

**APPENDIX E**  
*ORERP Construction Methodology*



**OTAY RIVER ESTUARY RESTORATION PROJECT**  
**CONSTRUCTION METHODOLOGY**

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## **1. INTRODUCTION**

This document describes a range of construction methods and equipment that could be used for the construction of the Otay River Estuary Restoration Project (Project). Figure 1 shows the Project site and its vicinity. The Project site consists of two major areas denoted by orange lines in Figure 1: (i) Otay River Floodplain (ORF) to the south, and (ii) Salt Pond 15 (Pond 15) in the San Diego National Wildlife Refuge Complex to the north.

Similar to other coastal wetland restoration projects, the major construction activity of this Project is earthwork. Project construction involves lowering the existing ground elevations in the ORF to form subtidal, mudflat, salt marsh, and upland habitats; and filling Pond 15 with excavated material to restore wetland habitats. Specifically, the Project requires the excavation (cut) of approximately 320,000 to 370,000 cubic yards (CY) of soil within the ORF. Most of the excavated material would be transported to Pond 15. A small portion of the excavated material would be used to construct a new berm along the southern edge of the ORF. The construction methods, equipment, and schedule for this Project are described below. These methods, equipment, and schedules have been developed based on Project requirements and constraints, in combination with experience from past projects of a similar nature. The construction methodology ultimately used would be determined by the contractor selected for Project construction with due consideration to the requirements specified in permits, agreements, and approval documents. If the selected contractor chooses a construction methodology that is substantially different than those considered herein then additional environmental review may be needed to verify that the Project would not result in substantial environmental impacts beyond those already considered.



Image: Google Earth Pro

Figure 1. Project Site and Vicinity

## 2. MOBILIZATION AND DEMOBILIZATION

Heavy construction equipment may be brought to the Project site either by land or water. Equipment transported by land would likely be trucked to the Project site via Main Street.

Large and heavy equipment would be transported during off-peak traffic so as to minimize traffic congestion. The site entrance/exit points are discussed in Section 3. If transported by water then the construction equipment would likely be brought into the site via San Diego Bay and the Otay River. Some large equipment may be brought into the Project site in several pieces and then be assembled on site. Regardless of whether construction equipment is mobilized to the site from land, sea, or both the potential environmental impacts should be assessed as part of environmental review under NEPA and CEQA.

At the end of construction, the equipment would be demobilized. Demobilization of equipment would use the same route as mobilization. Staging areas, access routes, and other disturbed areas would be uncompacted, revegetated, and restored to preconstruction conditions or as specified in the construction documents. Any temporary equipment, structures, or utilities (e.g., water and power) installed at the Project site would be removed at the completion of construction.

### **3. CONSTRUCTION ACCESS AND STAGING AREAS**

#### **3.1 Construction Access**

Roads that can be used for construction access routes in the vicinity of the Project site are shown in Figure 1. Saturn Boulevard is the north-south running road located along the eastern edge of the Project site. The other major roads in the Project vicinity are Palm Avenue (State Route 75) to the south, Main Street to the north of the ORF, and Interstate 5 to the east. There are interchanges to Interstate 5 at Main Street and Palm Avenue. Using one of these interchanges, construction equipment would access the ORF via the north-eastern corner of the Project site where West Frontage Road, Main Street, and the Bayshore Bikeway intersect. Construction equipment would access Pond 15 via a USFWS easement located off Bay Boulevard just north of the entrance to the Salt Works operational facility. To complete the construction work on the dike between Ponds 22 and 23, construction equipment would access the site via the main entrance to the Salt Pond Complex located off Bay Boulevard and then wind around the southern boundary of the Salt Pond Complex.

