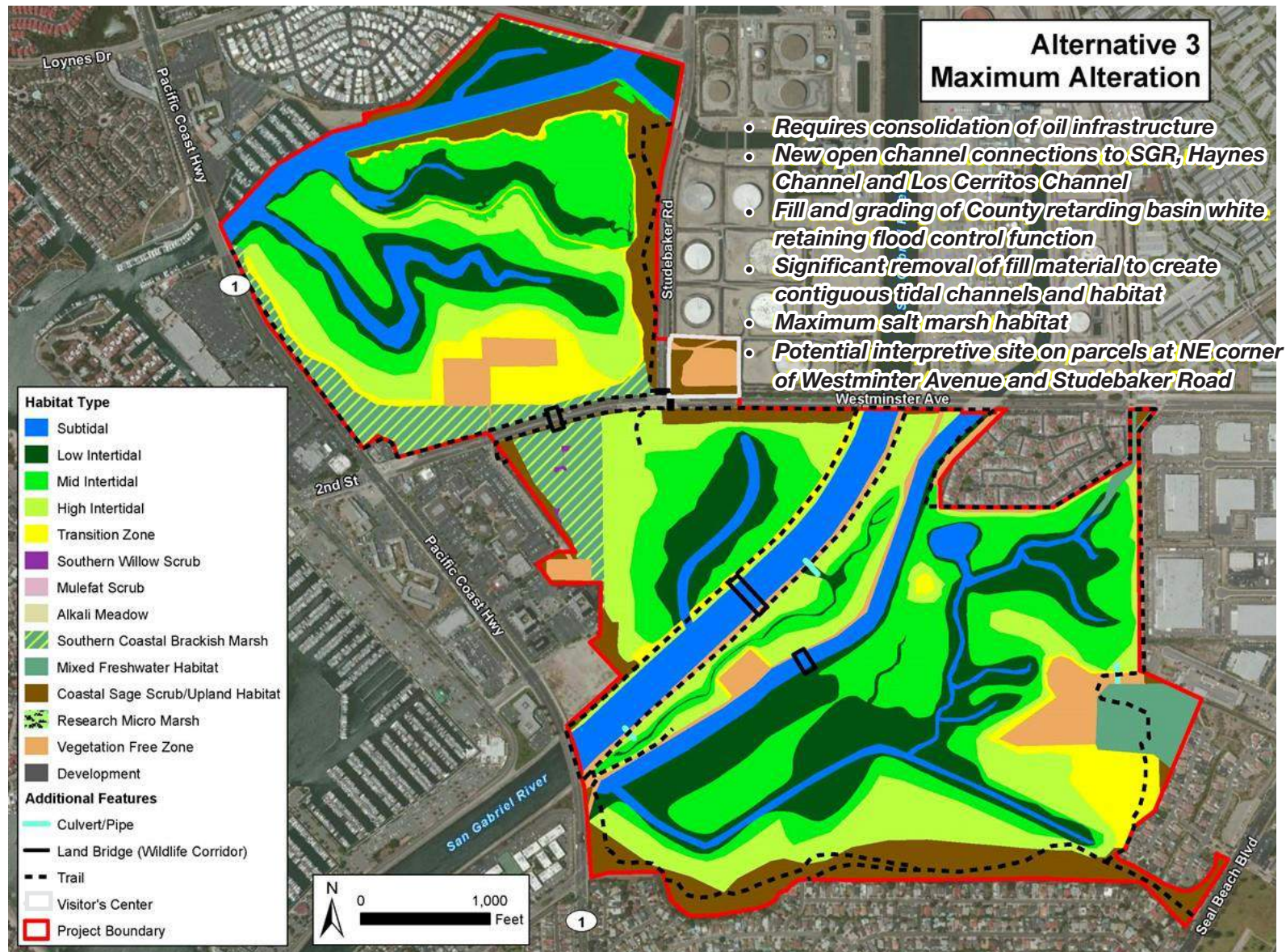
The CRP was adopted by the LCWA Board of Directors in August 2015. The report was prepared with input by the LCWA Steering Committee (made up of staff representing agencies of the LCWA joint powers authority), a Technical Advisory Committee (representatives of 20 resource and permitting agencies, and research groups covering federal, state, regional, and local jurisdictions), and the public (based on input during 6 community workshops). The plan is supported by 8 technical reports that provide baseline information for numerous topics including hydrology and hydraulics, soils, watersheds, and habitat. The CRP identified the next step in the restoration design process:

Further concept development of a hybrid alternative may occur at some point in the future to maximize benefits and minimize impacts of restoration. This work may include “mixing” and “matching” certain footprints of particular alternatives with those of different alternatives to create more alternatives that may provide more overall benefit than any of these individual concepts (pg 7).

As a result, the following alternatives were developed as hybrids of the CRP alternatives.

5.2.2 Los Cerritos Wetlands Optimized Restoration Plan

In 2017, LCWA received funding to further the design of the alternatives identified in the CRP (Section 5.2.1) with the development of an optimized restoration design, to prepare a PEIR, and to prepare a Los Cerritos Wetlands Optimized Restoration Plan (expected to be completed in 2020). The optimized restoration design process involved input from the LCWA Steering Committee (made up of staff representing agencies of the LCWA joint powers authority), a Technical Advisory Committee (representatives of 20 resource and permitting agencies, and research groups covering federal, state, regional, and local jurisdictions), and the public (based on input during 2 additional community workshops, beyond the 6 workshops conducted as part of the CRP).



SOURCE: Moffatt & Nichol, 2019

NOTE: Figure 5-3: Habitat types listed include all those proposed for Alternatives 1-3. Alternative 3 does not include the restoration of Research Micro Marsh or Mulefat Scrub.

Los Cerritos Wetlands Restoration Plan Draft Program EIR

Figure 5-3
CRP Alternative 3 – Maximum Alteration

5.2.2.1 Alternatives Developed for the South Area

The following sections describe the alternatives for the South Area that were discussed and either carried forward or not carried forward.

Full Tidal Connection from the Haynes Cooling Channel to the South Area

This alternative would remove the flap gate on the existing culvert that connects the San Gabriel River to the Southern Area to increase the tidal influence in the near-term. Focused marsh and transitional wetland grading would occur to lower the site to wetland elevations transitioning up to upland elevations along the southern and eastern borders of the South Area. Existing tidal salt marsh habitat would be avoided as much as possible. A new earthen berm or flood wall (with a height approximately 4 feet above the marshplain) would be constructed along the Hellman Retained site boundary on the South LCWA site to protect the Hellman Retained site from flooding. In the mid-term, the South LCWA site would be connected to the Haynes Cooling Channel, in addition to the existing culvert to the San Gabriel River, to increase the tide range at the site (Figure 2-13 in Chapter 2, *Project Description*). ***This alternative was chosen as part of the proposed program and is further described in Chapter 2, Project Description.***

Full Tidal Connection from the San Gabriel River to the South Area through an Open Channel

This alternative would excavate an open channel around the west end of the Haynes Cooling Channel to connect the San Gabriel River with the South Area. The existing San Gabriel River levee would be breached to allow for full tidal influence in the South Area. New flood management features would be constructed in the South Area to maintain or reduce the current level of flood risk. Major levees (with a height at least 13 feet above the marshplain) would be constructed around the entire perimeter of the South Area and along the channel from the San Gabriel River to the South Area. ***Section 5.4 discusses the reasons this alternative was not carried forward.***

Full Tidal Connection from the San Gabriel River through the Haynes Cooling Channel to the South Area

This alternative would excavate an open channel through the Isthmus Area to the Haynes Cooling Channel to connect the San Gabriel River with the South Area. The existing San Gabriel River levee would be breached to allow for full tidal influence in the Haynes Cooling Channel and in the South Area. New flood management features (e.g., major levees with a height at least 13 feet above the marshplain) would be constructed along the full distance of the Haynes Cooling Channel and the entire perimeter of the South Area to maintain or reduce the current level of flood risk. ***Section 5.4 discusses the reasons this alternative was not carried forward.***

Expanded Culvert Connection from the San Gabriel River to the South Area

This alternative would install an expanded culvert system (additional and/or larger culverts) along the existing culvert to increase the tidal connection from the San Gabriel River to the Southern Area. Focused marsh and transitional wetland grading would occur to lower the site to wetland elevations transitioning up to upland elevations along the southern and eastern borders of the South Area. Existing tidal salt marsh habitat would be avoided as much as possible. A new

earthen berm or flood wall (with a height approximately 4 feet above the marshplain) would be constructed along the Hellman Retained site property boundary on the South LCWA site to protect the Hellman Retained site from flooding. *Section 5.4 discusses the reasons this alternative was not carried forward.*

5.2.2.2 Alternatives Developed for the Isthmus Area

The following sections describe the alternatives for the Isthmus Area that were discussed and either rejected or carried forward.

Muted Tidal Connection from the Isthmus Area to the San Gabriel River through Existing Culverts

This alternative would enhance existing wetland habitat at the Zedler and Callaway Marsh sites (Figure 2-18 in Chapter 2, *Project Description*). The existing culverts connecting the San Gabriel River to the Zedler and Callaway Marsh sites would be maintained and the flap gate on the culvert to Callaway Marsh would be removed. *This alternative was chosen as part of the proposed program and is further described in Chapter 2, Project Description.*

5.2.2.3 Alternatives Developed for the Central Area

The following sections describe the alternatives for the Central Area that were discussed and either rejected or carried forward.

Full Breach from the San Gabriel River to the Central Area

This alternative would breach the existing San Gabriel River levee to allow full tidal influence in the Central Area (Figure 2-21 in Chapter 2, *Project Description*). Focused marsh and transitional wetland grading would occur to lower the site to wetland elevations transitioning up to upland elevations along the northern and western borders of the Central Area. A new earthen levee (approximately 18 feet above the marshplain elevation) would be constructed along 2nd Street and Shopkeeper Road and would tie into the existing levee. The existing wells on the Central LCWA site would be raised to approximately 13 feet above the marshplain elevation to maintain the existing level of flood protection. *This alternative was chosen as part of the proposed program and is further described in Chapter 2, Project Description.*

Flood Wall Flood Protection in the Central Area

This alternative would either breach the existing San Gabriel River levee or add a set of culverts to allow full or muted tidal influence in the Central Area. Focused marsh and transitional wetland grading would occur to lower the site to wetland elevations transitioning up to upland elevations along the northern and western borders of the Central Area. This alternative would construct flood walls (approximately 18 feet above the marshplain elevation for the full breach) around the perimeter of the Central Area, rather than build levees (**Figure 5-4, Proposed Central Area Long-Term Restoration, Flood Walls Option**). *Section 5.4 discusses the reasons this alternative was not carried forward.*



SOURCE: NOAA, ESA, LCWA

Los Cerritos Wetlands Restoration Plan Draft Program EIR

Figure 5-4
Proposed Central Area Long-Term Restoration,
Flood Walls Option

Culvert Connection from the San Gabriel River to the Central Area

This alternative would involve installing culverts within the northern San Gabriel River levee to connect the river to the Central Area. The goal of using culverts, rather than a full breach connection, would be to potentially reduce the height of the flood protection levees and the levee footprints, in order to reduce impacts to existing wetlands on site. Focused marsh and transitional wetland grading would occur to lower the site to wetland elevations transitioning up to upland elevations along the northern and western borders of the Central Area. A new earthen levee would be constructed along 2nd Street and Shopkeeper Road and would tie into the existing levee. The existing wells on the Central LCWA site would be raised as high as 13 feet above the marshplain elevation to maintain the existing level of flood protection. Multiple options for culvert sizing and levee elevations and footprints are considered under this alternative and discussed below:

Muted Tidal Connection

This option would size culverts to allow some tidal flow into the Central Area, but restrict high water levels from the San Gabriel River. The tides would be muted, but so would the riverine flood levels. The culverts in this option would be the smallest of the three options. Levees would be constructed around the perimeter of the Central Area and around the existing wells on the Central LCWA site, but the levee crest elevation and levee footprint would be reduced, because the riverine flood levels in the site would be reduced. However, the marsh vegetation would experience a reduced tide range, which would limit the potential function of the marsh. ***This alternative is further described in Section 5.5.2.***

Managed Culvert Connection

This option would size culverts to allow a full tide range into the Central Area, but restrict high water levels from the San Gabriel River using tide gates. The culverts in this option would be larger than the culverts in the muted tidal connection option. Levees would be constructed around the perimeter of the Central Area and around the existing wells on the Central LCWA site, but the levee crest elevation and levee footprint would be reduced, because the riverine flood levels in the site would be reduced. This alternative would involve increased management to maintain the tide gates. ***Section 5.4 discusses the reasons this alternative was not carried forward.***

Full Tide Range Culvert Connection

This option would size culverts to allow a full tide range into the Central Area, but restrict high water levels from the San Gabriel River. The culverts in this option would be larger than the culverts in the muted tidal connection option. Levees would be constructed around the perimeter of the Central Area and around the existing wells on the Central LCWA site. The levee crest elevation and levee footprint would likely need to be the same size as proposed in the program to maintain the current level of flood protection. ***Section 5.4 discusses the reasons this alternative was not carried forward.***

Tidal Connection from Steamshovel Slough to the Central Area

This alternative would connect Steamshovel Slough to the Central Area ~~through~~ via a channel that would ~~go through the~~ be constructed from the North Area and ~~extend~~ under 2nd Street, ~~either through a culvert system, by raising the road with a bridge, or by raising the road in a manner that~~

provides a tidal connection, flood control, and protection from sea-level rise. Focused marsh and transitional wetland grading would occur to lower the Central Area site to wetland elevations transitioning up to upland elevations along the northern and western borders of the Central Area. A new earthen levee would be constructed along 2nd Street and Shopkeeper Road, but the levee crest elevation and levee footprint would be reduced compared to the proposed program. The existing wells on the Central LCWA site would be raised or protected with a wall or berm to maintain the existing level of flood protection, but to a lower elevation than in the proposed program. Construction on the Central Area would be done in the long-term after the Los Cerritos Wetlands Oil Consolidation and Restoration project restores the Northern Synergy Oil Field site and removes the oil infrastructure and remediates the Southern Synergy Oil Field and the Long Beach City Property sites. Furthermore, a tidal connection will need to be created from the Northern Synergy Oil Field Site to 2nd Street. *Section 5.4 discusses the reasons this alternative was not carried forward.*

