2. PROJECT EFFECTS

Impacts to biological resources include temporary or permanent direct, indirect, and cumulative impacts, and are defined as follows:

Direct impacts are those that are generally obvious, absolute or quantifiable. The removal of habitat by grading or clearing is the most common direct impact. Other examples of direct impacts would include the construction of a substantial barrier in a wildlife corridor (the direct impact being to wildlife movement) or the loss of habitat occupied by a certain species (the direct impact being to that particular species). Direct impacts may occur through the project itself or actions necessary to implement the project (e.g., fire fuel modification and/or clearing, construction staging areas).

Indirect impacts may be the result of secondary effects from direct impacts or those impacts that over time cause the degradation of a resource by changing its function, health or quality. Unlike direct impacts that are typically one-time effects, indirect impacts often continue in the long term and may actually increase.

Indirect impacts commonly result from a project's "edge effects." Edge effects from development may extend several hundred feet into adjacent open space areas, causing significant changes in species composition, diversity and abundance in those nearby lands. Projects can have a wide variety of indirect impacts depending on the nature of the project, the type of resources present, and the type and degree of edge effects. Projects can also cause a decline in the availability of a resource, such as water or prey, or change the habitat viability by altering the moisture regime or vegetation present, thereby adversely affecting a biological resource. Projects may cause habitat fragmentation, loss of ecosystem and watershed integrity, and may affect ecosystems and natural systems through changes in the pattern of land use, and population density or growth rate.

Cumulative impacts are those caused by the additive effect of multiple direct and indirect impacts to a biological resource over time. A project's direct and indirect impacts may not be individually significant, but the additive effect when viewed in connection with the impacts of past, present and probable future projects may cause the significant loss or degradation of a resource. In addition, multiple different impacts to a resource may be cumulative. For instance, a creek may be impacted directly and indirectly from road crossings, buffer encroachment and edge effects, all of which cumulatively cause the overall degradation of the creek.

A project may have significant cumulative effects notwithstanding the project's conformance with a regulatory program or existing mitigation plan such as a Habitat Conservation Plan (HCP) or NCCP Program. For example, species may become listed that were not addressed in the adopted plan, or insufficient information was available at the time of plan adoption.

Permanent impacts to biological resources would result from a permanent direct loss of those resources as an area is converted to another condition (e.g., developed, ornamental landscaping, agriculture), or an indirect impact (e.g., edge effects) that would persist and is permanent.

Temporary impacts are impacts that can be restored to pre-project conditions. For example, direct impacts may be considered temporary when an area can be restored to its pre-impact condition thus providing habitat and wildlife functions and values effectively equal to the functions and values that existed before the area was impacted.

An overview of the direct and indirect impacts that would result from implementation of the proposed project are provided in the following text for habitats/vegetation communities (including wetlands and jurisdictional waters), species, and wildlife corridors, linkages, and nursery sites. Additional information on project impacts relevant to significance determinations specific to biological resources are provided in Chapters 3.0 (Special-status Species), 4.0 (Riparian Habitat or Sensitive Natural Community), 5.0 (Jurisdictional Wetlands and Waterways), 6.0 (Wildlife Movement and Nursery Sites), and 7.0 (Local Policies, Ordinances, and Adopted Plans).

2.1 Potential Impacts to Habitats/Vegetation Communities

Acreages of temporary, permanent, and neutral impacts to habitats and vegetation communities are provided in **Table 9**. The project, which includes mining activities, fuel modification areas, the dry depressions previously excavated golf course ponds, a drop structure, and a trail system would impact 262.34 acres over the course of 12 years. The removal of native or naturalized habitat for mineral extraction activities, and the establishment of fuel modification zones would directly affect habitats and associated plant and animal species that occur therein, including sensitive species, and foraging, breeding, and movement habitat for local wildlife. **Tables 10** and **11** provide a summary of the potential temporary and permanent impacts, respectively, that would occur to vegetation communities and other land cover types coincident with each project phase within the 479.5-acre proposed project area. Impacts from fuel modification zones are calculated separately from mining impacts (note that mining impacts include the excavated golf course ponds).

TABLE 9. TEMPORARY AND PERMANENT PROJECT IMPACTS TO VEGETATION COMMUNITIES (ACRES)

Habitat Type / Vegetation Community	Temporary Impacts[1]	Permanent Impacts[2]	Impact Neutral[3]	Total Impacts
Riparian and Wetlands				
Southern Cottonwood-Willow Riparian Forest	0.00	0.00	6.97	0.00
Southern Willow Scrub	0.00	0.12	0.00	0.12
Tamarisk Scrub	38.80	3.01	0.00	41.81
Non-Vegetated Channel	0.35	0.01	0.07	0.36
Uplands				
Diegan Coastal Sage Scrub	2.06	1.56	0.00	3.61
Southern Mixed Chaparral	0.00	0.00	0.00	0.00
Non-Native Grassland	74.44	12.12	1.36	86.55
Eucalyptus Woodland	0.08	1.22	0.00	1.30
Other Cover Types				
Disturbed Habitat	110.68	15.35	0.04	126.04
Agriculture	0.00	0.00	0.00	0.00
Developed	0.00	2.55	0.00	2.55
Mature Riparian Woodland[4]	0.00	0.00	0.00	0.00
Totals[5]	**226.40**	**35.94**	**8.45**	**262.34**

[1] Temporary impacts include all of the mining extraction areas, processing areas, and temporary access roads, as well as the dry depression, filled-in, dry depression previously excavated as a golf course pond, which will be filled in during Phase 1. These areas will be revegetated upon completion of each mining phase.

[2] Permanent impacts consist of the permanent drop structure, which will be built on the eastern end of the mining area, fuel modifications zones, which will be permanently maintained to ensure that vegetation remains at or below three inches in height, and a trail system, which will result in permanent trails along the perimeter of the area of disturbance and MUP boundary.

[3] Impact neutral areas are areas that are not considered impacted, but cannot be credited toward mitigation requirements, such as wetland buffers.

[4] A total of 8.45 acres was mapped as “Mature Riparian Woodland,” pursuant to the County Resource Protection Ordinance definition. Note that Mature Riparian Woodland is not a Holland (1986)/Oberbauer et al. (2008) category. The vegetation was mapped as a GIS overlay on top of the Holland/Oberbauer-based vegetation mapping; therefore, this acreage is not added to the acreage totals. The total impact neutral acreage for Holland/Oberbauer vegetation types

[5] Due to rounding, totals may differ slightly from numbers in column.

TABLE 10. TEMPORARY IMPACTS TO VEGETATION COMMUNITIES BY MINING PHASE

Habitat Type / Vegetation Community	Mining Phase				Total Impacts
	1	2	3	4	
Riparian and Wetlands					
Southern Cottonwood-willow Riparian Forest	0.00	0.00	0.00	0.00	0.00
Southern Willow Scrub	0.00	0.00	0.00	0.00	0.00
Tamarisk Scrub	11.55	12.79	3.76	10.70	38.80
Non-Vegetated Channel	0.08	0.11	0.03	0.13	0.35
Uplands					
Diegan Coastal Sage Scrub	1.77	0.00	0.00	0.28	2.06
Southern Mixed Chaparral	0.00	0.00	0.00	0.00	0.00
Non-Native Grassland	16.85	17.65	25.81	14.12	74.44
Eucalyptus Woodland	0.01	0.00	0.00	0.07	0.08
Other Cover Types					
Disturbed Habitat	46.54	21.45	18.00	24.70	110.68
Agriculture	0.00	0.00	0.00	0.00	0.00
Developed	0.00	0.00	0.00	0.00	0.00
Mature Riparian Woodland[1]	0.00	0.00	0.00	0.00	0.00
Totals[2]	**76.80**	**52.00**	**47.60**	**50.00**	**226.40**

[1] A total of 8.45 acres was mapped as Mature Riparian Woodland, pursuant to the County Resource Protection Ordinance definition. Note that Mature Riparian Woodland is not a Holland (1986)/Oberbauer et al. (2008) category. The vegetation was mapped as a GIS overlay on top of the Holland/Oberbauer-based vegetation mapping; therefore, this acreage is not added to the acreage totals.

[2] Due to rounding, totals may differ slightly from numbers in column

TABLE 11. PERMANENT IMPACTS TO VEGETATION COMMUNITIES BY MINING PHASE

Habitat Type / Vegetation Community	Mining Phase						Trails Outside of Mining Phase	Fuel Mod Zones	Total Impacts
	1 Trails	1 Drop Structure	1 Staging Areas	2 Trails	3 Trails	4 Trails			
Riparian and Wetlands									
Southern Cottonwood-willow Riparian Forest	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Southern Willow Scrub	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.10	0.12
Tamarisk Scrub	0.03	0.50	0.27	0.10	0.02	0.02	0.58	1.49	3.01
Non-Vegetated Channel	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Uplands									
Diegan Coastal Sage Scrub	0.01	0.29	0.67	0.00	0.00	0.00	0.27	0.32	1.56
Southern Mixed Chaparral	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Non-Native Grassland	0.04	0.00	4.37	0.07	0.19	0.08	2.90	4.47	12.12
Eucalyptus Woodland	0.01	0.00	0.90	0.00	0.00	0.00	0.04	0.27	1.22
Other Cover Types									
Disturbed Habitat	0.34	0.24	8.50	0.05	0.14	0.14	3.30	2.64	15.35
Agriculture	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Developed	0.00	0.00	0.00	0.00	0.00	0.00	0.01	2.54	2.55
Mature Riparian Woodland[1]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals[2]	**0.43**	**1.04**	**14.71**	**0.22**	**0.35**	**0.24**	**7.12**	**11.83**	**35.94**

[1] A total of 8.45 acres was mapped as Mature Riparian Woodland, pursuant to the County Resource Protection Ordinance definition. Note that Mature Riparian Woodland is not a Holland (1986)/Oberbauer et al. (2008) category. The vegetation was mapped as a GIS overlay on top of the Holland/Oberbauer-based vegetation mapping; therefore, this acreage is not added to the acreage totals.

[2] Due to rounding, totals may differ slightly from numbers in column

The following vegetation communities within the project area are considered by CDFW and/or the County to be sensitive: southern cottonwood-willow riparian forest, southern willow scrub, tamarisk scrub, non-vegetated channel, Diegan coastal sage scrub, and non-native grassland (Table 9).

Potential *direct*, *temporary* impacts to sensitive vegetation communities from the proposed project include mechanized land clearing and mineral extraction within both riparian/wetland and upland habitats. Temporary impacts also include the dry depressions that were previously excavated for the golf course; these would be refilled and revegetated. These activities would potentially affect a total of 115.65 acres of sensitive vegetation communities, including 38.80 acre of tamarisk scrub, 0.35 acre of non-vegetated channel, 2.06 acres of coastal sage scrub, and 74.44 acres of non-native grassland (Table 9).

In addition, the golf course grading in 2005 resulted in temporary impacts to 0.18 acre of riparian scrub (tamarisk scrub) for a planned golf cart crossing of the river in the eastern portion of the property. The golf course project was halted and the cart path crossing was not constructed. This was the only impact to a sensitive vegetation community outside the limits of the proposed mine project.

Potential *direct permanent* impacts would result from permanent changes to the vegetation and result in surfaces that would no longer be able to support native habitat. Permanent impacts would include the permanent drop structure, which would be built on the eastern end of the mining area, staging areas, a trail system and fuel modifications zones adjacent to some residential areas, which would be permanently maintained to ensure that vegetation remains at or below 3 inches in height. Permanent impacts would to sensitive vegetation communities would total of 11.51 acres, including 0.12 acre of southern willow scrub, 3.01 acres of tamarisk scrub, 0.01 acre of non-vegetated channel, 1.56 acres of coastal sage scrub, and 12.12 acres of non-native grassland (Table 9).

Impact neutral areas are areas that are not considered impacted, but cannot be credited toward mitigation requirements, such as wetland buffers (County 2010). Within the project area, impact neutral areas consist of the areas mapped as “Mature Riparian Woodland” pursuant to the RPO, as these areas, which include a 50-foot buffer from the perimeter of the tree canopy, must be avoided, but cannot be used for project mitigation. A total of 8.45 acres of impact neutral areas were mapped within the project area, which was overlaid onto the vegetation mapping. The Holland/Oberbauer categories falling within the impact neutral areas consist of 6.97 acres of southern cottonwood-willow riparian forest, 0.07 acre of non-vegetated channel, 1.36 acres of non-native grassland, and 0.04 acre of disturbed habitat.

Existing habitats surrounding the proposed project area may be *indirectly* impacted by project construction. These indirect impacts would include temporary construction-generated noise, dust, and siltation during the course of mining operations, and the more permanent operational impacts of increased human activities throughout the site, noise, and the potential for exotic species intrusions.

2.2 Potential Impacts to Jurisdictional Wetlands and Waters

Table 12 provides a summary of the area of potential direct impacts that would occur to jurisdictional waters from project implementation within the 479.5-acre proposed project area. Mining activities would temporarily and permanently affect jurisdictional non-wetland waters and/or riparian habitats as defined by USACE, RWQCB, CDFW, and the County of San Diego through removal of vegetation, grading, placement of temporary structures, mineral extraction, and placement of fill to create a bench around the mined pit. The proposed project would result in approximately 0.01 acre of permanent impacts and 0.35 acre of temporary impacts to non-wetland waters of the U.S./State (USACE/RWQCB); 0.36

acretotal. The proposed project would also result in 39.18 acres of temporary impacts and 2.28 acres of permanent impacts to State waters and associated riparian habitat, and County of San Diego wetlands; 41.46 acres total (Figures 14a and 14b and **Table 12**). In permitting projects, the USACE (and CDFW) seeks to meet the goal of no net loss of functions and values of wetlands and often other waters of the United States and would require at a minimum the restoration of disturbed areas to original contours and a revegetation program to restore jurisdictional areas disturbed by the proposed project. While San Diego County defined wetlands would be impacted by the proposed project, no federal or state protected wetlands would be impacted.

TABLE 12. IMPACTS TO JURISDICTIONAL RESOURCES

Jurisdiction	Temporary Impacts	Permanent Impacts	Total Impacts
Federal (USACE)/ State (RWQCB)	0.35	0.01	**0.36**
State (CDFW)/ County (San Diego)	39.18	2.28	**41.46**
Total	**39.53**	**2.29**	**41.82**

2.3 Potential Impacts to Special-Status Species

No federally or state listed plant species were detected on the project area; therefore, the project would not affect listed plant species.

Two federally listed wildlife species, the least Bell's vireo and coastal California gnatcatcher, and USFWS Designated Critical Habitat for arroyo toad and coastal California gnatcatcher would be potentially impacted by the project.

The state and federally endangered least Bell's vireo and coastal California gnatcatcher have been observed within the project area (Figure 13) and direct and indirect impacts may occur. One established vireo territory was detected during the 2010 surveys in remnant cottonwood-willow riparian forest habitat in the river channel between Hanson's Pond and Dairy Road (near the western border of the Phase 2 impact boundary). Another territory was observed in similar habitat west Hanson Pond. Although the least Bell's vireo was not observed in these locations during the 2015 surveys, the current project impact boundary was redesigned to avoid these areas. A third territory was observed in riparian habitat along the eastern edge of Hanson Pond, approximately 120 feet west of the project impact boundary. The least Bell's vireo was detected in this location during both the 2010 and 2015 surveys. The proposed project could directly impact least Bell's vireo if they were to nest in the riparian forest habitat within the project impact area, through removal of habitat and direct mortality of individuals or nests. The project could also indirectly affect the least Bell's vireo on the eastern edge of Hanson Pond as a result of construction-generated noise, nighttime lighting, and other mining activities. Noise impacts may disrupt

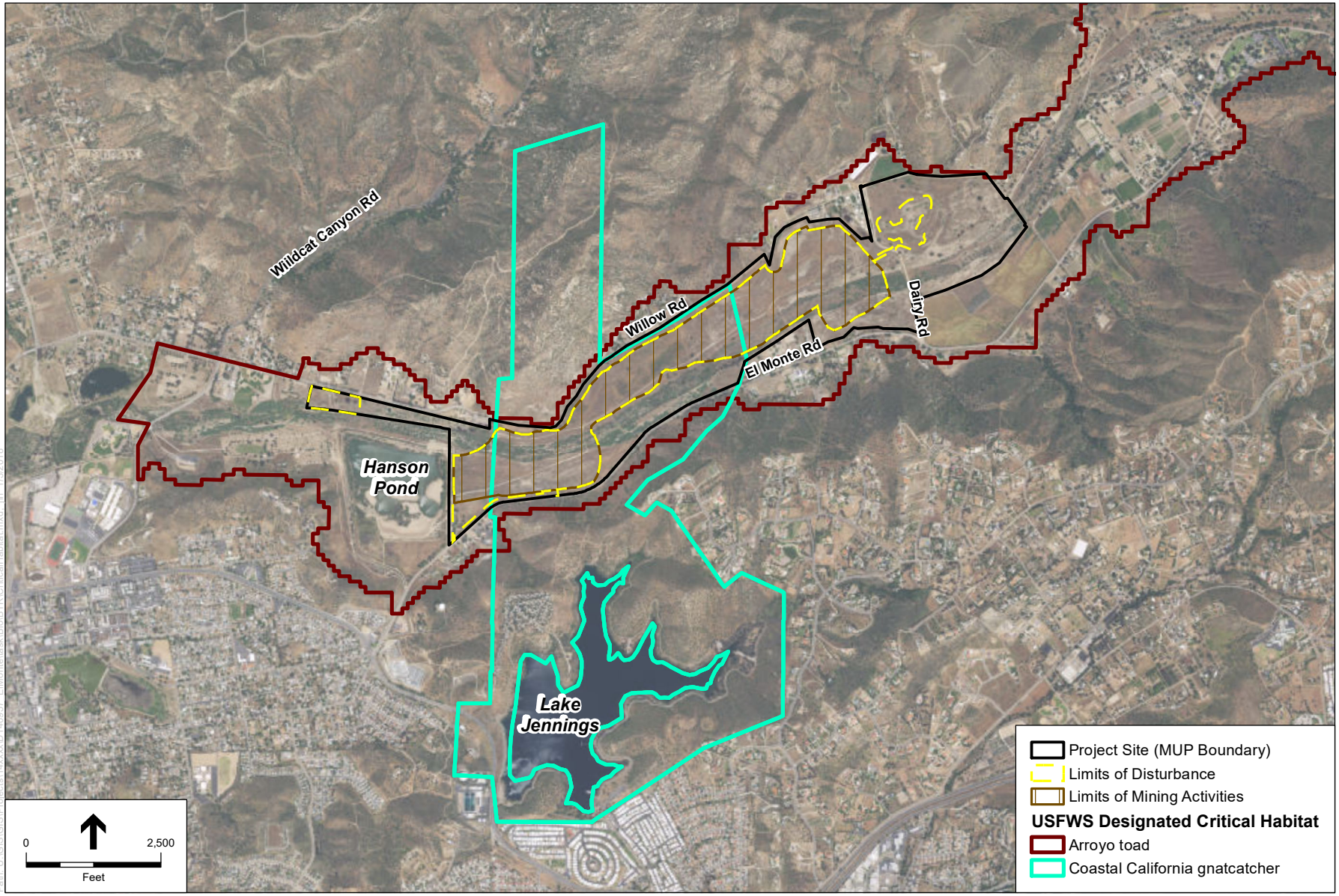
breeding capabilities as breeding birds like least Bell's vireo rely on auditory interaction between birds. Nighttime lighting could increase predation or nest parasitism by making nesting vireos more easily detectable.

The federally threatened coastal California gnatcatcher was observed in two locations during the 2015 surveys—north of Hanson Pond and southeast of Hanson Pond (Figure 13). The current project impact boundary was designed to avoid impacts to the territory north of Hanson Pond; however, direct impacts to this species could result from habitat removal for the proposed processing plant area southeast of Hanson Pond. Indirect impacts to California gnatcatchers observed north of Hanson Pond could occur from noise, nighttime lighting, and other mining activities resulting in similar impacts as described above for least Bell's vireo.

The project would result in direct impacts to Critical Habitat designated by the USFWS for the arroyo toad and coastal California gnatcatcher (**Figure 15**). None of the habitat within the river channel is suitable for the arroyo toad breeding because the specialized conditions required for breeding (i.e., slow-moving water, areas of ponding next to sandy shores) are not present. In addition, soil conditions on-site do not support aestivation. The coastal sage scrub habitat within the Designated Critical Habitat area consists of very small patches of coastal sage scrub that is highly disturbed and dominated by non-native species.

One individual plant of a County List B plant species and Narrow Endemic (Palmer's goldenbush) was observed onsite (Figure 13), but would not be directly impacted as it occurs within Mature Riparian Woodland that occurs within an impact neutral area.

Potential indirect impacts from dust coming from the nearby temporary haul road would be mitigated to a level below significant through the application of an environmentally-friendly water-based polymer binding agent, AggreBind® and use of a water truck. AggreBind® would be applied throughout the majority of the haul road to stick to dust and minimize it spreading into adjacent habitat. This binding agent, which is mixed with water, applied via water truck and compressed with a roller to ensure stabilization, coats the soil mass and compacts and compresses the soil together, so the particles have direct contact with each other. This ensures soil stabilization and complete dust suppression; polymers are cross linked to form a mass that is water resistant, can withstand high temperature, and is not biodegradable. The product itself is made from in-situ materials such as sub-soils and sands and environmentally friendly polymers. It is water-based and non-toxic and can be used in environmentally sensitive areas, agricultural roads, and as a surface seal for drainage channels. Because this product binds and hardens similar to cement or asphalt, it would be applied only once and then removed at the end of the project. Migration into the river channel or nearby habitats is not a threat. Upon removal of the temporary haul roads, it is easy to contain and would be removed in its entirety. There would be no negative impacts to groundwater, the river channel, or surrounding



SOURCE: ESRI; EnviroMine; The Altum Group; Chang Consultants; ESA; USFWS

El Monte Sand Mining Project. 140957

Figure 15

USFWS Designated Critical Habitat

vegetation from this method of dust suppression. Water trucks would spray at points of ingress and egress of the haul road at the intersection where the haul roads meet dirt roads or paved roads.

In addition, there are eleven County Group I animal species (San Diego banded gecko, Cooper's hawk, sharp-shinned hawk, red-shouldered hawk, osprey, turkey vulture, white-tailed kite, yellow breasted chat, loggerhead shrike, coastal California gnatcatcher, least Bell's vireo) that occur onsite. All but three of these species, the osprey, red-shouldered hawk, and turkey vulture, are also Species of Special Concern, along with the orange-throated whiptail, glossy snake, coast horned lizard, western spadefoot toad, southern California legless lizard, coast patch-nosed snake, glossy snake, red-diamond rattlesnake, yellow warbler, and San Diego black-tailed jackrabbit.

Grading associated with the proposed project would remove all or most of the existing onsite suitable habitat (burrowing, nesting, and foraging) for wildlife species over an approximately 12-year period potentially resulting in direct loss of habitats and direct mortality of individuals, and construction-related noise, dust and sedimentation into adjacent native habitats.

2.4 Potential Impacts to Wildlife Corridors, Linkages, and Wildlife Nursery Sites

The 479.5-acre project area is set in the midst of a larger rural setting with multiple areas of open space, making the El Monte Valley a core wildlife area. Of the 479.5 acres, approximately 22.27 acres of the project area are considered functional native wildlife habitats for local and migratory wildlife (e.g., southern willow scrub, southern cottonwood-willow riparian forest, Diegan coastal sage scrub) (Figure 11). Two non-native habitats including non-native grassland and eucalyptus woodland (total of approximately 138.37 acres) have habitat value for wildlife species due to their functionality as foraging and nesting habitat for resident and migratory raptor and passerine species. Tamarisk scrub (85.69 acres) provides marginal habitat values as a riparian community within the river channel and floodplain, but is capable of functioning as nesting and foraging areas for multiple avian species. During each mining phase, the project could directly impact a portion of the habitat that serves as a wildlife corridor, habitat linkage, and wildlife nursery site through vegetation removal and mining activities.

3. SPECIAL-STATUS SPECIES

The *County of San Diego Guidelines for Determining Significance for Biological Resources* was used to evaluate adverse environmental effects the project may have on special-status species, specifically Section 4.1 (County 2010a). Guidelines for the determination of significance and an analysis of project effects for special-status species is provided below.

3.1 Guidelines for the Determination of Significance

The project would have a substantial adverse effect, either directly or through habitat modifications, on one or more species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.

Any of the following conditions would be considered significant:

A. The project would impact one or more individuals of a species listed as federally or state endangered or threatened.

B. The project would impact the survival of a local population of any County List A or B plant species, or a County Group I animal species, or a species listed as a state Species of Special Concern. Impacts to these species are considered significant; however, impacts of less than 5 percent of the individual plants or of the sensitive species' habitat on a project area may be considered less than significant if a biologically based determination can be made that the project would not have a substantial adverse effect on the local long-term survival of that plant or animal taxon.

C. The project would impact the regional long-term survival of a County List C or D plant species or a County Group II animal species.

D. The project may impact arroyo toad aestivation, foraging, or breeding habitat. Any alteration of suitable habitat within 1 kilometer (3,280 feet) in any direction of occupied breeding habitat or suitable stream segments (unless very steep slopes or other barriers constrain movement) could only be considered less than significant if a biologically based determination can be made that the project would not impact the aestivation or breeding behavior of arroyo toads.

E. The project would impact golden eagle habitat. Any alteration of habitat within 4,000 feet of an active golden eagle nest could only be considered less than significant if a biologically based determination can be made that the project would not have a substantially adverse effect on the long-term survival of the identified pair of golden eagles.

F. The project would result in a loss of functional foraging habitat for raptors. Impacts to raptor foraging habitat is considered significant; however,

impacts of less than 5 percent of the raptor foraging habitat on a project area may be considered less than significant if a biologically based determination can be made that the project would not have a substantial adverse effect on the local long-term survival of any raptor species.

G. The project would impact the viability of a core wildlife area, defined as a large block of habitat (typically 500 acres or more not limited to project boundaries, though smaller areas with particularly valuable resources may also be considered a core wildlife area) that supports a viable population of a sensitive wildlife species. Alteration of any portion of a core habitat could only be considered less than significant if a biologically based determination can be made that the project would not have a substantially adverse effect on the core area and the species it supports.

H. The project would cause indirect impacts, particularly at the edge of proposed development adjacent to proposed existing open space or other natural habitat areas, to levels that would likely harm sensitive species over the long term. The following issues should be addressed in determining the significance of indirect impacts: increasing human access; increasing predation or competition from domestic animals, pests, or exotic species; altering natural drainage; and increasing noise and/or nighttime lighting to a level above ambient that has been shown to adversely affect sensitive species.

I. The project would impact occupied burrowing owl habitat.

J. The project would impact occupied cactus wren habitat, or formerly occupied coastal cactus wren habitat that has been burned by wildfire.

K. The project would impact occupied Hermes copper habitat.

L. The project would impact nesting success of the following sensitive bird species through grading, clearing, fire fuel modification, and/or other noise generating activities such as construction (**Table 13**).

TABLE 13. BREEDING SEASONS FOR SENSITIVE BIRD SPECIES

Species[1]	**Breeding Season**
Coastal cactus wren	February 15 to August 15
Coastal California gnatcatcher[1]	February 15 to August 31
Least Bell's vireo	March 15 to September 15
Southwestern willow flycatcher	May 1 to September 1
Tree-nesting raptors	January 15 to July 15
Ground-nesting raptors	February 1 to July 15
Golden eagle	January 1 to July 31

[1] The breeding seasons listed in this table do not supersede implementing agreements with the Wildlife Agencies, Habitat Conservation Plans (HCPs), Habitat/Resource Management Plans (HMPs/RMPs), and Special Area Management Plans. For example, inside the MSCP Subarea Plan, the gnatcatcher breeding season is March 1 to August 15.

3.2 Analysis of Project Effects

3.2.A No federally or state listed plant species were detected on the project area. ***The proposed project would not affect listed plant species.***

The state and federally endangered least Bell's vireo and coastal California gnatcatcher have been observed within the project area (Figure 13) and direct and indirect impacts may occur as described in Section 2.3. Additionally, Designated Critical Habitat for arroyo toad and coastal California gnatcatcher occurs within the project area. However, mitigation measures as discussed in Section 3.4 would reduce measures below a level of significance. Direct impacts could include mortality of individuals and temporal loss of nesting and foraging habitat; indirect impacts could occur as a result of construction-generated noise and activity during the breeding season. These impacts would be avoided by conducting vegetation removal activities outside of the bird breeding season, which encompasses the breeding season for these two species. Additionally, preconstruction surveys would be conducted prior to starting work to confirm that gnatcatchers and vireos are absent from the limits of construction prior to work starting. Additionally, habitats lost during construction and mining operations would be compensated through reclamation and revegetation, resulting in an increase in native habitats for use after completion of the project. ***Direct and indirect impacts to federally or state listed species would be less than significant with implementation of Mitigation Measures MM-BIO1, MM-BIO2, MM-BIO3, MM-BIO5, MM-BIO6, and MM-BIO6.***

3.2.B As discussed in Section 2.3, several County List A or B plant species, County Group I animal species, and Species of Special Concern occur within the biological survey area. One County List B plant species (Palmer's goldenbush) was observed onsite (Figure 13), in addition to eleven County Group I animal species (San Diego banded gecko, Cooper's hawk, sharp-shinned hawk, red-shouldered hawk, osprey, turkey vulture, white-tailed kite, yellow breasted chat, loggerhead shrike, coastal California gnatcatcher, and least Bell's vireo) occur onsite. All but three of these species, the osprey, red-shouldered hawk and turkey vulture, are also Species of Special Concern, along with the orange-throated whiptail, glossy snake, coast horned lizard, western spadefoot toad, southern California legless lizard, coast patch-nosed snake, glossy snake, red-diamond rattlesnake, yellow warbler, and San Diego black-tailed jackrabbit.

Palmer's goldenbush, a County List B plant species and Narrow Endemic, is the only special-status plant that occurs within the survey area. There would be no direct impacts to this species due to its location within Mature Riparian Woodland, an impact neutral area that would not be subject to any construction or mining activities. Potential indirect impacts to this species from fugitive dust during mining activity would be avoided through application of AggreBind® and regular use of a water truck along the haul road.

Direct impacts to wildlife species designated as County Group I or state Species of Special Concern could result from vegetation removal and grading associated with the proposed project, which would remove all or most of the existing habitat that is suitable for nesting and foraging over an approximately 12-year period. County-wide surveys conducted by USGS over the last 20 years have recorded only one occurrence of a single glossy snake. The survey in El Monte Valley recorded 23 occurrences; this population of glossy snake in El Monte Valley "represents the largest concentration of the species in coastal San Diego County" (Richmond et al. 2016). Indirect impacts could result from construction-generated noise and activity during the bird breeding season. However, mitigation measures would be implemented such as avoiding the bird breeding season, conducting preconstruction surveys to confirm absence of special-status species prior to conducting work, biological monitoring during construction, and restoration of habitats that would be impacted. It is anticipated that impacts to special-status species onsite would be minimal, and fall within the threshold of less than 5 percent of individuals. Additionally, the timing for clearing of vegetation would occur in stages, and as one mining phase area is being cleared, the previous mining area would be restored to high-quality native habitats with functions and values equal to or greater than those removed during mining. Ultimately, the proposed project would increase suitable nesting and/or foraging habitats for these species by restoring habitats, thus increasing available resources onsite for these species. The avoidance and reduction of the potential for impacts is not likely to affect the long-term survival for County List A or B plant animal species, Group I animal species, or California Species of Special Concern. ***Thus, direct and indirect impacts to County List A/B plant species, Group I animal species, or California Species of Special Concern would be less than significant with implementation of Mitigation Measures MM-BIO1, MM-BIO2, MM-BIO3, MM-BIO4, MM-BIO5, MM-BIO6, and MM-BIO7.***

3.2.C No County List C or D plant species were observed within the project area; therefore, there are no direct or indirect impacts to County List C or D plant species.

The following eight County Group II wildlife species were observed onsite: western spadefoot toad, coastal whiptail, coast patch-nosed snake, red-diamond rattlesnake, orange-throated whiptail, coast horned lizard, yellow warbler, and San Diego black-tailed jackrabbit. Impacts to these species were evaluated in Section 3.2.B above because they are also Species of Special Concern. Similarly, the avoidance and reduction of the potential for impacts is not likely to affect the long-term survival of County Group II animal species, or California Species of Special Concern. ***These direct impacts to the long-term survival of County Group II animal species would be less than significant with implementation of Mitigation Measures MM-BIO1, MM-BIO4, MM-BIO5, MM-BIO6, and MM-BIO7.***

3.2.D Although the project area is within Designated Critical Habitat for the arroyo toad (Figure 15), it does not contain habitat suitable for arroyo toad primarily due to the lack of surface water and associated pools that this species requires for breeding, and substrates required for aestivation. The project area contains riparian habitat along and within the floodplain of the San Diego River and has friable soils; however, the project area is too dry and does not contain the necessary habitat features that arroyo toads use for foraging and breeding. The nearest and most recent arroyo toad sighting listed by the CNDDB occurred approximately 5 miles north of the site in known suitable habitat. ***Therefore, the proposed project would not directly or indirectly impact arroyo toad aestivation, foraging, or breeding habitat.***

3.2.E No golden eagle nests were detected onsite or within 4,000 feet of the site. The nearest known active golden eagle nesting territory listed by the CNDDB was recorded approximately 2 miles east of the project area at El Cajon Mountain. Recent golden eagle surveys conducted by USGS in San Diego County suggest that two adjacent golden eagle territories may overlap with the BSA (USGS 2016) and foraging habitat exists within the BSA. The non-native grassland within the BSA is a large expanse of foraging habitat in the area available to the nearest golden eagle nesting territories; therefore, a high potential exists for the species to occur within the BSA for foraging, although suitable nesting habitat is not present within the project area or adjacent to the project area.

Direct impacts to golden eagle foraging habitat could result from removal of vegetation and grading. Indirect impacts to foraging eagles could occur through increased human presence, as golden eagles are known to be moderately sensitive to human presence (Kochert et al. 2002); the increased construction-related activity could discourage eagles from foraging in the immediate vicinity of mining and other activities. Other potential indirect impacts to foraging habitat could include invasion from non-native weeds. This effect would not be significant, because the open non-native grassland areas already support mostly non-native grasses and forbs such as Russian thistle and mustards.

Direct and indirect (e.g., weed invasion) impacts to foraging habitat would be mitigated through mining reclamation and habitat restoration. Reclamation would establish the final topography, stabilize the soil, and revegetate the area disturbed by mining activity pursuant to SMARA and Sections 1810 and 6550-6556 of the County Zoning Ordinance. Vegetation restored to provide habitat mitigation in accordance with County and resource agency requirements include more stringent standards, including a 5-year maintenance and monitoring program, and long term preservation and management.

Indirect impacts to foraging eagles from increased human presence and construction activity would be reduced by conducting the project in four phases, each lasting only three years, thereby reducing the overall area that might be avoided by foraging eagles. In addition, because the adjacent land within 10 or

more miles of the project area is mostly undeveloped, with the exception of dense urban development to the southwest, there are large areas of open scrub and non-native grassland surrounding the project that could be used for foraging during vegetation removal and mining activities. Further, the project would not result in alteration of habitat within 4,000 feet of an active golden eagle nest. ***Therefore, direct and indirect impacts to golden eagle habitat would be less than significant with implementation of MM-BIO5, MM-BIO6, MM-BIO7, and MM-BIO8.***

3.2.F The non-native grassland and coastal sage scrub within the project area provides functional foraging habitat for a variety of raptor species by supporting small mammals, such as ground squirrels and gophers (*Thomomys bottae*). Native riparian scrub and forest habitat also provide foraging habitat by supporting a robust population of native birds and other prey. Tamarisk scrub could provide low quality foraging habitat – this non-native vegetation generally does not support a high diversity or density of prey species. Direct impacts to raptor foraging habitat could result from vegetation removal and grading. High quality native riparian forest habitat would be avoided. Indirect impacts to foraging habitat could include invasion from non-native weeds. This effect would not be significant, because the open non-native upland areas currently support mostly non-native grasses and forbs such as Russian thistle and mustards.

Direct and indirect (i.e., weed invasion) impacts to foraging habitat would be mitigated through mining reclamation and habitat restoration. Reclamation would establish the final topography, stabilize the soil, and revegetate the area disturbed by mining activity pursuant to SMARA and Sections 1810 and 6550-6556 of the County Zoning Ordinance. Vegetation restored to provide habitat mitigation in accordance with County and resource agency requirements include more stringent standards, including a 5-year maintenance and monitoring program, and long term preservation and management.

Greater than five percent of the functional raptor foraging habitat within the project area would be impacted. However, vegetation clearing would occur in stages, and as one mining phase area is being cleared, the previous mining area would be revegetated, making this area available for foraging raptors. In addition, because the adjacent land within 10 or more miles of the project area is mostly undeveloped, with the exception of dense urban development to the southwest, there are large areas of open space surrounding the project that could be used for foraging during vegetation removal and mining activities. As such, the project is not likely to have a substantial adverse effect on the local long-term survival of any raptor species. ***The project would result in less-than-significant direct and indirect impacts to functional foraging habitat for raptors with implementation of Mitigation Measures MM-BIO1, MM-BIO5, MM-BIO6, and MM-BIO7.***

3.2.G The 479.5-acre project area is set in the midst of a larger rural setting with large blocks of open space, making the El Monte Valley a core wildlife area. Of the 479.5 project acres, approximately 22.27 acres of the project area are considered functional native wildlife habitat for local and migratory wildlife (e.g., southern willow scrub, southern cottonwood-willow riparian forest, Diegan coastal sage scrub); the remaining areas consist of highly disturbed, weed-dominated uplands and tamarisk scrub, which have limited potential to support wildlife. Direct impacts to core area habitat could result from vegetation removal and mining activities. Indirect impacts to a core wildlife area could result from weed invasion or erosion after mining activity is complete.

Although cleared areas would lose habitat functionality for wildlife species during mining, these effects would be reduced to a limited portion of the project area at any given time, as the project would proceed in four phases during the 12-year life of the mining activity. As each phase is completed, it would be reclaimed (e.g., the landscape would be stabilized and revegetated), before the next phase would be initiated. As the vegetation begins to grow back within reclaimed areas, it would become suitable to provide cover, forage, and breeding opportunities for wildlife. As such, most of the project area would be available for wildlife use at any given time for the duration of the proposed project. Upon the completion of revegetation, the area would be enhanced by the establishment of higher-quality and functional habitat types along the San Diego River corridor. ***Therefore, with implementation of Mitigation Measures MM-BIO5, MM-BIO6, and MM-BIO7, the proposed project would have less-than-significant direct and indirect impacts on a wildlife core area or the viability of the wildlife species it supports.***

3.2.H The proposed project would not result in indirect impacts as a result of increased predation or competition from domestic animals or pests because there would be no associated land use change to the property upon project completion such as residential, commercial or agricultural uses.

Indirect impacts from human use after the project is completed are not expected to significantly increase as a result of the project. Currently, portions of the project area contain unpaved roads and trails that are used by equestrian and recreational users for riding, walking, and hiking. In addition, existing residents access their homes using Willow Road and Dairy Road (both unpaved), and Helix Water District and San Diego Gas & Electric staff access the project area using these same unpaved roads. The proposed project would allow for continued access to the site during mining and reclamation/restoration activities. A trail system would be established along much of the periphery of both the area of disturbance and MUP boundary. Permanent impacts from trails total 8.36 acres, with 1.24 acres of disturbance within the mining disturbance area and 7.12 acres outside the mining disturbance area.