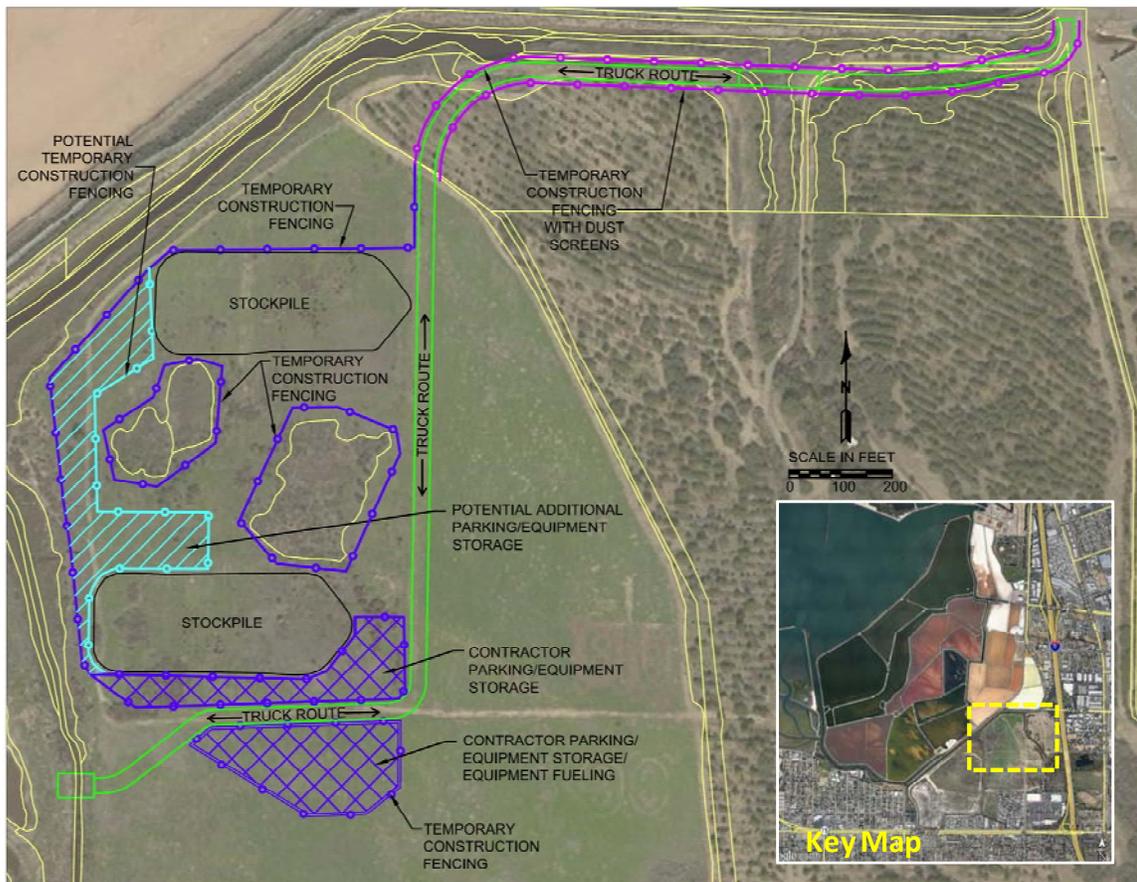
Within the Project site, temporary dirt roads would be established to provide access for construction equipment between the excavation, staging, beneficial use, disposal, and fill areas. For material transport, access routes would be established and maintained for public safety and environmental pollution control. To access the western portion of the ORF from the construction area, the contractor would have to install temporary crossings across Nestor Creek and Otay River. Access to the construction site would be controlled through the use of gates, fencing, and/or site security services.

Construction equipment transporting material to Pond 15 would utilize some of the existing salt pond dikes. Since the existing dikes were not built to accommodate this use, temporary improvements (e.g., widening and resurfacing) may be necessary depending on the method used to haul material between the excavation site (ORF), beneficial use/disposal site (Pond 15), and fill site (dike between Ponds 22 and 23). Three possible methods for material hauling and disposal are described in Section 4 below.

### **3.2 Staging Areas**

Staging areas would be located upland away from construction activities. The area east of Nestor Creek in the ORF would be used for staging (see Figure 2). Drying and sorting of excavated material may also be carried out at this location. The staging area to the south of the stockpiles would be utilized first. Additional area for staging would be the land to the west of the stockpiles as depicted in Figure 2. The staging area is near the entrance/exit to/from the excavation site (ORF). Any permits and/or approvals required to conduct the drying activities would need to be obtained prior to commencing with this activity.