Tidal Connection from Steamshovel Slough to the Long Beach City Property

This alternative would connect Steamshovel Slough to the Long Beach City Property and the portion of the Pumpkin Patch site within the Central Area through a channel that would be constructed from the North Area and extend under 2nd Street. This connection could be through a culvert system, by raising the road with a bridge, or by raising the road in a manner that provides a tidal connection, flood control, and protection from sea-level rise. Restoration for the Central LCWA and Central Bryant sites would progress in the near-term as proposed in the program, through a connection to the San Gabriel River. Focused marsh and transitional wetland grading would occur to lower the Long Beach City Property to wetland elevations transitioning up to upland elevations along the northern and western borders of the Central Area. A new earthen levee would be constructed along 2nd Street and Shopkeeper Road, but the levee crest elevation and levee footprint would be reduced compared to the proposed program. The Interim Levee dividing the Central LCWA site from the Long Beach City Property site as proposed under the program would instead be built to be permanent and therefore would need to be designed for greater protection for sea level rise. This would require a higher crest elevation and larger levee footprint than under the proposed program. The Interim Levee would hydrologically separate the Long Beach Property site from the Central Bryant and Central LCWA sites. Construction on the Long Beach City Property would be done in the long-term once the Los Cerritos Wetlands Oil Consolidation and Restoration project removes the oil infrastructure on the Southern Synergy Oil Field and the Long Beach City Property sites. *Section 5.4 discusses the reasons this alternative was not carried forward.*

Managed Artificial Flooding in the Central Area

This alternative would involve installing a permanent pump system to pump water from the San Gabriel River, over the levee, and into the Central Area. Minimal grading would occur to improve habitat connectivity. A new earthen berm would be constructed along 2nd Street and Shopkeeper Road and would tie into the existing levee. The existing wells on the Central LCWA site would be raised to maintain the existing level of flood protection. *Section 5.4 discusses the reasons this alternative was not carried forward.*

5.2.2.4 Alternatives Developed for the North Area

Alternatives for the North Area were not developed as part of the program, since a project-level EIR was already prepared for the North Area as part of the Los Cerritos Wetlands Oil Consolidation and Restoration Project (and alternatives were developed and evaluated as part of that project). The Los Cerritos Wetlands Oil Consolidation and Restoration Project EIR (State Clearinghouse Number 2016041083) contains more detail and quantitative analysis of the North Area. The following project characteristics were carried forward as part of the Los Cerritos Wetlands Oil Consolidation and Restoration Project (see also Chapter 2). The alternative would involve removing the existing oil operations and associated facilities and implementing a wetlands habitat restoration project on the Northern and Southern Synergy Oil Field sites. In the near-term, this would include remediating any contaminated areas, constructing a new sheet pile and earthen berm barrier along the southern limits of the Northern Synergy Oil Field site, excavating tidal channels, and removing the existing berm and roads that separate Steamshovel Slough from the non-tidal portions of the Northern Synergy Oil Field site. The first phase of the project would also include work on the Southern Synergy Oil Field site, including relocating the existing office building on-site to house the Long Beach Visitor Center, and construction of a parking lot, trail, overlook, sidewalk enhancements, and bikeway improvements.

In the long-term, all remaining wells would be removed and the Southern Synergy Oil Field site would be restored to tidal salt marsh by breaching or lowering the earthen berm and removing the sheet pile wall.

5.3 Criteria for Selecting Alternatives

Each alternative was evaluated for its ability to attain most of the proposed program's objectives, its ability to reduce and/or eliminate significant impacts associated with the proposed program, and its feasibility. These criteria are described below.

5.3.1 Ability to Achieve Proposed Program Objectives

As described above, *CEQA Guidelines* Section 15126.6(f) states: "The range of alternatives required in an EIR is governed by a 'rule of reason' ... [O]f those alternatives, the EIR need examine in detail only the ones that the lead agency determines could feasibly attain most of the basic objectives of the project." For purposes of the alternative analysis, each alternative assessed in this EIR was evaluated to determine the extent to which it could attain the basic objectives set forth by the program applicant for the proposed program. As described in Chapter 2, *Project Description*, under Section 2.5, *Los Cerritos Wetlands and Restoration Program Goals*, the following goals and objectives have been established for the proposed program and serve as a basis for developing a reasonable range of alternatives to evaluate in the EIR. The goals and objectives of the proposed program presented below are ~~identical~~ similar to the goals and objectives identified in the CRP.

- 1) Restore tidal wetland processes and functions to the maximum extent possible.
 - a) Increase estuarine habitat with a mix of tidal channels, mudflat, salt marsh, and brackish/freshwater marsh and ponds.
 - b) Provide adequate area for wetland-upland ecotone and upland habitat to support wetlands.

- c) Restore and maintain habitat that supports important life history phases for species of special concern (e.g., federal and state listed species), essential fish habitat, and migratory birds as appropriate.
- d) Solicit and address feedback on restoration design from members of the community, Native American tribes, and other interested parties.
- 2) Maximize contiguous habitat areas and maximize the buffer between habitat and sources of human disturbance.
 - a) Maximize wildlife corridors within the LCW Complex and between the LCW Complex and adjacent natural areas within the region.
 - b) Incorporate native upland vegetation buffers between habitat areas and human development to mitigate urban impacts (e.g., noise, light, unauthorized human encroachment, domestic animals, wastewater runoff) and reduce invasion by non-native organisms.
 - c) Design the edges of the LCW Complex to be respectful and compatible with current neighboring land uses.
- ~~4~~3) Create a public access and interpretive program that is practical, protective of sensitive habitat and ongoing oil operations, economically feasible, and will ensure a memorable visitor experience.
 - a) Build upon existing beneficial uses.
 - b) Minimize public impacts on habitat/wildlife use of the LCW Complex.
 - c) Design interpretive concepts that promote environmental stewardship and the connection between the wetlands and the ~~surrounding~~ community.
 - d) Solicit and address feedback from members of the ~~surrounding~~ community, Native American tribes, and other interested parties.
 - e) Encourage equitable access of the LCW as a regional resource.
- ~~3~~4) Incorporate phasing of implementation to accommodate existing and future potential changes in land ownership and usage, and as funding becomes available.
 - a) Include projects that can be implemented as industrial operations are phased out and other properties are acquired over the near-, mid- and long-term (next 10 years, 10-20 years, and 20+ years).
 - b) Investigate opportunities to restore levels of tidal influence that are compatible with current oil leases and neighboring private land holdings.
 - c) Remove/realign/consolidate existing infrastructure (roads, pipelines, etc.) and accommodate future potential changes in infrastructure to the maximum extent feasible.
- ~~4~~5) Strive for long-term restoration success.
 - a) Implement an adaptive management framework that is sustainable.
 - b) Restore habitats in appropriate areas to minimize the need for long-term maintenance activities that are extensive and disruptive to wildlife.
 - c) Design habitats that will accommodate climate changes, e.g., incorporate topographic and habitat diversity and natural buffers and transition zones to accommodate migration of wetlands with rising sea levels.
 - d) Provide economic benefit to the region.

~~5)~~6) Integrate experimental actions and research into the project, where appropriate, to inform restoration and management actions for this project.

- a) Include opportunities for potential experiments and pilot projects to address gaps in information (e.g., effect of warm river water on salt marsh ecosystem) that are protective of sensitive habitat and wildlife and that can be used to adaptively manage the restoration project.
- b) Include areas on the site, where appropriate, that prioritize research opportunities (such as those for adaptive management) over habitat sensitivities.

5.3.2 Elimination/Reduction of Significant and Unavoidable Impacts

As described above, *CEQA Guidelines* Section 15126.6(b) states that “[B]ecause an EIR must identify ways to mitigate or avoid the significant effects that a project may have on the environment (PRC Section 21002.1), the discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly.” Therefore, the alternatives evaluated in this EIR have been selected because they are anticipated to reduce and/or eliminate one or more significant impacts associated with the proposed program. Potentially significant environmental impacts that would result from the proposed program are evaluated in Sections 3.1 through 3.16 in Chapter 3, *Environmental Setting, Impacts, and Mitigation Measures*, and Chapter 4, *Other CEQA Considerations*. With implementation of the mitigation measures identified for each issue, many of the potentially significant impacts resulting from the proposed program would be reduced to a level considered less than significant. The proposed program impacts listed below would remain significant and unavoidable even after implementation of feasible mitigation measures.

5.3.2.1 Air Quality

If all subphases of construction associated with the near-term phase were to occur concurrently (which was conservatively analyzed in the earliest possible year), maximum daily emissions from construction activities would exceed the SCAQMD regional threshold for NO_x. With implementation of mitigation measures, regional impacts would be mitigated to a less than significant level. However, as discussed in Section 3.2, Air Quality, of this PEIR, localized impacts to sensitive receptors at the program-level would be considered potentially significant even after incorporation of mitigation. Therefore, localized impacts from program construction pertaining to NO_x emissions would be significant and unavoidable (Impact AQ-3), if all subphases of construction associated with the near-term phase were to occur concurrently (which was conservatively analyzed in the earliest possible year). In addition, as the proposed program would have a localized impact from NO_x emissions, the proposed program would also conflict with Criterion 1 for determining the proposed program’s consistency with the AQMP (Impact AQ-1 and Impact AQ-3).

5.3.2.2 Cultural Resources

As described in Section 3.4, *Cultural Resources*, there are 22 potential historical resources within or immediately adjacent to the program area, including 14 archaeological resources and 8 historical architectural resources. In addition, the Los Cerritos Wetlands is part of a potential

tribal cultural landscape identified by some tribal representatives during consultation with the CCC. Furthermore, given that the entire program area was not systematically surveyed as part of this assessment, there could be additional as-yet unidentified archaeological and historical architectural resources within the program area. As such, the proposed program would implement Mitigation Measure CUL-1 through CUL-16 to reduce impacts to historical resources by requiring qualified cultural resources personnel to conduct future project-specific studies; development of appropriate treatment for significant resources; and archaeological and Native American monitoring of ground disturbance (see Section 3.4, *Cultural Resources*, of this PEIR). The proposed program also includes several mitigation measures (see Mitigation Measures BIO-1 through BIO-11 in Section 3.3, *Biological Resources*, of this PEIR) that would lessen potential construction-related impacts to plants and animals that are considered part of the tribal cultural landscape. However, even with implementation of these mitigation measures, impacts to historical resources and archaeological resources would be significant and unavoidable at the program level during construction of the proposed program (Impact CUL-1 and Impact CUL-2).

5.3.2.3 Tribal Cultural Resources

As described in Section 3.15, *Tribal Cultural Resources*, no tribal cultural resources were identified in the program area by Public Resources Code section 21074 as either a site, feature, place, cultural landscape, or object with cultural value. However, the program area was identified as a potential tribal cultural landscape by some tribal representatives during consultation with the CCC that occurred in connection with the Los Cerritos Wetlands Oil Consolidation and Restoration Project. Implementation of Mitigation Measures CUL-1 and CUL-4 through CUL-15 would lessen the impact to archaeological resources that contribute to the significance of the tribal cultural landscape. The proposed program also includes several mitigation measures (see Mitigation Measures BIO-1 through BIO-11 in Section 3.3, *Biological Resources*, of this PEIR) that would lessen potential construction-related impacts to plants and animals that are considered part of the tribal cultural landscape. Even with implementation of these measures, the destruction or material alteration of an archaeological resource that contributes to the landscape's significance would constitute a substantial adverse change since it would no longer be present on the landscape. Since avoidance and preservation in place of such resources cannot be guaranteed, impacts to Native American or prehistoric archaeological resources that convey the significance of the tribal cultural landscape are considered significant and unavoidable at the program level.

5.3.3 Feasibility

CEQA Guidelines Section 15126.6(f)(1) (14 California Code of Regulations) states the following: "Among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries (projects with a regionally-significant impact should consider the regional context), and whether the proponent can reasonably acquire, control, or otherwise have access to the alternative site (or the site is already owned by the proponent). No one of these factors establishes a fixed limit on the scope of reasonable alternatives (*Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553; see *Save Our Residential Environment v. City of West Hollywood* (1992) 9 Cal.App.4th 1745, 1753, fn. 1)."

5.4 Alternatives Considered and Withdrawn from Consideration

The *CEQA Guidelines* recommend that an EIR identify any alternatives that were considered by the Lead Agency, but were withdrawn from consideration because they were deemed infeasible, and briefly explain the reasons underlying the Lead Agency's determination. *CEQA Guidelines* Section 15126.6(c) states the following:

The EIR should also identify any alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process and briefly explain the reasons underlying the lead agency's determination ... Among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are: (i) failure to meet most of the basic project objectives, (ii) infeasibility, or (iii) inability to avoid significant environmental impacts.

The analysis of alternatives started with an identification of a number of potential alternatives to the proposed program that would reduce or eliminate the proposed program's significant environmental impacts. Of the alternatives evaluated, six were eliminated from further consideration. The eliminated alternatives are discussed below.

It is important to note that some of the alternatives described in this section, particularly the tidal connection from the Central Area to Steamshovel Slough alternative, could become feasible in the future as some of the program uncertainties are resolved. As uncertainties are resolved, LCWA may choose to move forward with alternatives described in this section. At that time, LCWA would determine what additional environmental documentation must be prepared. See Chapter 2, Project Description, Section 2.2 for the restoration project road map and potential next steps.

5.4.1 South Area

5.4.1.1 Full Tidal Connection from the San Gabriel River to the South Area through an Open Channel

Would the alternative meet most of the program objectives?

This potential alternative meets most of the program objectives because it would restore tidal wetland processes and functions and maximize contiguous habitat areas and buffers.

Would the alternative reduce and/or eliminate significant impacts associated with the proposed program?

This alternative would not reduce and/or eliminate significant impacts associated with the proposed program, and instead would cause additional impacts. Creating a full tidal connection from the South Area to the San Gabriel River would require a flood risk management levee, a modified Los Angeles County Drainage Area project feature that would be operated and maintained by LACFCD, around the entire perimeter of the South Area and the channel connecting it to the San Gabriel River. This levee would be almost twice the length of the levee proposed in the Central Area. The levee footprint would impact existing biological and cultural resources beyond the impacts in the proposed program, and it would reduce the restored habitat area. The levee would require more extensive maintenance than would be required for the berm in the proposed program.

Would the alternative be feasible?

This alternative would be feasible for purposes of CEQA, because it would be capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors.

Summary

This alternative would meet most of the program objectives and would be feasible under CEQA. However, this alternative has not been carried forward for more detailed review because it would not reduce nor eliminate significant impacts associated with the proposed program.

5.4.1.2 Full Tidal Connection from the San Gabriel River through the Haynes Cooling Channel to the South Area***Would the alternative meet most of the program objectives?***

This potential alternative meets most of the program objectives because it would restore tidal wetland processes and functions and maximize contiguous habitat areas and buffers.

Would the alternative reduce and/or eliminate significant impacts associated with the proposed program?

This alternative would not reduce and/or eliminate significant impacts associated with the proposed program, and instead would cause additional impacts. Creating a full tidal connection from the South Area to the San Gabriel River through the Isthmus Area and the Haynes Cooling Channel would require a flood risk management levee, a modified Los Angeles County Drainage Area project feature that would be operated and maintained by LACFCD, around the entire perimeter of the South Area, the channel connecting it to the San Gabriel River, and the entire perimeter of the Haynes Cooling Channel. This levee would be substantially longer than the levee proposed in the Central Area. The levee footprint would impact existing biological and cultural resources beyond the impacts in the proposed program, and it would reduce the restored habitat area. The levee would require more extensive maintenance than would be required for the berm in the proposed program.