The project would not result in significant indirect impacts to downstream habitat due to altered hydrology (Chang Consultants 2018). Because El Capitan Dam has effectively cut off the upstream flow since its establishment in 1935, downstream areas are currently not receiving surface flow. The main source of water in the riverbed is runoff from surrounding hillsides. Although the post mining grades could result in temporary ponding, a negative reduction of surface flows is not expected because of the lack of surface flow that presently occurs onsite. Therefore, the changes to the topography as a result of mining activities are not expected to substantially affect the hydrology downstream. In addition, erosion control and stormwater measures would be installed to ensure that sediment and runoff do not drain offsite during mining. Post-project reclamation and revegetation would also improve onsite drainage conditions.

Although extremely unlikely, indirect impacts from altered natural drainage features onsite could result from ponding during extreme rain events. The project would effectively lower the substrate elevation on the surface of the San Diego River 36 to 41 feet below the current channel surface, which would be approximately 4 feet above the water table. During extreme storms events, water could overtop the El Capitan dam. In the event of the dam overtopping, the water table may rise above the pit bottom and a pond could form. If ponding does occur, vegetation could form around the fringe of the pond, although vegetation growth would be temporary as it would likely recede as the water recedes. Water has overtopped the dam only four times since 1940 (D. Roff pers. comm), making this a very unlikely event.

Indirect project impacts could result from a temporary increase in human activity, noise, and nighttime lighting during construction and mining activities, which could negatively affect breeding birds by disrupting breeding behavior. Temporary nighttime lighting would be installed at the facility for safety purposes; however, the lighting would be shielded away from adjacent native habitats, and thus is not anticipated to affect breeding or foraging behavior of sensitive species. However, during construction and mining, the ambient noise levels would be increased during operating hours, which could negatively affect breeding birds by altering breeding behavior or resulting in nest abandonment. These impacts would be reduced or avoided by avoiding the bird breeding season and conducting pre-construction nest surveys for activities that would occur during the breeding season.

Indirect impacts to native habitat and associated species could result from construction-generated dust from temporary haul roads into adjacent habitats. As discussed, to minimize the threat of dust from temporary haul roads moving onto adjacent habitat, an environmentally-friendly water-based polymer binding agent, AggreBind®, would be applied to haul roads, and frequent watering would occur at points of ingress and egress from the haul roads and frequent watering would occur at points of ingress and egress from the haul roads. It is made from in-situ materials such as sub-soils and sands and environmentally friendly polymers. It is water-based and non-toxic and can be used in environmentally sensitive

areas, agricultural roads, and as a surface seal for drainage channels. Because this product binds and hardens similar to cement or asphalt, upon removal of the temporary haul roads, it is easy to contain and remove in its entirety. There would be no negative impacts to groundwater, the river channel, or surrounding vegetation from this method of dust suppression. Water trucks would spray at points of ingress and egress of the haul road at the intersection where the haul roads meet dirt roads or paved roads. Thus, application of AggreBind® to temporary haul roads and watering would avoid/minimize construction-generated dust impacts to special-status species.

Indirect impacts to native habitat and associated species could result from weed invasion or erosion after mining activity is complete. These indirect impacts would be mitigated through mining reclamation, and a portion of the habitat would be restored to high quality native habitat in accordance with County and resource agency requirements, which include more stringent standards, including a 5-year maintenance and monitoring program, and long term preservation and management.

Therefore, with implementation of Mitigation Measures MM-BIO1, MM-BIO5, MM-BIO6, and MM-BIO7, the project would have less-than-significant indirect impacts to open space or other natural habitat areas or harm sensitive species over the long term.

3.2.I Burrowing owl has not been observed onsite during surveys conducted in 2006, 2010, and 2015, and the nearest known occurrence is approximately 12 miles to the north. Potential habitat within the project area is poor quality. In addition, the habitat is highly degraded, and very dense with non-native grasses, Russian thistle, and mustards; burrowing owls prefer more open habitat. As such, they are not likely to occur onsite. However, if burrowing owls move into the project area, direct impacts to the burrowing owl or its habitat could occur within disturbed habitat and non-native grassland through vegetation removal and mining activity. Indirect impacts from adjacent construction noise and activity could also affect owls. To ensure that burrowing owls are not directly or indirectly impacted from the project, pre-construction clearance surveys would be conducted. ***Therefore, with implementation of Mitigation Measures MM-BIO1, MM-BIO5, MM-BIO6, and MM-BIO7, the project would have less-than-significant indirect impacts to burrowing owl.***

3.2.J There is no cactus wren habitat in the project area (habitat was not present in the project area prior to 2003 Cedar fire), and cactus wren were not observed during the 2006, 2010, and 2015 surveys. ***The proposed project would not impact cactus wren or its habitat.***

3.2.K Native upland habitat on the project area is not extensive enough or of high enough quality to support Hermes copper, and the host plants required by this species are not present onsite. Additionally, Hermes coppers were not

observed during the 2006, 2010, and 2015 surveys. ***The proposed project would not impact Hermes copper or its habitat.***

3.2.L Clearing and grading associated with project area preparation could directly affect breeding birds by the removal of potential nesting habitat within the river channel and surrounding upland habitats. Proposed mining activities could also indirectly affect breeding birds adjacent to cleared areas during the breeding season due to noise, dust, increased truck traffic, and other human activities, which could impair the breeding behavior of birds, resulting in reduced mating or nest abandonment. Additionally, fuel modification could directly impact nesting bird species through removal of nesting habitat, and indirectly impact nesting birds during breeding season through noise. Direct impacts as a result of mortality of individuals and nests and removal of habitat during the breeding season, and construction-generated noise would be avoided through conducting construction and mining activities outside of the bird breeding season. Additionally, preconstruction surveys would be conducted prior to starting work to confirm that nesting birds are absent from the limits of construction prior to work starting. Additionally, habitats lost during construction and mining operations would be compensated through reclamation and revegetation, resulting in additional habitat acreage for use after completion of the project. ***With implementation of Mitigation Measures MM-BIO1, MM-BIO2, MM-BIO3, MM-BIO5, MM-BIO6, and MM-BIO7, direct and indirect impacts to coastal California gnatcatcher, least Bell's vireo, golden eagle, and tree-nesting and ground-nesting raptors from clearing, grading, fuel modification, and/or other noise generating activities would be less than significant. These activities would not impact coastal cactus wren, southwestern willow flycatcher or light-footed clapper rail.***

3.3 Cumulative Impact Analysis

As urbanization and industrial pressures increase within the El Monte Valley, the Lakeside community, and other unincorporated areas of San Diego County, impacts to biological resources within the region may also increase cumulatively. Cumulative impacts are concluded to be significant if the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.

A list of cumulative projects has been compiled, and the cumulative project study area defined, based on input from the County of San Diego. All of the cumulative projects are depicted in **Figure 16**. **Table 14** lists the cumulative projects that were determined to have effects on biological resources.

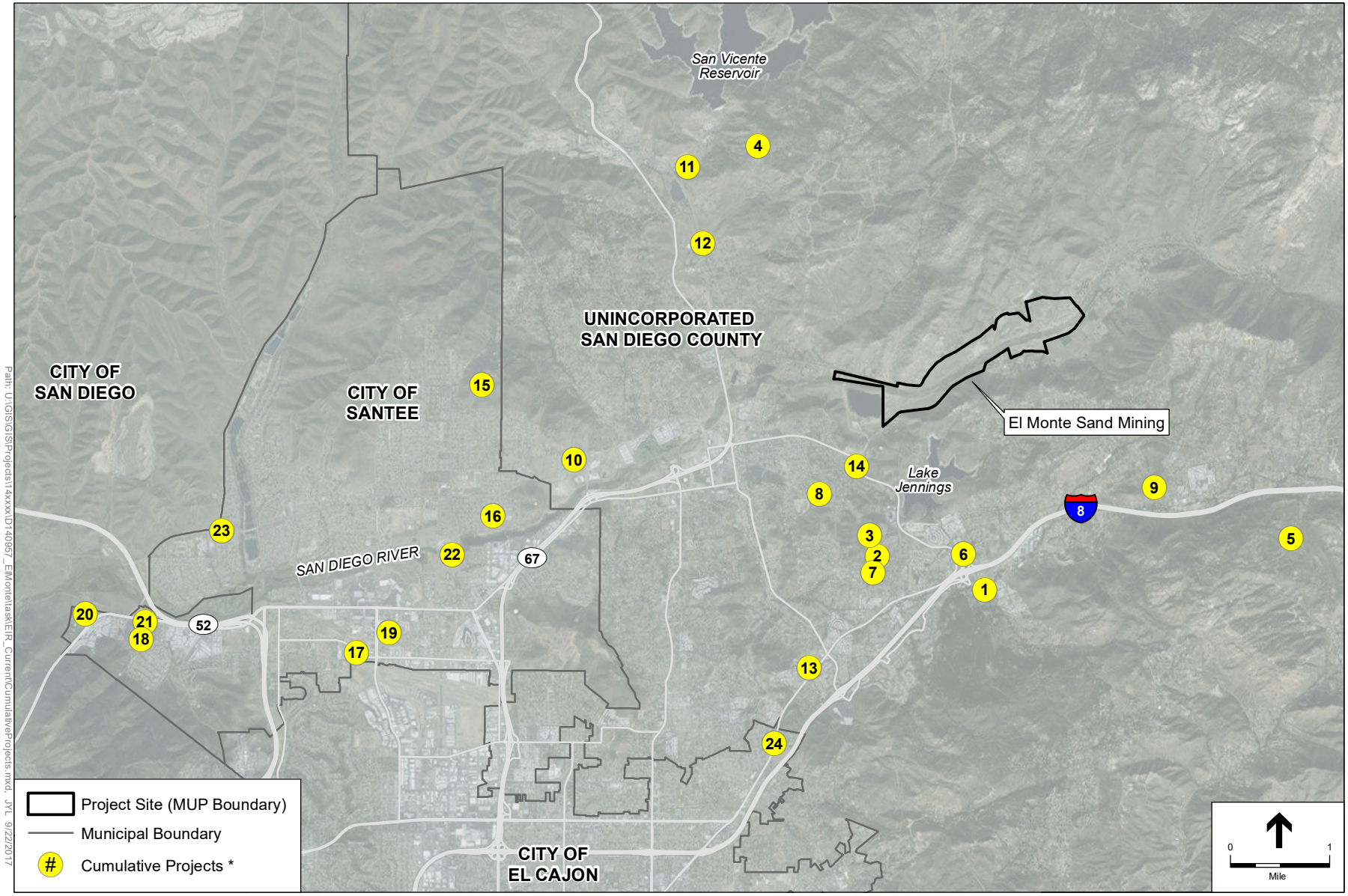
The geographical scope of the potential cumulative impacts related to biological resources encompasses the area south of San Vicente Reservoir, (generally) north of the Interstate 8, east of the city of San Diego and west of El Capitan Reservoir. As described in Sections 3.2-7.2, potentially significant biological resource impacts resulting from the proposed project include sensitive plant

communities, habitat for sensitive species, nesting birds, foraging habitat for raptors, jurisdictional wetlands and/or riparian habitats, wildlife movement and linkages, among other impacts. Although impacts would occur, habitat would be reclaimed and revegetated in phases following the proposed mining activities. The entirety of the 226.40 acres of temporary impacts within the mining phases would either be restored for habitat mitigation (113.92 acres) or be subject to reclamation (112.48 acres). An additional 64.16 acres of riparian and transitional upland habitats (with non-native exotic plant species) outside of mining limits would be enhanced for mitigation. A total of 224.34 of the 226.40 acres (greater than 99%) within the temporary impact area of disturbance in the mining phases is currently comprised of non-native habitats. All native habitats would be restored in-kind for mitigation per County guidelines, non-native grasslands would be mitigated with coastal sage scrub, tamarisk scrub would be mitigated with both riparian forest mitigation and enhancement within riparian and transitional upland habitats, and temporary impact areas that are not designated for habitat mitigation would be reclaimed via soil stabilization and reseeding.

Mitigation Measures MM-BIO1 through MM-BIO7 as described in Section 3.4, MM-BIO8 through MM-BIO11 as described in Section 4.4, and MM-BIO12 in Section 6.4, would reduce all of these temporary impacts to less-than-significant levels.

The majority of the cumulative projects listed in Table 14 are commercial or residential projects. Three of the 24 projects have approved Negative Declarations (Cumulative Projects 7, 8, and 13). An assessment of project locations, aerial photo signature, and an overlay of existing species database information (CNDDB, USFWS, and MSCP) was conducted in Google Earth for the remaining 21 projects identified with no existing environmental information or with approved Mitigated Negative Declarations, ten projects (Cumulative Projects 10, 14,16 through 21, and 23 - 24) were identified as being located in urban/developed areas; these are likely to not have potential impacts to biological resources. These developed areas generally have fewer sensitive biological resources than in the El Monte Valley where the proposed project is located.

The remaining 11 projects are located within undeveloped, open space areas likely to have biological resources that have a potential to be impacted (Cumulative Projects 1 through 6, 9, 11 - 12, 15, and 22). Other biological resources associated with these habitats may be impacted if present at this site; at a minimum this may include nesting birds protected under the MBTA or rare plants. Potential impacts to nesting birds may include direct mortality to individuals or eggs, loss of nests or nesting and foraging habitat and indirect impacts such as construction-generated noise during the breeding season. An overlay of existing species data in Google Earth from CNDDB, MSCP, and USFWS databases did not confirm presence of special-status species near or adjacent to these sites although confirmation of absence from project-specific assessments would be required to confirm no impacts to special-status species would occur.



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Refer to Table 1-9 for cumulative project list.

SOURCE: ESRI; EnviroMine; The Altum Group; Chang Consultants; ESA; SanGIS

El Monte Sand Mining Project . 140957

Figure 16

Cumulative Projects

TABLE 14. PAST, PRESENT, AND RESONABLY ANTICIPATED FUTURE PROJECTS IN THE PROJECT AREA THAT COULD AFFECT BIOLOGICAL RESOURCES

Cumulative Project Map Key	Project Name	Project Type	Location(s)	County of San Diego Reference #	APN #	Potential Resources Affected/Notes
County of San Diego						
1	Lake Jennings Marketplace	Shopping Center Gasoline with Food Mart and Car Wash	South side of Olde Highway 80 between Ridge Hill Road and Rios Canyon Road Lakeside, CA	TM5490 PDS2014-TM-5590	395-250-08	Potential biological resources, air quality, and traffic impacts.
2	Ashwood II Condo Conversion	Residential subdivision into nine lots on a 4.54-acre site	9288 Adlai Road Lakeside, CA	TM5356 PDS2004-3100-5356	398-390-19	Potential impacts to biological resources impacts, noise, and utilities and service systems. Mitigated Negative Declaration approved in 2006.
3	Greenhills Ranch	Estate Residential	9370 Adlai Road 9385 Adlai Road Lakeside, CA	TM5140/ TM5563	398-400-08-00	Potential biological resources and cultural resources impacts.
4	Crest/Dehesa	Estate Residential	12101 Muth Valley Lakeside, CA	TM5317	329-121-02-00	Project is idle.
5	Crestlake	Single-Family Detached	15045 Old Hwy 80 Lakeside, CA	TM5082 PDS2004-3100-5082	402-210-19	Potential impacts to biological resources. EIR approved in 2007.
6	Magnolia Courts	Single-Family Detached	9317 Lake Jennings Park Road Lakeside, CA	TM5541 PDS2007-3100-5541	395-220-11	Project is idle. Site is currently vacant/undeveloped land.
7	Clegg	Single-Family Detached	13516 E Lakeview Road Lakeside, CA	TM 5286 PDS2004-3100-5286	398-390-66	Negative Declaration approved in 2007.
8	Julian Avenue Major Subdivision	Single-Family Detached	9626 Christmas Tree Lane. Lakeside, CA	TM 5539 PDS2007-3100-5539	395-091-03	Negative Declaration approved in 2009.

TABLE 14. PAST, PRESENT, AND RESONABLY ANTICIPATED FUTURE PROJECTS IN THE PROJECT AREA THAT COULD AFFECT BIOLOGICAL RESOURCES

Cumulative Project Map Key	Project Name	Project Type	Location(s)	County of San Diego Reference #	APN #	Potential Resources Affected/Notes
9	Oakmont II	Single-Family Detached	Located off of Flinn Springs Road and Oak Creek Road Lakeside, CA	TM5421 PDS2005-3100-5421	396-020-13	Potential biological resources and noise impacts. Mitigated Negative Declaration approved in 2014.
10	Sunny Ridge Estates	Single-Family Detached	11427 El Nopal Lakeside, CA	TM5436	379-024-31-00	Noise and traffic impacts.
11	Eniss Sand Mines	Minor alterations at the existing mining area.	12356 Moreno Avenue 12238 Moreno Avenue 12332 Vigilante Road 12417 Vigilante Road Lakeside, CA	87-075-01 87-006-01 PDS2005-3301-87-075-01 PDS2011-3311-87-0011	375-040-01 25-062-06	In Progress. No environmental documents available as of the date of this EIR.
12	Turner Sand Mine (East County Sand Mine)	Extraction of 1,175,000 cubic yards of material (sand and top soil). The Reclamation Plan consists of importing 1,278,000 cy of clean soil, rock, and asphalt for use as onsite fill, channel rip-rap, and to construct a portion of Slaughterhouse Creek and San Vicente Creek channels to convey 100-year storm.	South of San Vicente Avenue Bounded by SR-67 to the west and Moreno Avenue to the east Lakeside, CA	PDS2009-3300-09-016	375-100-24 375-041-12 375-041-09 375-041-28 375-041-29 375-100-09	In Progress. No environmental documents available as of the date of this EIR.

TABLE 14. PAST, PRESENT, AND RESONABLY ANTICIPATED FUTURE PROJECTS IN THE PROJECT AREA THAT COULD AFFECT BIOLOGICAL RESOURCES

Cumulative Project Map Key	Project Name	Project Type	Location(s)	County of San Diego Reference #	APN #	Potential Resources Affected/Notes
13	Settler's Point	Multi-Family Residential	13244 I-8 Business Lakeside, CA	TM5423 PDS2005-3100-5423	397-291-03	Negative Declaration approved in 2012.
14	Hanson El Monte Pond Flood Control	Restoration and Recharge	10402 El Monte Road Lakeside, CA	PDS2014-LDGRMJ-00012	Unavailable	Currently in the environmental public review period.
City of Santee						
15	Fanita Ranch	Residential	Northwest area of Santee, CA	TM 05-04	Unavailable	In progress. No environmental documents available as of the date of this EIR.
16	Braverman Drive Residential	Residential	10635 Braverman Drive Santee, CA	TM-2015-2	381-160-7300	Approved by City Council in February 2016.
17	Michael Grant	Residential	Prospect Avenue between Mesa Road and Our Way Santee, CA	TM2015-2	383-112-05, 28	In progress. No environmental documents available as of the date of this EIR.
18	Infill Development Company	Infill Development	8646 Caribbean Way Santee, CA	TM2015-3	383-260-40, 383-260-41	In progress. No environmental documents available as of the date of this EIR.
19	Village Run Homes LLC	Residential	Buena Vista and Mission Greens Santee, CA	TM2015-4	384-042-22-00 384-042-23-00	In progress. No environmental documents available as of the date of this EIR.

TABLE 14. PAST, PRESENT, AND RESONABLY ANTICIPATED FUTURE PROJECTS IN THE PROJECT AREA THAT COULD AFFECT BIOLOGICAL RESOURCES

Cumulative Project Map Key	Project Name	Project Type	Location(s)	County of San Diego Reference #	APN #	Potential Resources Affected/Notes
20	Mission Trails Collection (Middle Parcel)	Residential	8758 Bushy Hill Drive Santee, CA	TM2015-5	383-021-06	Potential impacts to biological and cultural resources. Mitigated Negative Declaration prepared. Approved by City Council on January 27, 2016.
21	Hattie Davison Properties	Residential	7927-7941 Mission Gorge Road Santee, CA	TM2015-6	383-260-75-00 /383-260-76-00	Potential impacts to biological and cultural resources. Mitigated Negative Declaration prepared. Approved by City Council on October 28, 2015.
22	Walker Trails	Residential	NW Corner of Magnolia and Chubb Lane			
City of San Diego						
23	Castlerock Project		Mast Boulevard and Medina Drive			
City of El Cajon						
24	Bella Terrazza	Residential	East Main Street, north of Greenfield Drive (south of McDougal Terrace)			

The mitigation identified in Section 3.4 and in Section 8.0 would reduce potentially significant impacts to below a level of significance. Therefore, the proposed project would not contribute considerably to cumulative biological impacts and cumulative impacts to special-status species would not be considered significant.

3.4 Mitigation Measures and Design Considerations

The following project design features intended to avoid and minimize potential biological impacts have been included for the proposed project. Design considerations have been developed to reduce potentially significant direct and indirect impacts to sensitive biological resources (see Section 1.2). These include project phasing, which would reduce the amount of area that is impacted at any given time; implementation of erosion and stormwater control features, which would guard against erosion and sedimentation; implementation of the Reclamation Plan, which would stabilize the soils and landforms; and implementation of the Revegetation Plan, which would compensate for losses to environmentally sensitive habitats (see Section 1.2). The Reclamation Plan and Revegetation Plan have not been finalized. These plans should conform to the bulleted requirements listed in Mitigation Measure MM-BIO6 and MM-BIO7. All design considerations shall be included in the Mitigation Monitoring and Reporting Program and shall be monitored to ensure compliance, in the same manner as the proposed project's mitigation measures described below.

Proposed mitigation measures to avoid, minimize, and/or offset impacts to special-status plant and animal species are provided below.

MM-BIO1: Raptors and nesting birds covered by MBTA.

1) To avoid and minimize impacts to nesting coastal California gnatcatchers, least Bell's vireo, raptors and other birds protected by the Migratory Bird Treaty Act, vegetation removal and grading shall occur outside of the nesting bird season (February 1 through August 31). Note that no gravel crushing is required to process the materials extracted from the site; therefore, noise levels would be lower than those typically associated with mining activities. If the breeding season cannot be avoided, the follow measures shall be implemented:

    a. During the avian breeding season, a qualified Project Biologist shall conduct a preconstruction avian nesting survey no more than 72 hours prior to vegetation disturbance or site clearing. Surveys need not be conducted for the entire project area at one time; they shall be phased so that surveys occur shortly before a portion of the site is disturbed. If construction begins in the non-breeding season and proceed continuously into the breeding season, no surveys shall be required. However, if there is a break of 3-5 days or more in construction and mining activities during the breeding season, a

new nesting bird survey shall be conducted before these activities begin again.

b. The preconstruction survey shall cover all suitable bird nesting habitat on and within 300 feet, and all suitable raptor nesting habitat on and within 500 feet, of areas anticipated to be impacted in the near term. If an active nest is found during the preconstruction avian nesting survey, a qualified Project Biologist shall implement a 300-foot minimum avoidance buffer for coastal California gnatcatcher, least Bell's vireo, and other passerine birds, and a 500-foot minimum avoidance buffer for all raptor species. The nest site area shall not be disturbed until the nest becomes inactive or the young have fledged.

2) A preconstruction survey for burrowing owl will be conducted in accordance with Section 3.4.1 "Pre-grading Survey" of the *Strategy for Mitigating Impacts to Burrowing Owls in the Unincorporated County* (Burrowing Owl Strategy; County of San Diego 2010b). If burrowing owls are detected during the preconstruction survey within 300-feet of proposed grading, a translocation plan will be developed and finalized in coordination with the County and the wildlife agencies (USFWS and CDFW). Grading will not occur within 300-feet of an active owl burrow until the young have fledged and are no longer dependent on the burrow. Grading closer than 300 feet may occur within written concurrence from the wildlife agencies and the County Mitigation Monitoring Coordinator; the distance will depend on the burrow's location in relation to the site's topography and other physical and biological characteristics. In addition, mitigation for impacts to habitat would be required as outlined in the Burrowing Owl Strategy.

MM-BIO2: Least Bell's vireo. In accordance with the project's Revegetation Plan, direct impacts to suitable habitat for the state and federally endangered least Bell's vireo shall be mitigated at a minimum of 3:1 ratio through the restoration of riparian habitat. Approximately 126 acres of riparian habitat suitable to support least Bell's vireo will be revegetated.

MM-BIO3: Coastal California gnatcatcher. In accordance with the project's Revegetation Plan, direct impacts to California gnatcatcher-occupied habitat shall be mitigated at a minimum 2:1 ratio through restoration. Restoration may include a combination of in-kind restoration (i.e., coastal sage scrub habitat restored to coastal sage scrub habitat) and out-of-kind restoration (i.e., non-native grassland habitat restored to coastal sage scrub habitat). Approximately 50.5 acres of Diegan coastal sage scrub habitat will be revegetated.

MM-BIO4: Glossy Snake and Other Special-Status Amphibian and Reptile Species. A focused herpetofaunal mitigation plan shall be developed and implemented by a qualified biologist to address potential direct and indirect

impacts to glossy snake and other amphibian and reptile state Species of Special Concern. The mitigation plan shall include the following measures to be implemented:

1) Trapping and collection of herpetofaunal species shall be conducted prior to any site preparation and mining activities (refer to Appendix J of the Biological Resources Report [included as Appendix G to this Draft EIR]). Once the herpetofaunal species are collected, they shall be relocated and set free outside of mining boundaries in the eastern portion of the project site, east of Dairy Road. They shall be marked to track the success of this action over time; the mitigation plan shall include detail on the specific methodology of the marking study.

2) Exclusionary fencing shall be installed along the project disturbance footprint to preclude special-status herpetofaunal species from moving back into the site. The focused mitigation plan shall include specifications for installing, monitoring, and repairing the fencing to maintain its function and integrity throughout the duration of construction and mining activities.

3) Preconstruction surveys for herpetofaunal shall be conducted by a qualified biologist no more than 10 days prior to initiation of excavation activities associated with site preparation and sand mining activities in those specified areas of the project site. Surveys may not need to be conducted for the entire of the project site at once; they may be phased so that surveys occur in portions of the project before excavation occurs (refer to Appendix J of the Biological Resources Report [included as Appendix G to this Draft EIR]).

   Overburden excavated and collected during site preparation and mining activities shall be moved (to the maximum extent feasible) to the eastern portion of the site, outside of the mining limits, to improve the habitat for herpetofaunal species at the release location for the project site, particularly as fill into some of the previously excavated areas in the eastern portion of the site where limited species observations have been documented (Appendix J).

MM-BIO5: Mining Best Management Practices (BMPs) and oversight. A qualified Project Biologist shall be responsible for monitoring the limits of construction and mining activity, mitigation measures, design considerations, and project conditions during all phases of the project. The Project Biologist shall conduct the following:

- Attend the preconstruction meeting with the contractor and other key construction personnel prior to clearing, grubbing, or grading.

- Conduct worker training prior to all phases of construction; this shall include meetings with the contractor and other key construction personnel

to explain the limits of disturbance, which shall be delineated with temporary construction fencing with clear signage stating the fenced area is a sensitive habitat area and to keep out, and the importance of restricting work to designated areas prior to clearing, grubbing, or grading. Discussions shall include procedures for minimizing harm to or harassment of wildlife encountered during construction and mining activities prior to clearing, grubbing, and/or grading.

- Conduct pre-construction clearance surveys to detect the presence of nesting birds, burrowing owls, and other sensitive terrestrial wildlife species, such as coast horned lizard, glossy snake, orange-throated whiptail, and two-striped garter snake. The Project Biologist shall use their discretion in ensuring impacts to any sensitive wildlife observed during pre-construction clearance surveys are avoided (e.g., avoidance buffers, relocation from harm's way, etc.).

- Be present onsite to monitor initial vegetation clearing, grubbing, and grading to ensure that mitigation measures are being appropriately followed, including restricting activity to delineated construction areas and avoiding impacts to breeding birds.

- Periodically monitor the limits of construction and mining operations as needed throughout the life of the project to avoid unintended direct and indirect impacts by ensuring that:

- Confirm construction and mining activity boundaries are marked (e.g., delineated with temporary fencing and sensitive habitat signage) and not breached;

- Monitor Mature Riparian Woodland areas to confirm they are protected from incursion with installation of temporary construction fencing and sensitive habitat signage. Also confirm that the slopes at the edge of protected Mature Riparian Woodland habitat are not eroding, and that appropriate erosion control measures, such as fiber rolls, blankets, gravel bags, etc., are installed;

- Apply AggreBind® to temporary haul roads prior to beginning construction (remove at the end of construction) and spray water on grading areas and at points of ingress and egress of the haul road at the intersection where the haul roads meet dirt roads or paved roads to minimize dust;

- Implement pertinent requirements that address erosion and runoff, including the federal Clean Water Act, National Pollution Discharge Elimination System (NPDES), and Stormwater Pollution Prevention Plan (SWPPP); and

- Prepare a post-construction monitoring report for submittal to the County of San Diego. The report shall substantiate the supervision of the clearing, grubbing, and/or grading activities, and shall provide a final assessment of biological impacts.

MM-BIO6: Reclamation Plan implementation oversight. A qualified Restoration Ecologist shall be designated to oversee implementation of the Reclamation Plan (as it pertains to site preparation, erosion control, hydro seeding, and soil stabilization). Reclamation will occur within project phases as identified in Figure 7. The Restoration Ecologist shall have at least 5 years of experience monitoring successful native habitat restoration projects in Southern California, including all habitat types that shall be restored onsite. In addition, the Restoration Ecologist shall:

- Attend all relevant construction meetings.
- Have the authority to redirect construction and maintenance crews in keeping with the goals, objectives, and performance standards of the final Reclamation Plan.
- Approve the seed palette used for hydro seeding.
- Regularly monitor reclamation activities to determine if and how remedial actions should be conducted, if needed, for observed issues such as sedimentation and erosion.

MM-BIO7: Revegetation Plan implementation and oversight. A Revegetation Plan shall be implemented to guide and ensure successful revegetation/creation of self-sustaining riparian and upland habitats, which would serve as mitigation for impacts to native vegetation communities. In contrast to the Reclamation Plan, which focuses on landform and soil stabilization, the focus of the Revegetation Plan is to restore the ecological functions and values of the impacted habitats. Revegetation (mitigation) and habitat enhancement would occur within mining phases as depicted in Figure 7 and would be implemented in accordance with the Revegetation Plan (ESA 2018c) once approved by the County. The Revegetation Plan includes the following:

- Sufficient revegetation restoration or enhancement of habitat to fulfill the mitigation obligations described in MM-BIO8 (Section 4.4).
- The planting plan shall be designed to ensure that the appropriate restored/created habitat is suitable for the coastal California gnatcatcher and least Bell's vireo, and allows for local and regional wildlife movement (e.g., appropriate width and vegetative cover).
- The planting design shall also include adequate wetland buffers (100 to 200 feet wide, measured from the edge of wetland habitat).

- A native planting palette appropriate for each vegetation type being mitigated and appropriate to local conditions.
- Irrigation for upland and wetland habitat types for the first 2 to 3 years. Irrigation should be removed during the final 2 years of restoration to ensure that the habitat is self-sustaining.
- A 120-day plant establishment period plus five-year restoration maintenance period (or until success criteria are met).
- Qualitative and quantitative monitoring methods to ensure that success criteria are met.
- Five-year maintenance methods.
- Success criteria for establishment period and years 1–5.
- Responsibilities and qualifications of restoration and maintenance contractor(s) and restoration ecologist.
- Description of annual reporting.

3.4.1 Plant Species

Palmer's goldenbush, a County List B plant species and Narrow Endemic, is the only special-status plant that occurs within the area. There would be no direct impacts to this species due to its location within Mature Riparian Woodland, a protected impact neutral area. Potential indirect impacts to this species from fugitive dust during mining activity would be avoided through regular use of a water truck along the haul road and hydrology would not be impacted (see MM-BIO5). Several other plant species have a potential to occur within the native habitats associated with the BSA. Potential direct loss plants would be mitigated through the habitat-based mitigation for the loss of native habitats, in accordance of Table 5 of the County of San Diego Guidelines for Determining Significance (County of San Diego 2010a) and as discussed further in Section 4.4.

3.4.2 Animal Species

Several Group I animal species occur within the project area, including San Diego banded gecko, Cooper's hawk, sharp-shinned hawk, osprey, red-shouldered hawk, turkey vulture, white-tailed kite, yellow breasted chat, loggerhead shrike, coastal California gnatcatcher, and least Bell's vireo. Potential impacts to these species would require habitat-based mitigation the loss of native habitats, in accordance of Table 5 of the County of San Diego Guidelines for Determining Significance (County of San Diego 2010a) and as discussed further in Section 4.4.

3.5 Conclusions

Potentially significant impacts include direct and indirect impacts to the federally listed and/or Group I animal species including the San Diego banded gecko, coastal California gnatcatcher, least Bell's vireo, Cooper's hawk, sharp-shinned hawk, red-shouldered hawk, osprey, turkey vulture, white-tailed kite, yellow breasted chat, and loggerhead shrike that are known to occur within the BSA. Direct impacts include direct mortality of individuals and habitat (including burrowing, breeding, nesting, and foraging) from vegetation removal and mining activities. Indirect impacts include construction-generated noise, dust, sedimentation into adjacent habitats, and nighttime lighting. However, mitigation measures would be implemented to avoid/minimize impacts to a less-than-significant level. Avoidance of the bird breeding season, preconstruction surveys to confirm absence, and biological monitoring during mining and construction activities would reduce potential impacts to breeding least Bell's vireo and coastal California gnatcatcher, as well as other nesting birds covered under the MBTA. Mining activities would be phased and each phase area would be revegetated once mining is complete before initiating the subsequent phase, thus habitats that would be temporarily lost during mining would be replaced and mitigated at required ratios to increase available suitable habitats. The implementation of design considerations and mitigation for special-status species according to County guidelines would compensate for impacts.

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4. RIPARIAN HABITAT OR SENSITIVE NATURAL COMMUNITY

The *County of San Diego Guidelines for Determining Significance for Biological Resources* was used to evaluate adverse environmental effects the project may have on riparian habitat or sensitive natural communities, specifically Section 4.2 (County 2010a). Guidelines for the determination of significance and an analysis of project effects for riparian habitat or sensitive natural communities is provided below.

4.1 Guidelines for the Determination of Significance

The project would have a substantial adverse effect on riparian habitat or other sensitive natural communities identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.

The following information was evaluated to provide evidence to support the determination of impact significance:

A. Project-related grading, clearing, construction, or other activities would temporarily or permanently remove sensitive native or naturalized habitat on or off the project area. This guideline would not apply to small remnant pockets of habitat that have a demonstrated limited biological value. No *de minimus* standard is specified under which an impact would not be significant; however, minor impacts to native or naturalized habitat that is providing essentially no biological habitat or wildlife value can be evaluated on a case-by-case basis to determine whether the projected impact may be less than significant. For example, an impact to native or naturalized upland habitat under 0.1 acre in an existing urban setting may be considered less than significant (depending on a number of factors). An evaluation of this type should consider factors including, but not limited to, type of habitat, relative presence of the habitat type in the project vicinity, its condition and size, presence or potential for sensitive species, relative connectivity with other native habitat, wildlife species and activity in the project vicinity, and current degree of urbanization and edge effects in the project vicinity. Just because a particular habitat area is isolated, for example, does not necessarily mean that impacts to the area would not be significant (e.g., vernal pools). An area that is disturbed or partially developed may provide a habitat “island” that would serve as a functional refuge area “stepping stone” or “archipelago” for migratory species.

B. Any of the following would occur to or within jurisdictional wetlands and/or riparian habitats as defined by the USACE, CDFW, and the County of San Diego: removal of vegetation; grading; obstruction or diversion of water flow; adverse change in velocity, siltation, volume of flow, or runoff rate; placement of fill; placement of structures; construction of a road crossing; placement of culverts or other underground piping; any disturbance of the

substratum; and/or any activity that may cause an adverse change in native species composition, diversity and abundance.

C. The proposed project would draw down the groundwater table to the detriment of groundwater-dependent habitat, typically a drop of three feet or more from historical low groundwater levels.

D. The proposed project would cause indirect impacts, particularly at the edge of proposed development adjacent to proposed or existing open space or other natural habitat areas, to levels that would likely harm sensitive habitats over the long term. The following issues should be addressed in determining the significance of indirect impacts: increasing human access; increasing predation or competition from domestic animals, pests or exotic species; altering natural drainage; and increasing noise and/or nighttime lighting to a level above ambient that has been shown by the best available science to adversely affect the functioning of sensitive habitats.

E. The proposed project does not include a wetland buffer adequate to protect the functions and values of existing wetlands. If the proposed project is subject to RPO, buffers of a minimum of 50 feet and a maximum of 200 feet to protect wetlands are required based on the best available science available to the County at the time of adoption of the ordinance. The following examples provide guidance on determining appropriate buffer widths:

- A 50-foot wetland buffer would be appropriate for lower quality RPO wetlands where the wetland has been assessed to have low physical and chemical functions, vegetation is not dominated by hydrophytes, soils are not highly erosive and slopes do not exceed 25 percent.

- A wetland buffer of 50 to 100 feet is appropriate for moderate to high-quality RPO wetlands which support a predominance of hydrophytic vegetation or wetlands within steep slope areas (greater than 25 percent) with highly erosive soils. Within the 50- to 100-foot range, wider buffers are appropriate where wetlands connect upstream and downstream, where the wetlands serve as a local wildlife corridor, or where the adjacent land use(s) would result in substantial edge effects that could not be mitigated.

- Wetland buffers of 100 to 200 feet are appropriate for RPO wetlands within regional wildlife corridors or wetlands that support significant populations of wetland-associated sensitive species or where stream meander, erosion, or other physical factors indicate a wider buffer is necessary to preserve wildlife habitat.

- Buffering of greater than 200 feet may be necessary when a RPO wetland is within a regional corridor or supports significant populations

of wetland-associated sensitive species and lies adjacent to land use(s) that could result in a high degree of edge effects within the buffer. Although the RPO stipulates a maximum of 200 feet for RPO wetland buffers, actions may be subject to other laws and regulations (such as the Endangered Species Act) that require greater wetland buffer widths.