To protect the sensitive habitat in the vicinity, the contractor should install temporary fences so as to limit the construction activities in the designated staging area and minimize disturbance of the neighboring area. Figure 2 shows the proposed layout of the temporary construction fencing within the staging area.



**Figure 2. Staging Area Layout**

#### **4. EARTHWORK**

Earthwork is the major construction activity of the Project. The Project requires the excavation of approximately 320,000 cubic yards (yd<sup>3</sup>) of soil (material) within the ORF for the Intertidal Alternative and 370,000 yd<sup>3</sup> for the Subtidal Alternative. Between 50,000 to 60,000 yd<sup>3</sup> of soil would also be excavated from Pond 15. The majority of the soil would be beneficially used as fill and cover within Pond 15 to raise the ground to elevations suitable to support coastal salt marsh habitat and nesting areas. The excavated material would also be disposed of on-site as fill for dikes, levees, and upland habitat creation. The remainder of the material would be stockpiled within the ORF for use on future projects within the Refuge.

The success of wetland restoration depends greatly on the accuracy of the final grading in achieving the desired elevations for different wetland habitats. To meet this requirement, the contractor may decide to use land-based equipment to complete the earthwork under dry conditions or a combination of land-based and water-based equipment to complete the earthwork under wet conditions. Excavated material would be transported to the fill sites by

truck, conveyor belt, pipelines, or a combination of these methods. Bulldozers and loaders might also be used to move material short distances within the ORF.

## **4.1 Excavation**

### **4.1.1 Land-Based Excavation**

If the contractor decides to use land-based equipment to complete the earthwork under dry conditions then it is likely that the work would be done using an approach similar to the one described here. Excavation would most likely be done with land-based equipment for areas above groundwater. Soil within two feet below the groundwater elevation may be wet, but excavation with land-based equipment would likely still be feasible without dewatering. In locations where groundwater is present, dewatering would likely be necessary to conduct work under dry conditions.

Based on the results of soil sampling conducted by Anchor QEA (Anchor QEA 2010), the average groundwater elevation in the ORF is approximately 5 ft above the North American Vertical Datum of 1988 (NAVD88). Therefore, it is likely that water would be ponded in excavated areas below +3 ft, NAVD88. The estimated volume of excavated material below +3 ft, NAVD88 in ORF is 20,000 yd<sup>3</sup> for the Intertidal Alternative and 50,000 yd<sup>3</sup> for the Subtidal Alternative. In Pond 15, the entire area is very low in elevation; therefore, the small volume of material excavated in this pond would be wet.

Land-based excavation would be conducted with a combination of bulldozers, front loaders, backhoes, graders, scrapers, excavators, and trucks. Excavated material would either be loaded directly onto trucks and conveyor belts or it would be stockpiled temporarily near the excavation site. The stockpiled material would then be loaded onto trucks for hauling to the placement sites (Pond 15 and Pond 22/23 dike).

If excavation is conducted using land-based equipment below +3 ft, NAVD88, dewatering may be necessary. Dewatering may be achieved by blocking off the excavation site and then pumping water out of the excavation site. Alternatively, wet material may be excavated by a long-reach excavator and then dewatered on site before being hauled to the placement sites.

### **4.1.2 Combination of Land-Based and Water-Based Excavation**

If the contractor decides to use a combination of land-based and water-based equipment to complete the earthwork under wet conditions then it is likely that the work would be done using an approach similar to the one described here. The contractor would use land-based equipment to excavate material from ORF in matter as described in Section 4.1.1. Material excavated from the ORF would be dumped into a pit and mixed with water taken from the

Otay River to form a slurry. The slurry would then be pumped to Pond 15 via a pipeline. The pit would be hydraulically isolated from the Otay River until project completion at which time it would be opened and connected to the Otay River to restore tidal exchange to the restored area. To minimize impacts to water quality in San Diego Bay, a two-way pipeline system would be installed between the ORF and Pond 15 to convey slurried material to Pond 15 while bringing water back to the ORF for subsequent use. Water would occasionally be pumped from the Otay River to supplement water lost to groundwater and evaporation during operations.