Would the alternative be feasible?

This alternative would not be feasible for purposes of CEQA because it would not be feasible to acquire all the land that would be needed to maintain the current level of flood protection (CEQA Guidelines Section 15364). The flood risk management levee that would be needed around the Haynes Cooling Channel to maintain the existing level of flood protection would conflict with existing land uses outside the program area. For example, the Island Village neighborhood north of the Los Alamitos Retarding Basin and the Haynes Generating Station would limit the space available for a flood management levee and the program proponent would not be able to reasonably acquire, control, or otherwise have access to these areas, making this alternative infeasible.

Summary

This alternative would meet most of the program objectives. However, this alternative has not been carried forward for more detailed review because it would not reduce nor eliminate significant impacts associated with the proposed program and it would not be feasible under CEQA.

5.4.1.3 Expanded Culvert Connection from the San Gabriel River to the South Area

Would the alternative meet most of the program objectives?

This potential alternative meets most of the program objectives because it would restore tidal wetland processes and functions and maximize contiguous habitat areas and buffers.

Would the alternative reduce and/or eliminate significant impacts associated with the proposed program?

This alternative would not reduce and/or eliminate significant impacts associated with the proposed program, and instead would cause additional impacts. Installing a new expanded culvert connection from the South Area to the San Gabriel River would involve additional construction impacts west of the Haynes Cooling Channel, compared to the proposed program. The additional culverts, which would be larger compared to the culverts proposed under the proposed program, would require more extensive long-term maintenance than would be required in the proposed program.

Would the alternative be feasible?

This alternative would be feasible for purposes of CEQA, because it would be capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors.

Summary

This alternative would meet most of the program objectives and would be feasible under CEQA. However, this alternative has not been carried forward for more detailed review because it would not reduce nor eliminate significant impacts associated with the proposed program.

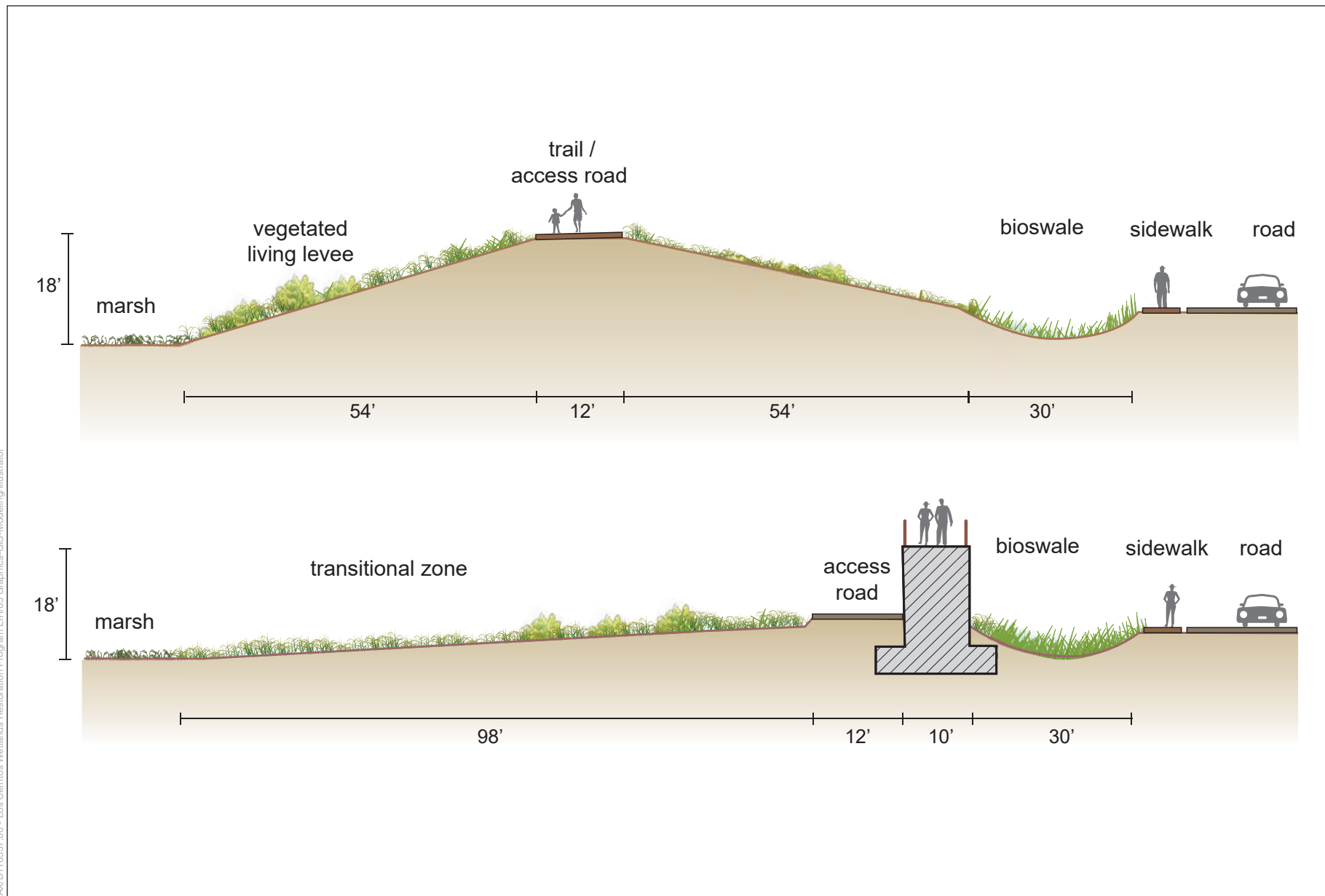
5.4.2 Central Area

5.4.2.1 Flood Wall Flood Protection in the Central Area

Would the alternative meet most of the program objectives?

This potential alternative meets some of the program objectives because it would restore tidal wetland processes and functions and maximize contiguous habitat areas and buffers. The footprint of the flood wall would take up less space than the footprint of the levee in the proposed program, which would provide additional space for wetland restoration compared to the proposed program (**Figure 5-5, Artistic Renderings of Central Area Perimeter Levee and Flood Wall**). However, the public access trail around the perimeter of the Central Area described in the proposed program would be infeasible on top of the flood wall due to the costs associated with public safety.

Therefore, public access in this alternative would be reduced to one or two overlook locations which would not be consistent with program objectives addressing public access. Similarly, an 18-foot-high flood wall along the perimeter of portions of the Central Area is not consistent with program objectives addressing public access and connecting the community to the wetlands.



SOURCE: ESA, 2019

Los Cerritos Wetlands Restoration Plan Draft Program EIR

Figure 5-5
Artistic Renderings of Central Area Perimeter Levee and Flood Wall

Would the alternative reduce and/or eliminate significant impacts associated with the proposed program?

This alternative would likely reduce the significant impacts for air quality associated with the proposed program because a substantially lower amount of fill would be moved on-site as compared to the proposed program. However, modeling would be necessary to confirm this reduction in air quality impacts. The flood wall would be constructed with steel and concrete rather than earth, as is the case of the levee in the proposed program, which would involve fewer truck and tug boat trips. Although not a significant impact, fewer impacts to existing biological resources would occur under this alternative as compared to the proposed program.

Would the alternative be feasible?

This alternative would be feasible for purposes of CEQA, because it would be capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors.

Summary

This alternative would reduce and/or eliminate some significant impacts and would be feasible under CEQA. However, this alternative has not been carried forward for more detailed review because it would reduce public access in the Central Area, and not meet all program objectives.

5.4.2.2 Culvert Connection from the San Gabriel River to the Central Area – Managed Culvert Connection

Would the alternative meet most of the program objectives?

This potential alternative meets most of the program objectives because it would restore tidal wetland processes and functions and maximize contiguous habitat areas and buffers.

Would the alternative reduce and/or eliminate significant impacts associated with the proposed program?

This alternative would not reduce and/or eliminate significant impacts associated with the proposed program. It is likely that agencies with flood management responsibilities will require that the flood protection levees would need to be sized based on the assumption that the gates could fail during a major storm event, so the benefit of using a culvert system to reduce the height of the levees and increase marsh acreage would not be realized. The hydrodynamic modeling (refer to Appendix H) showed that the tide range using culverts would be reduced (at least slightly, depending on the size of the culverts used) compared to the proposed program, which could be considered an impact to the restored habitats.

Would the alternative be feasible?

This alternative would be feasible for purposes of CEQA, because it would be capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors.

Summary

This alternative would meet most of the program objectives and would be feasible under CEQA. However, this alternative has not been carried forward for more detailed review because it would not reduce nor eliminate significant impacts associated with the proposed program.

5.4.2.3 Culvert Connection from the San Gabriel River to the Central Area – Full Tide Range Culvert Connection

Would the alternative meet most of the program objectives?

This potential alternative meets most of the program objectives because it would restore tidal wetland processes and functions and maximize contiguous habitat areas and buffers.

Would the alternative reduce and/or eliminate significant impacts associated with the proposed program?

This alternative would not reduce and/or eliminate significant impacts associated with the proposed program. The hydrodynamic modeling (refer to Appendix H) showed that to achieve a full tide range (or close to a full tide range) in the site, water levels under the 100-year flood event would be similar to water levels under the full breach condition. This result indicates that the flood protection levees would need to be sized similarly to the full breach conditions, so the benefit of using a culvert system to reduce the height of the levees and increase marsh acreage would not be realized. Additionally, the hydrodynamic modeling (refer to Appendix H) showed that the tide range using culverts would be reduced (at least slightly, depending on the size of the culverts used) compared to the proposed program, which could be considered an impact to the restored habitats.

Would the alternative be feasible?

This alternative would be feasible for purposes of CEQA, because it would be capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors.

Summary

This alternative would meet most of the program objectives and would be feasible under CEQA. However, this alternative has not been carried forward for more detailed review because it would not reduce nor eliminate significant impacts associated with the proposed program.

5.4.2.4 Tidal Connection from Steamshovel Slough to the Central Area

Would the alternative meet most of the program objectives?

This potential alternative meets the program objectives because it would restore tidal wetland processes and functions and maximize contiguous habitat areas and buffers, joining a larger area of wetland to the existing Steamshovel Slough system in the North Area. This could enhance establishment and the spread of native species. The footprint of the levee for this alternative would take up less space than the footprint of the levee in the proposed program, because the existing flood protection along the Los Cerritos Channel is not as high as the flood protection

along the San Gabriel River. The smaller footprint would provide additional space for wetland restoration compared to the proposed program.

Would the alternative reduce and/or eliminate significant impacts associated with the proposed program?

This alternative could reduce the significant impact for air quality associated with the proposed program, because a substantially lower amount of fill may be moved on-site as compared to the proposed program. However, modeling would be necessary to confirm this reduction in air quality impacts. Additionally, this alternative would cause new or more impacts compared to the proposed program because connecting the Central Area to Steamshovel Slough would involve creating a tidal connection under 2nd Street, either through a set of culverts or by building a bridge or causeway over an open channel. This would result in extensive construction and transportation impacts.

Although not a significant impact, fewer impacts to existing biological resources could occur under this alternative as compared to the proposed program because of the smaller footprint for the levee. The shorter levees would also reduce the aesthetic impacts compared to the proposed program. Eliminating the connection to the San Gabriel River would prevent the river's contamination and trash from diminishing water quality and habitat in the Central Area. However, the alternative would increase the likelihood of impacts from contamination and trash from the Los Cerritos Channel and decrease the beneficial freshwater stormwater pulses provided by the San Gabriel River.

Would the alternative be feasible?

This alternative would not be feasible for purposes of CEQA because it would not be capable of being accomplished in a successful manner within a reasonable period of time and LCWA cannot reasonably acquire, control or otherwise have access to the alternative site (CEQA Guidelines Section 15364). This alternative could not move forward for at least 20 years until all the oil operations in the North Area and on the Long Beach City Property site are removed through the Los Cerritos Wetlands Oil Consolidation and Restoration Project. The restoration design for the South Synergy Oil Field site would need to be developed in further detail to explore the feasibility of tidally connecting to the Central Area. Additionally, the feasibility of raising 2nd Street would need to be explored with the City of Long Beach, with considerations made for sea-level rise related hazards, traffic impacts associated with a lengthy construction period, and engineering feasibility. If and once these various variables are better understood, this alternative could be considered feasible and LCWA could choose to move forward with design and implementation. Additionally, LCWA does not have control and cannot reasonably acquire 2nd Street in order to modify the roadway to accommodate a tidal connection, either through culverts or by rebuilding the roadway into a bridge or causeway. The City of Long Beach currently owns and manages the roadway right-of-way. However, should the City of Long Beach grant access to the LCWA, then LCWA could choose to move forward with design and implementation.

Summary

This alternative would meet most of the program objectives. However, this alternative has not been carried forward for more detailed review because it would not reduce nor eliminate

significant impacts associated with the proposed program, it would impact traffic along 2nd Street, and it would not be feasible under CEQA. However, this alternative is not eliminated from being implemented in the future when other variables are better understood.

5.4.2.5 Tidal Connection from Steamshovel Slough to the Long Beach City Property

Would the alternative meet most of the program objectives?

This potential alternative meets the program objectives because it would restore tidal wetland processes and functions and maximize contiguous habitat areas and buffers. While it would separate the habitats in the Central Area, it would join a larger area of wetland to the existing Steamshovel Slough system in the North Area. This could enhance establishment and the spread of native species while still allowing a connection to the San Gabriel River which would benefit certain species like the Pacific green sea turtle. The footprint of the levee on the Long Beach City Property for this alternative would take up less space than the footprint of the levee in the proposed program, because the existing flood protection along the Los Cerritos Channel is not as high as the flood protection along the San Gabriel River. The smaller footprint would provide additional space for wetland restoration compared to the proposed program. However, the Interim Levee would need to be built to a higher elevation and with a larger footprint than in the proposed program because it would be a permanent feature in this alternative, rather than a temporary feature as in the proposed program.

Would the alternative reduce and/or eliminate significant impacts associated with the proposed program?

This alternative could reduce the significant impact for air quality associated with the proposed program, because a substantially lower amount of fill may be moved on-site as compared to the proposed program. However, modeling would be necessary to confirm this reduction in air quality impacts. Additionally, this alternative would cause new or more impacts compared to the proposed program. Connecting the Long Beach City Property to Steamshovel Slough would involve creating a tidal connection under 2nd Street, either through a set of culverts or by building a bridge or causeway over an open channel. This would result in extensive construction and transportation impacts.