4.2 Analysis of Project Effects

4.2.A A total of 115.65 acres of sensitive vegetation communities would be temporarily impacted as a result of temporary habitat loss during mining activities and 11.51 acres would be permanently impacted as a result of installation of a permanent drop structure on the eastern edge of the excavation area, the establishment of permanent fuel modification zones, and a trail system. However, habitats would be mitigated in accordance with the Reclamation and Revegetation Plans; upon the completion of revegetation, the area would be enhanced by the establishment of higher-quality and functional habitat types along the San Diego River corridor. ***These impacts to sensitive vegetation communities would be less than significant with implementation of Mitigation Measures MM-BIO7, MM-BIO8, MM-BIO9, and MM-BIO10.***

4.2.B The proposed project would temporarily and permanently affect jurisdictional (non-vegetated streambed) non-wetland waters and riparian habitats as defined by USACE, RWQCB, CDFW, and the County of San Diego through removal of vegetation, grading, placement of temporary structures (including a drop structure for erosion control, portable processing plant, temporary power lines, weigh scales, and modular scale house), and excavation to a maximum of 35 feet below the current surface, and placement of fill to create a bench around the mined pit. Approximately 0.36 acre of USACE/RWQCB jurisdictional non-wetland waters and approximately 41.46 acres of CDFW riparian and San Diego County jurisdictional wetlands would be affected (Figures 14a and 14b and **Table 15**). For permitting projects, the USACE (and CDFW) seeks to meet the goal of no net loss of functions and values of wetlands and often other waters of the United States and would require at a minimum the restoration of disturbed areas to original contours and a revegetation program to restore jurisdictional areas disturbed by the proposed project. ***With implementation of Mitigation Measures MM-BIO1, MM-BIO2, MM-BIO3, and MM-BIO10, the direct impacts to jurisdictional wetlands and/or riparian habitats as defined by USACE, CDFW, and the County of San Diego would be less than significant.***

TABLE 15. IMPACTS TO JURISDICTIONAL RESOURCES

Jurisdiction	Temporary Impacts	Permanent Impacts	Total Impacts
Federal (USACE)/State (RWQCB)	0.35	0.01	**0.36**
State (CDFW)/County (San Diego)	39.18	2.28	**41.46**
Total	**39.53**	**2.29**	**41.82**

4.2.C Under the current general plan for the undeveloped land within the BSA, average groundwater withdrawal of the unmitigated proposed project is expected to be about 2,350 acre-feet per year (afy). Estimated groundwater demand from evaporative losses in the mining pit is estimated to average about 250 afy when water is standing in the pit (AECOM 2017). The proposed Project is also expected to impact groundwater-dependent habitat (AECOM 2017). ***With implementation of measure MM-BIO11 impacts to groundwater-dependent riparian habitat or other natural communities due to draw down of the groundwater table would be less than significant.***

4.2.D Upon completion (i.e., after the Reclamation Plan and Revegetation Plan have been implemented), the project would not increase human access, predation, competition from domestic animals, pests, or exotic species, noise, or nighttime lighting. ***Therefore, the proposed project would not cause indirect impacts to riparian habitats or other sensitive vegetation community due to changes in these conditions.***

Although the BSA does not have a formally established trail system, trails have been formed by heavy human use throughout the years. Human-made trails are currently utilized daily by hikers, bikers, people with dogs, and equestrians on horseback. A formal trails system would have rules and regulations for trail users such as keeping pets leashed and staying on public trails, as well as timing of trail access limited to daytime hours. Wildlife-friendly split rail fencing would be permanently installed along portions of trails adjacent to sensitive resources. Although a formal trail system would be established and it is possible human and domestic pet usage may increase, these types of trail regulations would limit these potential impacts. Impacts to surrounding vegetation are expected to decrease as established trails discourage people and domestic pets from going off-trail. Thus, the establishment of a trail system would not increase pests, exotic species, noise, or nighttime lighting; impacts would be less than significant. The project would not result in significant indirect impacts to downstream habitat due to altered hydrology. Because El Capitan Dam has effectively cut off the flow from upstream since its establishment in 1935, the main source of water in the riverbed is runoff from surrounding hillsides. Therefore, the changes to the topography as a result of mining activities are not expected to substantially affect the hydrology downstream and impacts would be less than significant. In

addition, erosion control and stormwater measures would be installed as a project design feature to ensure that sediment and runoff do not drain offsite during mining. Post-project reclamation and revegetation would also improve onsite drainage conditions. ***With implementation of Mitigation Measures MM-BIO5, MM-BIO6, and MM-BIO7, indirect impacts to riparian and other sensitive habitats due to drainage alterations would be less than significant.***

The project would not result in significant indirect impacts to downstream habitat due to altered hydrology. Because El Capitan Dam has effectively cut off the flow from upstream since its establishment in 1935, the main source of water in the riverbed is runoff from surrounding hillsides. Therefore, the changes to the topography as a result of mining activities are not expected to substantially affect the hydrology downstream. In addition, erosion control and stormwater measures would be installed to ensure that sediment and runoff do not drain offsite during mining. Post-project reclamation and revegetation would also improve onsite drainage conditions.

Potential indirect impacts to native habitat could result from construction-generated dust from temporary haul roads into adjacent habitats. As discussed, to minimize the threat of dust from temporary haul roads moving onto adjacent habitat, an environmentally-friendly water-based polymer binding agent, AggreBind®, would be applied to haul roads, and frequent watering would occur at points of ingress and egress from the haul roads. AggreBind® is made from in-situ materials such as sub-soils and sands and environmentally friendly polymers. It is water-based and non-toxic and can be used in environmentally sensitive areas, agricultural roads, and as a surface seal for drainage channels. Because this product binds and hardens similar to cement or asphalt, upon removal of the temporary haul roads, it is easy to contain and remove in its entirety. There would be no negative impacts to groundwater, the river channel, or surrounding vegetation from this method of dust suppression. Application of AggreBind® to temporary haul roads and watering at points of the intersection of haul roads with other dirt roads and paved areas would thus avoid/minimize construction-generated dust impacts to special-status species. ***With implementation of Mitigation Measure MM-BIO5, indirect impacts to riparian and other sensitive habitats due to construction-generated dust would be less than significant.***

4.2.E As discussed in Section 1.5.3, the RPO conditionally allows impacts to wetland habitats (per Section 86.605, which describes exemptions for sand, gravel or mineral extraction projects), if certain mitigation measures are met. One of measures states that “Mature Riparian Woodland may not be destroyed or reduced in size due to sand, gravel, or mineral extraction.” A total of 8.45 acres of habitat that meets the RPO’s definition of Mature Riparian Woodland was mapped within the project area. The current project was designed to avoid this area thus impacts to wetland functions and values as a result of lack of buffers is not expected. Mining operations would result in an elevational disconnection of

the existing low flow channel between upstream mining areas (Phases 1 and 2) and the Mature Riparian Woodland. Low flow runoff channels within the Mature Riparian Woodland would remain and connect with downstream areas (Phases 3 and 4). Due to infrequent overtopping of the El Capitan Reservoir located upstream, alluvial soils (highly permeable) and hydrology conditions on-site, above-ground channel flow rarely occurs. Precipitation infiltration (including subsurface runoff from adjacent uplands) and groundwater are the primary hydrology inputs supporting the Mature Riparian Woodland; which generally includes phreatophytic plant species (plants that depend for their water supply upon ground water that lies within reach of their roots) in the midstory and overstory (e.g., willow and cottonwood), and riparian transitional and upland species in the understory. There is currently limited natural recruitment of younger willow and cottonwood age classes, likely because the water table is too deep (40-50 feet) for these species to become established. Since precipitation infiltration and groundwater conditions would be less than significant with mitigation in this preserved area, the Mature Riparian Woodland habitat would not be significantly impacted by mining activities.

The proposed mining haul road would primarily traverse north of the Mature Riparian Woodland, outside the 50-foot buffer around the habitat (see below). The proximity of the daily ingress/egress of approximately 231 trucks may result in significant exposure of the trees, vegetation and wildlife to nitrous oxides, dust and noise. Measures to protect the Mature Riparian Woodland from the haul road include preserve boundary marking (e.g., flagging or fencing), contractor education, erosion control measures (including fiber rolls and silt fencing), dust control (e.g., through the application of AggreBind® and regular spraying with water trucks at points of ingress/egress at the intersection of other dirt roads and paved roads with the temporary haul roads), and mulching of disturbed surfaces (not including the haul road drive surface) would prevent impacts from the haul road to the Mature Riparian Woodland.

To provide protection of the functions and values of existing wetlands, the RPO requires an adequate wetland buffer that would protect the environmental and functional habitat values of the wetlands. The buffer must be 50 to 200 feet wide, as measured from the edge of the wetland habitat, based on guidance given by the County (2010a). The mapped Mature Riparian Woodland areas include a buffer of 50 feet from the edge of the tree canopy, which provides a wetland buffer function. This buffer width is consistent with County guidelines, which state “A 50-foot wetland buffer would be appropriate for lower quality RPO wetlands where the wetland has been assessed to have low physical and chemical functions, vegetation is not dominated by hydrophytes, soils are not highly erosive and slopes do not exceed 25%.”

In addition, allowable impacts to 42.29 acres of existing wetland habitats would be mitigated onsite through revegetation of 126.15 acres of riparian habitats (plus 0.54 acre of riparian habitat restored for the previous golf course project for a total 126.69 acres). Once completed, the restored wetland habitat in the bottom

of the excavation pit would be buffered by a 70 to 140-foot wide band of restored coastal sage scrub habitat and an additional setback of 150 to 300 feet between the restored coastal sage scrub and adjacent roads. ***With implementation of Mitigation Measures MM-BIO5, MM-BIO6, and MM-BIO7, and avoidance of Mature Riparian Woodland, impacts to the functions and values of existing wetlands would be less than significant.***

4.3 Cumulative Impact Analysis

At a minimum, biological impacts may occur to vegetation communities requiring mitigation on the eleven Cumulative Project sites identified to occur within undeveloped open space areas; the Google Earth aerial photograph for these sites all appear to display either coastal sage scrub, oak woodlands, and/or non-native grassland, which are similar to habitats on the project site. Similarly, potential direct impacts to vegetation communities may occur such as direct removal or indirect impacts such as construction-generated dust, sedimentation, or runoff into adjacent vegetation communities. Although these same types of impacts have been identified for the project, project design measures and mitigation measures as discussed in Section 8.0 would reduce potentially significant impacts to below a level of significance. Therefore, the proposed project would not contribute considerably to cumulative biological impacts and cumulative impacts to sensitive plant communities would not be considered significant.

4.4 Mitigation Measures and Design Considerations

In addition to the design considerations and measures MM-BIO5 through MM-BIO7 discussed in Section 3.4, additional measures below would be implemented to avoid/minimize potential impacts to sensitive vegetation communities and jurisdictional resources. As referenced in Section 1.5.3, mitigation ratios as currently presented in this section may be adjusted during the permitting process for this project and after decision on the BLA request. A discussion of how mitigation ratios may be adjusted if the BLA is approved is provided in Appendix K. If the BLA is not approved, another process to amend the project area into the MSCP may be determined by the state and federal wildlife agencies.

MM-BIO8: Sensitive vegetation communities.

- In order to be consistent with the Southern California Coastal Sage Scrub NCCP guidelines, direct impacts to more than 5 percent of the coastal sage scrub onsite (i.e., impacts to more than 0.52 acre) shall be avoided. Avoidance shall be targeted at those patches of coastal sage scrub in which a California gnatcatcher was observed during the 2015 surveys.

- Direct impacts to sensitive vegetation communities shall be mitigated through implementation of the Reclamation Plan and Revegetation Plan.

The Revegetation Plan shall be designed to provide high quality habitat that is compatible with the post-project topography and hydrology. As such, some of the temporarily impacted habitat shall be mitigated out-of-kind (i.e., with a different, but higher quality habitat type), resulting in a net gain of native habitat acreage onsite and improve overall native habitat quality and functions.

- Revegetation mitigation will occur in areas currently supporting non-vegetated channel (will be revegetated as vegetated channel), southern willow scrub, tamarisk scrub (will be revegetated as native cottonwood-willow riparian forest and riparian scrub), coastal sage scrub, and non-native grassland (will be revegetated as coastal sage scrub) (**Table 16** and **Figure 7**). Based on mitigation replacement ratios and projected impacts for the mine project, a total of 126.15 acres of riparian/wetland habitat is required to be revegetated (restored) or enhanced (plus 0.54 acre of riparian habitat restored for the previous golf course project for a total 126.69 acres); and 50.49 acres of upland habitat is required to be revegetated (restored) to mitigate for temporary and permanent impacts. For the 3:1 mitigation ratio, 1.5:1 of the mitigation (i.e., 50%) for the mine project will occur via revegetation and restoration of 62.71 acres divided between 46.36 acres of cottonwood-willow riparian forest and 16.28 acres of southern willow scrub. The remaining 1.5:1 of the mitigation ratio (i.e., remaining 50%) will occur via enhancement and restoration of 62.72 acres of riparian and transitional habitat (for a total mitigation requirement of 125.43 acres). Based on an assessment of riparian and transitional habitat with exotic species onsite, 64.16 acres are proposed for enhancement. Therefore, the proposed enhancement and restoration mitigation of 64.16 acres will exceed the 62.72-acre requirement based on the mitigation ratio.

  Based on input from the County, the proposed mitigation for impacts to tamarisk scrub includes restoration of native riparian habitat within post-mining areas and enhancement and restoration of riparian and transitional habitat outside of mining limits. This approach would improve habitat more comprehensively within the project site and improve the functions and sustainability of habitat restoration mitigation areas onsite.
  Riparian/wetland habitat restoration will consist of high quality vegetated channel (0.36 acre) planted within the channel, cottonwood-willow and transitional species dominated riparian forest (46.43 acres) planted along the edges of the channel for a width of up to 300 feet, and riparian scrub habitat dominated by mule fat along with scattered willows and transitional species (17.18 acres [16.64 acres for the mine project + 0.54 acre for the previous golf course project]) within the excavated mining pit (basin) and lower slopes. The planted riparian forest mitigation (i.e., 46.43 acres) and the majority of riparian scrub mitigation (i.e.,16.28 acres for the mine project + 0.54 acre for the golf course project) will provide mitigation within post-mining areas for impacts to tamarisk scrub habitat. An additional 0.54

acre of southern willow scrub mitigation will occur as mitigation for the previously approved golf course project impact in 2005 to 0.18 acre of disturbed riparian (tamarisk scrub).

As previously discussed, the required balance of mitigation for tamarisk scrub for the mine project (i.e., 62.72 acres) will be accomplished by enhancing and restoring 64.16 acres of riparian and transitional habitat that include invasive exotic species within the project site outside of mining limits. Because all remaining riparian habitats onsite are included in the planned enhancement along with some adjacent transitional habitats (i.e., to establish contiguous enhancement area), the planned enhancement area has been rounded up to 64.16 acres (relative to the 62.72- acre requirement). The enhancement of 64.16 acres of riparian and transitional habitat will include initial removal of target exotics, follow-up monitoring and maintenance treatments annually for five years as needed, and measures to promote native plant revegetation including limited seeding and scattered planting. Removal of exotic species will be conducted with hand-tools (shovels, chain-saws, etc.) along with follow-up application of herbicide to kill exotic plant specimens. No vehicular equipment will be driven into the river bed. Maintenance personnel will walk into the enhancement areas, cut exotic vegetation, and carry it in pieces to nearby vehicles (e.g., pickup trucks) or dumpsters located along project access routes and/or disturbed upland staging areas. Exotic plant biomass will then be hauled to an approved green waste facility. Exotic vegetation will be either dug out with shovels (if specimens are small enough and the root system can be effectively removed), or cut within one foot of the ground surface. Cut stems/stumps will then be treated with herbicide. Based on input from County staff during an August 16, 2017 site visit, the removal of large exotics such as eucalyptus trees which provide screening for adjacent residences on the south side of the river should be removed in a phased approach so that sufficient screening with vegetation is provided (e.g., with existing vegetation and new native plant growth) during the enhancement and restoration program.

The existing riparian and transitional habitat areas that will be enhanced lack typical riparian habitat hydrology and are similar to alluvial fan scrub habitat (except for the extensive presence of tamarisk and other exotic species) which includes a mixture of riparian and transitional and upland species. Within this setting, management of natural recruitment is considered the most appropriate method to establish native habitat over time. However, measures will be conducted as part of the enhancement effort to promote native plant establishment including (1) limited seeding (utilizing some species in the project seed mixes and collection and spread of seed collected onsite during maintenance activities), (2) scattered low-density planting (container plants and cuttings) during wet conditions to help establish small patches/”islands” of native plants (which can help promote more natural recruitment), (3) distribution of mulch (not

including non-native seed or propagules) to provide improved microhabitat conditions for native plant germination and establishment, and (4) regular periodic follow-up exotic plant control to reduce competition with native plants. Because of the existing grades, depth to groundwater, and sandy alluvial soils, implementation of a planting program and temporary irrigation system are not considered appropriate or a worthwhile use of resources in the proposed enhancement areas. Relying on natural recruitment and treating exotic species is considered the best approach to establish native vegetation adapted to the site that will be self-sustaining over time. Enhancement mitigation activities are scheduled to start at the beginning of the project concurrent with the initiation of Phase 1 activities. The enhancement areas after the initial five-year maintenance and monitoring period will be managed in perpetuity, consistent with the other project mitigation areas.

As previously discussed, the remainder of the temporary impact area within the mining phases not designated for habitat mitigation will be subject to reclamation. Based on planned habitat mitigation acreage for the mine project, a total of 112.48 acres of reclamation would be conducted. However, because 0.54 acre of southern willow scrub restoration mitigation required for previous golf course impacts is planned within post-mining Phase 1 area, total reclamation within the mining temporary impact area has been lessened from 112.48 acres to 111.94 acres.

Anticipated impacts, habitat mitigation, and reclamation anticipated at this time are presented by community in **Table 16**.

TABLE 16. VEGETATION COMMUNITIES, IMPACTS, AND MITIGATION (ACRES)

Habitat Type / Vegetation Community	Total Impacts	Mitigation Ratio[1]	Habitat Mitigation[2]	Reclamation[2]
Riparian and Wetlands				
Southern Cottonwood-willow Riparian Forest	0.00	3:1	0.00	12.43
Southern Willow Scrub	0.12	3:1	0.36	46.78
Tamarisk Scrub	41.81	3:1	125.43[3]	0.00
Non-Vegetated Channel	0.36	1:1	0.36[4]	8.55
Subtotal	*42.29*		*126.15*	*67.76*
Uplands				
Diegan Coastal Sage Scrub	3.61	2:1	7.22	44.72
Non-Native Grassland	86.55	0.5:1	43.27[5]	0.00
Eucalyptus Woodland	1.30	N/A	0.00	0.00
Subtotal	*91.46*		*50.49*	*44.72*

Habitat Type / Vegetation Community	Total Impacts	Mitigation Ratio[1]	Habitat Mitigation[2]	Reclamation[2]
Other Cover Types				
Disturbed Habitat	126.04	N/A	0.00	0.00
Developed	2.55	N/A	0.00	0.00
Subtotal	*128.59*		*0.00*	*0.00*
Totals[6]	**262.34**		**176.64**	**112.48**

[1] Habitat mitigation ratios (Outside of approved MSCP Plan areas) are provided from the County's Guidelines for Determining Significance for Biological Resources (September 2010).
[2] A combination of habitat mitigation and reclamation will occur within the temporary impact acreage (226.40 acres).
[3] Tamarisk Scrub will be mitigated at a 3:1 ratio by a combination of restoration of native Riparian Forest and Riparian Scrub habitats within post-mining areas (62.71 acres; 1.5:1), and restoration of riparian and transitional habitat outside of mining limits but within the project site (62.72 acres, rounded up to 64.16 acres to address all riparian areas on-site; 1.5:1) via exotic plant removal and activities to promote native plant revegetation.
[4] Non-Vegetated Channel will be mitigated by restoration of Vegetated Channel since it is expected the post-mining grades and conditions will support native plants in the channel.
[5] Non-Native Grassland will be mitigated by restoration of Diegan Coastal Sage Scrub.
[6] Due to rounding, totals may differ slightly from numbers in column.

- Upland habitat revegetation shall consist of high quality coastal sage scrub habitat. The upland habitat mitigation need is mostly due to projected impacts to non-native grassland habitat, which is dominated by non-native grasses and forbs, providing only low quality habitat. The restored coastal sage scrub will provide an important foraging and breeding resource for the coastal California gnatcatcher, which is known to be onsite. Providing high quality coastal sage scrub in this area is highly beneficial, as all of the habitat surrounding the project area is degraded due to past wildfires. The excess revegetation of riparian habitat, which is of higher value than non-native grassland, will address the remaining upland mitigation need. A summary of anticipated impacts, mitigation ratios, required mitigation, and actual restoration are provided in Table 16. Because the project area is outside of the Multiple Species Conservation Program (MSCP), mitigation ratios shall be based on Table 5 of the County of San Diego Guidelines for Determining Significance for areas outside of the MSCP (County 2010). Mitigation measures may be revised to be consistent with the BMO once the BLA request is approved. If the BLA is not approved, another process to amend the project area into the MSCP may be determined by the state and federal wildlife agencies.

- Mitigation (i.e., revegetation and reclamation) shall be implemented on a phase-by-phase basis. Project site revegetation/restoration activities will be implemented in a phased approach moving from east to west across the project site as mining is completed. The mined area shall be progressively restored and reclaimed on disturbed areas previously mined prior to initiation of mining on the next phase. Restoration and reclamation is an ongoing process that commences when mining operations have ceased within a given area (phase) and continues until all mining related disturbance is reclaimed and all equipment involved in these operations have been removed before moving onto the next phase. **Tables 17-21**

show the anticipated breakdown of habitat mitigation and reclamation acres by phase. An overall restoration plan shall be approved by the County prior to the initiation of Phase 1 mining operations, including invasive species removal outside of the mining limits. Individual 40-scale restoration plans will be prepared for each phase and approved prior to the initiation of mining for the phase. Once Phase 1 mining has been completed and prior to the second half of Phase 2 mining operations being initiated, Phase 1 revegetation/restoration shall be implemented including, but not limited to, final restoration grading/slope stabilization, salvaged top soil placement and amendment, container planting, hydro-seed application/imprinting, temporary irrigation, erosion control, fencing and signage. Partial grading/mining of the subsequent mining phase is required to create a safe means of access for equipment and personnel to the previously mined phase to facilitate initiation the above outlined restoration activities. Once the revegetation/restoration installation has been completed for a particular phase, it will be reviewed by the County for conformance with the approved Revegetation Plan and will trigger the beginning of the monitoring and reporting period. Restoration/revegetation activities may be further broken down into sub-phases at the discretion of the mine operator. Ongoing maintenance is required to manage invasive species and trespass and is not part of the revegetation/ restoration activities that must be completed prior to moving on to the next phase of mining, as it is an ongoing activity. Revegetation/restoration bonding is required by phase prior to phase mining and will be released upon the successful completion of the phase restoration/revegetation installation, as determined by the County.

To minimize temporal loss of habitat values, mitigation for the proposed mine project for impacts outside of the mining footprint (i.e., fuel modification zones and some trail segments) and mitigation for the previous golf course project impact will be mitigated within the post-mine Phase 1 area. In addition, proposed enhancement to 64.14 acres of riparian and transitional habitats (as part of mitigation for impacts to tamarisk scrub) will be initiated at the start the project and Phase 1 mining activities in areas outside the mining footprint.

TABLE 17. PROJECT IMPACTS AND MITIGATION FOR MINING PHASE 1

Habitat Type / Vegetation Community	Permanent[1]	Temporary	Total	Mitigation Ratio[2]	Habitat Mitigation[3]	Reclamation [3]
Riparian and Wetlands						
Southern Cottonwood-willow Riparian Forest	0.00	0.00	0.00	3:1	0.00	0.00
Southern Willow Scrub	0.00	0.00	0.00	3:1	0.00	18.87
Tamarisk Scrub	0.80	11.55	12.35	3:1	37.05[4]	0.00
Non-Vegetated Channel	0.01	0.08	0.09	1:1	0.09[5]	1.76
Subtotal	*0.81*	*11.63*	*12.44*		*37.14*	*20.63*
Uplands						
Diegan Coastal Sage Scrub	0.97	1.77	2.74	2:1	5.48	13.13
Non-Native Grassland	4.41	16.85	21.26	0.5:1	10.63[6]	0.00
Eucalyptus Woodland	0.91	0.01	0.92	N/A	0.00	0.00
Subtotal	*6.29*	*18.63*	*24.92*		*16.11*	*13.13*
Other Cover Types						
Disturbed Habitat	9.08	46.54	55.62	N/A	0.00	0.00
Developed	0.00	0.00	0.00	N/A	0.00	0.00
Subtotal	*9.08*	*46.54*	*55.62*		*0.00*	*0.00*
Totals[7]	**16.18**	**76.80**	**92.98**		**53.25**	**33.76**

1 Permanent impacts in Phase 1 are from the drop structure, trails, and two staging areas.

2 Habitat mitigation ratios (Outside of approved MSCP Plan areas) are provided from the County's Guidelines for Determining Significance for Biological Resources (September 2010).

3 A combination of habitat mitigation and reclamation will occur within the temporary impact acreage (76.80 acres). The balance of 18.52 acres of mitigation for Tamarisk Scrub will occur through restoration of riparian and transitional habitat outside of mining limits but within the project site via exotic plant removal and activities to promote native plant revegetation. Mitigation for impacts outside of mining limits (trails and fuel modification zones) will be mitigated in Phase 1 and the reclamation acres (i.e., remaining temporary impact area) in this table account for this mitigation.

4 Tamarisk Scrub will be mitigated by a combination of restoration of native Riparian Forest and Riparian Scrub habitats within post-mining areas and restoration of riparian and transitional habitat outside of mining limits but within the project site via exotic plant removal and activities to promote native plant revegetation.

5 Non-Vegetated Channel will be mitigated by restoration of Vegetated Channel since it is expected the post-mining grades and conditions will support native plants in the channel.

6 Non-Native Grassland will be mitigated by restoration of Diegan Coastal Sage Scrub.

7 Due to rounding, totals may differ slightly from numbers in column.

TABLE 18. PROJECT IMPACTS AND MITIGATION FOR MINING PHASE 2

Habitat Type / Vegetation Community	Permanent[1]	Temporary	Total	Mitigation Ratio[2]	Habitat Mitigation[3]	Reclamation [3]
Riparian and Wetlands						
Southern Cottonwood-willow Riparian Forest	0.00	0.00	0.00	3:1	0.00	0.00
Southern Willow Scrub	0.00	0.00	0.00	3:1	0.00	12.28
Tamarisk Scrub	0.10	12.79	12.89	3:1	38.67[4]	0.00
Non-Vegetated Channel	0.00	0.11	0.11	1:1	0.11[5]	2.18
Subtotal	*0.10*	*12.90*	*13.00*		*38.78*	*14.46*
Uplands						
Diegan Coastal Sage Scrub	0.00	0.00	0.00	2:1	0.00	9.23
Non-Native Grassland	0.07	17.65	17.72	0.5:1	8.86[6]	0.00
Eucalyptus Woodland	0.00	0.00	0.00	N/A	0.00	0.00
Subtotal	*0.07*	*17.65*	*17.72*		*8.86*	*9.23*
Other Cover Types						
Disturbed Habitat	0.05	21.45	21.50	N/A	0.00	0.00
Developed	0.00	0.00	0.00	N/A	0.00	0.00
Subtotal	*0.05*	*21.45*	*21.50*		*0.00*	*0.00*
Totals[7]	**0.22**	**52.00**	**52.22**		**47.64**	**23.69**

1 Permanent impacts in Phase 2 are from the trails.

2 Habitat mitigation ratios (Outside of approved MSCP Plan areas) are provided from the County's Guidelines for Determining Significance for Biological Resources (September 2010).

3 A combination of habitat mitigation and reclamation will occur within the temporary impact acreage (52.00 acres).

4 Tamarisk Scrub will be mitigated by a combination of restoration of native Riparian Forest and Riparian Scrub habitats within post-mining areas and restoration of riparian and transitional habitat outside of mining limits but within the project site via exotic plant removal and activities to promote native plant revegetation.

5 Non-Vegetated Channel will be mitigated by restoration of Vegetated Channel since it is expected the post-mining grades and conditions will support native plants in the channel.

6 Non-Native Grassland will be mitigated by restoration of Diegan Coastal Sage Scrub.

7 Due to rounding, totals may differ slightly from numbers in column.

TABLE 19. PROJECT IMPACTS AND MITIGATION FOR MINING PHASE 3

Habitat Type / Vegetation Community	Permanent[1]	Temporary	Total	Mitigation Ratio[2]	Habitat Mitigation[3]	Reclamation [3]
Riparian and Wetlands						
Southern Cottonwood-willow Riparian Forest	0.00	0.00	0.00	3:1	0.00	12.43
Southern Willow Scrub	0.00	0.00	0.00	3:1	0.00	5.24
Tamarisk Scrub	0.02	3.76	3.78	3:1	11.34[4]	0.00
Non-Vegetated Channel	0.00	0.03	0.03	1:1	0.03[5]	2.86
Subtotal	*0.02*	*3.79*	*3.81*		*11.37*	*20.53*
Uplands						
Diegan Coastal Sage Scrub	0.00	0.00	0.00	2:1	0.00	8.37
Non-Native Grassland	0.19	25.81	26.00	0.5:1	13.00[6]	0.00
Eucalyptus Woodland	0.00	0.00	0.00	N/A	0.00	0.00
Subtotal	*0.19*	*25.81*	*26.00*		*13.00*	*8.37*
Other Cover Types						
Disturbed Habitat	0.14	18.00	18.14	N/A	0.00	0.00
Developed	0.00	0.00	0.00	N/A	0.00	0.00
Subtotal	*0.14*	*18.00*	*18.14*		*0.00*	*0.00*
Totals[7]	**0.35**	**47.60**	**47.95**		**24.37**	**28.90**

[1] Permanent impacts in Phase 3 are from the trails.

[2] Habitat mitigation ratios (Outside of approved MSCP Plan areas) are provided from the County's Guidelines for Determining Significance for Biological Resources (September 2010).

[3] A combination of habitat mitigation and reclamation will occur within the temporary impact acreage (47.60 acres).

[4] Tamarisk Scrub will be mitigated by a combination of restoration of native Riparian Forest and Riparian Scrub habitats within post-mining areas and restoration of riparian and transitional habitat outside of mining limits but within the project site via exotic plant removal and activities to promote native plant revegetation.

[5] Non-Vegetated Channel will be mitigated by restoration of Vegetated Channel since it is expected the post-mining grades and conditions will support native plants in the channel.

[6] Non-Native Grassland will be mitigated by restoration of Diegan Coastal Sage Scrub.

[7] Due to rounding, totals may differ slightly from numbers in columns.

TABLE 20. PROJECT IMPACTS AND MITIGATION FOR MINING PHASE 4

Habitat Type / Vegetation Community	Permanent[1]	Temporary	Total	Mitigation Ratio[2]	Habitat Mitigation[3]	Reclamation [3]
Riparian and Wetlands						
Southern Cottonwood-willow Riparian Forest	0.00	0.00	0.00	3:1	0.00	0.00
Southern Willow Scrub	0.00	0.00	0.00	3:1	0.00	10.39
Tamarisk Scrub	0.02	10.70	10.72	3:1	32.16[4]	0.00
Non-Vegetated Channel	0.00	0.13	0.13	1:1	0.13[5]	1.75
Subtotal	*0.02*	*10.83*	*10.85*		*32.29*	*12.14*
Uplands						
Diegan Coastal Sage Scrub	0.00	0.28	0.28	2:1	0.56	13.99
Non-Native Grassland	0.08	14.12	14.20	0.5:1	7.10[6]	0.00
Eucalyptus Woodland	0.00	0.07	0.07	N/A	0.00	0.00
Subtotal	*0.08*	*14.47*	*14.55*		*7.66*	*13.99*
Other Cover Types						
Disturbed Habitat	0.14	24.70	24.84	N/A	0.00	0.00
Developed	0.00	0.00	0.00	N/A	0.00	0.00
Subtotal	*0.14*	*24.70*	*24.84*		*0.00*	*0.00*
Totals[7]	**0.24**	**50.00**	**50.24**		**39.95**	**26.13**

[1] Permanent impacts in Phase 4 are from the trails.

[2] Habitat mitigation ratios (Outside of approved MSCP Plan areas) are provided from the County's Guidelines for Determining Significance for Biological Resources (September 2010).

[3] A combination of habitat mitigation and reclamation will occur within the temporary impact acreage (50.00 acres).

[4] Tamarisk Scrub will be mitigated by a combination of restoration of native Riparian Forest and Riparian Scrub habitats within post-mining areas and restoration of riparian and transitional habitat outside of mining limits but within the project site via exotic plant removal and activities to promote native plant revegetation.

[5] Non-Vegetated Channel will be mitigated by restoration of Vegetated Channel since it is expected the post-mining grades and conditions will support native plants in the channel.

[6] Non-Native Grassland will be mitigated by restoration of Diegan Coastal Sage Scrub.

[7] Due to rounding, totals may differ slightly from numbers in column.

TABLE 21. PROJECT IMPACTS AND MITIGATION FOR AREAS OUTSIDE MINING PHASES (PERMANENT)

Habitat Type/Vegetation Community	Trails Outside Mining Phases	Fuel Mod Zones Outside Mining Phases	Total	Mitigation Ratio[1]	Habitat Mitigation[2]
Riparian and Wetlands					
Southern Cottonwood-willow Riparian Forest	0.00	0.00	0.00	3:1	0.00
Southern Willow Scrub	0.02	0.10	0.12	3:1	0.36
Tamarisk Scrub	0.58	1.49	2.07	3:1	6.21[3]
Non-Vegetated Channel	0.00	0.00	0.00	1:1	0.00
Subtotal	*0.60*	*1.59*	*2.19*		*6.57*
Uplands					
Diegan Coastal Sage Scrub	0.27	0.32	0.59	2:1	1.18
Non-Native Grassland	2.90	4.47	7.37	0.5:1	3.68[3]
Eucalyptus Woodland	0.04	0.27	0.31	N/A	0.00
Subtotal	*3.21*	*5.06*	*8.27*		*4.86*
Other Cover Types					
Disturbed Habitat	3.30	2.64	5.94	N/A	0.00
Developed	0.01	2.54	2.55	N/A	0.00
Subtotal	*3.31*	*5.18*	*8.49*		*0.00*
Totals[4]	**7.12**	**11.83**	**18.95**		**11.43**

[1] Habitat mitigation ratios (Outside of approved MSCP Plan areas) are provided from the County's Guidelines for Determining Significance for Biological Resources (September 2010).

[2] Mitigation for impacts outside of mining phases will occur within the post-mining Phase 1 area.

[3] Tamarisk Scrub will be mitigated by a combination of restoration of native Riparian Forest and Riparian Scrub habitats within post-mining areas and restoration of riparian and transitional habitat outside of mining limits but within the project site via exotic plant removal and activities to promote native plant revegetation.

[4] Non-Native Grassland will be mitigated by restoration of Diegan Coastal Sage Scrub.

[5] Due to rounding, totals may differ slightly from numbers in column.

- Temporary fencing shall be installed as necessary during all mining, reclamation, and restoration activities to protect sensitive habitat, including Mature Riparian Woodland, from unauthorized incursion into areas outside the limits of disturbance. In addition, clear signage shall be installed, stating the fenced area is a sensitive habitat area and to keep out.
- To protect the habitat mitigation area in the long term, the entirety of the revegetation and enhancement areas shall be protected in perpetuity by placing a Biological Open Space Easement over the revegetation and enhancement areas (Figure 17). At this time, it is anticipated that once the four proposed mining phases are complete, the entirety of the areas proposed for mitigation, including the revegetation and enhancement areas that totals 176.64 acres, (1) will be transferred in fee title to a qualified land steward (non-profit) conservancy so that it may be maintained and managed in perpetuity for biological values, and (2) an easement will be recorded. It is understood, as standard measures, that a Biological Open Space Easement will be recorded for the mitigation areas and a long-term manager will be identified/established (and habitat management funds provided) for designated project habitat mitigation areas. It is the intent of the property owner to transfer these areas to a non-profit/conservancy group prior to the completion of the habitat mitigation restoration.
- An RMP will be prepared for the 176.64 acres of mitigation/enhancement areas designated as Biological Open Space Conservation (Figure 17). The RMP will be prepared in accordance with the County's Report Format and Content Requirements for Biological Resources and approved by the County of San Diego and Wildlife Agencies (CDFW and USFWS).
- Permanent fencing and signage shall be installed around the perimeter of the Biological Open Space Easement as proposed in Figure 17. Adjustments to the fencing details (e.g., the type and final location of fencing) would be determined upon finalization of the Revegetation Plan.

MM-BIO9: Mature riparian woodland, as defined by the County RPO. Mature Riparian Woodland and a 50-foot buffer beyond the canopy of trees shall be avoided during preconstruction clearing, grubbing, and/or grading, and during mining activities. This shall be accomplished by having a qualified Project Biologist onsite prior to the start of the project to delineate and protect the Mature Riparian Woodland with temporary construction fencing to avoid incursion during preconstruction clearing, grubbing, and/or grading, and during mining activities. In addition, potential indirect impacts from dust coming from the nearby temporary haul road would be mitigated to a level below significant through the application of an environmentally-friendly water-based polymer binding agent, AggreBind® and use of a water truck, as discussed in MM-BIO5.

MM-BIO10: Jurisdictional resources. Direct impacts to jurisdictional wetlands and waters shall be mitigated through implementation of the Reclamation Plan and Revegetation Plan, resulting in habitat creation and restoration of higher

quality than the habitat that is being impacted. Impacts to riparian resources shall be mitigated at a 3:1 ratio. A summary of anticipated impacts, mitigation ratios, and required mitigation are provided in **Table 22**. Impacts to non-vegetated streambed/non-wetland waters shall be mitigated at a 1:1 ratio. Mitigation ratios shall be based on the requirements in the County's *Guidelines for Determining Significance* (County 2010a) for areas outside of the MSCP, and may be modified by finalization of the BLA process as discussed in Appendix K, or other process as determined by the state and federal wildlife agencies.

TABLE 22. MITIGATION FOR IMPACTS RELATED TO JURISDICTIONAL RESOURCES (ACRES)

Jurisdictional Resource	Impacts	Mitigation Ratio[1]	Required Mitigation
Riparian (CDFW and County)	41.46	3:1	124.38
Non-vegetated Streambed/Non-Wetland Waters (CDFW and USACE)	0.36	1:1	0.36

[1] Wetland mitigation shall include a minimum 1:1 creation or restoration (re-establishment) component, while restoration (rehabilitation) or enhancement of existing habitats may be used to make up the remaining requirements.

Additionally, federal (Section 401 and 404 of the Clean Water Act) and state permits (Section 1600 of the CFGC) require permits for impacts to jurisdictional resources. The project will comply with these regulations and pursue permitting for potential impacts to 41.46 acres of riparian habitat regulated by CDFW, and 0.36 impacts of non-vegetated streambed and non-wetland waters regulated by USACE and CDFW). Final mitigation requirements for impacts to jurisdictional resources will be determined through the permitting process.

MM-BIO11: Groundwater resources.

Impacts to groundwater shall be mitigated by removing the Helix Water District Well HWD-101 from production, thereby reducing total demand by about 250 afy and balancing future project demand with annual recharge.

4.5 Conclusions

Potentially significant impacts include direct permanent and temporary impacts to sensitive vegetation communities as a result of implementation of the project. Temporary impacts to southern willow scrub, southern cottonwood willow riparian forest, tamarisk scrub, non-vegetated channel, Diegan coastal sage scrub, non-native grasslands, and Mature Riparian Woodland would occur as a result project construction, through the direct loss of habitat during mining, and creation of trails and fuel management zones. Mining activities would be phased and revegetated once mining is complete, thus habitats that would be temporarily lost during mining would be replaced and mitigated at required ratios, resulting in an increase in the amount of habitat and the quality of habitats. The implementation of design considerations and mitigation for riparian habitat and sensitive natural communities according to County guidelines would compensate for impacts.