## **4.2 Material Transport and Placement**

Material placement involves the transportation of excavated material to the final placement sites. The Project calls for most of the excavated material from ORF (approximately 260,000 yd<sup>3</sup> for the Intertidal Alternative and 310,000 yd<sup>3</sup> for the Subtidal Alternative) to be transported to Pond 15, with only a small volume (approximately 20,000 yd<sup>3</sup>) to be used on-site in the ORF for levee construction and upland restoration. About 30,000 yd<sup>3</sup> to 40,000 yd<sup>3</sup> would be stockpiled in the ORF to the east of Nestor Creek for future USFWS Refuge projects. The stockpiled material would be watered during construction to mitigate for dust generation. Upon completion of project construction, suitable and appropriate upland vegetation would be planted to control wind and water-related erosion until the stockpile material is reused for future USFWS Refuge projects.

Approximately 50,000 yd<sup>3</sup> to 60,000 yd<sup>3</sup> would be excavated from Pond 15. Based on soil sampling and testing, the majority of this material is expected to be free of contaminants; however, it is anticipated that a small portion of soil (<5,000 yd<sup>3</sup>) in the vicinity of the dike that would be breached would contain elevated levels of heavy metals. This contaminated material would be buried inside Pond 15 under clean fill from the ORF such that the contaminants would not be available to ecological receptors (*e.g.*, capped under fill material). Excavated material would be disposed of using some combination of scrapers, trucks, bulldozers, loaders, graders, conveyor belts, or pipelines.

If dump trucks are used to transport material from the ORF to Pond 15 then a system of haul roads and access points would need to be established and maintained. A few possible hauling configurations are discussed in Section 4.2.1. Dry material would be loaded onto trucks using front loaders or backhoes or it would be excavated and hauled directly using scrapers. Wet material would be dried and then transported via trucks equipped with a lining to retain water that remains in the soil. Bulldozers may be used to move excavated material to stockpile areas, which may be necessary for drying or staging before being transported by truck. Bulldozers may also be used to move material to on-site upland area or for berm construction.

Conveyor belts may be used to move excavated material within the ORF, part of the distance between the ORF and Pond 15, or all the way from the ORF to Pond 15. Within the ORF, conveyor belts could be used to transport material from the excavation area to the stockpile area. A conveyor belt system could be used to move excavated material across the Otay River and Bayshore Bikeway. Once across (under) the Bayshore Bikeway, and within the Salt Pond Complex, the conveyor belt would transport material to Pond 15.

#### **4.3 Haul Methods and Routes to Pond 15**

Three methods for moving excavated material from the ORF to Pond 15 were identified for consideration in evaluating potential environmental impacts. The three methods are described below.

- Truck
- Conveyor Belt
- Pipeline

These three methods represent a range that would likely be considered by a contractor given the site conditions, quantity of material, construction schedule, and likely mitigation measures to minimize environmental impacts. The three methods are described in more detail below.

##### **4.3.1 Truck**

Under this method, the contractor would use dump trucks to transport material from the ORF to Pond 15. The most likely truck haul route is shown in Figure 3. The truck route in the vicinity of Pond 15 is shown in Figure 4. Temporary crossings would be necessary for the trucks to cross Nestor Creek, Otay River and Palomar Creek (near Pond 15). These temporary structures are described at the end of this section.

Truck traffic on this route would interfere with the Bayshore Bikeway and City of San Diego bike path where the trucks exit the ORF onto West Frontage Road. Traffic flow at this intersection would be maintained by a flagman in order to ensure public safety. From West Frontage Road, the trucks would turn onto Anita Street and then to Bay Boulevard. The trucks would enter the Salt Ponds Complex via the USFWS easement located just north of the Salt Works operational facility off Bay Boulevard. The dikes within the salt ponds that would be used by construction traffic would be improved and widened to 30 feet to allow for two-way traffic, an exception is the dike around Pond 15 where one-way traffic in a loop can be established. The dike improvements would likely require the placement of small amounts of fill into the ponds. Any such fill would be removed upon the completion of construction activities thus returning the ponded area to pre-project conditions. The round trip distance of the truck route shown in Figure 3 is about 5 miles. A round trip, including loading and

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dumping, would likely take about 36 minutes. Assuming a bulking factor of 1.3 due to volume expansion after material is removed from the ground, a contractor using 12-yd<sup>3</sup> trucks would have to make about 28,000 trips and 34,000 round trips, respectively, for the Intertidal Alternative and Subtidal Alternative.