Although not a significant impact, fewer impacts to existing biological resources could occur under this alternative as compared to the proposed program. The shorter berms would also reduce the aesthetic impacts compared to the proposed program, although impacts would remain due to the flood protection that would still be needed. Eliminating the connection of the Long Beach City Property to the San Gabriel River would prevent the river's contamination and trash from diminishing water quality and habitat in that area. However, the alternative would increase the likelihood of impacts from contamination and trash from the Los Cerritos Channel and decrease the beneficial freshwater stormwater pulses provided by the San Gabriel River.

Would the alternative be feasible?

This alternative would not be feasible for purposes of CEQA because it would not be capable of being accomplished in a successful manner within a reasonable period of time and LCWA cannot

reasonably acquire, control or otherwise have access to the alternative site (CEQA Guidelines Section 15364). This alternative could not move forward for at least 20 years until all the oil operations in the North Area and on the Long Beach City Property site are removed through the Los Cerritos Wetlands Oil Consolidation and Restoration Project. The restoration design for the South Synergy Oil Field site would need to be developed in further detail to explore the feasibility of tidally connecting to the Long Beach City Property. Additionally, the feasibility of raising 2nd Street would need to be explored with the City of Long Beach, with considerations made for sea-level rise related hazards, traffic impacts associated with a lengthy construction period, and engineering feasibility. If and once these various variables are better understood, this alternative could be considered feasible and LCWA could choose to move forward with design and implementation. Additionally, LCWA does not have control and cannot reasonably acquire 2nd Street in order to modify the roadway to accommodate a tidal connection, either through culverts or by rebuilding the roadway into a bridge or causeway. The City of Long Beach currently owns and manages the roadway right-of-way. However, should the City of Long Beach grant access to the LCWA, then LCWA could choose to move forward with design and implementation.

Summary

This alternative would meet most of the program objectives. However, this alternative has not been carried forward for more detailed review because it would not reduce nor eliminate significant impacts associated with the proposed program and it would not be feasible under CEQA. However, this alternative is not eliminated from being implemented in the future when other variables are better understood.

5.4.2.55.4.2.6 Managed Artificial Flooding in the Central Area

Would the alternative meet most of the program objectives?

This potential alternative would not meet most of the program objectives because it would not restore tidal wetland processes and functions. Permanently pumping water into the site would create an unnatural hydrologic regime and natural processes such as sedimentation and erosion would be missing from the system. Additionally, the alternative would be inconsistent with the program objectives to minimize the need for long-term maintenance activities as the pump station would need to be regularly maintained and operated.

Would the alternative reduce and/or eliminate significant impacts associated with the proposed program?

This alternative would likely reduce the significant impact for air quality associated with the proposed program. The earthen berm would be substantially smaller than the levees associated with the proposed program, and less earthwork would likely reduce impacts associated with program construction pertaining to NO_x emissions. Additional air quality modeling would be needed to confirm that this alternative would reduce air quality emissions.

Although not a significant impact, the smaller berm footprint would reduce permanent impacts to existing biological resources. However, the enhancement of the wetland would be limited without a tidal connection.

Would the alternative be feasible?

This alternative would be feasible for purposes of CEQA, because it would be capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors.

Summary

This alternative would likely reduce significant air quality impacts associated with the proposed program and would be feasible under CEQA. However, this alternative has not been carried forward for more detailed review because it would not meet most of the program objectives, since tidal wetlands and processes would not be restored.

5.5 Alternatives Considered and Further Evaluated

As described above, the intent of the alternatives analysis in an EIR is to identify a range of reasonable alternatives to the proposed program that would feasibly attain most of the basic project objectives and would avoid or substantially lessen the significant impacts of the proposed program. Based on the significant environmental impacts of the proposed program, the aforementioned objectives established for the proposed program, and the feasibility of the alternatives considered, the following alternatives to the proposed program are evaluated in this section. As some impacts associated with the alternatives analyzed below would be the same or similar to the proposed program (depending upon the resource area), this chapter should be read in conjunction with the impact analyses contained in Chapter 3, *Environmental Setting, Impacts, and Mitigation Measures*, which provides more detailed information on the individual resource areas and impacts of the proposed program. The Significance Thresholds and the methodology utilized in this chapter are the same as those utilized in Chapter 3, *Environmental Setting, Impacts, and Mitigation Measures*. Therefore, for additional information regarding methodology, reviewers should reference the individual resource chapters for further details.

5.5.1 Alternative 1: No Program (No Build) Alternative

CEQA Guidelines Section 15126.6(e) requires that an EIR evaluate and analyze the impacts of the “No-Project” Alternative. Under Alternative 1, none of the proposed program components would be constructed and implemented and existing conditions would remain unchanged. This alternative assumes the restoration activities and development covered by the Los Cerritos Wetlands Oil Consolidation and Restoration Project would occur. The following would occur under Alternative 1:

- The South Area, which includes the Haynes Cooling Channel site, State Lands Parcel site, South LCWA site, Hellman Retained site, Los Alamitos Pump Station site, and Los Alamitos Retarding Basin site, would continue to exist as under the existing conditions. In particular, the Haynes Cooling Channel would continue to pull water from the Alamitos Bay Marina and discharge water into the San Gabriel River until it is decommissioned as part of the Haynes Generating Station modernization project in 2029. The State Lands Parcel and South LCWA sites would remain as they currently exist. The Hellman Retained site would continue to operate as an active oil field. In addition, the Los Alamitos Retarding Basin would continue to operate as a retention basin as operated by the County of Orange Flood Control District.

Furthermore, the Los Alamitos Pump station would continue to operate as a pump station to move the stormwater runoff from the Los Alamitos Retarding Basin into the San Gabriel River. Restricted public access within the South Area would continue to be provided as under existing conditions and the gate on 1st Street would remain as well.

- The Isthmus Area, which includes the Callaway Marsh site, DWP site, Zedler Marsh site, Isthmus LCWA site, and Isthmus Bryant site, would continue to exist as under existing conditions. In particular, the Callaway Marsh site, the Isthmus Bryant site, and DWP site would remain vacant. In addition, the Zedler Marsh site would continue to be enhanced as part of the LCWA Stewardship Program. Furthermore, the Isthmus LCWA site would continue as an active oil field, which would be maintained and operated by the Signal Hill Petroleum Inc., as under existing condition. Existing public access to trails and other public amenities would be maintained as under existing conditions. In addition, the San Gabriel River Trail would be maintained on the south bank of the San Gabriel River.
- The Central Area, which includes a portion of the Pumpkin Patch site, Long Beach City Property site, Central LCWA site, Central Bryant site, and San Gabriel River, would continue to exist as under existing conditions. The Pumpkin Patch site and Long Beach City Property site, in particular, would continue as approved under the Los Cerritos Wetlands Oil Consolidation and Restoration Project EIR (State Clearinghouse Number 2016041083). This would include construction of an aboveground pipeline system from the corner of 2nd Street and Studebaker Road to the Pumpkin Patch site. The Pumpkin Patch site would be remediated and graded, and new oil facilities would be constructed at the site. After 20 years, in the second phase of the project, oil operations would be removed from the Long Beach City Property site and contaminated areas would be remediated. The Long Beach City Property site would remain vacant. The Central LCWA site would continue to operate as an active oil field and the Central Bryant site would continue to operate as a vacant site. The San Gabriel River levees along the south and north banks of the river would remain intact. Restricted access to the Central LCWA site would be maintained.
- The North Area includes the Northern Synergy Oil Field site, Southern Synergy Oil Field site, and Alamitos Bay Partners site. As part of the Los Cerritos Wetlands Oil Consolidation and Restoration Project, existing oil operations and associated facilities would be consolidated and removed and a wetlands habitat restoration project would be implemented on the Northern and Southern Synergy Oil Field sites. The first phase of the project would be focused on the 76.52-acres Northern Synergy Oil Field site, and provide the conditions necessary for the reestablishment of coastal salt marsh habitat and associated hydrologic, biogeochemical, and habitat functions. The first phase of the project would also include work on the Southern Synergy Oil Field site, including relocating the existing office building on-site to house the Long Beach Visitor Center, and construction of a parking lot, trails, overlook, sidewalk enhancements, and bikeway improvements. After 20 years, in the second phase of the project, all remaining wells would be removed and the 73.07-acres Southern Synergy Oil Field site would be restored to tidal salt marsh by breaching or lowering the earthen berm and removing the sheet pile wall. The Alamitos Bay Partners site would be maintained as an active oil field as with existing conditions.

5.5.2 Alternative 2: Culvert Connection San Gabriel River to the Central Area Alternative

Under Alternative 2, a culvert or set of culverts would be installed within the northern San Gabriel River levee to connect the river to the Central Area rather than breaching the levee as in the proposed program. The following would occur under Alternative 2:

- The South Area, which includes the Haynes Cooling Channel site, State Lands Parcel site, South LCWA site, Hellman Retained site, Los Alamitos Pump Station site, and Los Alamitos Retarding Basin site, would be restored as described for the proposed program. Public access would be improved as described for the proposed program.
- The Isthmus Area, which includes the Callaway Marsh site, DWP site, Zedler Marsh site, Isthmus LCWA site, and Isthmus Bryant site, would be restored as described for the proposed program. Public access would be improved as described for the proposed program.
- The Central Area, which includes the Pumpkin Patch site, Long Beach City Property site, Central LCWA site, Central Bryant site, and San Gabriel River, would be restored similar to the proposed program, except instead of breaching the San Gabriel River to restore tidal connection to the site, a culvert or set of culverts would be installed in the levee to provide tidal connection to the site. The following sections describe the changes from the proposed program that would be included in this alternative.
- The North Area, which includes the Northern Synergy Oil Field site, Southern Synergy Oil Field site, and Alamitos Bay Partners site, would be restored as described for the proposed program. Public access would be improved as described for the proposed program.

5.5.2.1 Phasing

Ecosystem restoration in the Central Area under Alternative 2 would occur in two phases based on land and oil lease ownership, similar to the proposed program.

The near-term phase of Alternative 2 would be focused on the Central LCWA and Central Bryant sites and would provide the conditions necessary for the reestablishment of coastal salt marsh habitat and associated hydrologic, biogeochemical, and habitat functions. Near-term activities that mirror those in the proposed program would include:

- Relocating or modifying some oil infrastructure and remediation of soils on the Central LCWA site;
- Grading of the sites, including channels, and revegetation of native plants to support a diversity of salt marsh species; and
- Constructing public trails on levees, accessible ramps, and viewpoints, as described in the proposed program.

Near-term activities that would vary from those in the proposed program would include:

- Installing a culvert or set of culverts in the existing levee that currently separates the San Gabriel River from non-tidal portions of the Central LCWA and Central Bryant sites;
- Constructing a new earthen levee (Perimeter Levee) along 2nd Street from the San Gabriel River to the intersection with Studebaker Road to protect areas to the north from flooding, similar to the proposed program, but set to a lower elevation;

- Constructing a new interim earthen levee (Interim Levee) along the western boundary of the Central LCWA site to protect the areas to the west from flooding and to provide continued access to the wells on the Central LCWA site, similar to the proposed program, but set to a lower elevation; and
- Providing protection for the existing wells on the Central LCWA site by either raising the well pads out of the floodplain, similar to the proposed program, but set to a lower elevation, or constructing a berm or flood wall around the wells.

In the long-term, the Long Beach City Property site and the Pumpkin Patch site would be restored to tidal salt marsh as described for the proposed program, including:

- Grading the Long Beach City Property site, including channels, to support a diversity of salt marsh species;
- Removing the northern segment of the Interim Levee on the Central LCWA site to connect the restored habitats on the Central LCWA site to the non-tidal portions of the Long Beach City Property site; and
- Constructing public trails on levees, accessible ramps, stairs, and viewpoints, as described in the proposed program.

Long-term activities that would vary from those in the proposed program would include constructing a new earthen levee (Perimeter Levee) along 2nd Street between the intersection with Studebaker Road to Shopkeeper Road on the Long Beach City Property site and then along Shopkeeper Road to the existing San Gabriel River levee on the Long Beach City Property and Pumpkin Patch sites. The Perimeter Levee would be used to protect areas to the north and west from flooding, similar to the proposed program, but set to a lower elevation.

5.5.2.2 Ecosystem Restoration

Restored Habitats

Alternative 2 would restore connectivity of the San Gabriel River with the Central LCWA, Central Bryant, and Long Beach City Property sites by installing a culvert or set of culverts in the existing levees on the north bank of the river, rather than breaching and lowering the levee as in the proposed program. Alternative 2 would include a shorter and smaller footprint Perimeter Levee when compared to the one in the proposed program, allowing for less impact on existing wetlands.

Hydrology and Grading

In Alternative 2, the new tidal channels would be excavated between the San Gabriel River culvert(s) and the Interim Levee to create a sinuous and branching network of tidal channels through the wetlands. The culvert(s) would be set at an elevation around 0 to 2 feet NAVD.

The hydrodynamic modeling (refer to Appendix H) showed that one 4-foot-diameter culvert would allow an annual tide range of 2.4 feet into the site. This is 1.6 feet less than the modeled proposed program tide range (4.0 feet). The modeling results also showed that six 4-foot-diameter culverts would result in an annual tide range of 3.1 feet, which would only be 0.9 feet less than the proposed program.

As described under the proposed program, Alternative 2 would raise the upland perimeter around the restored wetlands to function as a flood risk management levee, but it would be set to a lower elevation, since the culvert(s) would limit the water elevations in the site. Less fill would be needed to construct the Perimeter and Interim Levees, compared to the proposed program. This would increase the volume of excess material in the near-term (see Table 2-14 in Chapter 2, *Project Description*), which could increase the amount of fill that would need to be stockpiled until the long-term.

Alternative 2 would maintain flood protection for well pads and access roads to existing levels, as discussed in the proposed program, but set to a lower elevation.

5.5.2.3 Flood Risk and Stormwater Management

In Alternative 2, the culvert(s) connecting the San Gabriel River to the Central LCWA site would restrict water levels in the Central Area during large riverine events. During the 100-year event, the hydrodynamic modeling showed water levels would reach 7.7 feet NAVD with one 4-foot-diameter culvert, compared to 14.4 feet NAVD under the proposed program (refer to Appendix H). Six 4-foot-diameter culverts would result in a 100-year water level of 11.0 feet NAVD in the site, according to the model results (refer to Appendix H). Gates could be added to the culvert(s) for maintenance purposes.

The new Perimeter Levee could be set approximately 6.7 feet lower than the proposed program under Alternative 2 with one 4-foot-diameter culvert, or 3.4 feet lower than the proposed program with six 4-foot-diameter culverts. The Perimeter Levee would have a slope of approximately 3:1 horizontal: vertical (H:V) down to restored salt marsh at approximately 6 feet MLLW and the same slope down to the road on the back, which would give it a footprint of 2.6 acres less than under the proposed program with one 4-foot-diameter culvert, or 1.3 acres less than under the proposed program with six 4-foot-diameter culverts. The culvert(s) would reduce the potential for erosion along the Perimeter and Interim Levees, so buried soil cement or rock protection of the levee core would not be included.