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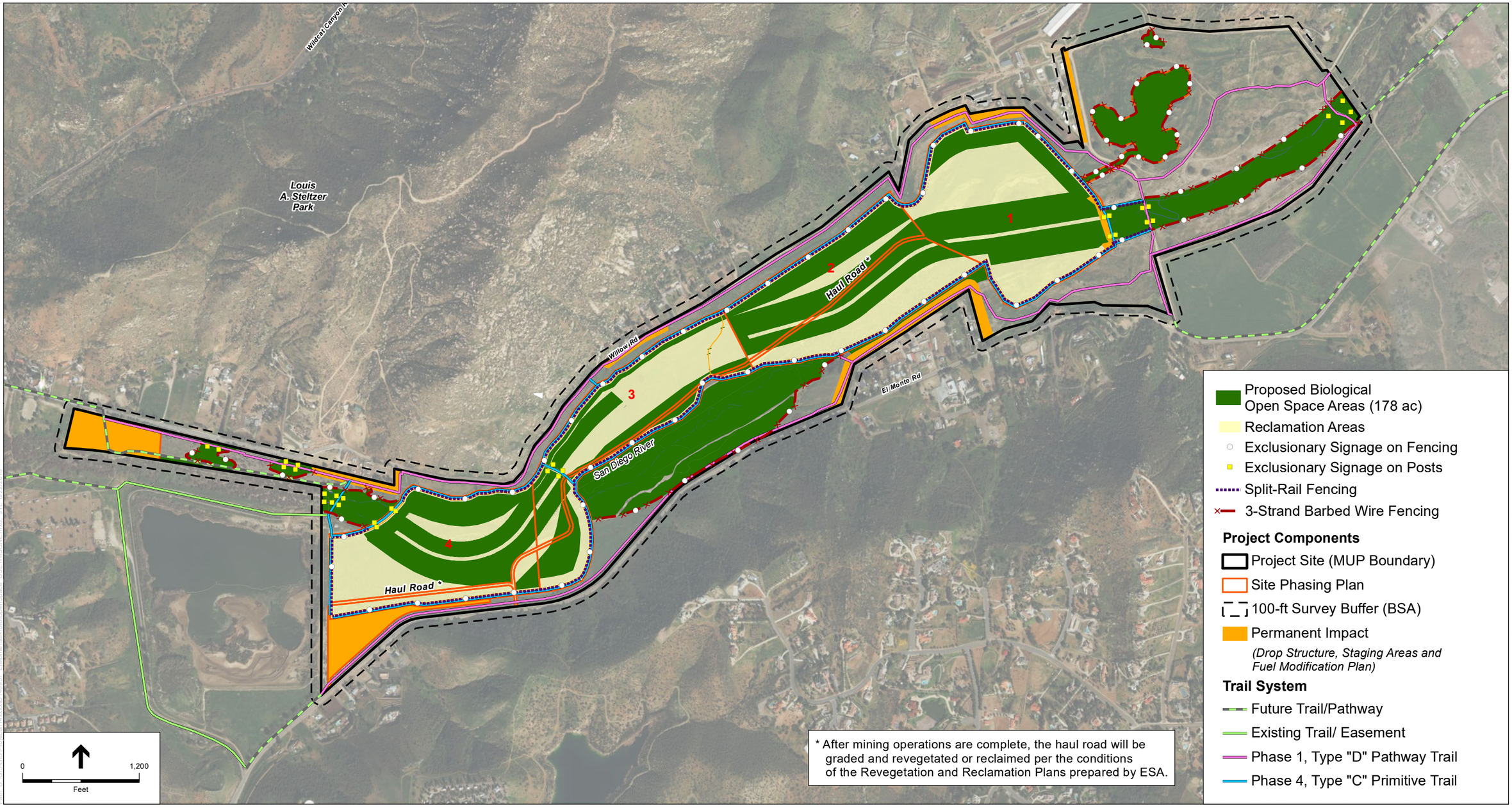

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SOURCE: ESRI; ESA

El Monte Sand Mining Project. 140957

Figure 17

Proposed Biological Open Space Areas

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5. FEDERAL WETLANDS

The *County of San Diego Guidelines for Determining Significance for Biological Resources* was used to evaluate adverse environmental effects the project may have on jurisdictional wetlands and waterways, specifically Section 4.3 (County 2010a). Guidelines for the determination of significance and an analysis of project effects for jurisdictional wetlands and waterways is provided below.

5.1 Guidelines for the Determination of Significance

The project would have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

The significance thresholds below are based on Sections 4.1.B, 4.1.C, and 4.1.E, as described in the *County Guidelines*. Note that this section refers to *federal* wetlands only; therefore, the text has been revised accordingly. These thresholds are numbered 5.1.B, 5.1.C and 5.1.E for consistency with *County Guidelines*.

5.1.B. Any of the following would occur to or within jurisdictional wetlands and/or riparian habitats as defined by the USACE: removal of vegetation; grading; obstruction or diversion of water flow; adverse change in velocity, siltation, volume of flow, or runoff rate; placement of fill; placement of structures; construction of a road crossing; placement of culverts or other underground piping; any disturbance of the substratum; and/or any activity that may cause an adverse change in native species composition, diversity and abundance.

5.1.C. The proposed project would draw down the groundwater table to the detriment of groundwater-dependent habitat, typically a drop of three feet or more from historical low groundwater levels.

5.1. E. The proposed project does not include a wetland buffer adequate to protect the functions and values of existing wetlands. If the proposed project is subject to RPO, buffers of a minimum of 50 feet and a maximum of 200 feet to protect wetlands are required based on the best available science available to the County at the time of adoption of the ordinance. The following examples provide guidance on determining appropriate buffer widths:

- A 50-foot wetland buffer would be appropriate for lower quality RPO wetlands where the wetland has been assessed to have low physical and chemical functions, vegetation is not dominated by hydrophytes, soils are not highly erosive and slopes do not exceed 25 percent.

- A wetland buffer of 50 to 100 feet is appropriate for moderate to high-quality RPO wetlands which support a predominance of hydrophytic vegetation or wetlands within steep slope areas (greater than 25 percent) with highly erosive soils. Within the 50- to 100-foot range, wider buffers

are appropriate where wetlands connect upstream and downstream, where the wetlands serve as a local wildlife corridor, or where the adjacent land use(s) would result in substantial edge effects that could not be mitigated.

- Wetland buffers of 100 to 200 feet are appropriate for RPO wetlands within regional wildlife corridors or wetlands that support significant populations of wetland-associated sensitive species or where stream meander, erosion, or other physical factors indicate a wider buffer is necessary to preserve wildlife habitat.

- Buffering of greater than 200 feet may be necessary when a RPO wetland is within a regional corridor or supports significant populations of wetland-associated sensitive species and lies adjacent to land use(s) that could result in a high degree of edge effects within the buffer. Although the RPO stipulates a maximum of 200 feet for RPO wetland buffers, actions may be subject to other laws and regulations (such as the Endangered Species Act) that require greater wetland buffer widths.

5.2 Analysis of Project Effects

5.2.B The project would result in direct impacts to 0.36 acre of non-wetland waters of the United States, including 0.35 acre of temporary impact and 0.01 acre of permanent impact, through removal of vegetation, grading, placement of temporary structures (including a drop structure for erosion control, portable processing plant, temporary power lines, weigh scales, and modular scale house), excavation to a maximum of 35 feet below the current surface, and placement of fill to create a bench around the mined pit. In permitting projects, the USACE seeks to meet the goal of no net loss of functions and values of wetlands and would require at a minimum the restoration of disturbed areas to original contours and a revegetation program to restore jurisdictional areas disturbed by the proposed project. ***With implementation of Mitigation Measures MM-BIO5 through MM-BIO10, the direct impacts to jurisdictional wetlands and/or riparian habitats as defined by USACE would be less than significant***.

5.2.C Under the current general plan for the undeveloped land within the BSA, average groundwater withdrawal of the unmitigated proposed project is expected to be about 2,350 afy. Estimated groundwater demand from evaporative losses in the mining pit is estimated to average about 250 afy when water is standing in the pit (AECOM 2017). The proposed Project is also expected to impact groundwater-dependent habitat (AECOM 2017). ***With implementation of measure MM-BIO11, impacts to groundwater-dependent riparian habitat or other natural communities due to draw down of the groundwater table are less than significant.***

5.2.E The RPO conditionally allows impacts to wetland habitats (per Section 86.605, which describes exemptions for sand, gravel or mineral extraction projects), if certain mitigation measures are met. One of measures states that "Mature Riparian Woodland may not be destroyed or reduced in size due to sand, gravel, or mineral extraction." A total of 8.45 acres of habitat that meets the RPO's definition of Mature Riparian Woodland was mapped within the project area. The current project was designed to avoid this area. Mining operations would result in an elevational disconnection of the existing low flow channel between upstream mining areas (Phases 1 and 2) and the Mature Riparian Woodland. Low flow runoff channels within the Mature Riparian Woodland would remain and connect with downstream areas (Phases 3 and 4). Due to infrequent overtopping of the El Capitan Reservoir, alluvial soils (highly permeable) and hydrology conditions on-site, above-ground channel flow rarely occurs. Precipitation infiltration (including subsurface runoff from adjacent uplands) and groundwater are the primary hydrology inputs supporting the Mature Riparian Woodland; which generally includes phreatophytic plant species (plants that depend for their water supply upon ground water that lies within reach of their roots) in the midstory and overstory (e.g., willow and cottonwood), and riparian transitional and upland species in the understory. There is currently limited natural recruitment of younger willow and cottonwood age classes. Since precipitation infiltration and groundwater conditions would not be changed in this preserved area, the Mature Riparian Woodland habitat would not be significantly impacted by mining activities.

The proposed mining haul road would traverse north of the Mature Riparian Woodland, outside the 50-foot buffer around the habitat. Measures to protect the Mature Riparian Woodland from mining activities include preserve boundary marking (e.g., flagging or fencing), contractor education, erosion control measures (including fiber rolls and silt fencing), dust control (e.g., through the use of water trucks), and mulching of disturbed surfaces (not including the haul road drive surface).

To provide protection of the functions and values of existing wetlands, the RPO requires an adequate wetland buffer that would protect the environmental and functional habitat values of the wetlands. The buffer must be 50 to 200 feet wide, as measured from the edge of the wetland habitat, based on guidance given by the County (2010a). The mapped Mature Riparian Woodland areas include a buffer of 50 feet from the edge of the tree canopy, which provides a wetland buffer function. This buffer width is consistent with County guidelines, which state "A 50-foot wetland buffer would be appropriate for lower quality RPO wetlands where the wetland has been assessed to have low physical and chemical functions, vegetation is not dominated by hydrophytes, soils are not highly erosive and slopes do not exceed 25%."

In addition, allowable impacts to existing wetland habitats would be mitigated onsite through revegetation of riparian habitats. ***With implementation of Mitigation Measures MM-BIO5, MM-BIO6, and MM-BIO7, and avoidance of Mature Riparian Woodland, impacts to the functions and values of existing wetlands would be less than significant.***

5.3 Cumulative Impact Analysis

At least eleven of the Cumulative Projects identified in Table 14 occur in undeveloped, open space areas. Project-specific information would be required to determine the presence of federally protected wetlands on these sites; if they do occur, potential direct impacts to wetlands may include removal of vegetation, grading, placement of temporary structures, and fill. While the project would impact 0.36 acre of federally protected wetlands, the mitigation identified in Section 8.0 would reduce potentially significant impacts to below a level of significance. Therefore, the proposed project would not contribute considerably to cumulative biological impacts and cumulative impacts to jurisdictional wetlands and waterways would not be considered significant.

5.4 Mitigation Measures and Design Considerations

Implementation of design considerations and measures MM-BIO5 through MM-BIO7 discussed in Section 3.4, and MM-BIO8 and MM-BIO10 discussed in Section 4.4, would be implemented to avoid/minimize potential impacts to jurisdictional wetlands and waterways.

Additionally, impacts to regulated waters, including non-wetland waters of the United States and federal wetlands, would require the following permitting with the regulatory agencies (USACE, CDFW, and RWQCB) that may also require mitigation.

5.5 Conclusions

Potentially significant impacts to non-wetland waters of the United States and federal wetlands would occur as a result of project implementation through direct vegetation removal, as previously discussed in Section 4.5. However, the area would be reclaimed and revegetated with higher quality self-sustaining wetlands and riparian habitats, through implementation of mitigation measures MM-BIO5 through MM-BIO 7, and MM-BIO10, and associated permitting requirements. The implementation of design considerations and mitigation for jurisdictional wetlands and waterways according to County guidelines would compensate for impacts.

6. WILDLIFE MOVEMENT AND NURSERY SITES

The *County of San Diego Guidelines for Determining Significance for Biological Resources* was used to evaluate adverse environmental effects the project may have on wildlife movement and nursery sites, specifically Section 4.4 (County 2010a). Guidelines for the determination of significance and an analysis of project effects for jurisdictional wetlands and waterways is provided below.

6.1 Guidelines for the Determination of Significance

The project would interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

Any of the following conditions would be considered significant:

A. The project would prevent wildlife access to foraging habitat, breeding habitat, water sources, or other areas necessary for their reproduction.

B. The project would substantially interfere with connectivity between blocks of habitat, or would potentially block or substantially interfere with a local or regional wildlife corridor or linkage. For example, if the project proposes roads that cross corridors, fencing that channels wildlife to underpasses located away from the interchanges would be required to provide connectivity. Wildlife underpasses shall have dimensions (length, width, height) suitable for passages by the affected species based on a site-specific analysis movement. Another example is increased traffic on an existing road that would result in significant road-kill or interference with an existing wildlife corridor/linkage.

C. The project would create artificial wildlife corridors that do not follow natural movement patterns. For example, constraining a corridor for mule deer or mountain lion to an area that is not well-vegetated or that runs along the face of a steep slope instead of through the valley or along the ridgeline.

D. The project would increase noise and/or nighttime lighting in a wildlife corridor or linkage to levels proven to affect the behavior of the animals identified in a site-specific analysis of wildlife movement.

E. The project does not maintain an adequate width for an existing wildlife corridor or linkage and/or would further constrain an already narrow corridor through activities such as (but not limited to) reduction of corridor width, removal of available vegetative cover, placement of incompatible uses adjacent to it, and placement of barriers in the movement path. The adequacy of the width shall be based on the biological information for the target species, the quality of habitat within and adjacent to the corridor, topography and adjacent land uses. Where there is limited topographic relief, the corridor should be well-vegetated and adequately buffered from adjacent development. Where there is limited topographic relief, the

corridor should be well-vegetated and adequately buffered from adjacent development. Corridors for bobcats, deer, and other large animals should reach rim-to-rim along drainages.

F. The project does not maintain adequate visual continuity (i.e., long lines-of-site) within wildlife corridors or linkage. For example, development (such as homes or structures) sited along the rim of a corridor could present a visual barrier to wildlife movement. For stepping-stone/archipelago corridors, a project does not maintain visual continuity between habitat patches.

6.2 Analysis of Project Effects

6.2.A The project would temporarily limit wildlife access to actively mined portions the site, which could affect wildlife movement and breeding. However, to reduce the magnitude of the temporary habitat loss, these effects would be limited to a small portion of the project area at any given time, as the project would proceed in four phases during the 12-year mining activity. As each phase is completed, it would be reclaimed (e.g., the landscape would be stabilized and revegetated), before the next phase would be initiated. As the vegetation begins to grow back within reclaimed areas, it would become suitable to provide cover, forage, and breeding opportunities for wildlife. As such, most of the project area would be available for wildlife use at any given time for the duration of the proposed project. In addition, because much of the surrounding land area is rural or undeveloped, wildlife could still move east to west by moving around the active area. ***With implementation of Mitigation Measures MM-BIO1, MM-BIO2, MM-BIO3, and MM-BIO12, direct impacts to wildlife access to foraging habitat, breeding habitat, water sources, or other areas necessary for reproduction would be less than significant.***

6.2.B Portions of the project site where active mining operations are occurring may temporarily interfere with connectivity between blocks of habitat or block local linkages. As discussed previously, to reduce the magnitude of this loss of available movement corridors, these impacts would be limited to a small portion of the project area at any given time as the project would proceed in four phases and most of the project area would be available while each phase is being constructed. The only area where a block in the linkage may take place during the duration of the project is at the primary staging/access area. Use of the primary staging/access area for mining operations, including daily ingress/egress approximately 231 trucks, would create a barrier to wildlife crossing this portion of the project area and may increase incidences of road kill as well as indirect effects on wildlife movement and behavior. However, mining operations would generally occur only during daylight hours, when most wildlife would not be expected to be active (e.g., peak wildlife movement occurs one hour after dawn and one hour prior to dusk). Therefore, an increase in wildlife mortality due to increased truck traffic during daylight hours would not be expected. Additionally, reclamation and revegetation of the mined areas, which would be conducted one

phase at a time, would eventually result in higher quality habitat that can serve as a local or regional wildlife corridor linkage post mining. ***The project would not substantially interfere with local or regional wildlife corridor linkages; therefore, impacts to wildlife movement would be less than significant.***

6.2.C The project would not create artificial wildlife corridors that do not follow natural movement patterns; therefore, the project would not result in associated impacts to wildlife movement.

6.2.D Noise and vibrations from construction and mining machinery would occur during mining operations, soil excavation, vehicle ingress and egress, and brush-removal, which have the potential to indirectly affect wildlife movement in the vicinity of the project area during the day and would be considered significant. Although there would be no mining operations during the night, nighttime lighting would be installed for safety reasons. The lighting would be shielded and designed to minimize glare and reflection; thus, it is not expected significantly interfere with local wildlife behavior. ***With implementation of Mitigation Measures MM-BIO1, MM-BIO2, and MM-BIO3, indirect impacts to wildlife movement would be less than significant.***

6.2.E The project may temporarily affect east-west wildlife movement along the existing river channel during excavation. However, during construction, wildlife would be able to move along the undeveloped upland setback of 150 to 300 feet that would be established along the northern and southern project boundaries. In addition, since excavation would occur in phases, north-west movement would not be impeded. Further, once the excavation has been completed, 99 percent of the mining area would be reclaimed and revegetated, providing higher quality habitat with better vegetative cover for the movement of wildlife. It is not expected these impacts would be significant. ***With implementation of Mitigation Measures MM-BIO1, MM-BIO2, MM-BIO3, and MM-BIO12, direct impacts to wildlife movement due to inadequate corridor/linkage width is less than significant.***

6.2.F Once the project area has been completed and revegetated, there would be no obstructions to line-of-sight as there are no permanent structures that would prevent visual continuity within wildlife corridors or linkages. Therefore, with implementation of Mitigation Measures MM-BIO1, MM-BIO2, MM-BIO3, and MM-BIO10, indirect impacts to wildlife movement due to inadequate visual connectivity is less than significant.

6.3 Cumulative Impact Analysis

At least eleven of the Cumulative Projects identified in Table 14 occur in undeveloped, open space areas that may function as wildlife movement corridors or linkages. However, it was determined that the proposed project would not significantly impact wildlife movement and nursery sites, thus the proposed project would not contribute to cumulative impacts to wildlife movement corridors

and nursery sites. Therefore, the proposed project would not contribute considerably to cumulative biological impacts and cumulative impacts to wildlife movement and nursery sites would not be considered significant.

6.4 Mitigation Measures and Design Considerations

In addition to measures described in Sections 3.4 and 4.4, the following measures specific to avoiding potential impacts to wildlife movement shall be implemented.

MM-BIO12: Wildlife movement. To ensure the area remains accessible to wildlife upon completion of the project, any fencing that is installed around the project area during the reclamation process shall be three strand, post-and-rail, or other type that allows for movement of terrestrial wildlife.

6.5 Conclusions

Potentially significant, temporary project impacts limiting wildlife movement during mining would occur. However, reclamation and revegetation would be implemented after mining activities are completed. As discussed in Section 3.5 and 4.5, mitigation measures and project design considerations including habitat mitigation to increase the amount of habitat to support movement and wildlife nursery sites would compensate for impacts. The implementation of design considerations and mitigation for special-status species (Section 3.4) and riparian habitat and sensitive natural communities (Section 4.4) according to County guidelines would compensate for impacts.

7. LOCAL POLICIES, ORDINANCES, AND ADOPTED PLANS

The *County of San Diego Guidelines for Determining Significance for Biological Resources* was used to evaluate adverse environmental effects the project may have on local policies, ordinances, and adopted plans, specifically Section 4.5 (County 2010a). Guidelines for the determination of significance and an analysis of project effects for local policies, ordinances, and adopted plans, are provided below.

7.1 Guidelines for the Determination of Significance

The project would conflict with one or more local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, and/or would conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Any of the following conditions would be considered significant:

A. For lands outside of the MSCP, the project would impact coastal sage scrub vegetation in excess of the County's 5 percent habitat loss threshold as defined by the *Southern California Coastal Sage Scrub NCCP Process Guidelines*.

B. The project would preclude or prevent the preparation of the subregional NCCP process. For example, the project proposes development within areas that have been identified by the County or resource agencies as critical to future habitat preserves.

C. The project will impact any amount of wetlands or sensitive habitat lands as outlined in the RPO.

D. The project would not minimize and/or mitigate coastal sage scrub habitat loss in accordance with Section 4.3 of the *Southern California Coastal Sage Scrub NCCP Process Guidelines.*

E. The project does not conform to the goals and requirements as outlined in any applicable HCP, Habitat Management Plan, Special Area Management Plan, Watershed Plan, or similar regional planning effort.

F. For lands within the MSCP, the project would not minimize impacts to Biological Resource Core Areas (BRCAs), as defined in the County of San Diego Biological Mitigation Ordinance (BMO).

G. The project would preclude connectivity between areas of high habitat values, as defined by the *Southern California Coastal Sage Scrub NCCP Process Guidelines*.

H. The project does not maintain existing movement corridors and/or habitat linkages as defined by the BMO.

I. The project does not avoid impacts to MSCP narrow endemic species and would impact core populations of narrow endemics.

J. The project would reduce the likelihood of survival and recovery of listed species in the wild.

K. The project would result in the killing of migratory birds or destruction of active migratory bird nests and/or eggs (MBTA).

L. The project would result in the take of eagles, eagle eggs, or any part of an eagle (Bald and Golden Eagle Protection Act).

7.2 Analysis of Project Effects

7.2.A The project area contains 10.38 acres of poor quality coastal sage scrub, of which 3.61 acres, or 35 percent, would be impacted (see Table 16). It should be noted that this significance is addressed for the current project status as not being within the MSCP. However as addressed in Section 1.5.3, a BLA (or other process approved by the state and federal wildlife agencies) is being proposed for this project and under the MSCP, these impacts would be significant. The project proposes to restore 50.49 acres of coastal sage scrub – a significant increase beyond the minimum 2:1 mitigation ratio, which requires a minimum of 7.22 acres of mitigation for 3.61 acres of impact. ***With implementation of MM-BIO6 through MM-BIO8, the direct loss of coastal sage scrub would be consistent with the Southern California Coastal Sage Scrub NCCP Process Guidelines.***

7.2.B The project is not currently covered by a subregional NCCP plan, and would therefore, not result in development within an area identified as critical to future habitat preserves pursuant to an NCCP. However, the project is currently being proposed in a BLA request (or other process determined by the state and federal wildlife agencies) to be added to the MSCP. While the project area is dominated by habitats generally supporting non-native vegetation, the proposed BLA provides an opportunity to contribute to habitat and covered species goals of the County Subarea Plan. In addition, the San Diego River and associated alluvial sand habitat within the BLA area represent areas of high biological value, providing habitat for several sensitive species and, in the case of the San Diego River corridor, representing a vital habitat linkage in the County. Also, the proposed BLA would improve upon the existing configuration of the County Subarea Plan's PAMA by filling a large portion of an existing "doughnut hole" within the PAMA and increasing connectivity among existing preserve areas. Overall, based on the analysis herein, the proposed BLA would have a net benefit to the MSCP Subregional Plan and County Subarea Plan. ***Therefore, the project would not preclude or prevent the preparation of the subregional NCCP process.***

7.2.C As discussed in Section 1.5.3, the project includes design features to avoid/minimize impacts to biological resources. With implementation of Mitigation Measures MM-BIO8, MM-BIO9, and MM-BIO10, would meet the exemption requirements of the RPO. Thus, no impacts to sensitive habitat lands outlined in the RPO are expected. In addition, a total of nine oak trees occur within the

proposed mining area. Three of these oak trees would be preserved in place, while six would be removed. To mitigate for projected impacts to six mature oak trees, oaks would be planted and established as part of the project revegetation program (ESA 2018c). Impacts to oak trees would not be considered significant.

The project would result in direct impacts to 0.36 acre of non-wetland waters of the United States, including 0.35 acre of temporary impact and 0.01 acre of permanent impact, through removal of vegetation, grading, placement of temporary structures (including a drop structure for erosion control, portable processing plant, temporary power lines, weigh scales, and modular scale house), excavation to a maximum of 35 feet below the current surface, and placement of fill to create a bench around the mined pit. In permitting projects, the USACE seeks to meet the goal of no net loss of functions and values of wetlands and would require at a minimum the restoration of disturbed areas to original contours and a revegetation program to restore jurisdictional areas disturbed by the proposed project. With implementation of Mitigation Measures MM-BIO5 through MM-BIO10, the direct impacts to jurisdictional wetlands and/or riparian habitats as defined by USACE would be less than significant. ***Thus, the project impacts any amount of wetlands or sensitive habitat lands as outlined in the RPO would be less than significant.***

7.2.D As noted in Section 1.4.2, coastal sage scrub habitat quality on the site is marginal as many of the patches are highly disturbed and support a high abundance of non-native grasses and forbs. With implementation of the Revegetation Plan, mitigation and enhancement for impacted habitat in addition to reclamation will increase overall habitat value for the project area and contribute to connectivity of habitats with a higher value. The project proposes to restore 50.49 acres of coastal sage scrub – a significant increase beyond the minimum 2:1 mitigation ratio, which requires a minimum of 7.22 acres of mitigation for 3.61 acres of impact. ***Therefore, the project would mitigate coastal sage scrub habitat loss in accordance with Section 4.3 of the Southern California Coastal Sage Scrub NCCP Process Guidelines.***

7.2.E The project is not currently covered by an HCP, Habitat Management Plan, or Special Area Management Plan. As addressed in Section 1.5.3, a BLA is being proposed for this project and in order for the BLA (or other process determined by the state and federal wildlife agencies) to be approved, this project would be required to conform to the goals and requirements outlined in the MSCP. ***Therefore, the project would not conflict with the goals and requirements as outlined in any applicable HCP, Habitat Management Plan, Special Area Management Plan, Watershed Plan, or similar regional planning effort.***

7.2.F The project area occurs within Lake Jennings/Wildcat Canyon Biological Resource Core Area (County of San Diego 1997). As discussed in Section 6.2, although impacts to movement and linkages within this Biological Resource Core Area would occur, reclamation and revegetation of the mined areas would

eventually result in higher quality habitat that can serve as a local or regional wildlife corridor linkage post mining. During project construction, noise levels would only be increased during daytime hours when most wildlife would not be expected to be active (e.g., peak wildlife movement occurs one hour after dawn and one hour prior to dusk) and temporary nighttime lighting that would be installed at the facility for safety purposes would be shielded away from adjacent native habitats, and thus is not anticipated to affect breeding or foraging behavior of wildlife moving through the area. Post project implementation, habitat linkages and existing movement corridors would be maintained, and vegetative cover would be increased, thus increasing the overall width of the linkage and habitat quality available to wildlife within the project area. Visual continuity would be maintained. ***Thus, impact to BRCAs would be minimized as defined in the County of San Diego Biological Mitigation Ordinance (BMO).***

7.2.G As addressed in Section 1.5.3, a BLA is being proposed for this project and in order for the BLA (or other process determined by the state and federal wildlife agencies) to be approved, this project would be required to conform to the goals and requirements outlined in the MSCP and would be required to maintain movement corridors and habitat linkages as defined in the County BMO. At this time, there are no known habitat corridor or linkage studies demonstrating connectivity between off-site regions of high-quality coastal sage scrub, but this project would not preclude connectivity between areas of high value that contain coastal sage scrub. As noted in Section 1.4.2, coastal sage scrub habitat quality on the site is marginal as many of the patches are highly disturbed and support a high abundance of non-native grasses and forbs. With implementation of the Revegetation Plan, mitigation and enhancement for impacted habitat in addition to reclamation will increase overall habitat value for the project area and contribute to connectivity of habitats with a higher value. ***Therefore, the project would preclude connectivity between areas of high habitat values, as defined by the Southern California Coastal Sage Scrub NCCP Process Guidelines.***

7.2.H As discussed in Section 6.2, portions of the project site where active mining operations are occurring may temporarily interfere with connectivity between existing movement corridors and/or habitat linkages as defined by the BMO. As discussed previously, to reduce the magnitude of this loss of available movement corridors, these impacts would be limited to a small portion of the project area at any given time as the project would proceed in four phases and most of the project area would be available while each phase is being constructed. The only area where a block in the linkage may take place during the duration of the project is at the primary staging/access area. Use of the primary staging/access area for mining operations, including daily ingress/egress approximately 231 trucks, would create a barrier to wildlife crossing this portion of the project area and may increase incidences of road kill as well as indirect effects on wildlife movement and behavior. However, mining operations would generally occur only during daylight hours, when most wildlife would not be expected to be active (e.g., peak wildlife movement occurs one hour after dawn

and one hour prior to dusk). Therefore, an increase in wildlife mortality due to increased truck traffic during daylight hours would not be expected. Additionally, reclamation and revegetation of the mined areas, which would be conducted one phase at a time, would eventually result in higher quality habitat that can serve as a local or regional wildlife corridor linkage post mining. ***Thus, the project would maintain existing movement corridors and/or habitat linkages as defined by the BMO.***

7.2.I One narrow endemic species, Palmer's goldenbush, does occur within the project area. There would be no direct impacts to this species due to its location within Mature Riparian Woodland, an impact neutral area that would not be subject to any construction or mining activities. Potential indirect impacts to this species from fugitive dust during mining activity would be avoided through application of AggreBind® and regular use of a water truck along the haul road. ***Therefore, the project would avoid impacts to MSCP narrow endemic species and would not impact core populations of narrow endemics.***

7.2.J The project could affect federally listed least Bell's vireo and California gnatcatcher. Mitigation measures would be implemented to avoid grading or vegetation removal during the breeding season for nesting birds, which would cover the breeding season for these species. Also, the current condition of the habitat is poor (high cover of invasive species, low native species diversity, etc.). Mitigation for loss of suitable habitat for these species would result in an overall increase in habit quality and acreage of suitable habitat. ***Thus, the project is not expected to reduce the likelihood of survival and recovery of these species in the wild, because with implementation of MM-BIO1 through MM-BIO3, and MM-BIO6 through MM-BIO8, impacts during the breeding season would be minimized and restored habitat would be more extensive and higher quality than current conditions (see Section 3.4).***

7.2.K Implementation of Mitigation Measures MM-BIO1, MM-BIO2, MM-BIO3, and MM-BIO7, would avoid the killing of migratory birds or destruction of active migratory bird nests and/or eggs. ***Therefore, the project is consistent with the Migratory Bird Treaty Act.***

7.2.L The project would not result in the take of eagles, eagle eggs, or any part of an eagle. ***Therefore, the project is consistent with the Bald and Golden Eagle Protection Act.***

7.3 Cumulative Impact Analysis

Projects considered within the vicinity of the proposed project would contribute to cumulative impacts to sensitive plants, wildlife, and habitats. Based on a Google Earth analysis of an overlay of MSCP layers onto the Cumulative Project sites identified in Table 14, fourteen of the total 24 projects occur within the County's MSCP Plan boundaries and have/would comply with local policies and ordinances such as the County guidelines (County of San Diego 2008) and

MSCP/Biological Mitigation Ordinance, and most would comply with the RPO. These projects have/would incorporate avoidance, minimization, and mitigation measures following guidelines provided in these local policies. Of the remaining projects (Cumulative Projects 15 through 24), eight occur within the City of Santee. Of the remaining two, one occurs within the City of San Diego and the other occurs within the City of El Cajon. These projects would have to comply with the local policies, ordinances, and adopted conservation plans of these jurisdictions.

The proposed project similarly would comply with the County local policies, and ordinances, as is being processed for an MUP permit. Additionally, at this time the proposed project site is not within the MSCP but is currently being proposed to be incorporated into the MSCP via a BLA (or other process determined by the state and federal wildlife agencies) which requires full compliance with the MSCP. This project is not expected to cumulative contribute to impacts of non-compliance with local policies, ordinances, and adopted conservation plans.

7.4 Mitigation Measures and Design Considerations

The project does not conflict with any local policies or ordinances protecting biological resources; thus, no mitigation would be required for impacts associated within noncompliance with local policies or ordinances.

7.5 Conclusions

The project complies with local policies, ordinances, and plans and would implement mitigation in accordance with these policies/ordinances/plans. Potential project impacts to coastal sage scrub and other sensitive habitats, as discussed in Sections 3.2, 4.2, 5.2, and 6.2, would be considered significant. As discussed in Sections 3.5, 4.5, 5.5, and 6.5, mitigation measures and project design considerations would compensate for impacts according to the goals and requirements of County guidelines (County of San Diego 2010a), by mitigating impacts to sensitive species and habitats below a level of significance.

8. SUMMARY OF PROJECT IMPACTS AND MITIGATION

A summary of acreages associated with project impacts and proposed mitigation is provided in **Table 23** below. In addition, **Table 23** includes the 0.18 acre of impacts to tamarisk scrub, a sensitive vegetation community, from the 2005 golf course grading (outside the proposed mine impact area) and mitigation which has been incorporated in this Revegetation Plan. Mitigation is proposed for impacts to southern cottonwood-willow riparian forest, southern willow scrub, non-vegetated channel, and Diegan coastal sage scrub. **Table 24** below provides specific detail on mitigation that would be implemented. Note that the restoration plan was designed to provide high quality habitat that is compatible with the post-project topography and hydrology. As such, some of the temporarily impacted habitat would be mitigated out-of-kind (i.e., with a different, but higher quality habitat type). This revegetation would result in a net increase in high quality native habitat acreage onsite and improve overall native habitat quality and functions. In addition, all of the habitat mitigation would be protected in perpetuity with a Biological Open Space Easement or similar instrument approved by the resource agencies, and managed in perpetuity. Post-restoration long-term management would be conducted in accordance with the Long-Term Management Plan (to be prepared and approved by the County and resource agencies), and funding for the long-term management would be provided by the applicant in the form of a non-wasting endowment held by an appropriate third party financial institution.

TABLE 23. TOTAL PROJECT IMPACTS TO VEGETATION COMMUNITIES AND MITIGATION

Habitat Type / Vegetation Community	Mining Phases 1-4		Trails Outside Mining Phases (Perm)	Fuel Mod Zones Outside Mining Phases (Perm)	Total Impacts	Mitigation Ratio[2]	Habitat Mitigation[3]	Revegetation[3]
	Perm[1]	Temp						
Riparian and Wetlands								
Southern Cottonwood-willow Riparian Forest	0.00	0.00	0.00	0.00	0.00	3:1	0.00	12.43
Southern Willow Scrub	0.00	0.00	0.02	0.10	0.12	3:1	0.36	46.78
Tamarisk Scrub	0.94	38.80	0.58	1.49	41.81	3:1	125.43[4]	0.00
Non-Vegetated Channel	0.01	0.35	0.00	0.00	0.36	1:1	0.36[5]	8.55
Subtotal	*0.95*	*39.15*	*0.60*	*1.59*	*42.29*		*126.15*	*67.76*
Uplands								
Diegan Coastal Sage Scrub	0.97	2.06	0.27	0.32	3.61	2:1	7.22	44.72
Non-Native Grassland	4.75	74.44	2.90	4.47	86.55	0.5:1	43.27[6]	0.00
Eucalyptus Woodland	0.91	0.08	0.04	0.27	1.30	N/A	0.00	0.00
Subtotal	*6.63*	*76.58*	*3.21*	*5.06*	*91.46*		*50.49*	*44.72*
Other Cover Types								
Disturbed Habitat	9.40	110.68	3.30	2.64	126.04	N/A	0.00	0.00
Developed	0.00	0.00	0.01	2.54	2.55	N/A	0.00	0.00
Subtotal	*9.40*	110.68	*3.31*	*5.18*	*128.59*		*0.00*	*0.00*
Mine Project Totals[7]	**16.99**	**226.40**	**7.12**	**11.83**	**262.34**		**176.64**	**112.48**
2005 Golf Course Totals					**0.18[8]**	**3:1[8]**	**0.54[8]**	**(-0.54) [8]**
TOTAL					**262.52**		**177.18**	**111.94 to**

[1] Permanent impacts within the mining phases are from the drop structure and trails.

[2] Habitat mitigation ratios (Outside of approved MSCP Plan areas) are provided from the County's Guidelines for Determining Significance for Biological Resources (September 2010).

[3] A combination of habitat mitigation and reclamation will occur within the temporary impact acreage (226.40 acres).

[4] Tamarisk Scrub will be mitigated at a 3:1 ratio by a combination of restoration of native Riparian Forest and Riparian Scrub habitats within post-mining areas (62.71 acres; 1.5:1), and restoration of riparian and transitional habitat outside of mining limits but within the project site (62.72 acres, rounded up to 64.16 acres to address all riparian areas on-site; 1.5:1) via exotic plant removal and activities to promote native plant revegetation.

[5] Non-Vegetated Channel will be mitigated by restoration of Vegetated Channel since it is expected the post-mining grades and conditions will support native plants in the channel.

[6] Non-Native Grassland will be mitigated by restoration of Diegan Coastal Sage Scrub.

[7] Due to rounding, totals may differ slightly from numbers in column.

[8] Grading in 2005 from the previously approved golf course project that was halted temporarily impacted 0.18 acre of disturbed riparian scrub (tamarisk scrub). The planned golf course cart path crossing of the river associated with this grading was not ultimately constructed. This is the only impact to a sensitive vegetation community outside of the planned mine project footprint that requires mitigation. This riparian habitat shall be mitigated at a 3:1 replacement ratio in accordance with the County's Guidelines for Determining Significance for Biological Resources (September 2010) by conducting 0.54 acre of southern willow scrub restoration in mining Phase 1. The golf course mitigation will occur where mine project riparian scrub reclamation would have occurred, therefore, overall planned reclamation will be reduced by 0.54 acre and riparian habitat reclamation will total 46.24 acres instead of 46.78 acres.