Image: Google Earth Pro

Figure 3. Truck Haul Routes

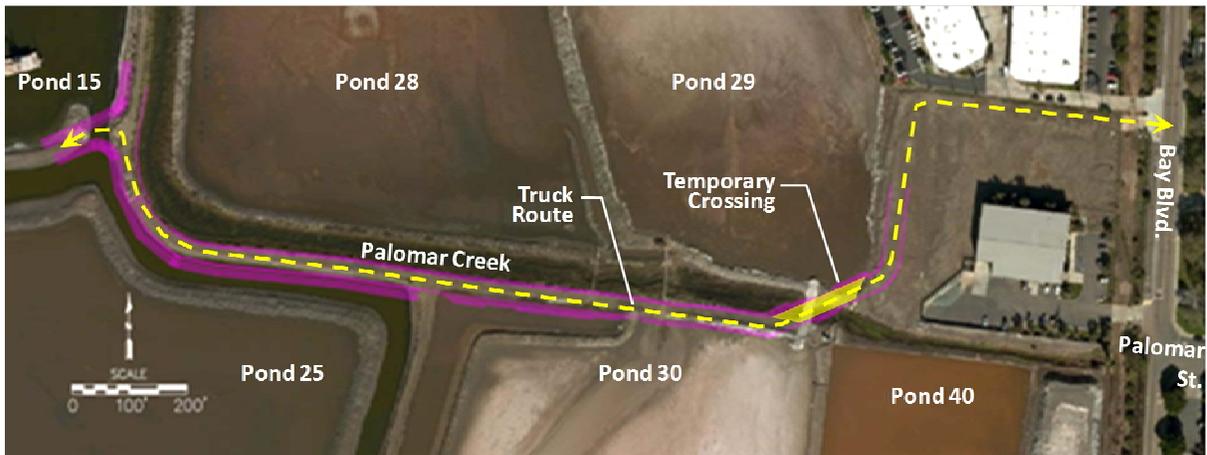


Figure 4. Truck Route to Pond 15

#### ***Temporary Crossings for the Truck Route***

Nestor Creek Temporary Crossing: In order to access the western portion of the Otay River Floodplain Site from the staging and stockpiling areas east of Nestor Creek, the contractor would have to install a temporary crossing across Nestor Creek. The temporary structure would likely be a bridge structure or a culvert that could maintain a hydraulic connection to Nestor Creek. This crossing would be removed at the completion of the project and the area would be restored to the existing condition.

Otay River Temporary Crossing: To access the western portion of the Otay River Floodplain Site from the staging and stockpiling areas east of Nestor Creek, the contractor would install temporary crossings across the Otay River. This crossing would be removed at the completion of construction and restored to their existing condition.

Palomar Creek Temporary Crossing: Trucks and other construction vehicles accessing the Pond 15 Site from Bay Boulevard would enter the site via the property easement east of Pond 29 (Figure 3). At the southern east corner of Pond 29, the vehicles would cross the Palomar Creek and then travel along the levee on the southern bank of the Palomar Creek towards Pond 15. The temporary crossing would be constructed of fill material. The flow of Palomar Creek would be maintained by installing culverts at the bottom of the temporary crossing. This crossing would be removed at the completion of the project and the area would be restored to the existing condition. The flow of brine between salt ponds would be maintained by installing open channels or pipes across Palomar Creek.

#### **4.3.2 Conveyor Belt**

Under this method, the contractor would use a system of conveyor belts to transport material from ORF to Pond 15. Two possible routes are shown in Figure 5 and the length would be approximately 1.5 miles. The conveyor belt would be installed over the Otay River and under the existing eastern Bayshore Bikeway crossing. After crossing the Otay River and Bayshore Bikeway, the conveyor belt would continue northward using the existing dikes for support. One end of the conveyor belt would be near the ORP excavation site and the other end would end either directly into Pond 15 or into awaiting trucks in Pond 15, which would move the material a short distance within the pond.