Well pads and access roads would be protected to match the existing level of flood risk protection provided by the San Gabriel River Levees.

5.5.2.4 Public Access and Visitor Facilities

Under Alternative 2, the installation of a culvert or set of culverts rather than breaching the levee would allow for a loop trail to be constructed along the existing San Gabriel River levee and the Perimeter Levee. The trail would be open to the public from dawn to dusk. The road on top of the Interim Levee (north-south between 2nd Street and the San Gabriel River Levee) would not be open to the public due to the oil operations, but could be restricted to docent-led use only with gates on either end, as described in the proposed program.

5.5.2.5 Implementation and Restoration Process

Implementation of the restoration under Alternative 2 would be similar to implementation under the proposed program. However, instead of breaching the northern San Gabriel River levee, a culvert or set of culverts would be installed through the levee. This would likely be done by, first,

using steel sheet pile cofferdams in the vicinity of the culvert locations to limit tidal inundation of the construction work. Then concrete box culverts would be installed with precast reinforced concrete (or steel) foundation piles. The construction work would likely involve track-mounted excavators utilizing pile drivers. Alternatively, trenchless technology could be used to push the culvert(s) through the levee. Construction of the culvert(s) would likely take longer than construction of the levee breach in the proposed program.

5.5.2.6 Operation and Maintenance Activities

The new culvert(s) from the San Gabriel River to the Central Area would require annual maintenance to ensure proper operation, similar to current operation and maintenance of the existing structures. Gates and weirs may be adjusted seasonally for habitat management. Obstructions would be removed when necessary. If sedimentation in the channel limits the functionality of the culvert(s), a low ground pressure excavator would be used to remove the sediment. A temporary access route, 35-feet wide, would be created using mats to provide equipment access.

5.6 Analysis Format

In accordance with *CEQA Guidelines* Section 15126.6(d), each alternative is evaluated in sufficient detail to determine whether the overall environmental impacts would be less, similar, or greater than the corresponding impacts of the proposed program. Furthermore, each alternative is evaluated to determine whether the proposed program objectives identified in Chapter 2, *Project Description*, would be mostly attained by the alternative. The proposed program's impacts that form the basis of comparison in the alternatives analysis are those impacts that represent a conservative assessment of proposed program impacts. The evaluation of each of the alternatives follows the process described below:

- a) The net environmental impacts of the alternative after implementation of reasonable mitigation measures are determined for each environmental issue area analyzed in this EIR.
- b) Post-mitigation significant and non-significant environmental impacts of the alternative and the project are compared for each environmental issue area as follows:
 - Less: Where the impact of the alternative after feasible mitigation would be clearly less adverse than the impact of the proposed program, the comparative impact is said to be "less."
 - Greater: Where the impact of the alternative after feasible mitigation would be clearly more adverse than the impact of the proposed program, the comparative impact is said to be "greater."
 - Similar: Where the impacts of the alternative after feasible mitigation and the proposed program would be roughly equivalent, the comparative impact is said to be "similar."
- c) The comparative analysis of the impacts is followed by a general discussion of whether the underlying purpose for the proposed program, as well as the proposed program's basic objectives would be substantially attained by the alternative.

Table 5-1, *Summary of Program and Alternative Impacts*, provides a summary matrix that compares impacts of the proposed program with the impacts of each of the alternatives analyzed. It is important to note that none of the program alternatives reduces the significant unavoidable impacts associated with air quality, historic architectural resources, archaeological resources, and tribal cultural resources.

TABLE 5-1
SUMMARY OF PROGRAM AND ALTERNATIVE IMPACTS

Environmental Issue	Program Impact	Alternative 1: No Program (No Build)	Alternative 2: Culvert Connection to San Gabriel River with Perimeter Levee
Aesthetics			
Impact AES-1: Scenic Vistas	LTS	LTS (Greater)	LTS (Similar)
Impact AES-2: Scenic Resources	LTS	NI (Less)	LTS (Similar)
Impact AES-3: Regulations Governing Scenic Quality	LTS	NI (Less)	LTS (Similar)
Impact AES-4: Light and Glare	LTS with MM	NI (Less)	LTS with MM (Similar)
Air Quality			
Impact AQ-1: Air Quality Plan	SU for construction; LTS for operation	NI for construction and operation (Less)	SU for construction (Similar); LTS for operation (Similar)
Impact AQ-2: Cumulative Considerable Net Increase	LTS with MM for construction; LTS for operation	NI for construction and operation (Less)	LTS with MM for construction (Similar); LTS for operation (Similar)
Impact AQ-3: Sensitive Receptors	SU for construction; LTS for operation	NI for construction and operation (Less)	SU for construction (Similar); LTS for operation (Similar)
Impact AQ-4: Odors	LTS	LTS (Similar)	LTS (Similar)
Biological Resources			
Impact BIO-1: Candidate, Sensitive or Special-Status Species	LTS with MM	NI (Less)	LTS with MM (Less)
Impact BIO-2: Riparian Habitat or Sensitive Natural Community	LTS with MM	NI (Less)	LTS with MM (Less)
Impact BIO-3: State or Federally Protected Wetlands	LTS with MM	NI (Less)	LTS with MM (Less)
Impact BIO-4: Native Resident or Migratory Fish or Wildlife Species	LTS with MM	NI (Less)	LTS with MM (Less)
Impact BIO-5: Biological Resources Protection Policies	LTS	NI (Less)	LTS (Similar)
Cultural Resources			
Impact CUL-1: Historical Resources	SU	NI (Less)	SU (Similar)
Impact CUL-2: Archaeological Resources	SU	NI (Less)	SU (Similar)
Impact CUL-3: Human Remains	LTS with MM	NI (Less)	LTS with MM (Similar)

TABLE 5-1
SUMMARY OF PROGRAM AND ALTERNATIVE IMPACTS

Environmental Issue	Program Impact	Alternative 1: No Program (No Build)	Alternative 2: Culvert Connection to San Gabriel River with Perimeter Levee
Geology, Soils, and Paleontological Resources			
Impact GEO-1a: Fault Rupture	LTS	NI (Less)	LTS (Similar)
Impact GEO-1b: Seismic Ground Shaking	LTS	NI (Less)	LTS (Similar)
Impact GEO-1c: Seismic-Related Ground Failure	LTS	NI (Less)	LTS (Similar)
Impact GEO-2: Soil Erosion and Topsoil Loss	LTS	NI (Less)	LTS (Less)
Impact GEO-3: Geologic Instability	LTS	NI (Less)	LTS (Similar)
Impact GEO-4: Expansive Soil	LTS	NI (Less)	LTS (Similar)
Impact GEO-5: Septic Tanks	NI	NI (Less)	NI (Similar)
Impact GEO-6: Paleontological Resources	LTS with MM	NI (Less)	LTS with MM (Similar)
Greenhouse Gas Emissions and Energy			
Impact GHG-1: GHG Emissions	LTS	LTS (Less)	LTS (Less)
Impact GHG-2: GHG Regulations	LTS	LTS (Similar)	LTS (Similar)
Impact EN-1: Wasteful, Inefficient, or Unnecessary	LTS	NI (Less)	LTS (Less)
Impact EN-2: Conflict or Obstruct State or Local Plan	LTS	LTS (Similar)	LTS (Similar)
Hazards and Hazardous Materials			
Impact HAZ-1: Routine Transport, Use, Or Disposal	LTS	NI (Less)	LTS (Similar)
Impact HAZ-2: Hazardous Materials Near Schools	NI	NI (Similar)	NI (Similar)
Impact HAZ-3: List of Hazardous Materials	LTS with MM	NI (Less)	LTS with MM (Similar)
Impact HAZ-4: Public Airport or Public Use Airport	NI	NI (Similar)	NI (Similar)
Impact HAZ-5: Wildland Fires	NI	NI (Similar)	NI (Similar)
Hydrology and Water Quality			
Impact HYD-1: Water Quality Standards	LTS with MM	NI (Less)	LTS with MM (Similar)
Impact HYD-2: Groundwater Supplies	LTS	NI (Less)	LTS (Similar)
Impact HYD-3a: Drainage Patterns – Erosion or Siltation	LTS with MM	NI (Less)	LTS with MM (Less)
Impact HYD-3b: Drainage Patterns - Flooding	LTS	LTS (Greater)	LTS (Similar)

TABLE 5-1
SUMMARY OF PROGRAM AND ALTERNATIVE IMPACTS

Environmental Issue	Program Impact	Alternative 1: No Program (No Build)	Alternative 2: Culvert Connection to San Gabriel River with Perimeter Levee
Impact HYD-3c: Drainage Patterns – Stormwater Drainage Systems	LTS	NI (Less)	LTS (Similar)
Impact HYD-3d: Drainage Patterns – Flood Flows	LTS	NI (Less)	LTS (Similar)
Impact HYD-4: Flood Hazards, Tsunami, Seiche	LTS	LTS (Similar)	LTS (Similar)
Impact HYD-5: Water Quality Control Plan	LTS	LTS (Greater)	LTS (Similar)
Land Use and Planning			
Impact LU-1: Applicable Land Use Plan, Policy, or Regulation	LTS	LTS (Greater)	LTS (Similar)
Mineral Resources			
Impact MIN-1: Mineral Resource Loss or Locally Important Mineral Resource Recovery Site Loss	NI	NI (Similar)	NI (Similar)
Noise			
Impact NOI-1: Noise Standard Exceedance	LTS	NI (Less)	LTS (Greater)
Impact NOI-2: Groundborne Vibration	LTS	NI (Less)	LTS (Greater)
Public Services			
Impact PS-1a: Fire Protection	LTS with MM	NI (Less)	LTS with MM (Similar)
Impact PS-1b: Police Protection	LTS	NI (Less)	LTS (Similar)
Impact PS-1c: Parks	LTS	NI (Less)	LTS (Similar)
Recreation			
Impact REC-1: Neighborhood and Regional Parks	LTS	NI (Less)	LTS (Similar)
Impact REC-2: Expansion of Recreational Facilities	LTS	NI (Less)	LTS (Similar)
Transportation			
Impact TRA-1: Program Plan, Ordinance, or Policy	LTS with MM	NI (Less)	LTS with MM (Similar)
Impact TRA-2: CEQA Guidelines section 15064.3, subdivision (b)	LTS	NI (Less)	LTS (Similar)
Impact TRA-3: Traffic Hazards	LTS with MM	NI (Less)	LTS with MM (Similar)

TABLE 5-1
SUMMARY OF PROGRAM AND ALTERNATIVE IMPACTS

Environmental Issue	Program Impact	Alternative 1: No Program (No Build)	Alternative 2: Culvert Connection to San Gabriel River with Perimeter Levee
Tribal Cultural Resources			
Impact TRI-1: Listed or Eligible Tribal Cultural Resource	SU	NI (Less)	SU (Similar)
Impact TRI-2: Tribal Cultural Resource Determined by the Lead Agency	SU	NI (Less)	SU (Similar)
Utilities and Service Systems			
Impact UTL-1: Expanded Facilities	LTS with MM	NI (Less)	LTS with MM (Similar)
Impact UTL-2: Sufficient Water Supplies	LTS	NI (Less)	LTS (Similar)
Impact UTL-3: Adequate Wastewater Treatment Capacity	LTS	NI (Less)	LTS (Similar)
Impact UTL-4: Solid Waste Capacity	LTS	NI (Less)	LTS (Similar)
Impact UTL-5: Solid Waste Regulations	LTS	NI (Less)	LTS (Similar)
NI = No Impact LTS = Less than Significant LTS with MM = Less than Significant with mitigation measures SU = Significant and unavoidable impacts			

5.7 Impact Analysis

5.7.1 Alternative 1: No Program (No Build)

5.7.1.1 Aesthetics

Under Alternative 1, the proposed program would not be implemented and existing conditions would remain unchanged on most of the program area. Thus, this alternative would result in fewer impacts to scenic vistas than the proposed program, as it would avoid temporary impacts to scenic vistas from program construction. However, Alternative 1 does not include enhancement and restoration of the Los Cerritos Wetlands complex, which is considered a scenic vista. As such, although construction impacts to a scenic vista would be less than the proposed program, overall operational impacts would be greater since conditions would remain the same. Therefore, as operational impacts, which are not temporary, would be greater under Alternative 1, overall impacts to scenic vistas would be less than significant but greater than the less-than-significant impacts identified for the proposed program.

Similar to the proposed program, this alternative would not result in impacts related to damaging a scenic resource within a state scenic highway, as no state scenic highways are designated within the vicinity of the proposed program. However, without the program, the aesthetic benefits of creating views of natural habitats would not be achieved. While PCH is identified as an eligible state scenic highway, construction would not occur under this alternative and, thus, no scenic resources as viewed from PCH, would be damaged. In addition, as Alternative 1 does not propose any alterations to the program area, it would not conflict with applicable zoning and other regulations governing scenic quality. Given that there would be no construction or new development of a Seal Beach Visitors Center, this alternative would also avoid the temporary impacts to light and glare associated with proposed program during construction and operation. Therefore, there would be no impacts related to damaging a scenic resource within a state scenic highway, consistency with zoning and other regulations governing scenic quality, or light and glare, and impacts would be less than the less-than-significant impacts identified for the proposed program.

5.7.1.2 Air Quality

Under Alternative 1, the proposed program would not be implemented and existing conditions would remain unchanged on most of the program area. The existing oil production facilities located on the Hellman Retained site, Isthmus LCWA site, Central LCWA site, and Alamitos Bay Partners site, would continue to operate. As Alternative 1 does not include any of the construction activities proposed under the proposed program, this alternative would not generate emissions associated with construction and restoration activities. Thus, this alternative would result in no construction emissions, eliminating the significant and unavoidable construction emission impact associated with conflicting and obstructing implementation of the applicable air quality plan and impacts to sensitive receptors. Thus, Alternative 1 would result in less construction impacts than those identified for the proposed program. In addition, the less-than-significant with mitigation impacts related to a cumulative considerable net increase in criteria pollutants during construction would be eliminated and impacts under Alternative 1 would be less than those identified for the proposed program.

Under Alternative 1, the proposed program would not generate new emissions associated with truck trips for maintenance of trails and wetlands and emissions from passenger vehicles from visitors to the program area and existing facilities would continue to operate as they do under existing conditions. As such, there would be no net increases in emissions under this alternative. Therefore, Alternative 1 would not have any impacts related to conflicting with or obstructing implementation of the applicable air quality plan, cumulatively considerable net increase in criteria pollutants, and impacts to sensitive receptors. Operational emissions generated under Alternative 1 would be less than those identified for the proposed program. However, it should be noted that program activities under the proposed program would restore habitats and eventually decommission and remove existing oil operations, potentially resulting in a decrease in emissions in the long-term.