TABLE 24. SUMMARY OF MITIGATION MEASURES

Mitigation Measure	Proposed Mitigation	Level of Significance after Mitigation	Guideline Number(s)
MM-BIO1	**Raptors and nesting birds covered by MBTA.** 1) To avoid and minimize impacts to nesting coastal California gnatcatchers, least Bell's vireo, raptors and other birds protected by the Migratory Bird Treaty Act, vegetation removal and grading shall occur outside of the nesting bird season (February 1 through August 31). Note that no gravel crushing is required to process the materials extracted from the site; therefore, noise levels would be lower than those typically associated with mining activities. If the breeding season cannot be avoided, the follow measures shall be implemented: a. During the avian breeding season, a qualified Project Biologist shall conduct a preconstruction avian nesting survey no more than 72 hours prior to vegetation disturbance or site clearing. Surveys need not be conducted for the entire project area at one time; they shall be phased so that surveys occur shortly before a portion of the site is disturbed. If construction begins in the non-breeding season and proceed continuously into the breeding season, no surveys shall be required. However, if there is a break of 3-5 days or more in construction and mining activities during the breeding season, a new nesting bird survey shall be conducted before these activities begin again. b. The preconstruction survey shall cover all suitable bird nesting habitat on and within 300 feet, and all suitable raptor nesting habitat on and within 500 feet, of areas anticipated to be impacted in the near term. If an active nest is found during the preconstruction avian nesting survey, a qualified Project Biologist shall implement a 300-foot minimum avoidance buffer for coastal California gnatcatcher, least Bell's vireo, and other passerine birds, and a 500-foot minimum avoidance buffer for all raptor species. The nest site area shall not be disturbed until the nest becomes inactive or the young have fledged. 2) A preconstruction survey for burrowing owl will be conducted in accordance with Section 3.4.1 "Pre-grading Survey" of the *Strategy for Mitigating Impacts to Burrowing Owls in the Unincorporated County* (Burrowing Owl Strategy; County of San Diego 2010b). If burrowing owls are detected during the preconstruction survey within 300-feet of proposed grading, a translocation plan will be developed and finalized in coordination with the County and the wildlife agencies (USFWS and CDFW). Grading will not occur within 300-feet of an active owl burrow until the young have fledged and are no longer dependent on the burrow. Grading closer than 300 feet may occur within written concurrence from the wildlife agencies and the County Mitigation Monitoring Coordinator; the distance will depend on the burrow's location in relation to the site's topography and other physical and biological characteristics. In addition, mitigation for impacts to habitat would be required as outlined in the Burrowing Owl Strategy.	Below Significance	3.1A through 3.1C, 3.1L

Mitigation Measure	Proposed Mitigation	Level of Significance after Mitigation	Guideline Number(s)
MM-BIO2	**Least Bell's vireo.** In accordance with the project's Revegetation Plan, direct impacts to suitable habitat for the state and federally endangered least Bell's vireo shall be mitigated at a minimum of 3:1 ratio through the restoration of southern willow scrub habitat.	Below Significance	3.1A and 3.1B, 4.1A
MM-BIO3	**Coastal California gnatcatcher.** In accordance with the project's Revegetation Plan, direct impacts to California gnatcatcher-occupied habitat shall be mitigated at a minimum 2:1 ratio through restoration. Restoration may include a combination of in-kind restoration (i.e., coastal sage scrub habitat restored to coastal sage scrub habitat) and out-of-kind restoration (i.e., non-native grassland habitat restored to coastal sage scrub habitat).	Below Significance	3.1A and 3.1B, 4.1A
MM-BIO4	1) A focused herpetofaunal mitigation plan shall be developed and implemented by a qualified biologist to address potential direct and indirect impacts to glossy snake and other amphibian and reptile state Species of Special Concern. The mitigation plan shall include the following measures to be implemented: a. Trapping and collection of herpetofaunal species shall be conducted prior to any site preparation and mining activities (Appendix J). Once the herpetofaunal species are collected, they shall be relocated and set free outside of mining boundaries in the eastern portion of the project site, east of Dairy Road. They shall be marked to track the success of this action over time; the mitigation plan would include detail on the specific methodology of the marking study. b. Exclusionary fencing shall be installed along the project disturbance footprint to preclude special-status herpetofaunal species from moving back into the site. The focused mitigation plan shall include specifications for installing, monitoring, and repairing the fencing to maintain its function and integrity throughout the duration of construction and mining activities. c. Preconstruction surveys for herpetofaunal shall be conducted by a qualified biologist no more than 10 days prior to initiation of excavation activities associated with site preparation and sand mining activities in those specified areas of the project site. Surveys may not need to be conducted for the entire of the project site at once; they may be phased so that surveys occur in portions of the project before excavation occurs (Appendix J). Overburden excavated and collected during site preparation and mining activities shall be moved (to the maximum extent feasible) to the eastern portion of the site, outside of the mining limits, to improve the habitat for herpetofaunal species at the release location for the project site, particularly as fill into some of the previously excavated areas in the eastern portion of the site where limited species observations have been documented (Appendix J).		

Mitigation Measure	Proposed Mitigation	Level of Significance after Mitigation	Guideline Number(s)
MM-BIO5	**Mining Best Management Practices (BMPs) and oversight.** A qualified Project Biologist shall be responsible for monitoring the limits of construction and mining activity, mitigation measures, design considerations, and project conditions during all phases of the project. The Project Biologist shall conduct the following: • Attend the preconstruction meeting with the contractor and other key construction personnel prior to clearing, grubbing, or grading. • Conduct worker training prior to all phases of construction; this shall include meetings with the contractor and other key construction personnel to explain the limits of disturbance, which shall be delineated with temporary construction fencing with clear signage stating the fenced area is a sensitive habitat area and to keep out, and the importance of restricting work to designated areas prior to clearing, grubbing, or grading. Discussions shall include procedures for minimizing harm to or harassment of wildlife encountered during construction and mining activities prior to clearing, grubbing, and/or grading. • Conduct pre-construction clearance surveys to detect the presence of nesting birds, burrowing owls, and other sensitive terrestrial wildlife species, such as coast horned lizard, glossy snake, orange-throated whiptail, and two-striped garter snake. The Project Biologist shall use their discretion in ensuring impacts to any sensitive wildlife observed during pre-construction clearance surveys are avoided (e.g., avoidance buffers, relocation from harm's way, etc.). • Be present onsite to monitor initial vegetation clearing, grubbing, and grading to ensure that mitigation measures are being appropriately followed, including restricting activity to delineated construction areas and avoiding impacts to breeding birds. • Periodically monitor the limits of construction and mining operations as needed throughout the life of the project to avoid unintended direct and indirect impacts by ensuring that: • Confirm construction and mining activity boundaries are marked (e.g., delineated with temporary fencing and sensitive habitat signage) and not breached; • Monitor Mature Riparian Woodland areas to confirm they are protected from incursion with installation of temporary construction fencing and sensitive habitat signage. Also confirm that the slopes at the edge of protected Mature Riparian Woodland habitat are not eroding, and that appropriate erosion control measures, such as fiber rolls, blankets, gravel bags, etc., are installed; • Water roads and grading areas regularly to minimize dust; • Implement pertinent requirements that address erosion and runoff, including the federal Clean Water Act, National Pollution Discharge Elimination System (NPDES), and Stormwater Pollution Prevention Plan (SWPPP); and • Prepare a post-construction monitoring report for submittal to the County of San Diego. The report shall substantiate the supervision of the clearing, grubbing, and/or grading activities, and shall provide a final assessment of biological impacts.	Below Significance	3.1A through 3.1C

Mitigation Measure	Proposed Mitigation	Level of Significance after Mitigation	Guideline Number(s)
MM-BIO6	**Reclamation Plan implementation oversight.** A qualified Restoration Ecologist shall be designated to oversee implementation of the Reclamation Plan (as it pertains to site preparation, erosion control, hydro seeding, and soil stabilization). The Restoration Ecologist shall have at least 5 years of experience monitoring successful native habitat restoration projects in Southern California, including all habitat types that shall be restored onsite. In addition, the Restoration Ecologist shall: • Attend all relevant construction meetings. • Have the authority to redirect construction and maintenance crews in keeping with the goals, objectives, and performance standards of the final Reclamation Plan. • Approve the seed palette used for hydro seeding. • Regularly monitor reclamation activities to determine if and how remedial actions should be conducted, if needed, for observed issues such as sedimentation and erosion.	Below Significance	3.1A through 3.1C, 3.1F through 3.1G, 3.1H, 4.1A,4.1B
MM-BIO7	**Revegetation Plan implementation and oversight.** A Revegetation Plan shall be implemented to guide and ensure successful revegetation/creation of self-sustaining riparian and upland habitats, which would serve as mitigation for impacts to native vegetation communities. In contrast to the Reclamation Plan, which focuses on landform and soil stabilization, the focus of the Revegetation Plan is to restore the ecological functions and values of the impacted habitats. The Revegetation Plan shall include: • Sufficient restoration or creation of habitat to fulfill the mitigation obligations described in MM-BIO8 (Section 4.4). • The planting plan shall be designed to ensure that the appropriate restored/created habitat is suitable for the coastal California gnatcatcher and least Bell's vireo, and allows for local and regional wildlife movement (e.g., appropriate width and vegetative cover). • The planting design shall also include adequate wetland buffers (100 to 200 feet wide, measured from the edge of wetland habitat). • A native planting palette appropriate for each vegetation type being mitigated and appropriate to local conditions. • Irrigation for upland and wetland habitat types for the first 2 to 3 years. Irrigation should be removed during the final 2 years of restoration to ensure that the habitat is self-sustaining. • A 120-day plant establishment period plus five-year restoration maintenance period (or until success criteria are met). • Qualitative and quantitative monitoring methods to ensure that success criteria are met. • Five-year maintenance methods. • Success criteria for establishment period and years 1–5. • Responsibilities and qualifications of restoration and maintenance contractor(s) and restoration ecologist. • Description of annual reporting.	Below Significance	3.1A through 3.1C, 3.1F through 3.1G, 3.1H, 4.1A, 4.1B

Mitigation Measure	Proposed Mitigation	Level of Significance after Mitigation	Guideline Number(s)
MM-BIO8	**Sensitive vegetation communities.** • In order to be consistent with the Southern California Coastal Sage Scrub NCCP guidelines, direct impacts to more than 5 percent of the coastal sage scrub onsite (i.e., impacts to more than 0.52 acre) shall be avoided. Avoidance shall be targeted at those patches of coastal sage scrub in which a California gnatcatcher was observed during the 2015 surveys. • Direct impacts to sensitive vegetation communities shall be mitigated through implementation of the Reclamation Plan and Revegetation Plan. The Revegetation Plan shall be designed to provide high quality habitat that is compatible with the post-project topography and hydrology. As such, some of the temporarily impacted habitat shall be mitigated out-of-kind (i.e., with a different, but higher quality habitat type), resulting in a net gain of native habitat acreage onsite and improve overall native habitat quality and functions. • Revegetation mitigation will occur in areas currently supporting non-vegetated channel (will be revegetated as vegetated channel), southern willow scrub, tamarisk scrub (will be revegetated as native cottonwood-willow riparian forest and riparian scrub), coastal sage scrub, and non-native grassland (will be revegetated as coastal sage scrub) (**Table 16** and **Figure 7**). Based on mitigation replacement ratios and projected impacts for the mine project, a total of 126.15 acres of riparian/wetland habitat is required to be revegetated (restored) or enhanced (plus 0.54 acre of riparian habitat restored for the previous golf course project for a total 126.69 acres); and 50.49 acres of upland habitat is required to be revegetated (restored) to mitigate for temporary and permanent impacts. Based on input from the County, the proposed mitigation for impacts to tamarisk scrub includes restoration of native riparian habitat within post-mining areas and enhancement and restoration of riparian and transitional habitat outside of mining limits. This approach would improve habitat more comprehensively within the project site and improve the functions and sustainability of habitat restoration mitigation areas onsite. Riparian/wetland habitat restoration will consist of high quality vegetated channel (0.36 acre) planted within the channel, cottonwood-willow and transitional species dominated riparian forest (46.43 acres) planted along the edges of the channel for a width of up to 300 feet, and riparian scrub habitat dominated by mule fat along with scattered willows and transitional species (17.18 acres [16.64 acres for the mine project + 0.54 acre for the previous golf course project]) within the excavated mining pit (basin) and lower slopes. The planted riparian forest mitigation (i.e., 46.43 acres) and the majority of riparian scrub mitigation (i.e.,16.28 acres for the mine project + 0.54 acre for the golf course project) will provide mitigation within post-mining areas for impacts to tamarisk scrub habitat. An additional 0.54 acre of southern willow scrub mitigation will occur as mitigation for the previously approved golf course project impact in 2005 to 0.18 acre of disturbed riparian (tamarisk scrub). As previously discussed, the required balance of mitigation for tamarisk scrub for the mine project (i.e., 62.72 acres) will be accomplished by enhancing and restoring 64.16 acres of riparian and transitional habitat that include invasive exotic species within the project site outside of mining limits. Because all remaining riparian habitats onsite are included in the planned enhancement along with some adjacent transitional habitats (i.e., to establish contiguous enhancement area), the planned enhancement area has been rounded up to 64.16 acres (relative to the 62.72- acre requirement). The enhancement of 64.16 acres of riparian and transitional habitat will include initial removal of target exotics, follow-up monitoring and maintenance treatments annually for five years	Below Significance	3.1F through 3.1G, 4.1A, 4.1B

Mitigation Measure	Proposed Mitigation	Level of Significance after Mitigation	Guideline Number(s)
	as needed, and measures to promote native plant revegetation including limited seeding and scattered planting. Removal of exotic species will be conducted with hand-tools (shovels, chain-saws, etc.) along with follow-up application of herbicide to kill exotic plant specimens. No vehicular equipment will be driven into the river bed. Maintenance personnel will walk into the enhancement areas, cut exotic vegetation, and carry it in pieces to nearby vehicles (e.g., pickup trucks) or dumpsters located along project access routes and/or disturbed upland staging areas. Exotic plant biomass will then be hauled to an approved green waste facility. Exotic vegetation will be either dug out with shovels (if specimens are small enough and the root system can be effectively removed), or cut within one foot of the ground surface. Cut stems/stumps will then be treated with herbicide. Based on input from County staff during an August 16, 2017 site visit, the removal of large exotics such as eucalyptus trees which provide screening for adjacent residences on the south side of the river should be removed in a phased approach so that sufficient screening with vegetation is provided (e.g., with existing vegetation and new native plant growth) during the enhancement and restoration program. The existing riparian and transitional habitat areas that will be enhanced lack typical riparian habitat hydrology and are similar to alluvial fan scrub habitat (except for the extensive presence of tamarisk and other exotic species) which includes a mixture of riparian and transitional and upland species. Within this setting, management of natural recruitment is considered the most appropriate method to establish native habitat over time. However, measures will be conducted as part of the enhancement effort to promote native plant establishment including (1) limited seeding (utilizing some species in the project seed mixes and collection and spread of seed collected onsite during maintenance activities), (2) scattered low-density planting (container plants and cuttings) during wet conditions to help establish small patches/"islands" of native plants (which can help promote more natural recruitment), (3) distribution of mulch (not including non-native seed or propagules) to provide improved microhabitat conditions for native plant germination and establishment, and (4) regular periodic follow-up exotic plant control to reduce competition with native plants. Because of the existing grades, depth to groundwater, and sandy alluvial soils, implementation of a planting program and temporary irrigation system are not considered appropriate or a worthwhile use of resources in the proposed enhancement areas. Relying on natural recruitment and treating exotic species is considered the best approach to establish native vegetation adapted to the site that will be self-sustaining over time. Enhancement mitigation activities are scheduled to start at the beginning of the project concurrent with the initiation of Phase 1 activities. The enhancement areas after the initial five-year maintenance and monitoring period will be managed in perpetuity, consistent with the other project mitigation areas. As previously discussed, the remainder of the temporary impact area within the mining phases not designated for habitat mitigation will be subject to reclamation. Based on planned habitat mitigation acreage for the mine project, a total of 112.48 acres of reclamation would be conducted. However, because 0.54 acre of southern willow scrub restoration mitigation required for previous golf course impacts is planned within post-mining Phase 1 area, total reclamation within the mining temporary impact area has been lessened from 112.48 acres to 111.94 acres.		

Mitigation Measure	Proposed Mitigation	Level of Significance after Mitigation	Guideline Number(s)
	• Upland habitat revegetation shall consist of high quality coastal sage scrub habitat. The upland habitat mitigation need is mostly due to projected impacts to non-native grassland habitat, which is dominated by non-native grasses and forbs, providing only low quality habitat. The restored coastal sage scrub will provide an important foraging and breeding resource for the coastal California gnatcatcher, which is known to be onsite. Providing high quality coastal sage scrub in this area is highly beneficial, as all of the habitat surrounding the project area is degraded due to past wildfires. The excess revegetation of riparian habitat, which is of higher value than non-native grassland, will address the remaining upland mitigation need. A summary of anticipated impacts, mitigation ratios, required mitigation, and actual restoration are provided in Table 16. Because the project area is outside of the Multiple Species Conservation Program (MSCP), mitigation ratios shall be based on Table 5 of the County of San Diego Guidelines for Determining Significance for areas outside of the MSCP (County 2010). • Mitigation (i.e., revegetation and reclamation) shall be implemented on a phase-by-phase basis. Project site revegetation/restoration activities will be implemented in a phased approach moving from east to west across the project site as mining is completed. The mined area shall be progressively restored and reclaimed on disturbed areas previously mined prior to initiation of mining on the next phase. Restoration and reclamation is an ongoing process that commences when mining operations have ceased within a given area (phase) and continues until all mining related disturbance is reclaimed and all equipment involved in these operations have been removed before moving onto the next phase. **Tables 17-21** show the anticipated breakdown of habitat mitigation and reclamation acres by phase. An overall restoration plan shall be approved by the County prior to the initiation of Phase 1 mining operations, including invasive species removal outside of the mining limits. Individual 40-scale restoration plans will be prepared for each phase and approved prior to the initiation of mining for the phase. Once Phase 1 mining has been completed and prior to the second half of Phase 2 mining operations being initiated, Phase 1 revegetation/restoration shall be implemented including, but not limited to, final restoration grading/slope stabilization, salvaged top soil placement and amendment, container planting, hydro-seed application/imprinting, temporary irrigation, erosion control, fencing and signage. Partial grading/mining of the subsequent mining phase is required to create a safe means of access for equipment and personnel to the previously mined phase to facilitate initiation the above outlined restoration activities. Once the revegetation/restoration installation has been completed for a particular phase, it will be reviewed by the County for conformance with the approved Revegetation Plan and will trigger beginning of the monitoring and reporting period. Restoration/revegetation activities may be further broken down into sub-phases at the discretion of the mine operator. Ongoing maintenance is required to manage invasive species and trespass and is not part of the revegetation/ restoration activities that must be completed prior to moving on to the next phase of mining, as it is an ongoing activity. Revegetation/restoration bonding is required by phase prior to phase mining and will be released upon the successful completion of the phase restoration/revegetation installation, as determined by the County. To minimize temporal loss of habitat values, mitigation for the proposed mine project for impacts outside of the mining footprint (i.e., fuel modification zones and some trail segments) and mitigation for the previous golf course project impact will be mitigated within the post-mine Phase 1 area. In addition, proposed enhancement		

Mitigation Measure	Proposed Mitigation	Level of Significance after Mitigation	Guideline Number(s)
	to 64.14 acres of riparian and transitional habitats (as part of mitigation for impacts to tamarisk scrub) will be initiated at the start the project and Phase 1 mining activities in areas outside the mining footprint. • theTemporary fencing shall be installed as necessary during all mining, reclamation, and restoration activities to protect sensitive habitat, including Mature Riparian Woodland, from unauthorized incursion into areas outside the limits of disturbance. In addition, clear signage shall be installed, stating the fenced area is a sensitive habitat area and to keep out. Permanent fencing shall be installed around the perimeter of protected open space upon completion of the project; however, fencing details (e.g., the type and exact location of fencing) are yet to be determined. • To protect the habitat mitigation area in the long term, the entire mitigation site shall be protected in perpetuity by placing a Biological Open Space Easement or other protective instrument over the property (Figure 17). In addition, this easement area shall be managed in perpetuity according to the long-term management plan prepared for this project and approved by resource agencies; long-term management shall be funded by a non-wasting endowment established by the project applicant on a phase-by-phase basis.		
MM-BIO9	**Mature riparian woodland, as defined by the County RPO.** Mature Riparian Woodland and a 50-foot buffer beyond the canopy of trees shall be avoided during preconstruction clearing, grubbing, and/or grading, and during mining activities. This shall be accomplished by having a qualified Project Biologist onsite prior to the start of the project to delineate and protect the Mature Riparian Woodland with temporary construction fencing to avoid incursion during preconstruction clearing, grubbing, and/or grading, and during mining activities. In addition, to control fugitive dust from the ingress and egress of trucks along the haul route, which is located at the norther perimeter of the Mature Riparian Woodland, water trucks shall be used along the haul route during all clearing, grubbing, grading, and mining activities.	Below Significance	4.1D, 4.1E, 7.1C
MM-BIO10	**Jurisdictional resources.** Direct impacts to jurisdictional wetlands and waters shall be mitigated through implementation of the Reclamation Plan and Revegetation Plan, resulting in habitat creation and restoration of higher quality than the habitat that is being impacted. Impacts to riparian resources shall be mitigated at a 3:1 ratio. A summary of anticipated impacts, mitigation ratios, and required mitigation are provided in Table 22. Impacts to non-vegetated streambed/non-wetland waters shall be mitigated at a 1:1 ratio. Mitigation ratios shall be based on the requirements in the County's *Guidelines for Determining Significance* (County 2010a) for areas outside of the MSCP.	Below Significance	5.1B, 5.1C, 5.1E
MM-BIO11	**Groundwater resources**. Impacts to groundwater shall be mitigated by removing the Helix Water District Well HWD-101 from production, thereby reducing total demand by about 250 afy and balancing future project demand with annual recharge.	Below significance	4.2.C, 5.2.C
MM-BIO12	**Wildlife movement.** To ensure the area remains accessible to wildlife upon completion of the project, any fencing that is installed around the project area during the reclamation process shall be three strand, post-and-rail, or other type that allows for movement of terrestrial wildlife.	Below Significance	3.1G, 6.1A, 6.1B, 6.1D, 6.1E

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APPENDIX A: DRAFT RECLAMATION PLAN

Reclamation Plan
For the
El Monte Sand Mining Project

Project # PDS2015-MUP-98-014W2/PDS2015-RP-15-001;
Record ID #: PDS2015-MUP-98-014W2; PDS2014-RP-15-001; Environmental Log #: PDS2015-ER-98-14-016B

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May 2018

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January 2018

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Attachment B. Plot Plan (note: forthcoming per direction of County DPS)

Attachment C. Groundwater Evaluation Technical Memorandum

Attachment D. Geologic Reconnaissance and Slope Stability Analysis

Introduction

El Monte Nature Preserve, L.L.C. (Proponent) is currently proposing the El Monte Sand Mining Project. The proponent is applying for a Major Use Permit (MUP) and Reclamation Plan (RP). The proposed project includes extraction of approximately 6.9 million cubic yards (10.3 million tons) of construction aggregate (sand and gravel) over a 12-year period. Production from mining activities would average approximately 862,500 tons (575,000 cubic yards) on an annual basis. Excavated material would total 11.3 million tons (7.5 million cubic yards) with approximately 10.3 million tons (6.9 million cubic yards) of construction aggregate produced. Reclamation of the project site would be continuous and follow the four mining phases across the site from east to west, followed by four years of reclamation activities in each phase. This RP area is located in El Monte Valley on land that is zoned for extractive use. As mining is completed in phases, the site will be restored to open space with recreational trail easements as the end use of the property. The RP and MUP boundaries would occupy a 479.5 acre area, which is currently owned by El Monte Nature Preserve LLC. Extraction and reclamation activities would impact approximately 243 acres of the 479.5 acre area. An additional approximately 19 acres would be impacted by fuel modification zones and trails outside of the proposed mining phases. The remaining approximately 217 acres would be buffer zones and open space.

At full site development, mining and extraction activities would impact approximately 243 acres and produce approximately 6.9 million cubic yards (10.3 million tons) of construction aggregate, with a maximum annual production level of 733,000 cubic yards (1.1million tons per year [MTPY]). Final reclamation would continue for approximately four years following phase 4 of the proposed sand mining operations. Associated activities include a movable aggregate processing plant and all support structures.

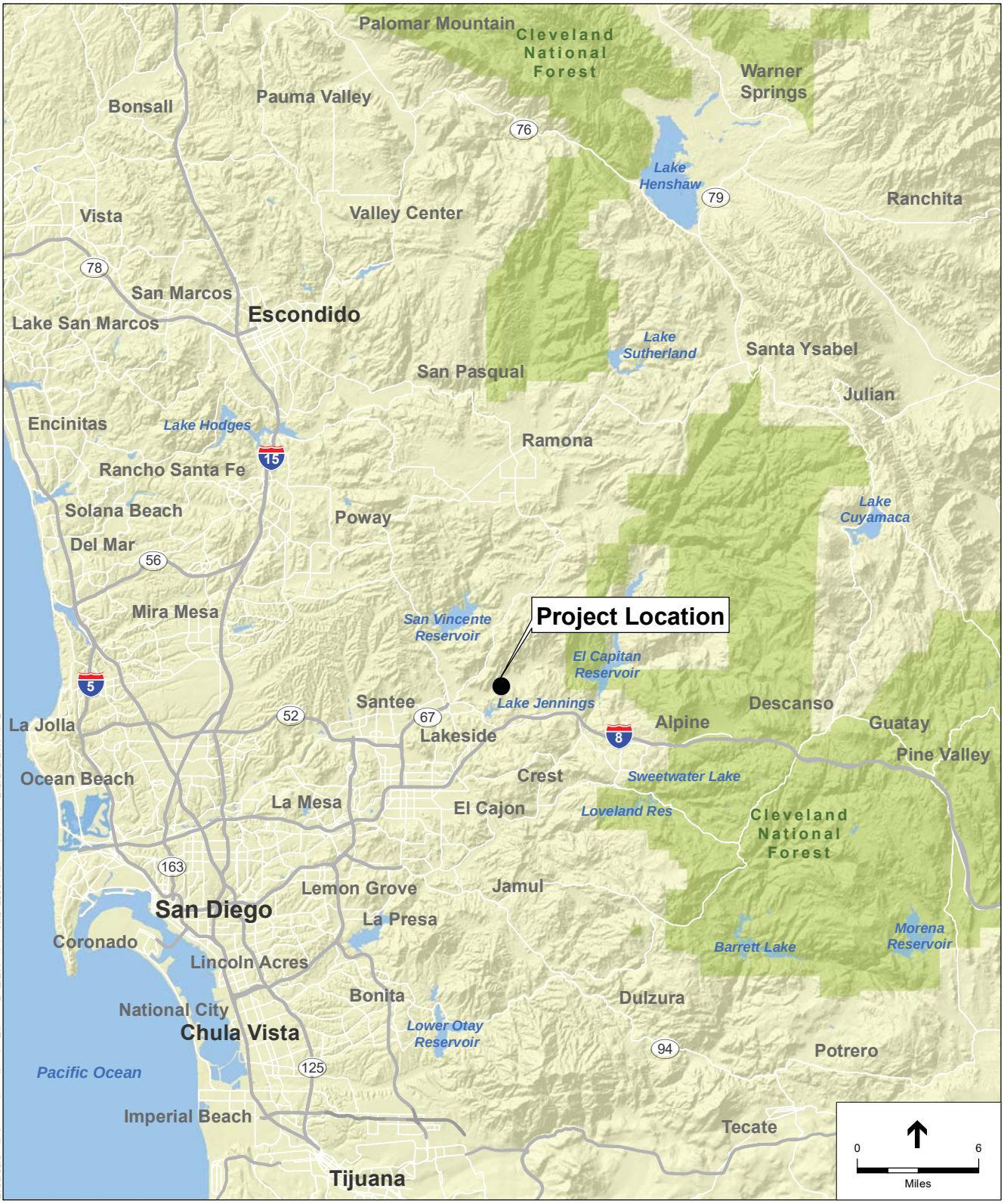
The project would be developed in four phases. Initial activity in each phase would involve the creation of a sub-grade (below the existing ground surface) processing area. This plant area would be served by a sub-grade road that would be used by over-the-road trucks to access the plant and loading area. Access to the site would have separate ingress and egress points on El Monte Road.

Reclamation of the project site would be continuous and phased with mining. Successful reclamation would return the project site to a beneficial end use of open space with recreational trail easements.

1.0 Environmental Setting

1.1 Project Location

The proposed project is situated in the San Diego River watershed, and is in the floodplain which flows through the central part of the project site. It is located parallel to and between El Monte Road and Willow Road in the community of Lakeside in an unincorporated area of San Diego County (Figures 1.1-1 and 1.1-2). The RP boundary for the project site is 1.2 miles east of the closest CalTrans Bridge on Highway 67 where the highway crosses the San Diego River, and 4.8 miles west/ southwest of the El Capitan Reservoir dam.



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SOURCE: ESRI; SanGIS 2015

El Monte Sand Mining Project . 140957

Figure 1.1-1

Regional Location

SOURCE: ESRI

El Monte Sand Mining Project . 140957

Figure 1.1-2
Site Vicinity

The entrance to the project site is 0.5 miles northeast of the intersection of El Monte Road and Lake Jennings Project Road. El Monte Road would serve as the route used by the proposed project, and also serves as the primary route to the Van Ommering Dairy Farm, El Monte County Park and El Capitan Reservoir. Residents use both El Monte Road and Willow Road to access their properties.

1.2 Legal Description

The project site is described by the San Diego County Assessor's Office as Parcel Numbers: 390-040-51, 391-061-01, 391-071-04, 392-060-29, 392-150-17, 393-011-01.

It is located in portions of Sections 9, 10, and 16, Township 15 South, Range 1 East of the El Cajon Mountain, California, U.S. Geological Survey (USGS) 7.5-minute quadrangle, San Bernardino Base and Meridian, County of San Diego, California at approximately 32°52' 38.53" N latitude -116° 52' 50.00 W longitude (Figure 1.2-1).

1.3 Land Use and Zoning

The project site is zoned as follows:

- S-82, Extractive Use (479.5 acres), Minimum Lot Size: 8 acre(s), Special Area Regulation: F, S
- A-70, Limited Agriculture (76 acres), Minimum Lot Size: 4 acre(s), Special Area Regulation: S

1.4 General Physiography

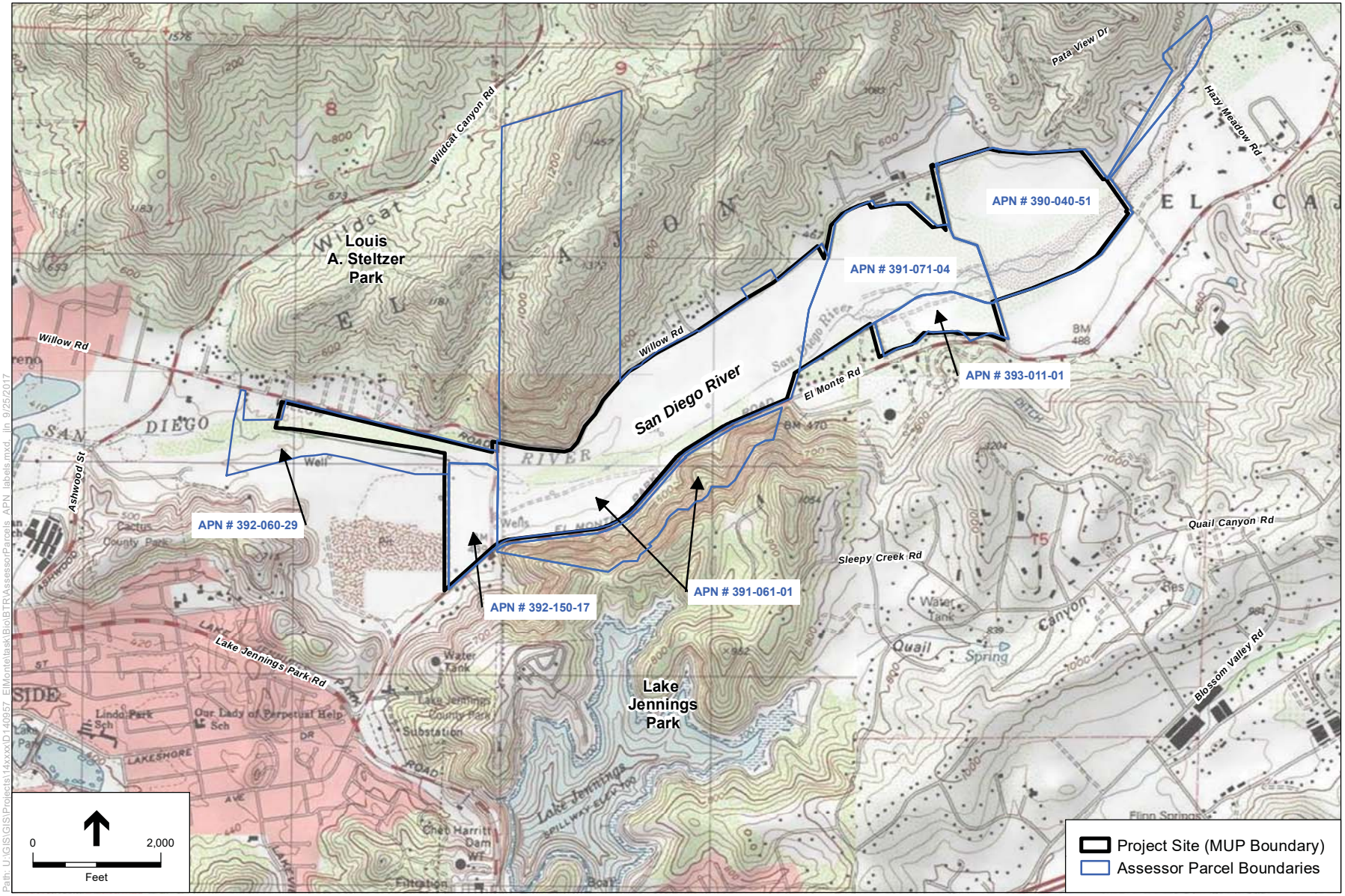
The RP area is located within the Foothills Physiographic Province of the Peninsular Ranges of Southern California. Site geology is composed of Quaternary Alluvium underlain by granodiorite of the Woodson Mountain Granodiorite Formation.

The topography in the vicinity of the RP area is characterized by steep mountains north and south of the alluvial valley. Elevations range from approximately 3,600 feet above mean sea level (MSL) in the mountains to 430 feet near the river channel.

The topography of the project site is generally flat; but grading activities associated with the development of the golf course in 2005-2006 have created undulating terrain in the eastern portion of the property. This area includes several large basins. Elevations range from approximately 490 feet above mean sea level (AMSL) at the eastern portion of the property to approximately 430 feet AMSL at the western end of the site. Elevations within the excavation area range from approximately 475 feet AMSL to 430 feet AMSL. The San Diego River extends in a general east-west direction and consists of a low-flow channel and the associated floodplain.

1.5 Climate

Average rainfall in the project vicinity is approximately 18 inches per year with average daily temperatures ranging from 43 to 89 degrees Fahrenheit.



SOURCE: ESRI; EnviroMine; The Altum Group; Chang Consultants; ESA;
USGS 7.5' Topo Quad El Cajon 1975, 1978; San Vicente Reservoir 1971, 1973, 1975;
El Cajon Mountain 1980, 1985

El Monte Sand Mining Project . 140957

Figure 1.2-1
APN Map

1.6 Geology

Regional Geology

The project site lies atop the southern California batholith consisting of Cretaceous granitic rocks. These rocks form the majority element of this massive feature that underlies roughly two-fifths of San Diego County. In the mountains surrounding the proposed project, exposed granitic bedrock is comprised of the Woodson Mountain Granodiorite Formation consisting principally of granodiorite with minor granite and quartz diorite

(tonalite) (Strand 1962; Weber 1963). The San Diego River drains east-west through the project area and has contributed deposits of Late Quaternary alluvium on the river's floodplain.

Site Geology

The RP area is underlain by recent alluvium. Geologic units encountered or observed during subsurface exploration include fill, alluvium, granitic rock, and metavolcanic rock. Groundwater was encountered at depths ranging from approximately 30 to 47 feet in previous drilling efforts. The alluvium is considered potentially compressible and the onsite soils are susceptible to erosion.

Storm Water control management activities that will be implemented under the project's Storm Water Pollution Prevention Plan (SWPPP) to prevent erosion in accordance with the Industrial General Permit ORDER 2014-0057-DWQ (Effective July 1, 2015) will include minimum best management practices (BMPs) (per the SWPPP Checklist) will include (1) good housekeeping, (2) preventative maintenance, (3), spill response, (4) material handling and waste management, (5) erosion and sediment controls, (6) employee training program, and (7) quality assurance and record keeping. Erosion and sediment controls would include, but not limited to, silt fence, fiber rolls, mulch, rock energy dissipaters, and temporary sediment collection basins.

1.7 Surface and Groundwater

1.7.1 Surface Water

The proposed project is located in an arid part of the state; therefore, surface water on site is only present during precipitation. The site lies within the San Diego River drainage basin about 4.8 miles west of El Capitan Reservoir dam. Designated beneficial uses for the San Diego River and its tributaries include: municipal and domestic supply; agricultural supply; industrial service supply; industrial process supply; contact and non-contact water recreation; warm freshwater habitat; cold freshwater habitat; wildlife habitat; and rare, threatened, or endangered species habitat (California RWQCB 1994). Jurisdictional waters consist of the main low-flow channel of the San Diego River between 3.1 and 5.5 miles downstream of the El Capitan Reservoir.

Although within the County's effective floodway, the proposed project would not raise the 100-year water surface elevations, so meets the County and FEMA's floodway

regulations. In addition, the project would not create adverse flood impacts within the study reach, which is consistent with the goals of floodplain regulations (Attachment A, Hydraulic Analyses and CEQA Drainage Study).

1.7.2 Groundwater

An alluvial aquifer underlies the project site. The maximum depth to bedrock at the site is approximately 240 feet, with the alluvium pinching out along the northern and southern limits of the aquifer along the steeply rising bedrock valley walls. The width of the alluvial aquifer from north to south ranges from less than 1,000 feet to greater than 3,000 feet at the project site. Groundwater levels are currently about 40 to 50 feet below the ground surface (AECOM 2017), but have been as shallow as 5 to 10 from ground surface in months following dam overtopping/releases. Groundwater flows regionally from east to west, and locally toward groundwater wells when they are pumping. Onsite groundwater wells are shown on Sheet 2 of the Plot Plan. Natural groundwater recharge in the area is highly variable and is dependent on climatic conditions.

1.8 Soils

Three soil series represent the vast majority of the soil within the project site. These include the Tujunga series, Riverwash, and the Visalia series (Figure 1.8-1). Other soil mapping units are identified in the 1973 Soil Survey but these occur as very narrow strips or small pockets of mapped soils immediately adjacent to El Monte and Willow Road. Where present, these minor units are on the outer fringes of the project and most likely will not be disturbed. They are very minor in comparison to the three main soils mapped. The three dominant soil mapping units are described as follows:

Tujunga sand, 0 to 5 percent slopes (TuB). The soil occurs on alluvial fans and flood plains. Slopes are dominantly 2 percent. This unit represents the largest area of mapped soil material within the project's boundary.

The Tujunga series consists of very deep excessively drained sands derived from granitic alluvium. These soils are on alluvial fans and flood plains and have slopes of 0 to 5 percent. The elevation ranges from sea level to 1,500 feet. The native vegetation generally occurring in uncultivated areas is chiefly annual grasses, forbs, and a few scattered oaks.

In a representative profile, the surface layer color is brown, neutral sand about 14 inches thick. The color of the next layers are pale-brown, neutral sand and coarse sand. This material extends to a depth of more than 60 inches. Fertility is low. Permeability is very rapid. The available water holding capacity is 3 inches. Runoff is very slow to slow and the hazard is slight. Roots easily penetrate to a depth of 60 inches. Short periods of flooding are probable during wet years.

Tujunga soils are used mainly for range and golf courses. A few small areas are used for avocados, flowers, and truck crops when farmed.

Riverwash (Rm). The Riverwash soil mapping unit occurs in intermittent stream channels. The material is typically sandy, gravelly or cobbly. It is excessively drained

and rapidly permeable. Many areas are barren. Scattered sycamores and coast live oaks grow along the banks. Sparse shrubs and forbs occur in patches.

Visalia sandy loam, 0 to 2 percent slopes (VaA). This nearly level to level soil is on floodplains. Slopes are dominantly 2 percent.

The Visalia series consists of moderately well drained, very deep sandy loams derived from granitic alluvium. These soils are on alluvial fans and flood plains and have slopes of 0 to 15 percent. The elevation ranges from 400 to 2,000 feet. The native vegetation in uncultivated areas is chiefly annual grasses, chamise, flattop buckwheat, California live oak, and scrub oak.