#### **4.3.3 Pipeline**

Under this method, the contractor would use a pipeline to hydraulically transport material from ORF to Pond 15. Two possible pipeline routes are shown in Figure 6. The pipeline would be installed over the Otay River and under the existing eastern Bayshore Bikeway crossing. After crossing the Otay River and Bayshore Bikeway, the pipeline would continue northward. One option of the pipeline route considers using the existing dikes for support, while the other option assumes a more direct path, with some sections floating on the salt ponds. One end of the pipeline would be located in a pit within the ORP excavation site and the other end would end directly into Pond 15. The pipeline would be approximately 1.1 to 1.5 miles in length depending on whether the pipeline remains on the dikes or if it takes a more direct route across (floating) the salt ponds.



Image: Google Earth Pro

Figure 5. Conveyor Belt Haul Routes



Image: Google Earth Pro

Figure 6. Pipeline Haul Routes

#### **4.3.4 Material Placement in Pond 15**

If the ORF excavated material is transported to Pond 15 via dump truck or conveyor belt then it would be dried before being hauled from the ORF. In order to place this dry material effectively, Pond 15 would be dewatered prior to material placement. Dewatering of Pond 15 would be one of the first tasks the contractor would complete during construction. This would be done by first modifying the dikes within and around Ponds 12, 13, and 14 (see Figure 1 for pond locations) to bypass the brine water around Pond 15 to the rest of the active salt-producing salt ponds. Next, the dikes around Pond 15 would be modified to hydraulically isolate Pond 15 from the rest of the salt pond system. At that point, the isolated brine water remaining in Pond 15 would be pumped into the active salt-producing salt ponds. Pond 15 is about 87 acres in area with an average water depth of about 5 feet so the volume of water in Pond 15 is estimated to be about 140 million gallons. Pumping this volume of water into the active salt-producing salt ponds would take about a month using several heavy duty water pumps. After the initial pumping to drain Pond 15, dewatering would continue during construction in order to keep the placement area relatively dry.

When Pond 15 is dewatered and ready for receiving fill material, material brought to Pond 15 by trucks or conveyor belts would be placed in the pond. Distribution of material would be carried out with land-based equipment, such as bulldozers, scrapers, and/or long-reach backhoes. To avoid sinking in the wet and soft sediment in the pond, the bulldozers would initially push and spread the ORF fill material outward into the pond from the dikes. The newly formed fill area extending from the dike would provide the working area for the trucks and bulldozers to reach farther into the pond.

If the ORF excavated material is transported to Pond 15 via pipeline then it would arrive at Pond 15 as a slurry mixture of water and soil. Pond 15 would be dewatered prior to material placement as described above. When Pond 15 is dewatered and ready for receiving fill material, material brought to Pond 15 by pipeline would be pumped into the pond. The material would be distributed throughout the pond by periodic relocation of the dredge pipeline discharge location. It is anticipated that it would take a relatively long period of time for the material to achieve a level of consolidation that would allow the safe use of land-based equipment. Consequently, once all the material from the ORF has been pumped to Pond 15 the material would be left in place until final consolidation has been achieved, which is currently estimated at one to five years. After final consolidation has been achieved construction equipment would be mobilized to the site to complete final grading within Pond 15.

#### **4.4 Final Grading and Other Earthwork**

Final grading would be conducted in the ORF to achieve final elevations in the excavated area. When the excavation reaches the approximate finished ground elevations, land-based equipment would be used to grade the site to the designed contours and slope variations. Final grading would also be conducted in Pond 15 to achieve final elevations in the fill area. When the fill reaches the approximate finished ground elevations, land-based or amphibious construction equipment would be used to grade the site to the designed contours and slope variations.

The restoration construction would include removal of the southern levee of the Otay River within the Project site, restoration of upland habitat, construction of a new levee along the southern border of the restored wetland, and modification of the Pond 22/23 dike. There would be several levee modifications (levee fill or breach) in Ponds 13 and 14 necessary to rechannelize the flow of brine after Pond 15 is decommissioned. These construction activities would be conducted with land-based equipment. At this time, it is assumed that suitable fill material for the levee construction, upland restoration, and dike modification would be available on-site via project excavation. If suitable material is not available on site then such material would be imported to the project site. Suitable material would be compacted to a density recommended by the project geotechnical engineer.