5.7.1.3 Biological Resources

Under Alternative 1, the proposed program would not be implemented and existing conditions would remain unchanged on most of the program area. Thus, there would be no impacts to candidate, sensitive, or special-status plant, wildlife, and/or riparian species or other sensitive natural communities within the program area. Given the lack of restoration under this alternative, no state or federally protected wetlands would be restored and no environmentally sensitive habitat areas (ESHA) would be expanded. This alternative would not interfere with the movement of any native resident, migratory fish, wildlife species, established native resident, wildlife corridors, or impede the use of native wildlife nursery sites, but it would also not enhance or expand these as in the proposed program. In addition, this alternative would not conflict with any local policies or ordinances protecting biological resources or conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local regional, or state habitat conservation plan. Therefore, there would be no impacts related to biological resources, and impacts would be less than the less-than-significant impacts identified for the proposed program. However, there would be no benefits to biological resources, which is one of the main objectives of the proposed program.

5.7.1.4 Cultural Resources

Under Alternative 1, the proposed program would not be implemented and existing conditions would remain unchanged on most of the program area. Given that there would be no ground disturbance, this alternative would avoid the potential impacts associated with historical resources as well as the potential discovery of undocumented cultural resources that were determined to be archaeological resources or discovery of human remains. Therefore, Alternative 1 would eliminate the significant and unavoidable program-level and cumulative impacts related to historical and archaeological resources and the less-than-significant with mitigation impacts identified for human remains under the proposed program.

5.7.1.5 Geology, Soils, and Paleontological Resources

Under Alternative 1, the proposed program would not be implemented and existing conditions would remain unchanged on most of the program area and no structures would be constructed within the program area (beyond those covered by the Los Cerritos Wetlands Oil Consolidation and Restoration Project). Thus, Alternative 1 would not directly or indirectly cause potential

substantial adverse effects from rupture of a known earthquake fault, strong seismic ground shaking, or seismic-related ground failure. In addition, as no construction or ground disturbance would occur under Alternative 1, Alternative 1 would have no impacts related to soil erosion and the loss of topsoil. Furthermore, as with the proposed program, as there would be no changes to oil production under Alternative 1, oil production would continue the current practice of returning the groundwater to the depth levels from which it was extracted, and this alternative would not have any impacts from subsidence and collapse as it relates to geologic instability. Additionally, as Alternative 1 does not include the construction of trails or visitor center (beyond those covered by the Los Cerritos Wetlands Oil Consolidation and Restoration Project), exposure of people to expansive soil impacts on the program area during operation would be unlikely. No septic tanks would be constructed under Alternative 1, as with the proposed program, and Alternative 1 would have no impacts related to septic tanks. Impacts would be less than the less-than-significant impacts identified for the proposed program.

With regard to paleontological resources, as Alternative 1 would not include any ground disturbing activities, the potential to encounter significant paleontological resources would be eliminated as compared to the proposed program. Therefore, there would be no impacts related to paleontological resources, and impacts would be less than the less-than-significant with mitigation impacts identified for the proposed program.

5.7.1.6 Greenhouse Gas Emissions and Energy

Under Alternative 1, the proposed program would not be implemented and existing conditions would remain unchanged on most of the program area. As such, Alternative 1 would not generate greenhouse gas (GHG) emissions associated with the construction and restoration activities or truck trips for maintenance of trails and wetlands and passenger vehicles from visitors to the program area during operation of the proposed program beyond existing operations and maintenance. As such, impacts under Alternative 1 would be less than the less-than-significant impacts identified for the proposed program.

Both the proposed program and Alternative 1 would be consistent with all applicable plans, policies, and regulations related to the reduction of GHG emissions as required by the City of Long Beach and the state. Therefore, impacts associated with GHG emission reduction plans and policies would be similar under Alternative 1 to the less-than-significant impacts identified for the proposed program.

With regard to energy consumption, Alternative 1 would not require energy associated with construction and restoration activities or truck trips for maintenance of trails and wetlands and passenger vehicles from visitors to the program area during operation of the proposed program beyond existing operations and maintenance. While Alternative 1 would continue to require energy associated with existing oil production facilities; new energy demand associated with the development of a Seal Beach Visitor Center and the use of transportation fuels (e.g., diesel and gasoline) from vehicles traveling to and from the program area would not be required, as under the proposed program. Overall, energy usage would be lower under Alternative 1; thus, Alternative 1 would have no impacts related to wasteful, inefficient, or unnecessary consumption of energy resources, and impacts would be less than the less-than-significant impacts identified

for the proposed program. As noted for air quality impacts, above, as the program activities would restore habitats and eventually decommission and remove existing oil operations, there could be a decrease in energy consumption in the long-term. In addition, recreational opportunities provided under the proposed program for the City of Seal Beach and City of Long Beach residents, employees, and visitors, which would reduce transportation-related fuel demand by providing nearby recreational amenities including a visitor center and trails, would not be realized under Alternative 1.

Since both the proposed program and this alternative would comply with applicable energy standards, policies, regulations, impacts to energy standards, policies, and regulations would be similar under Alternative 1 to the less-than-significant impacts identified for the proposed program.

5.7.1.7 Hazards and Hazardous Materials

Under Alternative 1, existing oil production uses would remain unchanged and there would be no potential to create a significant hazard through the routine transport, use, disposal, or upset and accident conditions that release hazardous materials through construction activities, well plugging and abandonment, and removal and relocation of oil pipelines. While Alternative 1 would still require maintenance of existing oil wells and pipelines on the program area, Alternative 1 would not include development of the Seal Beach Visitor Center, which could occasionally use small quantities of cleaning products and paints, solvents, and thinners for routine maintenance. Thus, there would be no impacts under Alternative 1 and impacts would be less than the less-than-significant impacts identified for the proposed program.

As discussed in Section 3.7, *Hazards and Hazardous Materials*, there are no schools located within 0.25 mile of the program area. Therefore, there would be no impacts related to hazardous materials near schools, similar to the proposed program.

While the program area has several individual sites listed on one or more hazardous materials lists for the presence of active, idle, or plugged oil wells, historical releases of contamination, and/or the presence of landfill materials, this alternative would not result in restoration activities or new development of a Seal Beach Visitor Center and, thus, this alternative would not create new significant hazards to the public or environment. Therefore, there would be no impact under Alternative 1 and impacts would be less than the less-than-significant with mitigation impacts identified for the proposed program.

Similar to the proposed program, this alternative would not be located within an airport land use plan nor would the alternative expose people or structures to significant risk involving wildland fires and there would be no impact.

5.7.1.8 Hydrology and Water Quality

Under Alternative 1, the proposed program would not be implemented and existing conditions would remain unchanged on most of the program area. As such, Alternative 1 would not require ground disturbance, vegetation removal and/or grading, levee modifications, public access facilities (beyond those covered by the Los Cerritos Wetlands Oil Consolidation and Restoration

Project), and infrastructure and utility modifications. In addition, no changes would occur to local water bodies. As such, Alternative 1 would not violate any water quality standards and impacts would be less than the less-than-significant with mitigation impacts of the proposed program.

As no construction or operational activities would occur under Alternative 1, Alternative 1 would not require the use of groundwater, which could impede sustainable groundwater management of the basin. Therefore, no impacts would occur under Alternative 1 and impacts would be less than the less-than-significant impacts of the proposed program.

Unlike the proposed program, this alternative would not alter the drainage patterns and, thus, would not result in substantial erosion or siltation, result in flooding on or off site, exceed capacity of existing or planned stormwater drainage systems, or impede or redirect flood flows. However, existing levees along the San Gabriel River do not account for sea-level rise, while the levees proposed under the proposed program would be designed to account for sea-level rise. As such, impacts under Alternative 1 would be less than the less-than-significant with mitigation impacts of the proposed program related to substantial erosion or siltation. In addition, impacts under Alternative 1 would be less than the less-than-significant impacts related to exceeding capacity of existing or planned stormwater drainage systems, or impeding or redirecting flood flows. However, impacts under Alternative 1 would be greater than the less-than-significant impacts related to flooding on or off site.

This alternative would result in similar less-than-significant impacts related to a flood hazard, tsunami, or seiche zone since both this alternative and the proposed program would operate facilities in a tsunami inundation area.

While activities under Alternative 1 would remain unchanged and there would be no potential to conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan, the benefits to water quality would not be realized under this alternative as with the proposed program, which includes implementation of a restoration program that would allow for tidal flows into the vegetated wetlands and would create favorable water quality conditions by limiting retention time and enhancing tidal exchange. Impacts would be less than significant under Alternative 1, but greater than the less-than-significant impacts of the proposed program.

5.7.1.9 Land Use and Planning

While there would be no change to existing uses, Alternative 1 would not include habitat restoration (beyond restoration activities covered by the Los Cerritos Wetlands Oil Consolidation and Restoration Project). As such, Alternative 1 would conflict with land use plans, policies, or regulations related to habitat restoration including the Hellman Ranch Specific Plan, adopted South East Area Development and Improvement Plan (SEADIP), the proposed Southeast Area Specific Plan (SEASP) 2060 (for informational purposes), the California Coastal Act, and Long Beach Local Coastal Program. Impacts would be less than significant under Alternative 1, but greater than the less-than-significant impacts identified for the proposed program.

5.7.1.10 Mineral Resources

Under Alternative 1, extraction of the existing resources would continue to occur, however oil wells would not be plugged and associated oil infrastructure would not be removed. As such, this alternative would not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state, or the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. Impacts would be similar to the less-than-significant impacts identified for the proposed program.

5.7.1.11 Noise

Given that existing conditions would remain unchanged on most of the program area and no restoration activities or new development of a Seal Beach Visitor Center would occur under Alternative 1, impacts related to generation of substantial temporary or permanent increase in ambient noise levels would not occur. As such, impacts would be less than the less-than-significant impacts identified for the proposed program. In addition, this alternative would not result in excessive groundborne vibration or groundborne noise levels. Therefore, related impacts would be less than the less-than-significant impacts identified for the proposed program.

5.7.1.12 Public Services

Under Alternative 1, existing conditions would remain unchanged on most of the program area and restoration activities or new development of a Seal Beach Visitor Center would not occur; thus, the potential increase in demand for fire protection and police protection services would not occur. As such, Alternative 1 would not require new or physically altered government facilities and would have a less-than-significant impact on public services. Impacts under this alternative would be less than the less-than-significant with mitigation impacts identified for the proposed program for fire protection and less than the less-than-significant impacts identified for the proposed program for police protection.

5.7.1.13 Recreation

Under Alternative 1, existing conditions would remain unchanged on most of the program area and restoration activities or new development of a Seal Beach Visitor Center would not occur, thus, temporary construction workers or the number of employees, volunteers, and daytime visitors within the program area would not increase. As such, an increase in the use of existing parks and recreational facilities resulting in substantial physical deterioration of facilities would not occur or be accelerated. Alternative 1 would maintain the program area's existing operations and new recreational facilities, including the Seal Beach Visitor Center, overlooks, pedestrian trails, and potential sidewalk improvements, would not be developed. Thus, the City of Seal Beach and City of Long Beach would not benefit from the increase in recreational uses. However, because this alternative would not increase the use of existing parks and recreational facilities, there would be no impact and impacts would be less than the less-than-significant impacts identified for the proposed program.

5.7.1.14 Transportation

Alternative 1 would not result in the construction-related traffic or additional operations-related traffic associated with the proposed program; therefore, this alternative would not conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities. Impacts under Alternative 1 would be less than the less-than-significant impacts identified for the proposed program. However, Alternative 1 would not provide an increase in connectivity, walkability, and safety for pedestrians that would be realized under the proposed programs' installation of new trails along the perimeter of the program areas. Similar to the proposed program, as it relates to the regulations of SB 743 and vehicle miles travelled (VMT), CEQA Guidelines section 15064.3, subdivision (b) is not applicable to Alternative 1 at this time. However, unlike the proposed program, Alternative 1 does not have the potential to generate operational trips. As such, no impacts would occur under Alternative 1 and would be less than the less-than-significant impacts of the proposed program. Given that there would be no restoration activities or new development of a Seal Beach Visitor Center, this alternative would also not increase hazards due to a design feature or incompatible uses. Thus, impacts under Alternative 1 would be less than the less-than-significant impacts identified for the proposed program.

5.7.1.15 Tribal Cultural Resources

Given the cultural resources sensitivity of the program area, construction activities associated with the proposed program could impact tribal cultural resources. This alternative would not include restoration or the construction of any facilities or structures and, thus, would not result in potential construction-related impacts to tribal cultural resources that could occur under the proposed program. No impacts to tribal cultural resources are expected in association with continued operation of existing facilities at the program area. However, the benefit of restoring a natural marsh system as part of the cultural resources of the site would be lost in the no project alternative. This alternative would result in no impact, and would avoid the significant and unavoidable impacts to tribal cultural resources identified for the proposed program.

5.7.1.16 Utilities and Service Systems

Alternative 1 would not result in an increase in water use, would not generate additional wastewater, would not change the existing flood risk and stormwater management elements, and would not increase electricity, natural gas, and telecommunications use. As such, this alternative would not result in the construction of associated facilities or the expansion of existing facilities and there would be no impact under Alternative 1. Impacts would be less than the less-than-significant with mitigation impact related to water infrastructure and less than the less-than-significant impacts related to wastewater infrastructure, stormwater infrastructure, electric infrastructure, or telecommunications infrastructure. In addition, as Alternative 1 would not increase water use or generate additional wastewater, this alternative would not affect water supplies or impact wastewater treatment capacity. Impacts related to sufficient water supplies and adequate wastewater treatment capacity under Alternative 1 would be less than the less-than-significant impacts identified for the proposed program.

Given that there would be no change to existing conditions under this alternative, solid waste disposal needs would not increase and this alternative would continue to comply with all regulations pertaining to solid waste. Therefore, there would be no impact under this alternative, and impacts would be less than the less-than-significant impacts identified for the proposed program.

5.7.1.17 Comparison of Impacts

Alternative 1 would avoid the proposed program's significant and unavoidable construction air quality impacts, historical resource impacts, archeological impacts, and tribal cultural resources impacts. With the exception of impacts related to scenic vistas, odors, GHG emissions, drainage patterns related to flooding on or off site, water quality, and consistency with land use plans, policies, or regulations that would be greater under this alternative, all impacts associated with the remaining environmental issues would be similar or less than those of the proposed program.

5.7.1.18 Relationship of the Alternative to the Project Objectives

No restoration activities or new development of a Seal Beach Visitor Center would be introduced on the program area under Alternative 1 and existing oil production would continue. No oil production facilities would be decommissioned to allow for restoration of tidal wetlands and habitat buffers and no visitor center or public access trails (beyond those covered by the Los Cerritos Wetlands Oil Consolidation and Restoration Project) would be constructed. As a result, none of the proposed program objectives would be achieved by Alternative 1.