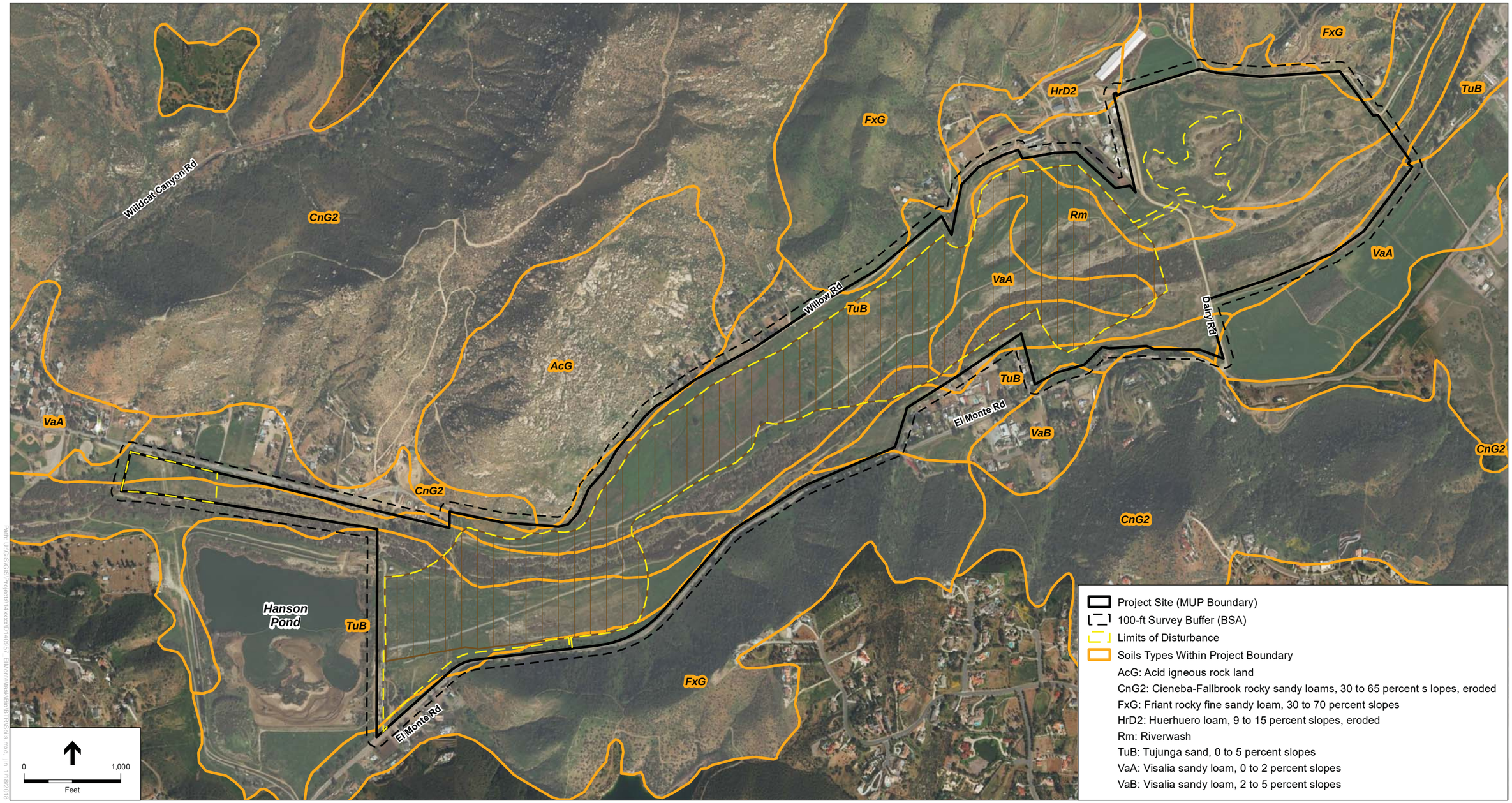
In a representative profile, the surface layer is dark grayish-brown, slightly acid sandy loam about 12 inches thick. The next layers are dark grayish brown, slightly acid sandy loam and loam. This material extends to a depth of more than 60 inches. In some areas the soil is gravelly throughout.

1.9 Vegetation

The majority of the plant species on the project site are nonnative, exotic, and invasive species. Native habitats occur on fewer than 50 acres of the project area. The most abundant habitat type on the site is "disturbed habitat," which is dominated by weedy mustards, tree tobacco, other invasive herbs, and an understory mainly of non-native grasses. Non-native grassland and tamarisk scrub are second and third most abundant, respectively. Tamarisk scrub habitat on the project site is largely a monoculture that ranges in density from loosely spaced to dense and impassable, leaving little to no space for other species to germinate or emerge.

Of the native habitat types within the project site, roughly half are coastal sage scrub and half are southern cottonwood-willow riparian forest, both of which are predominantly disturbed. The northeastern-most region of the site contains a sparse, loosely-spaced grouping of cottonwood trees emerging from mainly sandy soils, indicating that the region may have functioned as a riparian community at one time; however, that area is overall dominated by Coastal Sage Scrub grasses and buckwheat shrubs and is therefore most appropriately considered a disturbed CSS community. Coast live oak trees (*Quercus agrifolia*) are scattered within the floodplain and along the borders of the project site (Figure 1.9-1).

An area defined as Mature Riparian Woodland, as defined in the County of San Diego's Resource Protection Ordinance, was identified and mapped during biological surveys of the site (Figure 1.9-2). It is located in the existing channel on the south central portion of the project area. This woodland area would be provided a 50-foot buffer from the excavation and would not be disturbed by mining.



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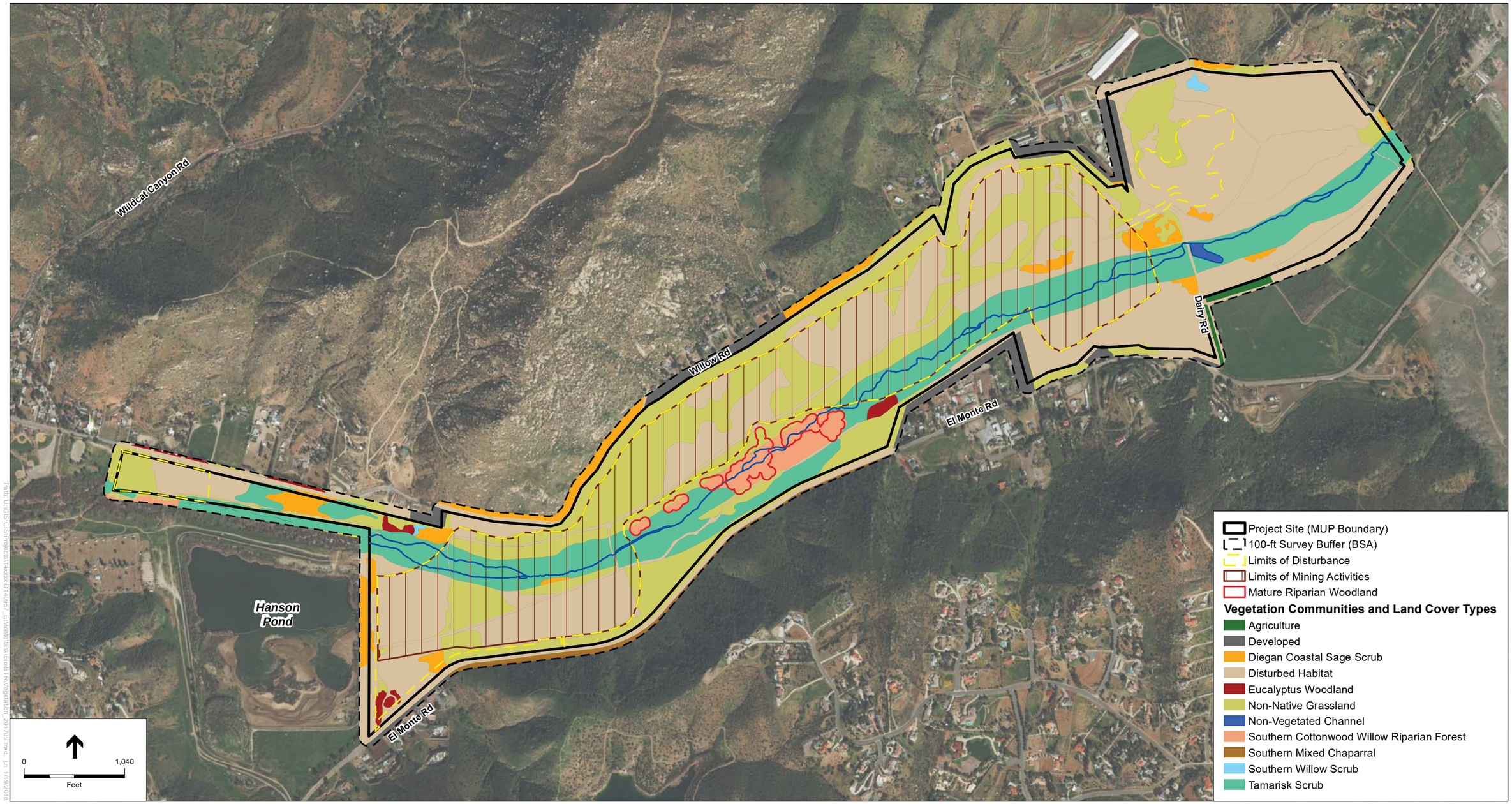
SOURCE: ESRI; EnviroMine; The Altum Group; Chang Consultants; SSURGO

El Monte Sand Mining Project . 140957

Figure 1.8-1

Soils Map



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SOURCE: ESRI; EnviroMine; The Altum Group; Chang Consultants; ESA; SanGIS

El Monte Sand Mining Project . 140957

Figure 1.9-1

Site Vegetation

1.10 Wildlife

Habitats on the project site are suitable for a variety of wildlife commonly observed in areas that have undergone modification and/or degradation, such as in the disturbed areas, non-native grassland, tamarisk scrub, and nearby agricultural parcels.

Common wildlife observed onsite during field surveys included house finch (*Carpodacus mexicanus*), common raven (*Corvus corax*), mourning dove (*Zenaida macroura*), California towhee (*Pipilo crissalis*), side-blotched lizard (*Uta stansburiana*), western fence lizard (*Sceloporus occidentalis*), California ground squirrel (*Spermophilus beecheyi*), and Audubon's cottontail (*Sylvilagus audubonii*). Common bat species with the potential to forage in the project area include California myotis (*Myotis californicus*), big brown bat (*Eptesicus fuscus*), and Brazilian free-tailed bat (*Tadarida brasiliensis*).

Indirect observations of various larger species, which included scat and prints, indicated that coyote (*Canis latrans*) and bobcat (*Lynx rufus*) are present onsite. Larger mammals that may occur within the project area include raccoon (*Procyon lotor*), western spotted skunk (*Spilogale gracilis*), striped skunk (*Mephitis mephitis*), mountain lion (*Felis concolor*), and mule deer (*Odocoileus hemionus*).

Sensitive Wildlife Species

Special-status wildlife species were evaluated for their potential to occur on or adjacent to the project area based on field surveys and the literature review conducted. Table 7 of the Biological Resources Report (BRR) includes a summary of species with a moderate or high potential to occur onsite, as well as all state or federally listed species, regardless of their potential to occur. Twenty-one special-status wildlife species were observed within the Biological Study Area (BSA) throughout all four survey years. Two wildlife species have a high potential to occur within the BSA based on suitable habitat present onsite; these include two-striped garter snake (*Thamnophis hammondii*) and golden eagle (*Aquila chrysaetos*). Five wildlife species have a moderate potential to occur within the BSA due to the presence of marginally suitable habitat onsite; these include southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*), Swainson's hawk (*Buteo swainsoni*), pallid bad (*Antrozous pallidus*), Yuma myotis (*Myotis yumanensis*), and big free-tailed bat (*Nyctinomops macrotis*). The remaining 56 species evaluated were considered to have a low to unlikely potential to occur within the BSA due to a lack of suitable habitat, such as piñon-juniper woodlands or coastal habitats. Additional details (e.g., habitat preferences, number of individuals observed) for observed species and species with a high potential to occur are given below.

Special-Status Wildlife Species Known to Occur Onsite

Western spadefoot toad (*Spea hammondii*)

The western spadefoot toad is a state Species of Special Concern and a San Diego County Group II species. This nocturnal species prefers soil soft enough for burrowing, found within grasslands, scrub, chaparral, and oak woodlands (Lemm 2006). Its distribution occurs at elevations from sea level to approximately 4,650 feet. This

species was detected during USGS surveys; while it was noted generally that amphibian diversity was relatively low with three species, western spadefoot toad was the second most detected amphibian with at least 48 observations (Richmond et al. 2016).

Orange-throated whiptail (*Aspidoscelis hyperythrus*)

The orange-throated whiptail is a state Species of Special Concern and a San Diego County Group II species. This species prefers washes and other sandy areas in coastal sage scrub and chaparral, with patches of brush and rocks for cover. This subspecies is restricted to the extreme southwest of California and northwest of Baja California, Mexico. In California, it is found on the west side of the Peninsular Ranges in Los Angeles, San Bernardino, Orange, Riverside, and San Diego counties, below 3,000 feet in elevation. A limiting factor to the species' range is the availability of its primary food item, the termite (*Reticulitermes hesperus*). The orange-throated whiptail was observed predominately in coastal sage scrub habitat during the 2006, 2010, and 2015 surveys. It was also detected in abundance with 173 captures during USGS herpetofaunal surveys of the property (Richmond et al. 2016).

Coastal whiptail (*Aspidoscelis tigris stejnegeri*)

Coastal whiptail is a state Special Animal and a San Diego County Group II species. In San Diego County, this species is found from the coast to the mountains with an estimated elevational range of sea level to approximately 5,000 feet (Lemm 2006). It is found in various habitats including sage scrub, chaparral, riparian areas, oak and pine woodlands, pinyon juniper woodlands, and rocky foothills. Coastal whiptail was the fifth most captured lizard species during the USGS study with 29 observations (Richmond et al. 2016).

Coast horned lizard (*Phrynosoma blainvillei*)

The coast horned lizard is a state Species of Special Concern and a San Diego County Group II species. This lizard ranges from coastal southern California to the desert foothills and into Baja California, Mexico. In San Diego County, it has a wide range but spotty distribution. This species can be locally abundant in areas where it occurs, with densities near 20 adults per acre. It is often associated with coastal sage scrub, especially areas of level to gently sloping ground with well-drained loose or sandy soil, but it can also be found in annual grasslands, chaparral, oak woodland, riparian woodland, and coniferous forest between 30 and 7,030 feet (Jennings and Hayes 1994). The coast horned lizard typically avoids dense vegetation, preferring 20 to 40 percent bare ground in its habitat. Adults are active from late March to late August, and young are active from August to November or December. They are largely dependent upon native harvester ants (*Pogonomyrmex* sp.) for food. Populations along the coast and inland have been severely reduced by loss of habitat. The coast horned lizard was observed in the BSA in 2015 in tamarisk scrub habitat during the 2015 biological surveys, and was also detected during the USGS surveys (Richmond et al 2016).

Southern California legless lizard (*Anniella stebbinsi*)

The southern California legless lizard is a state Species of Special Concern. It is primarily found in oak woodland, chaparral, coastal sage scrub, pinyon-juniper woodland, and urban areas, and is occasionally found in desert flats, dunes, and beaches. It occurs within an elevational range extending from sea level to 5,940 feet (Lemm 2006). It is a burrower, so it spends most of its time underground. This species was detected during the USGS surveys, with 17 observations (Richmond et al. 2016).

San Diego banded gecko (*Coleonyx variegatus abbotti*)

The San Diego banded gecko is a state Species of Special Concern and a San Diego County Group I species. It is found throughout most of southern California, and north into parts of Nevada and Utah, south into Baja Mexico and Sonora, Mexico, and east into eastern parts on Arizona and New Mexico. This species prefers rocky areas in coastal sage scrub and chaparral and is active at night, burrowing under the surface of rocky and other objects during the day (California Herps 2017).

Coast patch-nosed snake (*Salvadora hexalepis virgultea*)

Coast patch-nosed snake is species of Special Concern and a San Diego County Group II species. It is associated with coastal scrubs and chaparral and other low shrub habitats. This species has been observed foraging in smaller shrubs and trees for prey, and uses burrows of woodrats and gopher holes (Lemm 2006). Its distribution is from the coast to mountains, with an elevational range of sea level to 7,000 feet. One observation of this species was recorded during the USGS study (Richmond et al. 2016).

Glossy snake (*Arizona elegans*)

The glossy snake is a state Species of Special Concern. This species occurs primarily throughout Southern California in deserts and interior Coast Ranges, but has been found as far north as Mount Diablo near San Francisco (Zeiner et al. 1988-1990). It is most often found in desert habitats but also occurs in chaparral, sagebrush and annual grasslands. The glossy snake prefers open, sandy areas, but is also found in rocky areas. It takes cover in abandoned animals' burrows, in rock outcrops and, less often, beneath debris. Its primary source of food is lizards, including juvenile desert iguanas, side-blotched lizards, and zebra-tailed lizards. The glossy snake was recorded within the BSA during the 2015 and 2016 surveys conducted by USGS, with a total of 23 observations (Richmond et al. 2016).

Red-diamond rattlesnake (*Crotalus ruber*)

The northern red diamond rattlesnake is state Species of Special Concern and a San Diego County Group II species. It is often found in chaparral, coastal sage scrub, along creek banks, and in rock outcrops or piles of debris. This species prefers dense vegetation in rocky areas with a supply of burrowing rodents for prey. The northern red diamond rattlesnake is restricted to southern California and Baja California from Morongo Pass to the tip of the Baja Peninsula, with the majority of its California range

in western Riverside County and San Diego County. It occurs from sea level to 3,000 feet in elevation. Suitable habitat is prevalent within the BSA, and three observations were made during the USGS surveys (Richmond et al. 2016).

Cooper's hawk (*Accipiter cooperii*)

The Cooper's hawk is a state Special Animal, and San Diego County Group I species. The nesting sites of this species are considered sensitive by the California Department of Fish and Wildlife (CDFW). The Cooper's hawk ranges year-round throughout most of the United States; its wintering range extends south to Central America, and its breeding range extends north to southern Canada (Rosenfeld and Bielefeldt 1993). It is a common breeder in both natural and urban environments, with eucalyptus trees used nearly as often as oaks (Unitt 2004). This hawk mainly breeds in oak and willow riparian woodlands but will also use eucalyptus trees. Breeding occurs from March to July. This hawk forages primarily on medium-sized birds but is also known to eat small mammals, such as chipmunks and other rodents (Rosenfeld and Bielefeldt 1993). The decline of this species has been caused by urbanization and loss of habitat. However, during the last 20 years, the Cooper's hawk has apparently adapted to city living (Unitt 2004). The Cooper's hawk has been observed in 2006, 2010, and 2015 in the BSA in the vicinity of the riparian habitat along the San Diego River corridor.

Sharp-shinned hawk (*Accipiter striatus*)

The sharp-shinned hawk is a state Special Animal, and San Diego County Group I species. The nesting sites of this species are considered sensitive by the CDFW. It is a woodland hawk that requires a certain amount of dense cover, but this species can be localized and scattered through relatively open country. It prefers wooded areas where it can hunt small birds. This species is distributed throughout North, Central, and South America. In California, it is a fairly common migrant and winter resident, although its breeding distribution is poorly documented. In western Riverside County, it is a common winter migrant and has been frequently documented in the San Jacinto Mountains in the summer. The sharp-shinned hawk was observed in the BSA in 2010 in the vicinity of riparian habitat along the San Diego River corridor.

Red-shouldered hawk (*Buteo lineatus*)

The red-shouldered hawk is a San Diego County Group I species. This species occurs in riparian forest and oak woodland habitat, as well as eucalyptus groves and residential areas. This species occurs along the entire length of the west coast of the United States and Baja California, Mexico. It also occurs in eastern North America from the southern portion of Canada, into eastern Mexico. The red-shouldered hawk builds a stick nest in sycamore, coast live oak, and eucalyptus trees, and occasionally in palm trees. This species frequently reuses its nests in successive years and takes over old nests of other hawks. The red-shouldered hawk was observed in the BSA in 2010 in the vicinity of riparian habitat along the San Diego River corridor.

Turkey vulture (*Cathartes aura*)

The turkey vulture is a San Diego County Group I species. It occurs throughout North and South America in a variety of open and forested habitats, and tends to avoid

developed areas. Rather than building nests, this species lays its eggs in rock crevices, caves and hollow logs. It roosts in large communal groups but searches for food independently during the day. The turkey vulture is a scavenger, feeding primarily on carrion which it finds with its acute sense of smell, but it will also occasionally eat garbage and rotten vegetation. Mammals are the most common source of carrion; however, birds, amphibians and reptiles are also eaten. Within the BSA, this species was observed in 2006, 2010 and 2015 soaring overhead throughout the site.

Osprey (*Pandion haliaetus*)

The osprey is a County Group I species. It is a long-range migrant breeding in North America and migrating to South America in the winter. This species is associated with large bodies of clear, open water. Its diet consists almost entirely of live fish, but will also occasionally prey on smalls mammals, birds, reptiles, and amphibians. The osprey is known to consume over 80 species of fresh and saltwater fish in North America. Nesting occurs at the top of large snags and dead trees up to twelve miles from fishing areas; however, nests most commonly occur within one mile of open water (Polite 1990). Occasionally, this species will nest on the ground. In North America, breeding typically occurs along the coast and near large inland lakes. This species was observed within the BSA near Hanson Pond during 2015 surveys; no nests or breeding behavior was observed. However, Hanson Pond and nearby Lake Jennings provide appropriate habitat for prey, and habitat on the project site is appropriate for potential nesting areas.

Yellow warbler (*Setophaga petechia*)

The yellow warbler is state Species of Special Concern within its nesting habitat and a San Diego County Group II species. It occupies marshes, swamps, streamside groves, willow and alder thickets, open woodlands with thickets, orchards, gardens, and open mangroves. This species breeds from Alaska to Newfoundland and south to western South Carolina and northern Georgia, and west sporadically through the southwest to the Pacific Coast. This species is highly migratory and winters in Central America and the West Indies south to northern Peru. The yellow warbler is a summer visitor in California. In San Diego County the yellow warbler is a common breeding species but is localized to suitable riparian woodland habitats. In 2006 and 2015 the yellow warbler (*Dendroica petechia*) was detected within the riparian woodland along the edge of Hanson Pond just outside of the BSA, and within the tamarisk scrub northeast of the pond.

White-tailed kite (*Elanus leucurus*)

The white-tailed kite is a state Fully Protected species, and its nesting sites are considered sensitive by the CDFW. It is also a San Diego County Group I species. This raptor occurs in coastal lowland areas from Oregon to northern Baja California, Mexico (National Geographic Society 1983). Nesting occurs in riparian woodlands, oaks, or sycamore groves that border grassland or open fields (Unitt 2004). This species is known to roost in large communal groups (Unitt 2004). The white-tailed kite forages over open areas and grasslands feeding primarily on small rodents and insects (National Geographic Society 1983). White-tailed kite populations in southern California have declined as a result of the loss of nesting and foraging habitat. The

species nests in trees of variable height in riparian or oak woodland habitats adjacent to grasslands, agricultural areas, and other open vegetation. In the BSA, the white-tailed kite was detected in 2006 in disturbed habitat just east of Dairy Road and northeast of Hanson Pond.

Yellow-breasted chat (*Icteria virens*)

The yellow-breasted chat is a state Species of Special Concern and a San Diego County Group I species. This small songbird breeds from southern Canada into Mexico, and winters in southern Mexico and Central America. Within San Diego County, this species occurs in coastal lowlands in riparian woodland habitat (Unitt 2004). The yellow-breasted chat (*Icteria virens*) was detected in 2006 within the river channel in the eastern portion of the BSA.

Loggerhead shrike (*Lanius ludovicianus*)

The loggerhead shrike is a state Species of Special Concern and a County Group I species. This species inhabits most of the continental United States and Mexico and is a year-round resident of southern California. The loggerhead shrike prefers open habitat with perches for hunting and fairly dense shrubs for nesting (Yosef 1996). In southern California, loggerhead shrikes inhabit grasslands, agricultural fields, chaparral, and desert scrub (Unitt 2004). Their breeding season is from March to August. Loggerhead shrikes are highly territorial and usually live in pairs in permanent territories (Yosef 1996). They feed on small reptiles, mammals, amphibians, and insects that they often impale on sticks or thorns before eating. Loggerhead shrike populations are declining, likely as a result of urbanization and loss of habitat as well as, to a lesser degree, pesticide use (Yosef 1996). Within the BSA, the loggerhead shrike (*Lanius ludovicianus*) was detected in the disturbed area near Dairy Road

Coastal California gnatcatcher *(Polioptila californica californica)*

The coastal California gnatcatcher is federally threatened, a state Species of Special Concern, and a County Group I species. The coastal California gnatcatcher is a local year-round resident found primarily in coastal sage scrub communities in southern California. Home range size requirements of the coastal California gnatcatcher vary with habitat quality and distance from the coast. Documented home ranges have varied from approximately 6 to 45 acres in San Diego County (Unitt 2004). This species typically forages beyond their nesting sites in habitats of varying quality, including open patches of disturbed coastal sage scrub and adjacent chaparral and grassland areas. The breeding season for this species generally extends from February 15 through August 31. Gnatcatcher pairs attempt several nests each year, each placed in a different location inside their breeding territory; most nest attempts are unsuccessful as they are generally preyed on by various predator species. Clutch size can range from one to five eggs, with three to four eggs most common. Gnatcatchers remain paired through the nonbreeding season and generally expand their home range during this time.

The coastal California gnatcatcher was detected in or adjacent to the BSA within three disconnected patches of coastal sage scrub. One of these patches, located just south

of Willow Road to the north of Hanson Pond, is highly disturbed and dominated by California buckwheat and non-native grasses and forbs. A second occupied patch is located due south of this location just north of Hanson Pond. This area consists of a thin, very dense strip of California sagebrush that has grown along an existing unpaved access road. Although this area is outside of the BSA, it is within approximately 1,000 feet of the impact area. The third patch is a very small, highly disturbed fragment dominated by California buckwheat and non-native grasses and forbs, located within the impact area of the BSA southeast of Hanson Pond, just north of El Monte Road. Refer to Appendix H of the BRR for the 2015 Coastal California Gnatcatcher Survey Report (ESA 2015a).

Least Bell's vireo *(Vireo bellii pusilus)*

Least Bell's vireo is a state and federally endangered and San Diego County Group I species. This small songbird occurs in riparian forest, scrub, and woodland habitats. It nests primarily in willow, mulefat, or mesquite vegetation. The least Bell's vireo is a summer resident in Southern California that typically resides in willow-dominated habitat. The least Bell's vireo is known to establish territories in riparian habitats of moderate to high quality, such as the remnant riparian woodland patches detected onsite. This species was detected during the 2010 and 2015 protocol surveys in the riparian woodland habitat along the eastern edge of Hanson Pond, just outside of the BSA. In 2010, it was also observed in two locations in the riparian habitat along the San Diego River channel within and adjacent to the BSA. The potential for this species to nest onsite is considered high. Refer to Appendix I of the BRR for the 2015 Least Bell's Vireo Survey Report (ESA 2015b).

San Diego black-tailed jackrabbit *(Lepus californicus bennettii)*

The San Diego black-tailed jackrabbit is a state Species of Special Concern and is a San Diego County Group II species. It ranges from near Mt. Pinos (at the Kern-Ventura County line) southward and west of the Peninsular Range into Baja California, Mexico (Hall 1981). This species can be found throughout southern California, with the exception of high-altitude mountains. It occupies open or semi-open habitats, such as coastal sage scrub and open chaparral areas. Forested and thick chaparral regions are not suitable (Bond 1977). The San Diego black-tailed jackrabbit breeds throughout the year, with the greatest number of births occurring from April through May. The black-tailed jackrabbit is strictly herbivorous, preferring habitat with ample forage such as grasses and forbs. Declines in San Diego black-tailed jackrabbit populations are due to loss of suitable habitat as a result of urban development. This species was observed regularly during 2006 surveys in the upland oak/sandy dune area, but was not observed during 2010 or 2015 surveys.

USFWS Designated Critical Habitat

United States Fish and Wildlife Service (USFWS) Designated Critical Habitat for two species falls within the BSA, including the limits of mining activities. Designated Critical Habitat for arroyo toad (*Anaxyrus californicus*) covers the entire project boundary. This federally endangered species requires slow-moving streams and rivers with shallow, gravelly pools next to sandy beaches for breeding and adjacent scrub or grassland habitat for non-breeding adults. These conditions do not exist in this

portion of the San Diego River channel. Therefore, this species is unlikely to occur in the BSA.

Designated Critical Habitat for the coastal California gnatcatcher encompasses approximately two thirds of the BSA, totaling 183.82 acres within the project area and 18.11 acres within the buffer. Impacts to this habitat would consist of 1.79 acres of permanent impacts from the establishment of permanent fuel modification zones, and 182.05 acres of temporary impacts from staging, processing, and mining activities. Two of the three locations observed in the 2015 surveys are well outside of this Designated Critical Habitat; the third location (southeast of Hanson Pond) is located in the processing area just west of the Designated Critical Habitat.

Special-Status Wildlife Species with a High Potential to Occur Onsite

Red-diamond rattlesnake *(Crotalus ruber)*

The northern red diamond rattlesnake is state Species of Special Concern and a San Diego County Group II species. It is often found in chaparral, coastal sage scrub, along creek banks, and in rock outcrops or piles of debris. This species prefers dense vegetation in rocky areas with a supply of burrowing rodents for prey. The northern red diamond rattlesnake is restricted to southern California and Baja California from Morongo Pass to the tip of the Baja Peninsula, with the majority of its California range in western Riverside County and San Diego County. It occurs from sea level to 3,000 feet in elevation. Suitable habitat is prevalent within the BSA, indicating high potential for the species to occur onsite.

Two-striped garter snake *(Thamnophis hammondii)*

The two-striped garter snake is a state Species of Special Concern and a County Group I species. The species is found in permanent and semipermanent waterways from the coast to the desert. It is frequently found in oak woodlands, brushlands, and sparse coniferous forests (Stebbins 2003). It is known to inhabit vernal pools and seasonally ephemeral waterways. Its altitudinal range is from sea level to 8,000 feet. It is found in most undisturbed habitats provided there is sufficient water and foliage for cover. Rocky and sandy streambeds are favored with the species being active from spring to fall. Winter is spent in burrows or rock crevices and occasionally the species may be found in groups. During winter, this species inhabits coastal sage scrub and grassland locations adjacent to waterways and riparian areas. The two-striped garter snake can be found basking on rocks or in vegetation in the morning and afternoon. The species is more tolerant of lower temperatures and can be active on cold days. The species feeds primarily on fish, fish eggs, tadpoles, frogs, and salamanders. Suitable habitat is prevalent in the BSA along the river channel, especially during the wet season when water is present, indicating high potential for the species to occur onsite.

Golden eagle *(Aquila chrysaetos)*

The golden eagle is a federally protected species under the Bald and Golden Eagle Protection Act, a state Fully Protected species and Species of Special Concern, and a San Diego County Group I species. This species occurs throughout the United States and is a common resident in San Diego County. The nesting population in San Diego

County is concentrated in the foothill zone and coastal lowlands. Golden eagles nest on cliffs, boulders, or in large trees. This species requires vast foraging areas to prey upon small mammals. Golden Eagles forage close to and far from their nests as far as 3.7 miles from the center of their territories, but have been observed to move 5.6 miles from the center of their territories in favorable habitat (McGrady et al. 2002). Ideal foraging habitat includes vegetation communities such as of grassland, open chaparral, or coastal sage scrub. Several golden eagle territories in the coastal lowland have been eliminated by urbanization, agricultural development, and other human disturbances (Unitt 2004). There is abundant foraging habitat within the BSA, although much of it is moderate to low quality because of the abundant invasive plant species cover, which may not support a robust small mammal prey base. However, recent golden eagle surveys conducted by USGS in San Diego County suggest that two adjacent golden eagle territories may overlap with the BSA (SDMMP 2015). Therefore, a moderate potential exists for the species to occur within the BSA for foraging, although suitable nesting habitat is not present onsite.

Analysis of Impacts to Special-Status Species

The *County of San Diego Guidelines for Determining Significance for Biological* Resources was used to evaluate adverse environmental effects the project may have on special-status species. The project would have a substantial adverse effect, either directly or through habitat modifications, on one or more species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service. Mitigation measures to address adverse effects on biological resources are incorporated by reference and listed in the subsection that follows the analysis below.

No federally or state listed plant species were detected on the project area. The proposed project would not affect listed plant species.

The state and federally endangered least Bell's vireo and coastal California gnatcatcher have been observed within the project area and direct and indirect impacts may occur as described in Section 2.2 of the BRR. Additionally, Designated Critical Habitat for arroyo toad and coastal California gnatcatcher occurs within the project area. However, mitigation measures as discussed in Section 3.4 of the BRR would reduce measures below a level of significance. Direct impacts as a result of mortality of individuals and nests and removal of habitat during the breeding season, and construction-generated noise would be avoided through conducting construction and mining activities outside of the bird breeding season, which encompasses the breeding season for these two species. Additionally, preconstruction surveys would be conducted prior to starting work to confirm that gnatcatchers and vireos are absent from the limits of construction prior to work starting. Additionally, habitats lost during construction and mining operations would be compensated through reclamation and revegetation, resulting in additional habitat acreage for use after completion of the project.

Several County and Species of Special Concern occur within the biological study area. One County List B plant species (Palmer's goldenbush) was observed onsite, in addition to nine County Group 1 animal species (Cooper's hawk, sharp-shinned hawk,

red-shouldered hawk, turkey vulture, white-tailed kite, yellow breasted chat, loggerhead shrike, coastal California gnatcatcher, least Bell's vireo). All but two of these species, the red-shouldered hawk and turkey vulture, are also Species of Special Concern, along with the orange-throated whiptail, coast horned lizard, yellow warbler, and San Diego black-tailed jackrabbit. A significance determination for impacts to least Bell's vireo and coastal California gnatcatcher are discussed in Section 3.2.A of the BRR.

Grading associated with the proposed project would remove the all or most of the existing onsite suitable nesting and foraging habitat for wildlife species over an approximately 12-year period. However, mitigation measures would be implemented such as avoiding the bird breeding season, conducting preconstruction surveys to confirm absence of special-status species prior to conducting work, biological monitoring during construction, and restoration of habitats that would be impacted. It is anticipated that impacts to special-status species onsite would be minimal, and fall within the threshold of less than 5 percent of individuals. Additionally, the timing for clearing of vegetation would occur in stages, and as one mining phase area is being cleared, the previous mining area would be restored to high-quality native habitats with function and value equal to or greater than those removed during mining. Ultimately, the proposed project would increase suitable nesting and/or foraging habitats for these species by restoring habitats, thus increasing available resources onsite for these species. The avoidance and reduction of the potential for impacts is not likely to affect the long-term survival for County List A or B plant animal species, Group I animal species, or California Species of Special Concern.

No County List C or D plant species were observed within the project area; therefore, there are no impacts to County List C or D plant species.

The following four County Group II wildlife species were observed onsite: orange-throated whiptail, coast horned lizard, yellow warbler, and San Diego black-tailed jackrabbit. Impacts to these species were evaluated in Section 3.2.B in the BRR because they are also Species of Special Concern. Similarly, the avoidance and reduction of the potential for impacts is not likely to affect the long-term survival of County Group II animal species, or California Species of Special Concern. These direct impacts to the long-term survival of County Group II animal species would be less than significant with implementation of Mitigation Measures MM-BIO1, MM-BIO4, MM-BIO5, and MM-BIO6.

Although the project area is within Designated Critical Habitat for the arroyo toad, it does not contain habitat suitable for arroyo toad primarily due to the lack of surface water and associated pools that this species requires for breeding, and substrates required for aestivation. The project area contains riparian habitat along and within the floodplain of the San Diego River and has friable soils; however, the project area is too dry and does not contain the necessary habitat features that arroyo toads use for foraging and breeding. The nearest and most recent arroyo toad sighting listed by the CNDDB occurred approximately 5 miles north of the site in known suitable habitat. Therefore, the proposed project would not impact arroyo toad aestivation, foraging, or breeding habitat.

No golden eagle nests were detected onsite or within 4,000 feet of the site. The nearest known golden eagle nest listed by the CNDDB was recorded approximately 2 miles east of the project area at El Capitan Reservoir, well outside of the zone of influence of this project. Recent golden eagle surveys conducted by USGS in San Diego County suggest that two adjacent golden eagle territories may overlap with the BSA (SDMMP 2015). Therefore, a moderate potential exists for the species to occur within the BSA for foraging, although suitable nesting habitat is not present within the project area or adjacent to the project area. The grassland habitat could provide potential golden eagle foraging habitat, however, this is unlikely given the lack of eagle nesting within 4,000 feet of the project area. Therefore, impacts to golden eagle habitat would be less than significant.

The project area provides nesting and foraging habitat for a variety of raptor species. A majority of vegetation within the impact footprint would be removed, however the Mature Riparian Woodland habitat would remain as it is considered an impact neutral area. Greater than five percent of the raptor foraging and nesting habitat within the project area would still be impacted. However, clearing of vegetation would occur in stages, and as one mining phase area is being cleared, the previous mining area would be restored to high-quality native habitats with function and value equal to or greater than those removed during mining. Ultimately, the project would increase suitable nesting and/or foraging habitats for these species by restoring habitats. With the design of the work to occur in stages and the implementation of avoidance and reduction of the potential for impacts, the project is not likely to affect the long-term survival of raptor species. The project would result in less-than-significant direct impacts to functional foraging habitat for raptors with implementation of Mitigation Measures MM-BIO1, MM-BIO46, MM-BIO5, and MM-BIO6.

The 479.5-acre project area is set in the midst of a larger rural setting with multiple areas of open space, making the El Monte Valley a core wildlife area, according to the County's definition. Impacts are discussed in Section 3.1 of the BRR. Although cleared areas would lose habitat functionality for wildlife species during each mining phase, upon cessation of mining in each phase, reclamation activities would restore some function prior to the end of the expected 19-year project life of the proposed project. Since a maximum of two mining areas would be devoid of vegetation at any one time, and then only temporarily, as reclamation of previously mined phases would commence with initiation of mining in the downstream phase, most of the project area would be available for wildlife use at any given time over the 16-year life of the proposed project. Upon the completion of revegetation, the area would be enhanced by the establishment of higher-quality and functional habitat types along the San Diego River corridor. Therefore, with implementation of Mitigation Measures MM-BIO4, MM-BIO5, and MM-BIO6, the proposed project would have a less-than-significant direct impact on a wildlife core area or the viability of the wildlife species it supports.

Portions of the project area contain unpaved roads and trails that are currently used by equestrian and recreational users for riding, walking, and hiking. In addition, existing residents access their homes using Willow Road and Dairy Road (both unpaved), and Helix Water District and San Diego Gas & Electric staff access the project area using these same unpaved roads. The proposed project would allow for continued access to the site during the 16-year life of the proposed project, and a trail easement along the periphery of the site would be established in perpetuity at the end

of the project. Any future trails built within this easement would be permitted separately from the proposed project. Upon completion of the project and following implementation of the Reclamation Plan and Revegetation Plan, the proposed project would not increase human access, predation, or competition from domestic animals, pests, or exotic species; therefore, the proposed project would not cause indirect impacts to species from altered conditions.

The project is anticipated to alter natural drainage features onsite by effectively lowering the substrate elevation on the surface of the San Diego River 25 – 30 feet below the current channel surface, which would be approximately 15 to 25 feet above the water table (AECOM 2017). During extreme storms events, water could overtop the El Capitan dam. In the event of the dam overtopping, the water table may rise above the pit bottom and a pond could form. If ponding does occur, vegetation could form around the fringe of the pond, although vegetation growth would be temporary as it would likely recede as the water recedes. Water has overtopped the dam only four times since 1940 (D. Roff pers. comm), making this a very unlikely event. Because El Capitan Dam effectively cuts off the flow from upstream, the main source of water in the riverbed is runoff from surrounding hillsides. Therefore, the changes to the topography as a result of the project are not expected to substantially affect the hydrology downstream. In addition, erosion control and stormwater measures would be installed to ensure that sediment and runoff do not drain offsite during mining. Post-project reclamation and revegetation would also improve onsite drainage conditions. Therefore, with implementation of Mitigation Measures MM-BIO4, MM-BIO5, and MM-BIO6, the project would have less-than-significant indirect impacts to sensitive species due to changes in the natural drainage.