#### **4.5 Pond 15 Ocean Inlet/Outlet**

Breaching of the levee at Pond 15 will be done after all earthwork within Pond 15 is completed, except for a fill area in Pond 15 near the proposed inlet/outlet that can be reserved to receive the cut material from the levee breach. Excavation would likely be conducted from west progressing to east using land-based equipment such as a long-reach backhoe situated on the top of the levee on the east side of the proposed inlet/outlet. This construction may be completed with about 45 equipment hours using a 2 to 3-cy capacity bucket with an average yield of 200 cy per hour.

The excavation of the levee breach may create temporary water turbidity similar to the levee breach construction for the San Diego Bay Western Salt Pond Restoration Project completed in 2011. During the Western Salt Pond Restoration construction, an analysis of the breaching was conducted before it was implemented to determine if such breaching would likely result in substantial erosion of material and associated transport into San Diego Bay to assess potential impacts to turbidity. The results indicated that the impact would be minor and there were no reported problems when the levees were breached for that project. To minimize sediment plumes entering San Diego Bay, the levee breach should be excavated only when turbidity levels are within 20% of ambient conditions. If necessary, the contractor

could install a silt curtain across the breach to minimize the short-term (< 24 hours) distribution of fine-grained material and associated turbidity.

## **5. CONSTRUCTION TIMING, PHASING, AND EQUIPMENT**

The timing and phasing of the various construction activities are important considerations in project planning. Dewatering of Pond 15 would be a critical path task that would be started right after the brine water bypassing of Pond 15. Other mobilization and staging area construction would follow. The access/truck routes would be strengthened and widened as necessary and conveyor belts would be installed, if applicable. The site would be cleared and grubbed to begin excavation. Excavation and disposal of excavated materials would occur simultaneously; otherwise excavated material would be stockpiled while waiting for transport to the fill area. Planting would begin upon completion of earthwork within the ORF and Pond 15. The final step would be to open the restored areas to tidal exchange and demobilize the remaining construction equipment and material from the site.

The existing levee along the southern bank of the Otay River helps to keep tidal and fluvial water from entering the excavation site. In order to maintain a water barrier between the Project site and Otay River during excavation, the existing levee would remain in place until excavation is complete. To maintain flood protection, a new levee along the southern edge of the restored wetland would be constructed prior to removing the existing levee along the southern bank of the Otay River. In addition, there would be several operations maintained throughout most of the construction period, including Pond 15 dewatering, access/haul road resurfacing, bike and pedestrian safety, pollution control, and dust abatement.

The contractor would follow local jurisdiction time restrictions for construction equipment operation. It is anticipated that construction would take place Monday through Friday from 7 a.m. to 6 p.m. Work may or may not occur on holidays, depending on the contractor and local jurisdiction restrictions. In addition, construction activities would be scheduled around the bird nesting season, which generally runs from February 15 to September 30. The construction windows for specific site locations would be determined by the U.S. Fish and Wildlife Refuge Manager during final Project design. In addition, the construction window schedule may change during construction depending on actual nesting activities at the time of construction. For the purpose of assessing environmental impacts, a preliminary construction schedule was developed for the Project based on the assumptions and information above. The schedule, presented in Table 1, is based on hauling the excavated material to Pond 15 via truck and/or conveyor belt. If the contractor opts to slurry the material and use a pipeline to transport the material from the ORF to Pond 15 then an additional one to five years would be needed to complete the construction operation. This is indicated by the last two lines in Table 1 that show the final grading operation in Pond 15 that would occur in any one year between 2020 and 2024 starting in the month of September and running through the month of December.