5.7.2 Alternative 2: Culvert Connection to San Gabriel River with Perimeter Levee

As described above, under Alternative 2, a culvert or set of culverts would be installed within the northern San Gabriel River levee to connect the river to the Central Area rather than breaching the levee as in the proposed program. As such, all components of this alternative would remain the same as the proposed program except for the change to install a culvert or set of culverts in the levee rather than breach the levee, and to reduce the height and footprint of the Perimeter and Interim Levees in the Central Area. Thus, the analysis contained herein focuses on impacts that could occur within the Central Area as a result of implementation of this alternative.

5.7.2.1 Aesthetics

Installation of the culvert(s) in Alternative 2 would restrict the water levels in the site. As such, the levees proposed within the Central Area would be designed to have a smaller footprint and would be lowered by approximately 3 to 7 feet. As construction and restoration activities under Alternative 2 would require similar construction equipment as the proposed program, impacts to scenic vistas during construction would be similar to those of the proposed program. However, impacts along 2nd Street and Shopkeeper Road would be less during operation of Alternative 2 as compared to the proposed program, as the proposed levees would be lower and would allow for a better view of the Los Cerritos Wetlands complex. Views of the Central Area from the San Gabriel River Levee Bike Trail would not be improved as in the proposed program, since the existing northern San Gabriel River levee would not be breached and lowered. Overall, impacts

related to scenic vistas would be less than significant under Alternative 2 and similar to the less-than-significant impacts identified for the proposed program.

Alternative 2 would include similar alterations to the program area as the proposed program; as such, no scenic resources would be damaged within a state scenic highway and implementation of the alternative would enhance the scenic value of the proposed program. In addition, similar to the proposed program, Alternative 2 would not conflict with applicable zoning and other regulations governing scenic quality, including the City of Seal Beach General Plan, Hellman Ranch Specific Plan, City of Long Beach General Plan, adopted SEADIP, proposed SEASP 2060 (for informational purposes), and City of Long Beach's LCP. Impacts related to damaging a scenic resource within a state scenic highway and consistency with zoning and other regulations governing scenic quality, would be less than significant under Alternative 2 and similar to the less-than-significant impacts identified for the proposed program.

Impacts from light and glare associated with Alternative 2 during construction and operation would be similar to the proposed program as the activities and intensity of light and glare required under both the alternative and proposed program would be similar. Therefore, impacts under Alternative 2 would be less than significant and impacts would be similar to the less-than-significant impacts identified for the proposed program.

5.7.2.2 Air Quality

On a daily basis, the type of equipment used within the program area during construction of Alternative 2 would be similar to the proposed program. As such, construction emissions under Alternative 2 would be similar to the construction emissions under the proposed program. Alternative 2 would have a significant and unavoidable impact as it relates to conflicting and obstructing implementation of the applicable air quality plan and impacts to sensitive receptors during construction. Impacts related to a cumulative considerable net increase in criteria pollutants during construction would be less than significant under Alternative 2 with implementation of Mitigation Measure AQ-1, as with the proposed program. With respect to odors, impacts would be less than significant under Alternative 2 and similar to those of the proposed program.

Alternative 2 would generate similar operational emissions as the proposed program, as operational activities would be similar under both the alternative and the proposed program. As such, impacts related to conflicting and obstructing implementation of the applicable air quality plan, cumulative considerable net increase in criteria pollutants, sensitive receptors, and odors, would be less than significant under Alternative 2 and similar to the less-than-significant impacts identified for the proposed program.

5.7.2.3 Biological Resources

Under Alternative 2, the footprint of the levees would be reduced and there would be 1 – 3 acres less encroachment into the existing wetland habitat areas. Impacts related to candidate, sensitive, or special-status species, riparian habitat or sensitive natural communities, state or federally protected wetlands, and native resident or migratory fish or wildlife species would be less-than-

significant with mitigation and less than the less-than-significant with mitigation impacts identified for the proposed program. However, Alternative 2 would create 1.5 acres less marsh, compared to the proposed program, since the San Gabriel River levee would not be breached and reduced to the marsh plain elevation. Additionally, the hydrologic processes in a natural tidal marsh along a river would be restricted by the culverts, so the marsh would not experience the same high water levels as it would under the proposed program. The tide range would be reduced 1 to 2 feet compared to the proposed program.

As Alternative 2 would include the same habitat restoration activities as the proposed program, this alternative would not conflict with any local policies or ordinances protecting biological resources or conflict with the provisions of an adopted Habitation Conservation Plan, Natural Community Conservation Plan, or other approved local regional, or state habitat conservation plan. Impacts would be less than significant under Alternative 2 and similar to the less-than-significant impacts identified for the proposed program.

5.7.2.4 Cultural Resources

Similar to the proposed program, construction under this alternative would require ground disturbance; thus, there would be the potential to impact and encounter historical resources, archaeological resources, and human remains. As such, Alternative 2 would implement similar mitigation measures as the proposed program. However, as with the proposed program, even with implementation of mitigation measures, Alternative 2 would have significant and unavoidable program-level and cumulative impacts related to historical resources and archaeological resources and impacts related to human remains would be less than significant with mitigation, as with the proposed program. Impacts under Alternative 2 would be similar to the impacts identified for the proposed program.

5.7.2.5 Geology, Soils, and Paleontological Resources

Operational activities under Alternative 2 include the Seal Beach Visitors Center, which would not be located within a fault zone and would implement the regulatory requirements of the California Building Code. No change to the oil operators would occur under Alternative 2 within the Central Area. In addition, with regard to the existing oil fields, Alternative 2 does not include changes to the existing injection and extraction of oil and produced water. Over time, these oil wells and associated pipelines would be plugged or removed and the operators would be required to comply with the California Geologic Energy Management Division (formerly the Department of Conservation's Division of Oil, Gas, and Geothermal Resources) regulations for these activities. With implementation of regulatory requirements, Alternative 2 would have less than significant impacts related to fault rupture, seismic ground shaking, seismic-related ground failure, geologic instability, and expansive soils. Impacts under Alternative 2 would be similar to the less-than-significant impacts identified for the proposed program.

As with the proposed program, since Alternative 2 would exceed one acre, Alternative 2 would be required to comply with the *NPDES General Permit for Discharges of Storm Water Runoff Associated with Construction and Land Disturbance Activities* (Order 2009-0009-DWQ, NPDES No. CAS000002; as amended by Orders 2010-0014-DWQ and 2012-006-DWQ) (Construction

General Permit), the *Long Beach Storm Water Management Program Manual*, and the *Seal Beach Grading and Stormwater Pollution Prevention Implementation Manual*, the compliance of which would serve to reduce impacts associated with soil erosion during construction of Alternative 2. In addition, during operation, the change to the installation of a set of culverts rather than breaching the existing San Gabriel River levee would result in less erosion during storm events in the Central Area. Impacts related to soil erosion and loss of top soils under Alternative 2 would be less than significant and less than the less-than-significant impacts identified for the proposed program.

Similar to the proposed program, Alternative 2 does not include the construction or operation of septic tanks or alternative waste water disposal systems, resulting in no impacts. Impacts under Alternative 2 would be similar to the impacts identified for the proposed program.

Similar to the proposed program, construction under this alternative would require ground disturbance; thus, there would be the potential to impact and encounter paleontological resources. As such, Alternative 2 would implement similar mitigation measures as the proposed program. With implementation of mitigation, impacts related to paleontological resources would be less than significant with mitigation. Impacts would be similar under Alternative 2 as compared to the less-than-significant with mitigation impacts identified for the proposed program.

5.7.2.6 Greenhouse Gas Emissions and Energy

While operational activities and resulting emissions would be similar under Alternative 2 to the operational emissions of the proposed program, construction emissions under Alternative 2 would be reduced as installation of the culverts within the San Gabriel River levee would reduce the overall required soils movement during construction, which would reduce the overall number of tug boats and/or haul truck trips needed to move soil off site. Total GHG emissions would decrease under Alternative 2 and GHG emissions would not exceed the GHG threshold of 10,000 metric tons of carbon dioxide equivalent per year (MTCO₂e/year) for industrial projects. Impacts would be less than significant under Alternative 2 and less than the less-than-significant impacts identified for the proposed program.

As with the proposed program, Alternative 2 would utilize construction contractors that would be in compliance with the same regulations as the proposed program. In addition, during operation, workers and visitors to the program area would utilize vehicles that comply with State motor vehicle emissions standards and the visitor center buildings would be built to the CALGREEN standards, as with the proposed program. Similar to the proposed program, Alternative 2 would provide improved public access to the wetlands both on foot and by bicycle. As Alternative 2 includes the installation of culverts rather than breaching the levee, this would allow for a loop trail to be constructed along the existing San Gabriel River levee and the Perimeter Levee, which would serve to contribute to the non-automotive transportation network and would further reduce transportation-related air pollutants and GHG emissions. Impacts under Alternative 2 as it relates to consistency with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions would be less than significant and similar to the less-than-significant impacts identified for the proposed program.

Operational activities would be similar under Alternative 2 as with the proposed program, and Alternative 2 would generate an energy demand similar to the proposed program; however, the levees would be smaller and, therefore, require less fill. Overall transportation fuel usage would decrease during construction of Alternative 2 as this alternative would require fewer tug boat and/or haul truck trips. As with the proposed program, construction trucks would be required to comply with fuel saving regulations such as the USEPA Phase 2 standards. During operation, Alternative 2 would incorporate similar green building measures as the proposed program. As such, Alternative 2 would continue to not result in wasteful, inefficient, and unnecessary consumption of building energy or transportation usage during construction and operation of Alternative 2 and impacts would be less than significant. However, impacts under Alternative 2 would be less than the less-than-significant impacts identified for the proposed program due to the reduction in tug boat/haul truck trips.

As with the proposed program, Alternative 2 would generally include the same construction and operational activities. As such, Alternative 2 would be consistent with energy efficiency standards in the City of Seal Beach municipal code, City of Long Beach municipal code, and CALGreen Code. Alternative 2 would also not conflict with the Southern California Association of Governments (SCAG) *2016–2040 Regional Transportation Plan and Sustainable Communities Strategy* (RTP/SCS) general goals and strategies of increasing accessibility to natural areas, preserving open space, and encouraging active transportation (e.g., bicycling and walking) thereby minimizing transportation fuel demand. As noted previously, since Alternative 2 includes the installation of culverts rather than breaching the levee, this would allow for a loop trail to be constructed along the existing San Gabriel River levee and the Perimeter Levee, which would add to the improved public access of the proposed program, and would further reduce transportation-related fuel demand. Alternative 2 would have a less than significant impact with regard to conflicting with or obstructing a state or local plan for renewable energy or energy efficiency and impacts would be similar to the less-than-significant impacts identified for the proposed program.

5.7.2.7 Hazards and Hazardous Materials

As construction and operational activities under Alternative 2 would be similar to the proposed program, including overall construction activities, well plugging and abandonment, removal of oil pipelines, relocation of oil pipelines, restoration of wetland habitat, operations of oil wells and pipelines, and construction of the Seal Beach Visitor Center, Alternative 2 would comply with the appropriate existing regulations and policies. As such, Alternative 2 would result in less-than-significant impacts related to the routine transport, use, or disposal of hazardous materials, similar to the proposed program.

As with the proposed program, Alternative 2 would not be located within one-quarter mile of a school, would not be within two miles of a public airport or public use airport, and would not be within or near a very high or high fire hazard severity zone; therefore, no impacts would occur. Impacts under Alternative 2 would be similar to the impacts identified for the proposed program.

As the program area of Alternative 2 would be the same as the proposed program, several individual sites within the program area of Alternative 2 would be listed on one or more hazardous materials lists for the presence of active, idle, or plugged oil wells; historical releases

of contamination; and/or the presence of landfill materials. As such, Alternative 2 would comply with existing regulations and would implement similar mitigation measures as the proposed program to reduce the potential for harmful exposure to hazardous materials. Impacts under Alternative 2 would be less than significant with mitigation, and would be similar to the less-than-significant with mitigation impacts identified for the proposed program.

5.7.2.8 Hydrology and Water Quality

Installation of the culvert or set of culverts within the existing San Gabriel River levee would change the hydrology of the Central Area.

With regard to violating water quality standards or waste discharge, construction activities under Alternative 2 would be similar to those of the proposed program. As such, construction activities under Alternative 2 would be required to comply with the Construction General Permit for the State and the County MS4 Permit required as part of the permitting process. With regard to contaminated water and sediment from upstream sources, upstream sources that have the potential to impact water quality, these sources have identified watershed control measures that help jurisdictions meet the MS4 permit requirements and improve water and sediment quality in the rivers and channels. The concentration and loading of the water quality constituents from the watershed will be reduced through compliance with the reissued MS4 Permit, TMDLs, and the WMPs. Additionally, the culverts could be outfitted with trash racks to reduce trash coming into the Central Area, which would improve water quality in the Central Area. The potential for significant adverse impacts to the program would, therefore, be significantly reduced.

Reconnections of water bodies with poor water quality under Alternative 2 could also impact channels and marshes within the program area for Alternative 2 which may impact biological resources/beneficial uses. Alternative 2 would implement similar mitigation measures as the proposed program, the implementation of which would ensure monitoring and adaptive management is conducted to recognize and address any erosion, deposition, or sediment quality issues. Similar to the proposed program, since it is likely that sediment in certain areas of the program area will require remediation before restoration, remediation undertaken under Alternative 2 would improve conditions and be a benefit to groundwater quality. Restoration of Alternative 2 would also not impact ocean water quality as any sediment placed in an ocean disposal site would only be placed if it met the standards of the Ocean Disposal – Testing Manual. Based on the above, impacts related to water quality standards would be less than significant with mitigation, and similar to the less-than-significant with mitigation impacts identified for the proposed program.

As with the proposed program, Alternative 2 could include use of groundwater supplies, however, construction water supply needs would be temporary and are unlikely to be substantial. In addition, while operation of Alternative 2 would generate a demand for water supplies, water would be supplied through the City of Seal Beach and Long Beach Water District, and, as such, would not deplete groundwater supplies or impede sustainable groundwater management of the basin, similar to the proposed program. Impacts under Alternative 2 would be less than significant, and similar to the less-than-significant impacts of the proposed program.

Post-construction, Alternative 2 would reconnect the San Gabriel River to the Central Area, which could cause erosion of the marsh during a large storm event and could deliver sediment-laden runoff further down the river or to the ocean. If this sediment deposited in the San Gabriel River or the entrance of Alamitos Bay, it could impact flood management or navigation. However, the sediment dynamics analysis (refer to Appendix I) showed that the erosion of the Central Area during a 100-year storm event under the proposed program is expected to be minimal and Alternative 2 would result in even less erosion due to the culvert(s) limiting velocities inside the site. Additionally, Alternative 2 would implement similar mitigation measures as the proposed program, the implementation of which would ensure monitoring and adaptive management is conducted to recognize and address any erosion or deposition issues. Impacts under Alternative 2 would be less than significant after mitigation and less than the proposed program.