Temporary nighttime lighting would be installed at the facility for safety purposes; however, the lighting would be shielded away from adjacent native habitats, and thus is not anticipated to affect breeding or foraging behavior of sensitive species. However, during construction and mining, the ambient noise levels would be increased during operating hours, which could negatively affect breeding birds by altering breeding behavior or resulting in nest abandonment. However, with implementation of Mitigation Measures MM-BIO1, MM-BIO2, MM-BIO3, and MM-BIO4, indirect impacts to breeding birds from construction and operational activities would be less than significant.

There is no burrowing owl habitat in the project area and burrowing owls were not observed during the 2006, 2010, and 2015 surveys. The proposed project would not impact burrowing owl or its habitat.

There is no cactus wren habitat in the project area (habitat was not present in the project area prior to 2003 Cedar fire), and cactus wren were not observed during the 2006, 2010, and 2015 surveys. The proposed project would not impact cactus wren or its habitat.

Native upland habitat on the project area is not extensive enough or of high enough quality to support Hermes copper, and the host plants required by this species are not present onsite. Additionally, Hermes coppers were not observed during the 2006, 2010, and 2015 surveys. The proposed project would not impact Hermes copper or its habitat.

Clearing and grading associated with project area preparation could directly affect breeding birds by the removal of potential nesting habitat within the river channel and surrounding upland habitats. Proposed mining activities could also indirectly affect breeding birds adjacent to cleared areas during the breeding season due to noise, dust, increased truck traffic, and other human activities, which could impair the breeding behavior of birds, resulting in reduced mating or nest abandonment. Additionally, fuel modification could directly impact nesting bird species through removal of nesting habitat, and indirectly impact nesting birds during breeding season through noise. Direct impacts as a result of mortality of individuals and nests and removal of habitat during the breeding season, and construction-generated noise would be avoided through conducting construction and mining activities outside of the bird breeding season. Additionally, preconstruction surveys would be conducted prior to starting work to confirm that nesting birds are absent from the limits of construction prior to work starting. Additionally, habitats lost during construction and mining operations would be compensated through reclamation and revegetation, resulting in additional habitat acreage for use after completion of the project. With implementation of Mitigation Measures MM-BIO1, MM-BIO2, MM-BIO3, MM-BIO4, MM-BIO5, and MM-BIO6, direct and indirect impacts to coastal California gnatcatcher, least Bell's vireo, and tree-nesting and ground-nesting raptors from clearing, grading, fuel modification, and/or other noise generating activities would be less than significant. These activities would not impact coastal cactus wren, southwestern willow flycatcher, golden eagle, or light-footed clapper rail.

The development of planned fencing (and gates) to protect the site from unauthorized public access has been conducted in a manner to preserve and maintain access to the site by wildlife. The project applicant coordinated with the County Department of Planning and Development Services (PDS) to revise the proposed trail system configuration and type of fencing. Fencing to restrict the public from work areas has been changed from four-strand barbed wire to three-strand barbed wire. Fencing along interior trail segments will include wood split-rail fence with two horizontal poles. The three-strand fencing and wood split-rail fencing will each provide sufficient clearance for wildlife to pass through the fences without restriction.

Mitigation Measures

The following are mitigation measures which have been developed to avoid and/or minimize the potentially significant direct and indirect impacts to sensitive biological resources associated with the proposed project:

MM-BIO1: Special-status species and nesting birds covered by MBTA.

1) To avoid and minimize impacts to nesting coastal California gnatcatchers, least Bell's vireo, raptors and other birds protected by the Migratory Bird Treaty Act, vegetation removal and grading shall occur outside of the nesting bird season (February 1 through August 31). Note that no gravel crushing is required to process the materials extracted from the site; therefore, noise levels would be lower than those typically associated with mining activities. If the breeding season cannot be avoided, the follow measures shall be implemented:

a. During the avian breeding season, a qualified Project Biologist shall conduct a preconstruction avian nesting survey no more than 3-5 days prior to vegetation disturbance or site clearing. Surveys need not be conducted for the entire project area at one time; they shall be phased so that surveys occur shortly before a portion of the site is disturbed. If construction begins in the non-breeding season and proceed continuously into the breeding season, no surveys shall be required. However, if there is a break of 3-5 days or more in construction and mining activities during the breeding season, a new nesting bird survey shall be conducted before these activities begin again.

b. The preconstruction survey shall cover all reasonably potential nesting locations on and within 300 feet of the proposed construction and mining activities areas. If an active nest is found during the preconstruction avian nesting survey, a qualified Project Biologist shall implement a 300-foot minimum avoidance buffer for coastal California gnatcatcher, least Bell's vireo, and other passerine birds, and a 500-foot minimum avoidance buffer for all raptor species. The nest site area shall not be disturbed until the nest becomes inactive or the young have fledged.

2) A focused herpetofaunal mitigation plan shall be developed and implemented by a qualified biologist to address potential direct and indirect impacts to glossy snake and other amphibian and reptile state Species of Special Concern. The mitigation plan shall include the following measures to be implemented:

a. Trapping and collection of herpetofaunal species shall be conducted prior to any site preparation and mining activities (Appendix J of the BRR). Once the herpetofaunal species are collected, they shall be relocated and set free outside of mining boundaries in the eastern portion of the project site, east of Dairy Road. They shall be marked to track the success of this action over time; the mitigation plan would include detail on the specific methodology of the marking study.

b. Exclusionary fencing shall be installed along the project disturbance footprint to preclude special-status herpetofaunal species from moving back into the site. The focused mitigation plan shall include specifications for installing, monitoring, and repairing the fencing to maintain its function and integrity throughout the duration of construction and mining activities.

c. Preconstruction surveys for herpetofaunal shall be conducted by a qualified biologist no more than 10 days prior to initiation of excavation activities associated with site preparation and sand mining activities in those specified areas of the project site. Surveys may not need to be conducted for the entire of the project site at once; they may be phased so that surveys occur in portions of the project before excavation occurs (Appendix J of the BRR).

d. Overburden excavated and collected during site preparation and mining activities shall be moved (to the maximum extent feasible) to the eastern portion of the site, outside of the mining limits, to improve the habitat for herpetofaunal species at the release location for the project site, particularly as fill into some of the previously excavated areas in the eastern portion of the site where limited species observations have been documented (Appendix J of the BRR).

MM-BIO2: Least Bell's vireo. In accordance with the project's Revegetation Plan, direct impacts to suitable habitat for the state and federally endangered least Bell's vireo shall be mitigated at a minimum of 3:1 ratio through the restoration of southern willow scrub habitat.

MM-BIO3: Coastal California gnatcatcher. In accordance with the project's Revegetation Plan, direct impacts to California gnatcatcher-occupied habitat shall be mitigated at a minimum 2:1 ratio through restoration. Restoration may include a combination of in-kind restoration (i.e., coastal sage scrub habitat restored to coastal sage scrub habitat) and out-of-kind restoration (i.e., non-native grassland habitat restored to coastal sage scrub habitat).

MM-BIO4: Mining Best Management Practices and Oversight. A qualified Project Biologist shall be responsible for monitoring the limits of construction and mining activity, mitigation measures, design considerations, and project conditions during all phases of the project. The Project Biologist shall conduct the following:

1. Attend the preconstruction meeting with the contractor and other key construction personnel prior to clearing, grubbing, or grading.

2. Conduct worker training prior to all phases of construction; this shall include meetings with the contractor and other key construction personnel to explain the limits of disturbance, which shall be delineated with temporary construction fencing with clear signage stating the fenced area is a sensitive habitat area and to keep out, and the importance of restricting work to designated areas prior to clearing, grubbing, or grading. Discussions shall include procedures for minimizing harm to or harassment of wildlife encountered during construction and mining activities prior to clearing, grubbing, and/or grading.

3. Conduct pre-construction clearance surveys to detect the presence of nesting birds, burrowing owls, and other sensitive terrestrial wildlife species, such as coast horned lizard, glossy snake, orange-throated whiptail, and two-striped garter snake. The Project Biologist shall use their discretion in ensuring impacts to any sensitive wildlife observed during pre-construction clearance surveys are avoided (e.g., avoidance buffers, relocation from harm's way, etc.).

4. Be present onsite to monitor initial vegetation clearing, grubbing, and grading to ensure that mitigation measures are being appropriately followed.

5. Periodically monitor the limits of construction and mining operations as needed throughout the life of the project to avoid unintended direct and indirect impacts by ensuring that:

6. Confirm construction and mining activity boundaries are marked (e.g., delineated with temporary fencing and sensitive habitat signage) and not breached;

7. Monitor Mature Riparian Woodland areas to confirm they are protected from incursion with installation of temporary construction fencing and sensitive habitat signage. Also confirm that the slopes at the edge of protected Mature Riparian Woodland habitat are not eroding, and that appropriate erosion control measures, such as fiber rolls, blankets, gravel bags, etc., are installed;

8. Water roads and grading areas regularly to minimize dust;

9. Implement pertinent requirements that address erosion and runoff, including the federal Clean Water Act, National Pollution Discharge Elimination System (NPDES), and Stormwater Pollution Prevention Plan (SWPPP); and

10. Prepare a post-construction monitoring report for submittal to the County of San Diego. The report shall substantiate the supervision of the clearing, grubbing, and/or grading activities, and shall provide a final assessment of biological impacts.

MM-BIO5: Reclamation Plan oversight. A qualified Restoration Ecologist shall be designated to oversee implementation of the Reclamation Plan (as it pertains to site preparation, erosion control, hydro seeding, and soil stabilization). The Restoration Ecologist shall have at least 5 years of experience monitoring successful native habitat restoration projects in Southern California, including all habitat types that shall be restored onsite. In addition, the Restoration Ecologist shall:

- Attend all relevant construction meetings.
- Have the authority to redirect construction and maintenance crews in keeping with the goals, objectives, and performance standards of the final Reclamation Plan.
- Approve the seed palette used for hydro seeding.

- Regularly monitor reclamation activities to determine if and how remedial actions should be conducted, if needed, for observed issues such as sedimentation and erosion.

MM-BIO6: Revegetation Plan and oversight. A Revegetation Plan shall be implemented to guide and ensure successful revegetation/creation of self-sustaining

riparian and upland habitats, which would serve as mitigation for impacts to native vegetation communities. In contrast to the Reclamation Plan, which focuses on landform and soil stabilization, the focus of the Revegetation Plan is to restore the ecological functions and values of the impacted habitats. The Revegetation Plan shall include:

- Sufficient restoration or creation of habitat to fulfill the mitigation obligations described in MM-BIO7 (Section 4.4).
- The planting plan shall be designed to ensure that the appropriate restored/created habitat is suitable for the coastal California gnatcatcher and least Bell's vireo, and allows for local and regional wildlife movement (e.g., appropriate width and vegetative cover).
- The planting design shall also include adequate wetland buffers (100 to 200 feet wide, measured from the edge of wetland habitat).
- A native planting palette appropriate for each vegetation type being mitigated and appropriate to local conditions.
- Irrigation for upland and wetland habitat types for the first 2 to 3 years. Irrigation should be removed during the final 2 years of restoration to ensure that the habitat is self-sustaining.
- A 120-day plant establishment period plus five-year restoration maintenance period (or until success criteria are met).
- Qualitative and quantitative monitoring methods to ensure that success criteria are met.
- Five-year maintenance methods.
- Success criteria for establishment period and years 1–5.
- Responsibilities and qualifications of restoration and maintenance contractor(s) and restoration ecologist.

- Description of annual reporting.

MM-BIO7: Sensitive vegetation communities.

- In order to be consistent with the Southern California Coastal Sage Scrub NCCP guidelines, direct impacts to more than 5 percent of the coastal sage scrub onsite (i.e., impacts to more than 0.52 acre) shall be avoided. Avoidance shall be targeted at those patches of coastal sage scrub in which a California gnatcatcher was observed during the 2015 surveys. In addition, because the project is outside of the MSCP, a Habitat Loss Permit (HLP) will be required for the loss of coastal sage scrub.

- Direct impacts to sensitive vegetation communities shall be mitigated through implementation of the Reclamation Plan and Revegetation Plan. The Revegetation Plan shall be designed to provide high quality habitat that is compatible with the post-project topography and hydrology. As such, some of the temporarily impacted habitat shall be mitigated out-of-kind (i.e., with a different, but higher quality habitat type), resulting in a net gain of native habitat acreage onsite and improve overall native habitat quality and functions.

- Revegetation shall occur in areas currently supporting southern willow scrub, tamarisk scrub, non-vegetated channel, coastal sage scrub, non-native grassland, disturbed habitat, eucalyptus woodland, and developed land cover. All habitat mitigation ratios (outside of approved MSCP Plan areas) shall be consistent with the County's Guidelines for Determining Significance for Biological Resources (September 2010). Riparian/wetland habitat restoration shall consist of high quality vegetated channel planted within the channel and riparian scrub habitat dominated by mule fat along with scattered willows within the excavated mining pit (basin). Tamarisk scrub shall be mitigated at a 3:1 replacement ratio. For the 3:1 mitigation ratio, 1.5:1 of the mitigation (i.e., half) shall occur via restoration of native riparian forest and riparian scrub habitats within the post-mining area. The balance of mitigation for tamarisk scrub shall occur via enhancement and restoration of riparian and transitional habitat outside of mining limits but within the project area. Anticipated impacts, habitat mitigation, and reclamation anticipated at this time are presented by community in Table 16 of the BRR.

- Upland habitat revegetation shall consist of high quality coastal sage scrub habitat. The upland habitat mitigation need is mostly due to projected impacts to non-native grassland habitat, which is dominated by non-native grasses and forbs, providing only low quality habitat. The restored coastal sage scrub will provide an important foraging and breeding resource for the coastal California gnatcatcher, which is known to be onsite. Providing high quality coastal sage scrub in this area is highly beneficial, as all of the habitat surrounding the project area is degraded due to past wildfires. The excess revegetation of riparian habitat, which is of higher value than non-native grassland, will address the remaining upland mitigation need. A summary of anticipated impacts, mitigation ratios, required mitigation, and actual restoration are provided in Table 16 of the BRR. Because the project area is outside of the Multiple Species Conservation Program (MSCP), mitigation ratios shall be based on Table 5 of the County of San Diego Guidelines for Determining Significance for areas outside of the MSCP (County 2010).

- Mitigation (i.e., reclamation and restoration) shall be implemented on a phase-by-phase basis. The mined area shall be progressively reclaimed and restored on disturbed areas previously mined prior to initiation of mining on the next phase. Reclamation and restoration is an ongoing process that commences when mining operations have ceased within a given area (phase) and continues until all mining related disturbance is reclaimed and all equipment involved in these operations have been removed before moving onto the next phase. Tables 17-21 of the BRR show the anticipated breakdown of habitat mitigation and reclamation acres by phase.

- Temporary fencing shall be installed as necessary during all mining, reclamation, and restoration activities to protect sensitive habitat, including Mature Riparian Woodland, from unauthorized incursion into areas outside the limits of disturbance. In addition, clear signage shall be installed, stating the fenced area is a sensitive habitat area and to keep out. Permanent fencing shall be installed around the perimeter of protected open space upon completion of

the project; however, fencing details (e.g., the type and exact location of fencing) are yet to be determined.

- To protect the habitat mitigation area in the long term, the entire mitigation site shall be protected in perpetuity by placing a Biological Open Space Easement or other protective instrument over the property. In addition, this easement area shall be managed in perpetuity according to the long-term management plan prepared for this project and approved by resource agencies; long-term management shall be funded by a non-wasting endowment established by the project applicant on a phase-by-phase basis.

MM-BIO8: Mature riparian woodland, as defined by the County RPO. Mature Riparian Woodland and a 50-foot buffer beyond the canopy of trees shall be avoided during preconstruction clearing, grubbing, and/or grading, and during mining activities. This shall be accomplished by having a qualified Project Biologist onsite prior to the start of the project to delineate and protect the Mature Riparian Woodland with temporary construction fencing to avoid incursion during preconstruction clearing, grubbing, and/or grading, and during mining activities. In addition, to control fugitive dust from the ingress and egress of trucks along the haul route, which is located at the norther perimeter of the Mature Riparian Woodland, water trucks shall be used along the haul route during all clearing, grubbing, grading, and mining activities.

MM-BIO9: Jurisdictional resources. Direct impacts to jurisdictional wetlands and waters shall be mitigated through implementation of the Reclamation Plan and Revegetation Plan, resulting in habitat creation and restoration of higher quality than the habitat that is being impacted. Impacts to riparian resources shall be mitigated at a 3:1 ratio. A summary of anticipated impacts, mitigation ratios, and required mitigation are provided in Table 22 of the BRR. Impacts to non-vegetated streambed/non-wetland waters shall be mitigated at a 1:1 ratio. Mitigation ratios shall be based on the requirements in the County's Guidelines for Determining Significance (County 2010a) for areas outside of the MSCP.

MM-BIO10: Groundwater resources. Impacts to groundwater shall be mitigated by removing the Helix Water District Well HWD-101 from production, thereby reducing total demand by about 250 afy and balancing future project demand with annual recharge.

MM-BIO11: Wildlife movement. To ensure the area remains accessible to wildlife upon completion of the project, any fencing that is installed around the project area during the reclamation process shall be three strand, post-and-rail, or other type that allows for movement of terrestrial wildlife.

1.11 Mineral Resources

The California Geological Survey classifies California mineral resources with the Mineral Resource Zones (MRZs) system. These zones have been established based on the presence or absence of significant sand and gravel deposits and crushed rock source area used as construction aggregate. The following definitions of the zones on or directly adjacent to the project area are as follows: (CGS, 1982 and 1996b).

- MRZ-2 - Areas where adequate information indicates that significant mineral deposits are present or where it is judged that there is a high likelihood for their presence.
- MRZ-3 - Areas containing mineral deposits, the significance of which cannot be evaluated from available data.

The project site is classified as MRZ-2 which consists of alluvial deposits along the San Diego River channel. Surrounding area outside of the project boundary is classified as MRZ-3. The site and vicinity fall within the Sector M of the Upper San Diego River Resource area aggregate resource sector (Figure 1.9-3).

2.0 Reclamation Plan Details

2.1 Owner/Operator/Agent

Applicant

El Monte Nature Preserve, LLC
1335 San Lucas Court
Solana Beach, CA 92075

Name of Mineral Property

El Monte Nature Preserve, LLC

Property and Mineral Rights Ownership

El Monte Nature Preserve, LLC
1335 San Lucas Court
Solana Beach, CA 92075

Operator

El Monte Nature Preserve, LLC
1335 San Lucas Court
Solana Beach, CA 92075
Phone: (619) 889-3397

Agent

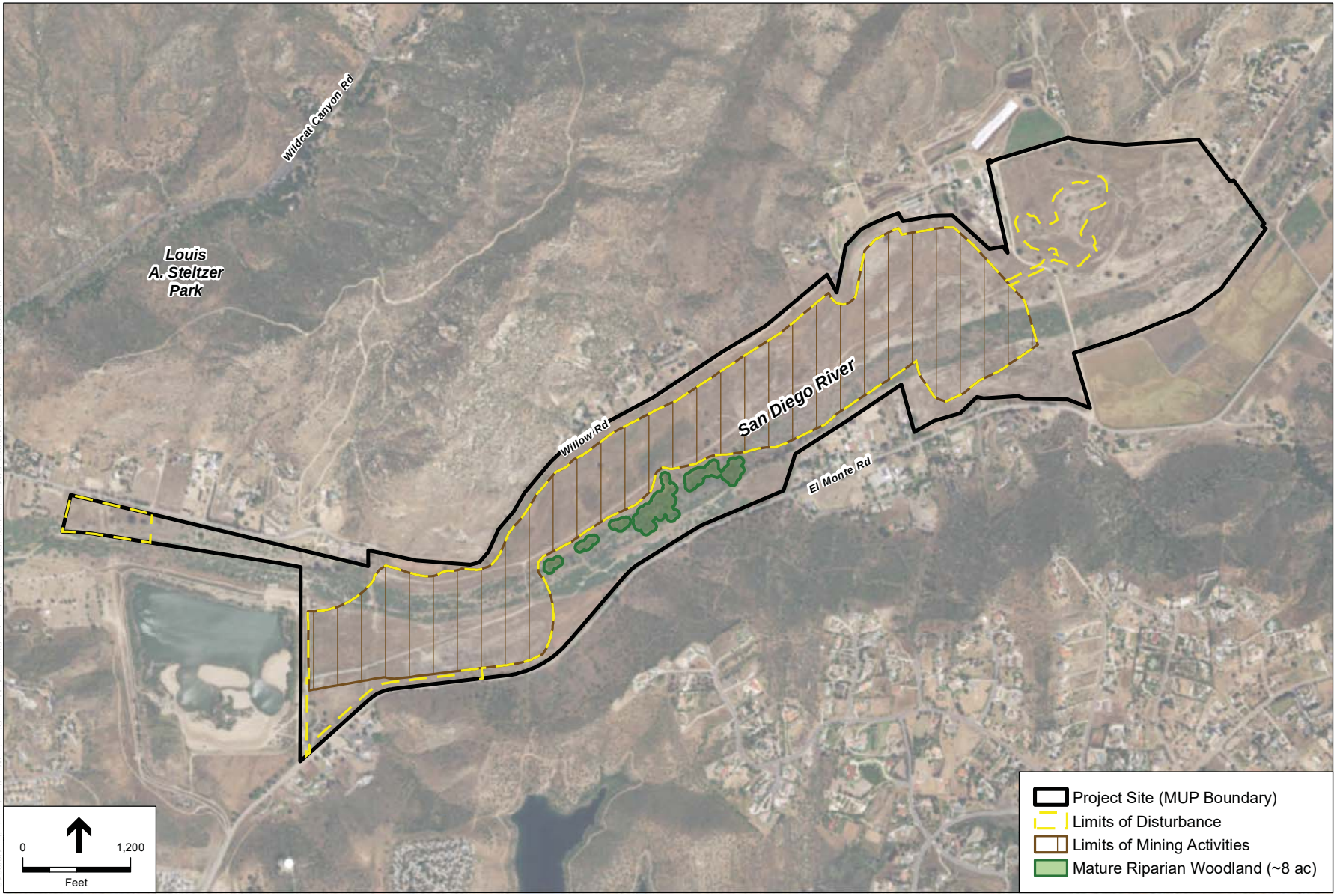
William Adams
El Monte Nature Preserve, LLC
1335 San Lucas Court
Solana Beach, CA 92075
Phone: (619) 889-3397

Mineral Commodity

Construction aggregate

Surface Mining Initiation Date

March 1, 2019

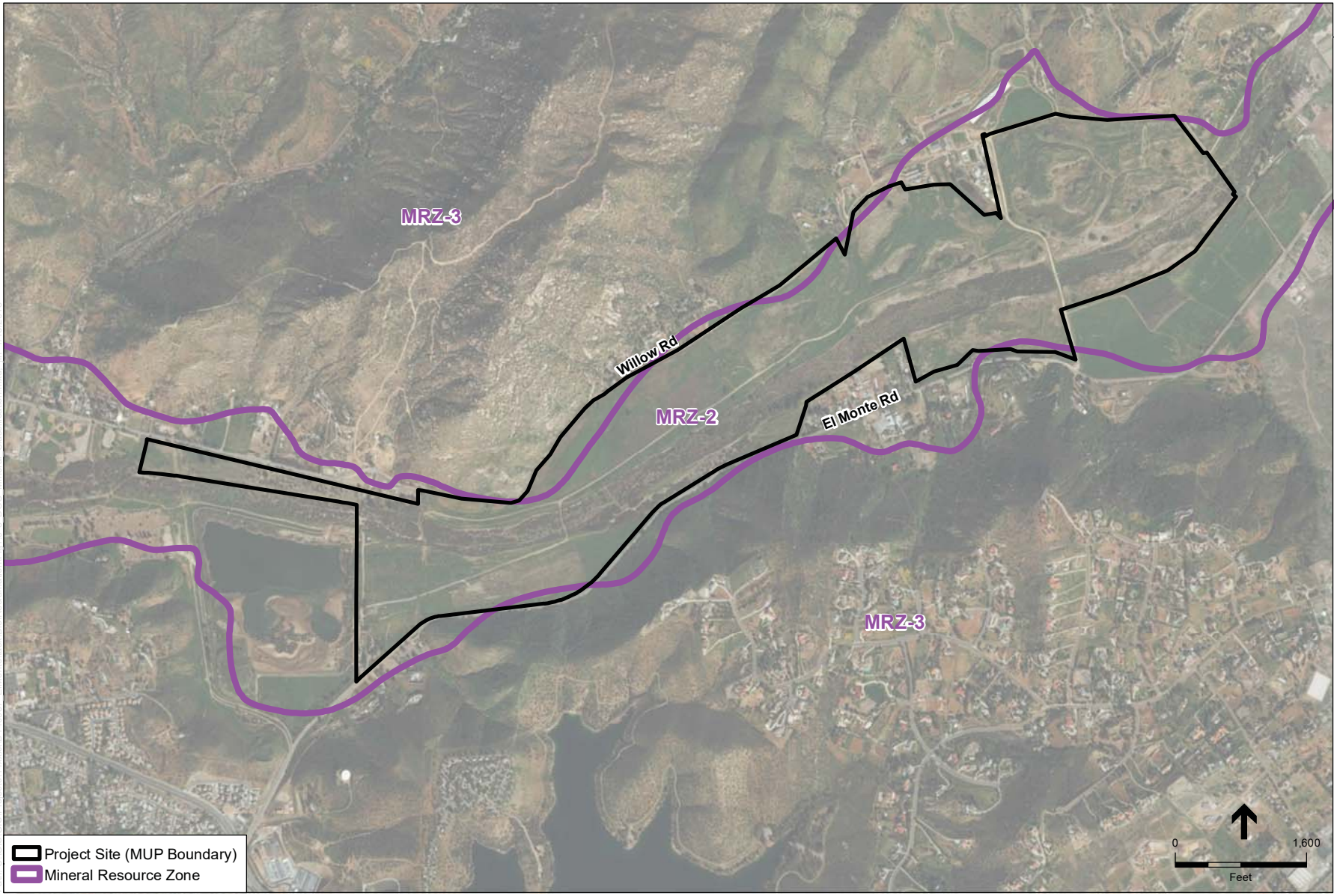


SOURCE: ESRI; EnviroMine; The Altum Group; Chang Consultants; ESA; SanGIS

El Monte Sand Mining Project. 140957

Figure 1.9-2

Mature Riparian Woodland



SOURCE: ESRI; EnviroMine; The Altum Group; Chang Consultants; ESA; SanGIS

El Monte Sand Mining Project . 140957

Figure 1.9-3

DOC Mineral Classification

Proposed Closure Date

January 31, 2035. Operations may continue beyond the proposed termination date if required to fully exhaust permitted volumes. This would require a time extension to the Major Use Permit and would be subject to approval by the County Planning Commission.

Maximum Anticipated Annual Production

733,000 cubic yards (1,100,000 tons)

Total Anticipated Production

6.9 million cubic yards (10.3 million tons)

Maximum Anticipated Depth of Surface Mining

400 feet AMSL (approximately 35 feet bgs)

2.2 Operational Characteristics

Operations in the RP area would extract, process, and market aggregate using conventional earth moving and processing equipment. Extractive operations for the project are expected to continue for approximately 12 years with a total production of 6.9 million cubic yards (10.3 million tons). This time frame may extend beyond this period depending on the demand for aggregate or geologic conditions encountered during the mining process. Extractive and processing activities would produce up to approximately 733,000 cubic yards (1,100,000 tons) of material per year. Extracted aggregate suitable for construction uses would be transported offsite to construction projects and batch plants in San Diego County. Material would be sold in bulk to various customers. The Plot Plan for the extractive operations is presented as Attachment B - Plot Plan. Table 1 outlines estimated mining dates, duration, and acreages.

Table 1. Acres Mined & Volumes

Mining Phase	Area Affected by Mining Operations (acres)*	Mining Duration (years)	Mining Initiation Date (est.)	Mining Completion Date (est.)	Reclamation Completion Date (est.)
1	93	4	2019	2023	2027
2	52	3	2023	2026	2030
3	48	3	2026	2029	2033
4	50	2	2029	2031	2035
Total	243	12	-	-	-

*rounded to nearest acre

2.3 Topsoil Removal

The end use of the proposed project would be open space with recreational trail easements. Materials in the area are very sandy with depth and very similar to the existing topsoil. Some topsoil would be salvaged from the disturbed area and stored in berms around the pit and at the entrance to the site. The majority of materials would

be utilized as fill or sold. Topsoil material stored in the berms would be mixed with wash fines and used as a final cover on areas that have reached final grade.

The topsoil within the plan boundary is known to be heavily infused with a massive, subterranean seed bank containing the seeds of the noxious, non-native, invasive species. These are not desirable as end-product plants. Aggressive weed eradication is an important objective as the pit develops and during reclamation. As a result, any re-applied top dressing material would likely require aggressive weed control in order to meet the revegetation goals of the proposed project.

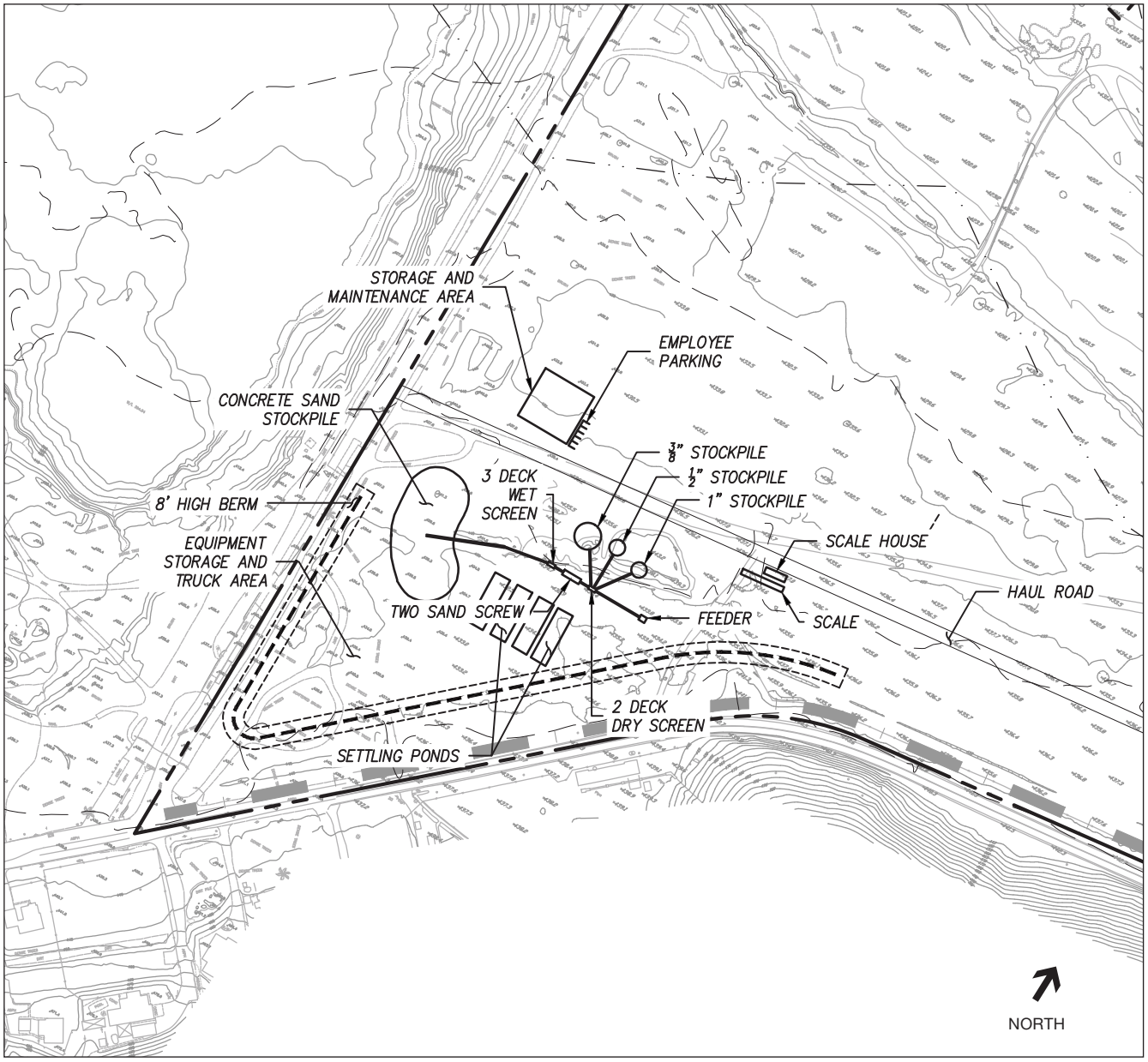
2.4 Extraction and Phasing

2.4.1 Mine Phases

Mining operations would occur in four (4) overlapping phases which would progress from east to west. The precise location and timing of mining and reclamation is subject to market demand, variations in geologic conditions encountered in the field, and technological advancements in the mining process. Each phase would include vegetation removal, topsoil salvaging, resource extraction and reclamation. Concurrent reclamation would occur with mining where practicable on areas that have achieved final contours. Final reclamation of the RP area would be completed in Phase 4 and during a Final Reclamation phase. It is anticipated that all four phases of mining and final reclamation would be completed in approximately 16 years. Sheet 2 in Attachment B shows the locations of each phase.

Operations would begin with the excavation of the Plant Site #1, located north of the channel in Phase 1. Initial excavation would establish a pad for the processing plant approximately 10 feet below the existing ground surface (bgs) located in the southwestern and northeastern segment of the project excavation area. A processing plant would be constructed in the southwestern area of the project site and remain at this location during all 4 phases of the project. A second mobile processing plant would be constructed in the northeastern segment of the excavation area, and would move from east to west during mining. Earthen berms would be constructed around the top sides of the plant area to screen the equipment and operation from public view. Temporary power lines and the processing plant equipment would also be installed. The processing plant is portable and would move to a variety of locations (east to west) as operations proceed (Figure 2.4-1).

A two-lane, onsite access road, which would connect to the haul road from El Monte Road to the location of the processing plant, would be excavated to approximately 10 feet bgs to accommodate over-the-road truck access to the processing plant. Initially, the processing pad would be located north of the river channel near the eastern excavation boundary and would be moved westward as the mining phases advance. As mining progresses, the previous plant area and access road would be consumed by removal of materials.



SOURCE: Environmine

El Monte Sand Mining Project . 140957

Figure 2.4-1
Processing Pad Area

Initial segments of the planned trail system would be established during the first mining phase within the setback areas north and south of the area to be disturbed by the operation (see Attachment B). The remainder of the planned trail system would be installed after Phase 4 when mining extraction is complete. A three-strand, barbed wire fence and an earthen berm would separate the temporary trails from the operation (see Attachment B). Once installation of the trail system is complete, split-rail fencing and signing would be installed to keep users on the trails.

All plans including the Reclamation Plan and Revegetation Plan have been coordinated regarding the proposed trail network. As previously stated, the project applicant coordinated with the County Department of Planning and Development Services (PDS) to revise the proposed trail system configuration. The trail system, which has been analyzed as permanent impacts, has been accounted for and excluded from the planned reclamation revegetation areas and habitat mitigation areas. In addition, wood split-rail fence is proposed for the trail system to keep users on the trails and to prevent unauthorized access and impacts to habitat revegetation and restoration areas.

As mining progresses, a grade control structure (drop structure) would be constructed across the San Diego River floodway approximately 300 feet west of Dairy Road to prevent headward channel erosion during periods of water flow for a 4-year duration. Mining would continue and progress in a series of westerly advancing phases (1-4) and a meandering, low flow channel would be developed within the pit floor as part of the final contour. This channel would have a westward gradient and direct drainage from local runoff.

Wash fines (silt and clay sized particles) from the plant are expected to be approximately 13 percent of the washed material and would be collected in a series of earthen basins near the wash plant. These basins would be used to protect surface

water quality and to recycle the process water through the settling of silts and clays (wash fines). The basins would also be used to collect local runoff which may be transporting earthen solids. These basins would be cleaned occasionally by removing the sediment collected.

Initially, the collected wash fines would be used to fill in the dry depression, previously excavated as a golf course pond east of Dairy Road and the extraction area. This approximately 12.8-acre depression would be backfilled with about 300,000 cubic yards (450,000 tons) of wash fines as part of the project. Fill would be transported to the golf course pond area by truck or pumped using a slurry pipe. If transported by truck, the sediment removed would be stockpiled near the basins parallel to the prevailing wind direction for dewatering prior to being sold or used as fill. Fugitive dust control measures for these stockpiles would include surface watering, use of wind barriers and if necessary, covering with polyethylene tarps. If a stockpile is not moved within six months, it would be revegetated with an erosion control seed mix using native species.

After filling the depression, wash fines material would be sold as a soil amendment or used as cover on the areas to be reclaimed. Once spread these fines would be mixed

with available topsoil and incorporated into the surface by ripping or a disc. These settling basins would be moved westward in conjunction with the plant relocation.

Fill materials in depression would be spread in near-horizontal layers, approximately 8 inches thick. Thicker lifts may be approved by the geotechnical engineer if testing indicates that the grading procedures are adequate to achieve the required compaction. Each lift would be spread evenly, thoroughly mixed during spreading to attain uniformity of the material and moisture in each layer, brought to near optimum moisture content and compacted to a minimum relative compaction of 90 percent.

A maintenance program to control weeds on un-reclaimed disturbed ground would be established and implemented at the start of the mining process. The purpose of this effort is to prevent weed infestation of areas that are to be reclaimed in the future. This program would continue during the revegetation and monitoring periods of the project.

Reclamation and habitat mitigation restoration would be completed as final reclaimed surfaces are established. All temporary impact areas not specified for habitat mitigation restoration would be subject to reclamation revegetation. Within the temporary impact area of the mining phases totaling 241.11 acres, 113.92 acres are specified for habitat mitigation for impacts to sensitive habitats and the remainder, 127.19 acres, are specified for reclamation revegetation. Revegetation for the purpose of habitat mitigation and restoration is provided in the Conceptual Revegetation Plan and is not part of this Reclamation Plan; however, it is appropriate to note that habitat mitigation restoration includes more stringent performance standards than reclamation revegetation and therefore meets and exceeds reclamation standards. In Phase 4 (final mine phase), the western portion of the project would be extracted, all equipment would be removed from the property, and the final area (16 acres) of mining related disturbance would be reclaimed.

At the start of each mining phase, the mining area boundary would be established through land surveying that would identify the top of the cut at a minimum of 150 feet from El Monte Road and Willow Road. Other setbacks from areas not to be disturbed would also be established as needed. A bulldozer or front-end loader would begin removing vegetation and other deleterious debris from areas to be excavated. Tree stumps and roots would be removed. Clearing and grubbing would extend to the limits of the proposed excavation and fill areas.

Phase 1

Phase 1 would include site development for the construction of the drop structure, access road, processing area pad, settling basins and screening berms. Following these initial site development activities, extractive operations would commence at the far eastern portion of the mining area and include an area of approximately 93 acres, including the dry depressions, previously excavated as golf course ponds.

Initial extractive operations would remove all materials from the surface, generally in an east to west direction, to approximately 15-25 feet above the water table (approximately 40–50 ft. bgs) with an excavator or wheeled front-end loaders. Large front-end loaders would transport the mined material to the processing plant where it would be washed if necessary, stockpiled and loaded for delivery. A low flow channel

would be constructed in the pit floor as part of the final contours to direct any localized runoff events to the west. This channel would be approximately 5 feet deep, have a 25 feet wide bottom and have 4:1 side slopes.