**Table 1. Preliminary Construction Schedule**

ACTIVITY	START DATE	FINISH DATE	DURATION
Mobilization	8/1/2017	9/30/2017	2 months
Earthwork	10/1/2017	1/31/2018	4 months
Shut Down*	2/1/2018	2/28/2018	1 month
Core Nesting Season	3/1/2018	7/31/2018	5 months
Remobilization*	8/1/2018	8/31/2018	1 month
Earthwork	9/1/2018	12/31/2018	4 months
Demobilization	1/1/2019	2/28/2019	2 months
Pond 15 Grading (Early Estimate)+	9/1/2020	12/31/2020	4 months
Pond 15 Grading (Late Estimate)+	9/1/2024	12/31/2024	4 months

*\* Denotes periods when field activities may occur in specifically delineated areas. Delineation of operations zones is dependent on variation of wildlife community and individual species or species groups' activities in a given season. Areas of avoidance will be determined on a case by case basis by the U.S. Fish and Wildlife Refuge Manager.*

*+Pond 15 grading shown for the slurry option to indicate grading operations in Pond 15 that would be conducted after consolidation of placed slurried material.*

The type of equipment used to construct the Project and the number of various pieces of equipment would ultimately be determined by the contractor during construction. A preliminary list of construction equipment was developed to provide the information needed to evaluate potential environmental impacts. The type and number of major construction equipment used to construct the Project are presented in the table below. The type of fuel for each type of construction equipment is also provided to allow evaluation of impacts to air quality and greenhouse gas emissions. If the pipeline option is used to haul material from the ORF to Pond 15 then additional equipment would be needed to conduct final grading operations in Pond 15 after enough consolidation has occurred to allow construction equipment to operate in the area. It is anticipated that up to four bulldozers, four loaders, and four scrapers would be needed during the four-month final grading operation that would occur between 2020 and 2024.

**Table 2. Construction Equipment Summary**

EQUIPMENT	FUEL TYPE	EQUIPMENT QUANTITY		
		TRUCK HAUL	CONVEYOR BELT HAUL	PIPELINE HAUL
Backhoe	Diesel	4	4	4
Loader	Diesel	4	4	4
Scraper	Diesel	4	4	4
Bulldozer	Diesel	4	4	4
Dump Truck	Diesel	28	4	4
Conveyor Belt	Electric	None	1.5 to 2.0 miles	None
Pipeline	Electric	None	None	1.1 to 1.5 miles

## 6. SITE PROTECTION AND EROSION CONTROL

### 6.1 Environmental Protection

The contractor would be required to comply with National Pollutant Discharge Elimination System (NPDES) stormwater permit conditions as well as other local, state, and federal permit/approval requirements. A stormwater pollution prevention plan (SWPPP) would be prepared and implemented by the contractor to achieve NPDES permit compliance. The contractor would identify and implement best management practices (BMPs) to protect water quality, air quality, and sensitive biological/wildlife resources as well as to reduce construction related noise.

As discussed in the previous section, construction activities would be scheduled around the bird nesting season. The construction windows for specific site locations as well as the noise and pollution restrictions of the construction equipment would be assessed and determined in the EIS and implemented by the U.S. Fish and Wildlife Refuge Manager during final Project design.

### 6.2 Protection of Existing Facilities and Infrastructure

The Bayshore Bikeway runs along the northern bank of the Otay River outside the Project site. Transport of excavated material to the salt ponds through the use of a temporary bridge would likely interfere with bikeway users. The extent and types of interruption to the Bayshore Bikeway would be discussed with local authorities during the final design phase

such that best management practices and safety measures are developed prior to construction and then implemented during construction.

Utilities have been identified along the extension of Saturn Boulevard east of the ORF, including overhead electric lines and poles, high pressure gas line, sewers, and storm drains. A few manholes were also found east of Saturn Boulevard. These utilities would not need to be relocated, but the contractor would need to maintain and protect them during construction.

The operation of the Salt Works may be impacted by the conveyor belt operation and truck traffic. Coordination with the Salt Works operators should occur during the final design and construction phases. The removal of water from Pond 15 would also require the cooperation of the Salt Works operators. The Salt Pond dikes would be used for access by construction vehicles and/or conveyors transporting and disposing material to the Salt Ponds. These dikes would need to be improved and maintained during construction. When construction is complete, the dikes would be restored to preconstruction conditions.

## **7. REFERENCE**

Anchor QEA, 2010. *Otay River Restoration Screening Assessment Report*. Prepared for Poseidon Resources.