Alternative 2 would reconnect the San Gabriel River to the restored wetland floodplain by grading the Central Area to marshplain elevations and installing a culvert or set of culverts in the levees along the river. The expansion of the floodplain could increase water levels upstream, downstream, and at the site during storm events, thereby increasing off-site flooding. Hydrodynamic modeling of the proposed program (refer to Appendix H) showed that Alternative 2 would lower water levels in the San Gabriel River compared to existing conditions due to the extra flood storage in the site. Within the site under Alternative 2, water levels would increase compared to existing conditions, but the Perimeter Levee would be designed to maintain or increase the level of flood protection, similar to the proposed program. Impacts under Alternative 2 would be less than significant and similar to the proposed program.

Alternative 2 would include replacement of stormwater storage volume by creating low areas (e.g., basins or swales) between the roads and the proposed levee in the Central Area, as provided under the proposed program. These storage basins or bioswales would be sized to accommodate the local area drainage. These basins would also function as water quality treatment measures for a portion of the runoff from the existing paved areas. All drainage features throughout the program area would be designed in accordance with NPDES MS4 permit requirements. The potential impacts would be less than significant.

By design, Alternative 2 would alter existing drainage patterns of the site to allow for increased flooding within the targeted restoration areas in pursuit of mimicking pre-development conditions, while also providing flood protection of off-site properties through the construction of levees, berms, or flood walls. The levees, berms, or flood walls would be constructed in accordance with 33 U.S.C. Section 408 permit requirements. Therefore, Alternative 2 would alter drainage patterns and areas that would be susceptible to flooding, but would not impede or redirect flood flows to off-site areas. As a result, the potential impact related to altered drainage patterns and flood flows would be less than significant.

As with the proposed program, Alternative 2 would be located within a tsunami inundation zone. Alternative 2 would include flood protection measures that would be designed to limit flooding to the intended habitat areas consistent with pre-restoration conditions and provide sufficient protection to off-site areas. In addition, there would not be any storage of substantive quantities of

hazardous materials anywhere within the program area of Alternative 2 such that there would be risk of release from program inundation. Otherwise, the program area is not located adjacent to an enclosed or semi-enclosed water body such that there would be no risk of seiche waves that could affect the site. Impacts under Alternative 2 would be less than significant and similar to the less-than-significant impacts of the proposed program.

The Los Cerritos Channel and San Gabriel River, which are both located within the program area of Alternative 2, are both listed as impaired waterbodies for a number of constituents through the 303(d) and TMDL programs. Implementation of the proposed restoration program under Alternative 2 would allow for tidal flows into the program area, improving water quality conditions through vegetated wetlands and by limiting retention time and enhancing tidal exchange. The culvert(s) would also minimize the amount of sediment that comes into the Central Area and deposits on the restored program area during high storm flow events. As a result, Alternative 2, similar to the proposed program, would not conflict with or obstruct implementation of the water quality control plan, but would actually be a benefit to water quality. Impacts under Alternative 2 would be less than significant and similar to the less-than-significant impacts of the proposed program.

5.7.2.9 Land Use and Planning

Restoration under this alternative would include similar activities in the Program area as the proposed program and would require similar approvals. As with the proposed program, Alternative 2 would not conflict with land use plans, policies, or regulations adopted for the purpose of avoiding or mitigating an environmental effect, including the Seal Beach General Plan, Seal Beach Municipal Code, Hellman Ranch Specific Plan, Long Beach General Plan, Long Beach Municipal Code, adopted SEADIP, proposed SEASP 2060 (for informational purposes), Long Beach Bicycle Master Plan, AELUP, SCAG 2016–2040 RTP/SCS, the California Coastal Act, and Long Beach Local Coastal Program. Impacts would be similar to the less-than-significant impacts identified for the proposed program.

5.7.2.10 Mineral Resources

Oil production would continue on the Central, Isthmus, and South Areas until the operations cease. Once the oil production ceases, the oil wells would be plugged, the associated infrastructure would be removed, and no economic resources would remain accessible within these areas. Therefore, there would be no impact under Alternative 2 and impacts would be similar to those identified for the proposed program.

5.7.2.11 Noise

Similar to the proposed program, Alternative 2 would require the use of heavy equipment during the construction activities on site and the type of equipment used would be similar to the equipment used for the development of the proposed program. One exception would be the equipment associated with the installation of the culvert(s) within the San Gabriel River levee, which would require the use of vibratory pile drivers. While vibratory pile drivers would produce greater noise as compared to the proposed program, the cities of Seal Beach and Long Beach exempt noise generated by construction activities during daytime hours depending on the day of

the week. As with the proposed program, construction of Alternative 2 would occur within these defined daytime hours and would not generate a substantial increase in ambient noise levels in the vicinity of the proposed program in excess of standards established in the local general plan or noise ordinance. Nonetheless, construction of Alternative 2 would implement recommended noise reduction measures similar to the proposed program. While overall required tug boat and/or haul truck trips would be reduced under Alternative 2 compared to the proposed program, since the levees would be smaller and, therefore, require less fill, impacts on a daily basis would be similar to those of the proposed program. As such, off-site construction traffic noise under Alternative 2 would similarly not generate a substantial increase in ambient noise levels in the vicinity of the proposed program in excess of standards established in the local general plan or noise ordinance. With regard to noise during operation, as operational activities under Alternative 2 would be similar to those of the proposed program, Alternative 2 would not generate a substantial increase in ambient noise levels in the vicinity of the proposed program in excess of standards established in the local general plan or noise ordinance. Impacts to noise during construction and operation under Alternative 2 would be less than significant, but greater than the less-than-significant impacts identified under the proposed program due to the use of vibratory pile drivers during construction.

With regard to vibration impacts during construction, the proposed program assumed that no rock blasting with explosives or pile driving would be used during program construction. However, under Alternative 2, vibratory pile drivers would need to be used for the installation of culverts within the San Gabriel River levee. This would increase the vibration generated during construction of Alternative 2. The operation of heavy equipment generates vibrations that propagate through the ground and diminish in intensity with distance from the source. Residences were conservatively assumed to be 50 feet from the program area boundary. Vibratory pile drivers would have a vibration level of 0.17 in/sec peak particle velocity (PPV) at a reference distance of 25 feet (FTA, 2018). Therefore, Alternative 2 would generate vibration levels at 50 feet that would not exceed the structural damage potential criteria of 0.5 in/sec PPV or exceed the vibration criteria for human annoyance of 0.04 in/sec PPV. Residences are located as close as approximately 50 feet outside of the program area boundary, and program restoration activities with the operation of heavy equipment (i.e., bulldozer) would not occur at the program area boundary. With regard to vibration during operation, as operational activities under Alternative 2 would be similar to those of the proposed program, vibration associated with operation of the program would be below the structural damage and human annoyance criteria. Therefore, the potential vibration impacts for structural damage at off-site residences and human annoyance during construction and operation of Alternative 2 would be less than significant, but greater than the less-than-significant impacts identified for the proposed program due to the use of vibratory pile drivers required for development of Alternative 2.

5.7.2.12 Public Services

As construction and operational components under Alternative 2 would be similar to the proposed program, there would be a similar potential increase in demand for fire protection and police protection services. Both Alternative 2 and the proposed program would result in a small incremental increase in demand for fire and police protection services. Similar to the proposed

program, this alternative, would not require new or physically altered government facilities. Impacts under Alternative 2 would be similar to the less-than-significant with mitigation impacts identified for the proposed program for fire protection and similar to the less-than-significant impacts identified for the proposed program for police protection.

5.7.2.13 Recreation

Similar to the proposed program, Alternative 2 would include the development of new recreational facilities, including the Seal Beach Visitor Center, overlooks, pedestrian trails, and potential sidewalk improvements, and would improve recreational resources in the City of Seal Beach and City of Long Beach. As noted above, since Alternative 2 includes the installation of a culvert or set of culverts rather than breaching the levee, this would allow for a loop trail to be constructed along the existing San Gabriel River levee and the Perimeter Levee and would allow for visitors to view areas within the proposed program that were once inaccessible areas on site, and gain better views of the on-site wetland habitat. Thus, impacts under Alternative 2 would be less than significant and similar to the less-than-significant impacts identified for the proposed program.

5.7.2.14 Transportation

As the height and footprint of the Perimeter and Interim Levees would be reduced under Alternative 2, compared to the proposed program, fewer tug boat and/or haul truck trips would be required overall; all other components of construction and operation under Alternative 2 would be similar to the proposed program. On a daily basis, Alternative 2 would be expected to require roughly the same level of construction effort and the number of construction vehicles as the proposed program and operation of Alternative 2 would be the same as the proposed program. As with the proposed program, Alternative 2 would implement mitigation during construction which would require the preparation and implementation of a traffic control plan and would serve to reduce impacts during construction. Impacts under Alternative 2 related to consistency with a program plan, ordinance, or policy addressing the circulation system as well as impacts related to increasing hazards would be less than significant with mitigation and similar to the less-than-significant impacts identified for the proposed program. As VMT produced under Alternative 2 would be similar to that of the proposed program, impacts related to consistency with CEQA Guidelines section 15064.3, subdivision (b) would also be less than significant and similar to the less-than-significant impacts identified for the proposed program.

5.7.2.15 Tribal Cultural Resources

Similar to the proposed program, construction under this alternative would require ground disturbance; thus, there would be the potential to encounter tribal cultural resources. As such, Alternative 2 would implement similar mitigation measures as the proposed program. However, even with implementation of these mitigation measures, impacts to tribal cultural resources would be significant and unavoidable under Alternative 2. Impacts would be similar under Alternative 2 as compared to the impacts identified for the proposed program.

5.7.2.16 Utilities and Service Systems

As Alternative 2 would require similar construction and operational activities as the proposed program, water demand, wastewater generation, design of the on-site stormwater drainage facilities, electricity demand, and telecommunication demand would be the same under Alternative 2 as with the proposed program. As such, Alternative 2 would not result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects. As with the proposed program, Alternative 2 would implement mitigation to reduce temporary pedestrian and traffic impacts during construction of water distribution lines and connections to the public main. As such, impacts would be less than significant with mitigation under Alternative 2. In addition, as water demand and wastewater generation during construction and operation of Alternative 2 would be similar to the proposed program, impacts related to available water supplies and capacity of wastewater treatment providers would be less than significant. Furthermore, as solid waste generation under Alternative 2 would be similar to that of the proposed program, impacts related to solid waste capacity of local infrastructure and consistency with federal, state, and local management and reduction statutes and regulations related to solid waste would be less than significant. All impacts analyzed under utilities and service systems for Alternative 2 would be similar to those of the proposed program.

5.7.2.17 Comparison of Impacts

As described above, under Alternative 2, a culvert or set of culverts would be installed within the northern San Gabriel River levee to connect the river to the Central Area rather than breaching the levee as in the proposed program. Additionally, the height and footprint of the Perimeter and Interim Levees would be reduced, compared to the proposed program. As such, all components of this alternative would remain the same as the proposed program except for the change to install a culvert or set of culverts rather than breach the levee in the Central Area and to reduce the height and footprint of the levees. Impacts related to noise and vibration were found to be greater under Alternative 2, while impacts related to soil erosion and top soil, GHG emissions, and wasteful, inefficient, and unnecessary consumption of energy would be less than the impacts under the proposed program. Impacts related to biological resources related to candidate, sensitive or special-status species, riparian habitat or sensitive natural communities, state or federally protected wetlands, native residential or migratory fish or wildlife species would be less than the impacts under the proposed program, but Alternative 2 would also create less wetland habitat than the proposed program because a portion of the levee along the San Gabriel River would not be removed and restored to wetlands. All impacts associated with the remaining environmental issues would be similar to impacts associated with the proposed program.

5.7.2.18 Relationship of the Alternative to the Project Objectives

Similar to the proposed program, Alternative 2 would meet all of the Project Objectives, in that it contains the same components as the proposed program.

5.8 Environmentally Superior Alternative to the Proposed Program

CEQA Guidelines Section 15126.6(e)(2) indicates that an analysis of alternatives to a project shall identify an Environmentally Superior Alternative among the alternatives evaluated in the EIR. The *CEQA Guidelines* also state that should it be determined that the No Program (No Build) Alternative is the Environmentally Superior Alternative, then the EIR shall identify another Environmentally Superior Alternative among the remaining alternatives.

A comparative summary of the environmental impacts anticipated under each alternative with the environmental impacts associated with the proposed program is provided above in Table 5-1, on page 5-28. A more detailed description of the potential impacts associated with each alternative is provided above. Pursuant to *CEQA Guidelines* Section 15126.6(c), the analysis presented above addresses the ability of the alternatives to “avoid or substantially lessen one or more of the significant effects” of the proposed program.

As previously stated, the intent of the alternatives analysis is to reduce the significant impacts of a project. Implementation of the proposed program would result in significant and unavoidable impacts on a program level with regard to emissions of NO_x, which would exceed the threshold for localized impacts to sensitive receptors. As the proposed program would have a localized impact from NO_x emissions, the proposed program would also have a significant impact related to consistency with the AQMP. In addition, the proposed program would have a significant and unavoidable impact related to historical resources, archaeological resources, and tribal cultural resources.

The No Program (No Build) Alternative would eliminate all of the significant impacts of the proposed program, including those related to consistency with the AQMP, localized emissions during construction, historical resources, archaeological resources, and tribal cultural resources, as there would be no change to the existing site conditions. As the No Program (No Build) Alternative eliminates the proposed program’s significant impacts, it is determined to be the Environmentally Superior Alternative. In accordance with the *CEQA Guidelines* requirement to identify an Environmentally Superior Alternative other than the No Program (No Build) Alternative, Alternative 2 would reduce program impacts to biological resources related to candidate, sensitive or special-status species; riparian habitat or sensitive natural communities; state or federally protected wetlands; and native residential or migratory fish or wildlife species, and soil erosion and top soil, GHG emissions, and wasteful, inefficient, and unnecessary consumption of energy; however, Alternative 2 would not eliminate the significant impacts related to consistency with the AQMP, localized emissions during construction, historical resources, archaeological resources, and tribal cultural resources. In addition, impacts related to noise and vibration would be greater under Alternative 2. While the No Program (No Build) Alternative reduces impacts to a greater degree than the proposed program, in accordance with CEQA, the EIR is required to identify an Environmentally Superior Alternative other than the No Program (No Build) Alternative; as such, Alternative 2 is selected as the Environmentally Superior Alternative.

5.9 References

Environmental Science Associates (ESA). 2017. *Los Cerritos Wetlands Oil Consolidation and Restoration Project, Final Environmental Impact Report*, November 2017.

Federal Transit Administration (FTA). 2018. *Transit Noise and Vibration Impact Assessment Manual*, September.

Moffatt & Nichol. 2015. *Los Cerritos Wetlands Final Conceptual Restoration Plan*.