As Phase 1 comes to completion the plant would be moved to a new location along the haul road. This process would repeat a number times during the project life in order to maintain the plant in proximity to the active excavation area.

Phase 2

Phase 2 would continue the identical extraction process in an east to west direction on the adjacent area of approximately 52 acres. The processing plant area and access road would be moved westward. This phase is anticipated to last approximately 3 years. Excavation of the materials would continue and proceed westward in the same fashion as utilized in Phase 1. Total depth of the excavation is expected to be approximately 30 feet. Excavated materials would be loaded directly into the processing plant by a wheeled front-end loader. Reclamation (and also implementation of habitat mitigation) of the Phase 1 area would begin as the final land forms are established. Reclamation would include establishment of all final slopes, placement of final cover, revegetation, weed control, and monitoring.

Phase 3

The excavation process in Phase 3 would continue in a similar nature as in Phase 2 on approximately 48 acres of the valley, west of the Phase 2 area. Phase 3 is anticipated to last approximately 3 years and develop using the same procedure as the two previous phases. During Phase 3, the processing plant would be moved south of the existing channel. At the same time, reclamation (and also implementation of habitat mitigation) of the Phase 2 disturbance would begin, and monitoring of the Phase 1 reclamation would continue.

Phase 4

Phase 4 would continue from Phase 3 on approximately 50 acres in the western portion of the project site. Any remaining reserves within the RP area would be extracted during Phase 4, allowing for full resource depletion. Following the cessation of extractive operations (approximately 2 years), equipment and temporary structures would be removed from the project site. Remaining access road segments and operational related disturbance would be scarified and graded to the final reclamation contours and then revegetated. Reclamation (and also implementation of habitat mitigation) of Phase 3 would begin and monitoring of Phase 2 would continue as Phase 4 commences.

2.4.2 Reclamation Specifics

Reclamation (and habitat mitigation) would be completed for each phase after the completion of mining in that specific area. For example, as mining progresses into the Phase 2 area, final reclamation would begin in the Phase 1 area. Final landforms would be established and the area planted with the native species identified in Section 3.0. This procedure would result in approximately 50 percent of the site (i.e., 241

acres within the mining phases of the total of 479.5 acres onsite) being revegetated with native species. And approximately 53 percent of the existing non-native habitats would be revegetated with native species via reclamation and habitat mitigation (i.e., of the total 452.5 acres of disturbed lands and non-native habitats onsite, 238 acres would be revegetated with native species in the mining phases) by the time extractive operations are complete, in addition to the enhancement of 51 acres of disturbed habitat (i.e., 43.8 acres of tamarisk scrub and 7.2 acres of non-native grassland as part of the overall mitigation enhancement of 64.16 acres) outside of the mining phases.

Reclamation is expected to continue for up to 4 years after the cessation of mining. Work completed during this period would include removal of all equipment, final grading, removal of roads, preparation of seed beds and planting. Monitoring of the revegetation effort and weed control of all the reclaimed areas would continue to be implemented. Erosion and sediment control would also be monitored and repaired if necessary.

2.5 Equipment and Personnel

Mining and processing equipment would be on site over the duration of the project. Approximately eight individuals would be employed onsite. The location of processing equipment, the storage yard, vehicle parking area, and maintenance area, as well as the storage of materials, equipment, and any other materials would be situated in accordance with the applicable sections of the County Zoning Ordinance. No materials, vehicles, or equipment would be stored in the floodway that could pose a health or safety hazard to humans or property pursuant to Section 5472 of the Zoning Ordinance.

Open pit excavation would be completed with front-end loaders and/or excavator. After mining, the materials are transported to the processing plant by front-end loader, conveyor and occasionally an off-road haul truck.

The processing of sand and gravel, to produce PCC aggregates, involves the use of screens, wash circuits, classifiers to segregate materials by particle size, and stockpile materials for loading.

After transport to the processing plant, the sand and gravel raw feed is stockpiled or emptied directly into a hopper, covered with a "grizzly" of parallel bars to screen out large cobbles and rock. From the hopper, the material is moved to the screens by belt conveyors.

Screening separates the sand and gravel into different size ranges. Water is sprayed onto the material throughout the screening process for dust control and to wash any impurities (silt and clay-sized particles) from the material. After screening, the sized-sands and gravel is transported to a stockpile.

A radial stacker/conveyor would be used to stockpile the sized-material into individual stockpiles. Processed material would be ground loaded into over-the-road haul trucks using a front-end loader and transported off site.

Processed material would be stockpiled onsite. Raw material would also be stockpiled to stay in equilibrium with processing capabilities. Stockpile size would depend on production and market demand.

All equipment associated with the mining operations would be located at the processing plant pad. As many as 15 over-the-highway trucks may be parked each day near the entrance to the site (Figure 2.5-2). This parking area would be on the interior of the earthen berm in order to screen the parked vehicles from public view. The processing area would be located initially near the eastern end of the project and progress to the west in advance of the pit. All equipment, structures and the road leading to the processing yard would be removed prior to final reclamation of the property.

2.6 Waste

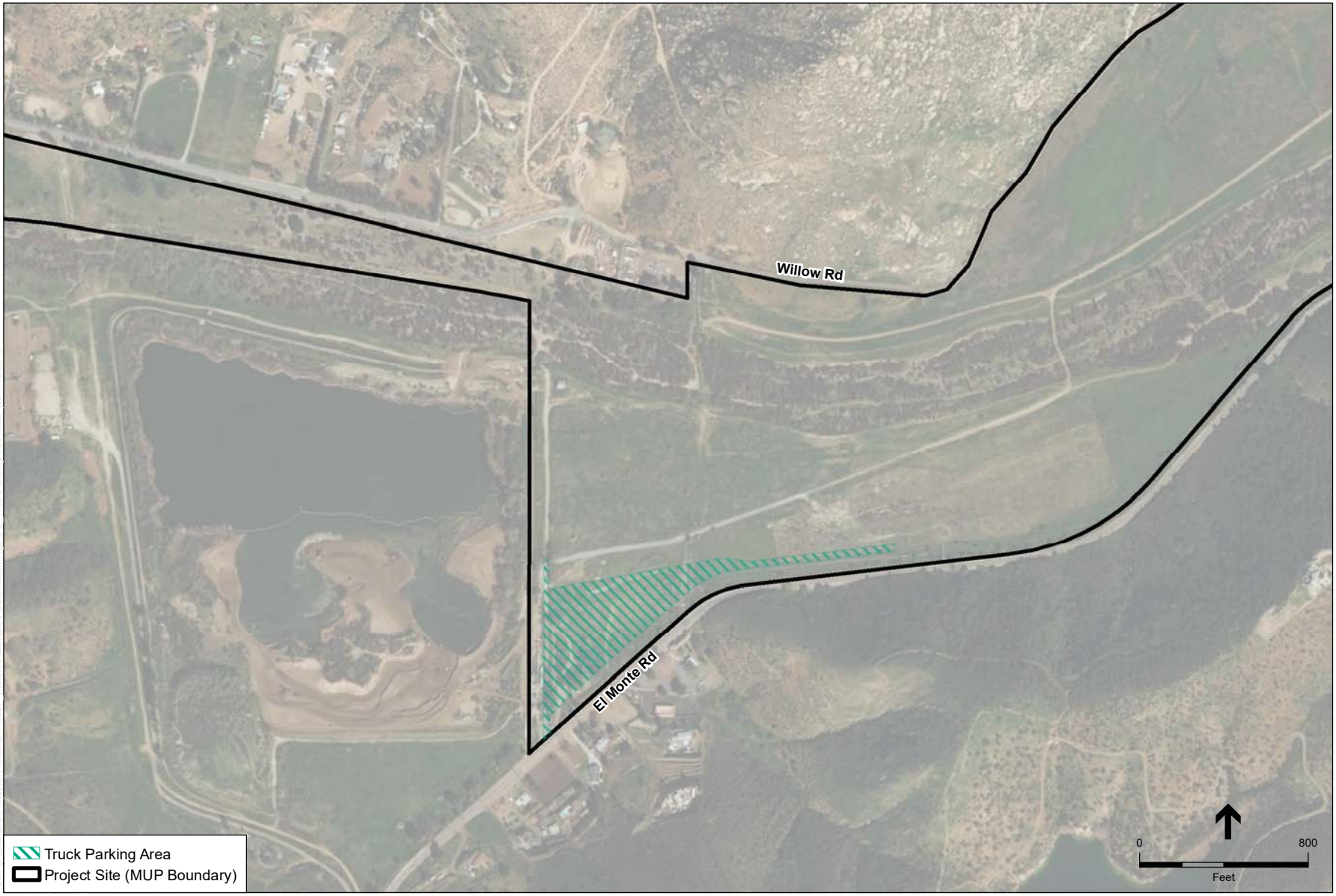
All excavated material not destined for the commercial market would be utilized for reclamation purposes. Domestic refuse would be collected in approved trash bins and hauled to the nearest approved landfill for disposal by a commercial service. Equipment would be maintained onsite and all used oils, fuels and solvents collected in accordance with the Department of Toxic Substances Control regulations and picked up by an approved hauler for recycling.

2.7 Traffic

Processed and sorted materials would be loaded directly onto over-the-road haul trucks from stockpiles located in the plant area. The loaded trucks would be weighed to comply with state regulations and sprayed with water to minimize dust. Watering of the load would occur at the scales.

Haul trucks would approach the project site from I-8 on Lake Jennings Park Road, or SR-67 on Maple View Street. Trucks would enter the project site at the staging/access point on El Monte Road and proceed to the processing area over the onsite access road. When not in active service, approximately 15 trucks would be stored onsite in a designated parking area. All other trucks would be parked off-site at individual trucking company storage yards, arrive at the site empty, and leave with a full load. Most vehicle maintenance and repair would be conducted off-site. Maintenance and repairs of mining and construction equipment would be completed onsite in the processing area.

The maximum annual rate of extraction is expected to be 733,000 cubic yards (1,100,000 tons). This would result in approximately 2,820 cubic yards (4,236 tons) leaving the site each day. Sand extraction and trucking operations would be conducted approximately 260 days per year, on weekdays, between the hours of 7:00 a.m. to 5:00 p.m., with the majority of the truck activity occurring in the morning hours. Approximately 157 trucks would enter and exit the site daily (Table 2). Approximately 14 other traffic (vendor or light vehicle) trips (one way) would be performed per day (Table 3).



SOURCE: ESRI; EnviroMine; The Altum Group; Chang Consultants; ESA; SanGIS

El Monte Sand Mining Project . 140957

Figure 2.5-2

Truck Parking Area

Loaded trucks would utilize El Monte Road to Lake Jennings Park Road, to either Highway 8 or Maple View Street to Highway 67, to deliver the construction aggregate to local markets. The annual maximum production limit (1.1-million tons in any calendar year), as well as seasonal and daily peaking factors, were used to generate conservative (worst-case-scenario) estimates; actual truck trips would be dependent on market conditions.

2.7.1 Truck Trips

Table 2. Daily Truck Trips

End Product	% of Total	Quantity	t/load	Loads/day	Round Trips
Aggregate	100	1,100,000 tons	27	157	314
Total		1,100,000 tons		157	314

* A cubic yard of concrete contains 1.5 tons of aggregate.

Other Vehicle Trips

Table 3. Other Traffic Trips

Trip Type	One way trips/day	Round Trips/day
Light Vehicle Trips	12	24
Vendor Trips[1]	2	4

[1]Vendor trips include fuel, supplies, service companies, etc.

2.8 Storm Water and Erosion Control

2.8.1 Erosion Control

Erosion control for the project would be accomplished through a combination of permanent and temporary structures. Permanent structures include the drop structure to prevent head cutting of the channel during infrequent, high flow events and appropriate slopes, terraces, ditches and down drains where needed. This section addresses temporary erosion control measures that would be used on the active, disturbed areas of the project.

A Notice of Intent (NOI) and Storm Water Pollution Prevention Plan (SWPPP) would be prepared and submitted to the State Water Resources Board for the project site prior to construction. It would reflect the conditions expected to be encountered on the project site. Industrial Best Management Practices (BMPs) and post-extraction BMPs would be designed to protect water quality and be in compliance with CCR section 3706, the Federal Clean Water Act, and the Porter–Cologne Water Quality Control Act. A copy of the SWPPP would also be maintained at the project site. The SWPPP would include an erosion control plan prepared per State and/or County guidelines

The SWPPP and erosion control plan would define BMPs to prevent erosion and the discharge of sediment to surface waters. BMPs would be specified for soil stabilization, sediment control, vehicle track out, and transport of soil by wind (e.g. dust control and wind erosion BMPs). Typical soil stabilization BMPs include preservation of existing vegetation to the maximum extent practicable, mulch, hydroseeding, soil binders, geotextiles, silt fences, fiber roles, gravel bag berms, stockpile management, lining of drainage ditches and/or velocity control structures if needed.

Vehicle track out and dust-related BMPs may include paved or stabilized roadway surfaces, tire washes, use of grates at vehicle entrances or exits, soil stabilizers, regular street sweeping, and water spray. The final plan may incorporate these or additional BMPs as appropriate on the site.

In compliance with CCR section 3710, additional BMPs that would be implemented to protect water quality from pollutants, include, but are not limited to, ensuring fueling would occur in a designated staging area where spills could be contained, storing other hydrocarbon compounds, such as lubricants for equipment, in small quantities at the staging areas in proper containment, and collecting and transporting waste oil generated at the project site off-site for disposal by properly trained and licensed personnel. In addition, proper material handling and storage BMPs would be defined in and enforced through the SWPPP.

Erosion and sedimentation control measures, at a minimum, would be designed for the 20-year 1-hour storm event in accordance with SMARA guidelines. These measures shall be implemented throughout the project life to control surface runoff and drainage for the protection of surrounding land and water resources. Silt fencing, earthen dikes or other erosion control measures would be installed to ensure the overall direction of flow toward the pit or small settling basins. These treatments would also be used to control erosion and sedimentation in areas with the potential for offsite transport of sediment (Attachment A - Hydraulic Analyses and CEQA Drainage Study). These erosion control measures would be maintained until vegetation becomes established to serve as an effective storm water and erosion control measure.

Slopes and perimeter berms would be revegetated with native species common to the Coastal Sage Scrub or Southern Willow Scrub vegetation communities depending on location on the site. Successful revegetation would minimize the potential for erosion and sedimentation. If necessary, straw wattles or silt fencing may be used on slopes to help control erosion during the revegetation process. All areas disturbed by the project would be revegetated as soon as feasible.

Erosion control measures would be implemented in accordance with the following criteria:

Class 1: No soil loss or erosion; topsoil layer intact; well-dispersed accumulation of litter from past year's growth plus smaller amounts of older litter.

NO ACTION NECESSARY

Class 2: Soil movement slight and difficult to recognize; small deposits of soil in form of fans or cones at end of small gullies or fills, or as accumulations back of plant crowns or behind litter; litter not well dispersed or no accumulation from past year's growth.

ACTION: Monitor to see if any further deterioration and action is required.

Class 3: Soil movement or loss more noticeable; topsoil loss evident, with some plants on pedestals or in hummocks; rill marks evident, poorly dispersed litter and bare spots not protected by litter.

ACTION: Any rills or gullies in excess of 8 square inches in cross sectional area and more than 10 linear feet located on finished slopes shall be arrested using straw mulch and hay bales

Class 4: Soil movement and loss readily recognizable; topsoil remnants with vertical sides and exposed plant roots; roots frequently exposed; litter in relatively small amounts and washed into erosion protected patches.

ACTION: Replant via hydroseeding or spread seed and cover with straw mulch. Re-grade, compact with equipment and install silt fences if necessary.

2.8.2 Potential Impacts to Groundwater

Groundwater in Storage

As detailed in the Groundwater Evaluation Technical Memorandum included in Attachment C, aquifer watershed boundaries are generally assumed to be consistent with surface topographic boundaries within El Monte Valley. The project site is part of the larger El Monte Basin watershed (tributary watershed) that begins at the toe of the El Capitan dam on the east and exits to the larger San Diego River watershed to the west.

Sparse groundwater level records have been maintained in the tributary watershed. According to the Technical Memorandum, inspection of the El Monte #14 hydrograph reveals that the groundwater rose to an elevation of roughly 446 feet above mean sea level, or 6 feet below ground surface, in 1984, 1994, 1995, and 1996. This elevation is roughly equal to the ground surface elevation within the San Diego River at that cross-section, indicating the groundwater basin was essentially full (AECOM 2017).

Current annual groundwater consumption within the study area includes a combination of residential water usage; Helix Water District pumping; City of San Diego pumping; County of San Diego pumping for El Monte Regional Park; and agricultural irrigation, transpiration of groundwater-dependent vegetation, and surface water evaporation in Hanson Pond. Annual groundwater consumption within the tributary watershed the last 40 years has fluctuated based on area wide water levels affecting pond evaporation and phreatophyte demand, gradual buildout of the residential water demand, and changes in Helix Water District and City of San Diego pumping. Total groundwater demands over the last 40 years have ranged from approximately 1,240 afy to approximately 2,300 afy with a 40-year average annual groundwater demand of approximately 1,700 afy.

The surface mining and resultant pit will remove material that would have otherwise had the potential to store groundwater. Under current conditions groundwater levels would be below the bottom of the pit, in which case, the excavated material would not affect groundwater storage. In the event of a dam overtopping, the water table may rise above the pit bottom and a pond would form. The quantity of water stored as surface water (approximately 1200 acre-feet) would be greater than if it was stored as groundwater. However, this increase in available storage would be subject to evaporation and induce groundwater inflow into the pit.

- A total of approximately 26,800 acre-feet of groundwater is thought to be in storage in the alluvium, residuum, and fractured rock in the study area.

- Under current conditions and buildout (no project) of the 40-year evaluation period (1976–2015), the minimum amount of groundwater in storage after the drought conditions of the mid-1970s is about 72% in 1991/1992; over the last 4 years (2011–2015), the minimum amount of groundwater in storage is about 77% in 2014–2015.

- Proposed project extraction of approximately 7.5 million cubic yards of material would result in the loss of about 600 acre-feet of groundwater storage capacity.

- Under future conditions and buildout (with an unmitigated project) of the 40-year evaluation period (with a repeat of the climatic conditions from 1976–2015), the minimum amount of groundwater in storage after the drought conditions similar to those in the mid-1970s is about 65% in 2006/2007; over the last 4 years of the water balance, the minimum amount of groundwater in storage is about 70% in the last year of the water balance.

- Under future conditions and buildout (with a mitigated project) of the 40-year evaluation period (with a repeat of the climatic conditions from 1976–2015), the minimum amount of groundwater in storage after the drought conditions similar to conditions in the mid-1970s is about 71% in 2003/2004; over the last 4 years, the minimum amount of groundwater in storage is about 79% in the last year of the water balance.

Water Quality

In August 2016, AECOM collected water samples from three wells to establish a water quality baseline. In addition, water quality data was obtained from one of the El Monte Regional Park supply wells. These samples were analyzed for nitrate (as nitrogen [N]) and total dissolved solids (TDS) (Attachment C). Due to the findings of the Groundwater Evaluation Technical Memorandum (Attachment C), water quality of the aquifer shall not be diminished (AECOM 2017).

Water Balance

Sources of groundwater recharge include precipitation, runoff, soil moisture, El Capitan Dam periodic overtopping, and streambed infiltration. The average annual rainfall for the project site has been about 16 inches per year over the last 40 years, and has ranged between 5 and 31 inches (AECOM 2017). As stated above, the most recent overtopping event was in 1993 and thus, groundwater levels have been declining thereafter for the past 15 years. Based on this declining trend, groundwater levels have declined by approximately 1.7 feet per year (ft/yr) on average, with existing levels being about 40 to 45 feet below ground surface (bgs) (AECOM 2017).

The following water balance evaluation is based on the draft Groundwater Evaluation Technical Memorandum (Attachment C) prepared by AECOM in September 2017.

- Under current conditions (no project), the total groundwater recharge over the last 40 years was estimated to range from about 140 afy to about 8,600 afy with a 40-year average annual groundwater recharge about 1,800 afy.

- Under future conditions, with a similar rainfall pattern as the last 40 years, the total groundwater recharge is estimated to range from about 160 afy to

about 9,300 afy with a 40-year average annual groundwater recharge about 2,100 afy.

- The potential for a reduction to 50 percent or more of the basin storage is analyzed based upon the "water budget" of the tributary watershed (i.e., the amount of watering entering the groundwater basin and the amount of water leaving the groundwater basin) with implementation of the proposed project.

- While the proposed project would not use on-site surface or groundwater, effects from the proposed project would result in changes to the "water budget" as a result of three factors: (1) stormwater runoff from precipitation events that flow into the excavation pit, (2) potential evapotranspiration losses if exposed water stands within the excavation pit, and (3) potential changes in the amount of evapotranspiration (ET) of on-site groundwater dependent habitat, which is comprised of phreatophytes.

- Once the excavation pit has been fully restored as revegetated open space per the Reclamation Plan and Revegetation Plan, approximately 368 afy is anticipated to be retained and stored in the groundwater basin as an addition.

- Based on periodic overtopping events from the El Capitan Reservoir that would result in temporary standing water in the excavation pit, evaporation losses from the standing water are estimated at 4.66 afy per year of exposed water as a subtraction.

- ET rates of phreatophytic habitats were compared against the predicted basin-wide groundwater elevation each year (ranging from 15-20 feet to 40-45 feet below the bottom of the excavation pit), which would remove 325 to 366 afy, depending on the groundwater levels, from ET of on-site groundwater dependent habitat.

- When combining all three factors, the proposed project would be considered a net benefit to the groundwater basin as the amount of water estimated to infiltrate the groundwater basin through capture of stormwater runoff would be greater than the amount of water estimated to be lost through evaporation and ET. In addition, the planned removal of exotic species outside of the mining phases (but within the MUP boundary) for habitat mitigation including the deep rooted species, tamarisk (*Tamarix ramosissima*), would equal a net savings of approximately 71 afy, which provides an additional project benefit.

For these reasons, the proposed project would not result in a 50 percent reduction of groundwater in storage and would provide environmental benefits to the tributary watershed. Thus, based on the above stated factors, the storage capacity, water quality, and recharge potential of the groundwater aquifer shall not be diminished.

Recommendations

- Since open wells could provide a conduit for groundwater contamination and could present a safety hazard, existing (and any future) onsite wells should be secured with locking covers. Wells that would not be used in the future should be properly abandoned.

2.8.3 In-Stream Mine Impacts

In-stream surface mining operations shall be conducted in compliance with Section 1600 et seq. of the California Fish and Game Code, section 404 of the Clean Water Act, and Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403). Surface mining and reclamation activities shall be conducted to protect on-site and downstream beneficial uses of water in accordance with the Porter-Cologne 47 Water Quality Control Act, Water Code section 13000, et seq., and the Federal Clean Water Act, 33 U.S.C. section 1251, et seq.

Any federal or state jurisdictional features would require appropriate permits from the applicable regulatory agencies. Jurisdictional features would be managed in accordance with the requirements of the applicable permits from the agencies to minimize and avoid impacts to the resources, and mitigate for impacts where appropriate and required.

Waters of the United States

Waters of the United States that are subject to the jurisdiction of the U.S. Army Corps of Engineers (USACE) include the ephemeral channel (Ordinary High Water Mark: OHWM limits) within the San Diego River floodplain. The San Diego River, a non-RPW through this portion of the project site, functions as a riverine and palustrine system that conveys water flow downstream toward the Pacific Ocean, a Traditional Navigable Waters (TNW). The San Diego River within the project site is mapped as palustrine by the USFWS Wetlands Mapper; however, based on data collected during the field survey, the river contains riparian habitat but lacks hydric soils to be considered a federally protected wetland. Additionally, no hydric soils are mapped for the entire San Diego River. Therefore, a total of 1.66 acres of non-wetland waters of the United States (ephemeral channel), subject to USACE jurisdiction under Section 404 of the Clean Water Act, occurs in the project boundary. Additionally, the ponded area in the northeastern portion of the project boundary contains all three wetland parameters to be considered a federally protected wetland. Therefore, 0.39 acre of wetland waters of the United States subject to USACE jurisdiction occur in the project boundary. The total waters of the United States delineated on the project boundary is 2.05 acres. Waters of the U.S., including wetlands would be avoided to them maximum extent practicable. Impacts to Waters of the U.S. require the submission of a section 404 permit application, pursuant to Section 401 of the Clean Water Act.

Waters of the State

The features described above as subject to USACE's jurisdiction also potentially fall under the authority of the San Diego Regional Water Control Board (RWQCB) in accordance with Section 401 of the CWA. Therefore, 1.66 acres of non-wetland waters of the State and 0.39 acre of wetland waters of the State are subject to RWQCB jurisdiction within the project site, for a total of 2.05 acres of waters of the State. Impacts to Waters of the State require the submission of a Water Quality Certification application to the RWQCB, pursuant to Section 401 of the Clean Water Act.

CDFW Jurisdiction

Areas potentially under CDFW jurisdiction include the San Diego River floodplain and associated riparian habitat (tamarisk scrub), as well as the ponded area in the northeast portion of the project boundary. Based on the data collected during the delineation survey, the ephemeral floodplain of the San Diego River displays evidence of flow, and the outer limits of the tamarisk scrub canopy provide habitat for a number of species. Therefore, the 86.14 acres of the San Diego River within the project site is potentially subject to CDFW jurisdiction. Additionally, the ponded area in the northeast portion of the project contains surface water at least periodically and associated southern willow scrub vegetation that provides habitat for species. Therefore, the ponded area contains 0.39 acre of wetland habitat subject to CDFW jurisdiction. The total waters and wetlands present on the project boundary, potentially subject to CDFW jurisdiction, is 86.53 acres. Impacts to CDFW jurisdictional streambed and riparian habitat would require the submission of a Streambed Alteration Agreement application to CDFW, pursuant to Section 1600 of the CFGC.

County of San Diego Wetlands

Areas potentially considered County of San Diego wetlands and subject to regulation under the County RPO include the 86.14 acres of the San Diego River and associated tamarisk scrub habitat, and the 0.39-acre ponded area in the northeast portion of the project boundary. These areas contain a dominance of hydrophytes and the presence of a perennial stream, and a total 86.53 acres of County of San Diego wetlands occur in the project boundary.

Potential Impacts to Jurisdictional Resources

Table 4 provides a summary of the area of potential direct impacts that would occur to jurisdictional resources from project implementation within the 479.5-acre proposed project area. Mining activities would temporarily and permanently affect jurisdictional non-wetland waters and/or riparian habitats as defined by USACE, RWQCB, CDFW, and the County of San Diego through removal of vegetation, grading, placement of temporary structures, mineral extraction, and placement of fill to create a bench around the mined pit. The proposed project would result in 0.01 acre of permanent impacts and 0.35 acre of temporary impacts to non-wetland waters of the U.S./State (USACE/RWQCB); 0.36-acre total. The proposed project would also result in 39.18 acres of temporary impacts and 2.28 acres of permanent impacts to State waters and associated riparian habitat, and County of San Diego wetlands; 41.46 acres total. In permitting projects, the USACE (and CDFW) seeks to meet the goal of no net loss of functions and values of wetlands and often other waters of the United States and would require at a minimum the restoration of disturbed areas to original contours and a revegetation program to restore jurisdictional areas disturbed by the proposed project. While San Diego County defined wetlands would be impacted by the proposed project, no federal or state protected wetlands would be impacted.

Table 4. Impacts to Jurisdictional Resources

Jurisdiction	Temporary Impacts	Permanent Impacts	Total Impacts
Federal (USACE)/State (RWQCB)	0.35	0.01	0.36
State (CDFW)/County (San Diego)	39.18	2.28	41.46
Total	**39.53**	**2.29**	**41.82**

MM-BIO9: Jurisdictional resources. Direct impacts to jurisdictional wetlands and waters shall be mitigated through implementation of the Revegetation Plan (i.e., mitigation plan), resulting in habitat restoration of higher quality than the habitat that is being impacted. Impacts to riparian resources would total 41.46 acres, with a required mitigation ration of 3:1, required mitigation for riparian resources shall be 124.38 acres (Table 5). Impacts to non-vegetated streambed/non-wetland waters would total 0.36 acre, with a mitigation ratio of 1:1, required mitigation shall be 0.36 acre. No USACE-defined wetlands would be impacted by the project. Mitigation ratios are based on the requirements in the County's Guidelines for Determining Significance (County 2010a) for areas outside of the MSCP (Table 6).

Table 5. Mitigation for Impacts to Jurisdictional Resources (acres)

Jurisdictional Resource	Impacts	Mitigation Ratio[1]	Required Mitigation
Riparian (CDFW and County)	41.46	3:1	124.38
Unvegetated Streambed/Non-Wetland Waters (CDFW and USACE)	0.36	1:1	0.36

[1]Wetland mitigation shall include a minimum 1:1 creation or restoration component, while enhancement of existing habitats may be used to make up the remaining requirements.

Analysis of Impacts to Jurisdictional Resources

The *County of San Diego Guidelines for Determining Significance for Biological Resources* was used to evaluate adverse environmental effects the project may have on jurisdictional wetlands and waterways. *The project would have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.* A total of 0.36 acre of non-wetland waters of the United States would be affected by the project. However, no project impacts would occur to federally-defined wetlands and the area would be reclaimed and revegetated via habitat mitigation restoration with higher quality self-sustaining wetlands and riparian habitats. No federal vegetated wetlands occur on-site and therefore the project would not result in impacts to federal wetlands. due to draw down of the groundwater table. The project would not result in impacts to federal wetlands due to the absence of an adequate protective wetland buffer.

2.9 Utilities

2.9.1 Water and Wastewater

Operational Water

A water truck is used to water material stockpiles and unpaved areas periodically throughout the day for dust suppression purposes. Other water requirements include surface watering of outgoing loads, dust suppression for the processing equipment material washing and irrigation (if used). Water needs at the site would be provided by a local water district pipeline. Water needs are not permitted to be met by groundwater from on-site well and may not be used from any surface water that may pond within the excavation pit.

Water used to wash the excavated material would be retained in a series of connected settling basins near the plant. Two submersible pumps enclosed in a waterproof casing would feed and circulate the wash water. Of the 203 gallons per minute (gpm) of water used in the washing operation, 90 percent would be continuously reused and recycled. Approximately 25 gpm of continuous water input would be required to make up for the 10 percent lost through evaporation and retention on material.

Mining operations require water for dust control on roads and at the processing plants. Water is also required for washing some of the material as it is processed in the secondary plant. Water usage depends on production volume of material to be washed. Production volume would vary from year-to-year with market demand; however, the mines estimated water usage assumes that 70 percent of the maximum annual production, approximately 513,000 cubic yards (770,000 tons) per year, would be washed. Water usage is estimated at 68 acre-feet annually for this production rate. A single water truck would be required to control dust at the site. Water required to suppress dust from the mining operations is estimated to require an additional 20 acre feet of water per year. Irrigation, if used, would utilize approximately 12 acre feet per year for a total water use of 100 acre feet per year.

Sewage Disposal

Mining operations would utilize portable restrooms provided by a private vendor. The portable restrooms are serviced at appropriate intervals.

Drinking Water

Drinking water would be provided by a private vendor.

2.9.2 Electricity and Telephone

Electrical power is required for mining and processing operations, which is provided by San Diego Gas & Electric through an overhead transmission line that would enter the site from the south.

Telephone service would be provided by cellular service.

2.9.3 Fire and Law Enforcement Services

A fire station operated by the Lakeside Fire Protection District is located at 14008 Highway 8 Business El Cajon, CA, 92021. This station is approximately 2.5 road miles southwest of the project site. Access to the site from the fire station is provided by Lake Jennings Park Road and El Monte Road. A second fire station, also operated by the Fire District, is about the same distance to the west of the project site at 12216 Lakeside Avenue, Lakeside, CA, 92040.

Law enforcement services are provided by the San Diego County Sheriff's Department from the Santee substation.

2.9.4 Equipment Fuel

Diesel would be delivered to the site by a private supplier to fill a portable, trailer mounted, tank onsite. This fuel wagon would be utilized to service the onsite mining equipment and would be stored in compliance with all regulations. If gasoline is needed on the site for small tools, it would be contained in approved, five-gallon fuel cans with a maximum of 10 gallons stored at the site at any time. These containers would be stored in a locked container away from flammable materials. Small trucks and passenger vehicles would utilize local commercial stations for fuel.

2.10 Safety and Security

Fencing (3-strand barbed wire) would be installed along the exterior edges of the pit (see Attachment B). This would allow public use of the trail easements in the setback area but restrict public access to the operational areas of the site. The trail easement adjacent to El Monte Road would not be accessible to recreationists during the work week. Signage would be placed along the fence at appropriate intervals warning the public of hazards and restricted access.

A gate would be installed at the ingress/egress roads to restrict public vehicular access. This gate would be closed and locked during periods of non-operation. Signs would be posted at the entrance identifying the name of the operation, permit number and emergency contact information. The site would be patrolled on a regular basis to discourage trespass.

3.0 Reclamation and Revegetation

The Reclamation Plan describes reclamation of the extraction area and sets forth standards to assure adequacy of the plan measures. Attachment B - Plot Plan shows the proposed reclaimed landform that would be developed upon resource depletion and final backfilling.

The goals of this Reclamation Plan are to:

1. Maximize the recovery of aggregate in a safe and efficient manner.
2. Return extracted areas to a useful purpose following depletion of natural mineral resource.
3. Restore vegetation through the use of native species.

4. Mitigate, by design, potential environmental impacts on the land that might otherwise be created by extraction.

Resource extraction would lower the existing elevation of the area by approximately 30 feet and create perimeter slopes with a nearly level 20-foot wide bench separated by 3H:1V slopes. Slopes, at maximum 3H:1V overall, would constitute the perimeter of the site. Exterior slopes would be cut to a maximum 3H:1V and would be setback 150 feet from the property limits on the north and south, 300 feet from Dairy Road on the east, and 30 feet on the west.

Following completion of the mining and reclamation activities, the entire site would be reclaimed and revegetated with the exception of recreational trail easements.

3.1 Roads

Access to the project site would be through an existing entrance (ingress driveway) located off of El Monte Road approximately 0.5 miles east of the intersection of El Monte Road and Lake Jennings Park Road. The existing access point is located in the north central part of the extraction area and would be retained for post mining use. An egress point from El Monte Road would be installed approximately 0.4 miles east of the ingress driveway. Onsite roads would be reclaimed. Lead Agency approval would be required should the property owner request that specific roads remain in place. Reclaimed roads would be stripped of road base materials, covered with 4 inches of topsoil or wash fines if needed, ripped to relieve compaction, and revegetated by hydroseeding with the Coastal Sage Scrub seed mix. The haul road within the pit would be mined out as part of the mine plan and revegetated with the appropriate seed mix.

3.2 Removal of Equipment

All equipment used in the operation is portable and would be removed from the site prior to final reclamation. This includes all loaders, bulldozers, haul trucks, storage containers and water trucks, as well as, the portable processing equipment. The truck scales and office trailer would be removed. Surplus equipment and supplies stored onsite would be moved from the excavation area and transported off-site. All trash and miscellaneous debris would be collected and hauled to an appropriate waste disposal facility.

All existing hazardous materials located onsite shall be disposed of and transported in accordance with all applicable regulations/ordinances. Any wells located on the property shall be destroyed under permit and inspection by Department of Environmental Health. Wells owned by entities other than the operator would be retained at the owner's request.

3.3 Slope Grading & Compaction

All slopes would be cut from native materials in compliance with geotechnical recommendations (see attached Geotechnical Report, Attachment D). These recommendations address issues including, but not limited to, compacted fills, fill

slope construction, periodic observation of mine benches above working areas, and slope protection, as follows:

- Overall final cut slopes in soil/alluvial materials should be no steeper than 3h:1v up to the maximum proposed height (approx. 30 feet).

- Periodic observations of mine benches above working areas for indications of potential instability during mine operations.

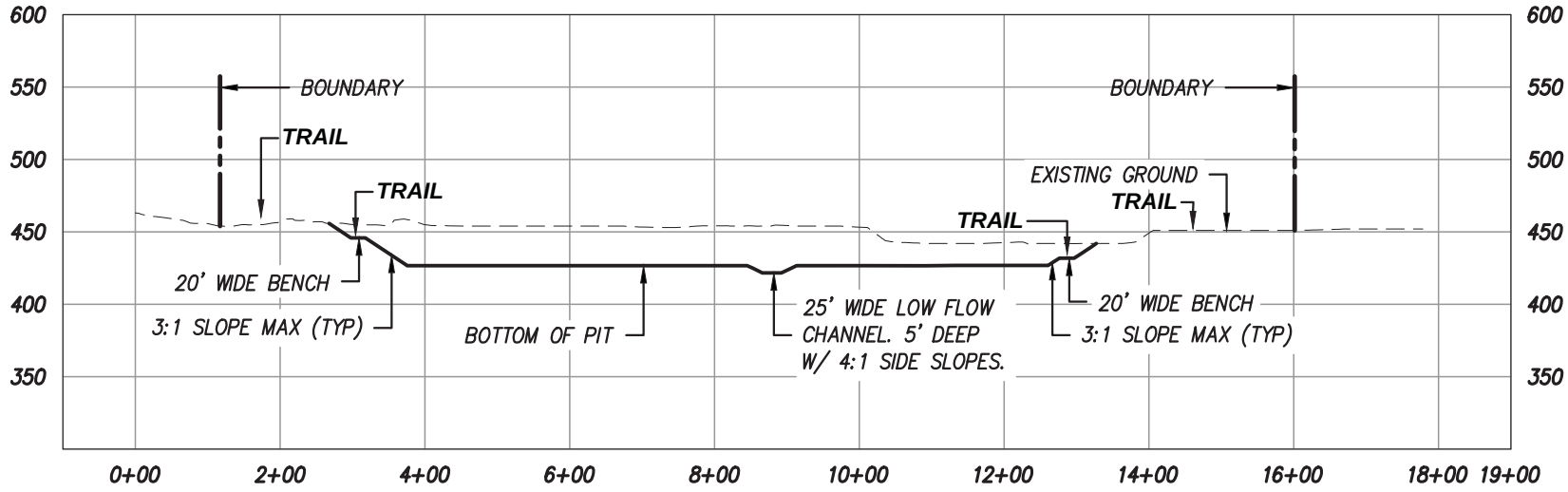
- If engineered fills are needed, the on-site soils and production by products should provide adequate quality fill material provided they are free from organic matter and other deleterious materials.

- Fills should be spread in near-horizontal layers, approximately 8 in. thick. Thicker lifts may be approved by the geotechnical engineer if testing indicates that the grading procedures are adequate to achieve the required compaction. Each lift should be spread evenly, thoroughly mixed during spreading to attain uniformity of the material and moisture in each layer, brought to near optimum moisture content and compacted to a minimum relative compaction of 90 percent in accordance with ASTM D1557.

- Project slopes should be protected from erosion by establishment of vegetation as soon as possible. Also, slopes should be protected with drainage improvements such as berms and/or levees as necessary to prevent slope erosion.

The bench, cut slopes and pit floor would be continuously developed as the pit progresses to the west using wash fines incorporated with topsoil as a cover material. The bench would consist of a 20-foot wide, relatively flat top at 10 feet below the existing ground surface and 20 feet above the pit floor. Slopes above and below the bench top would be at a 3H:1V gradient (see Figure 3.3-1). The bench surface would slope gently towards the rear of the bench. There would be approximately 20 feet of elevation difference between the surface of the bench and the bottom of the pit. See Attachment B, Plot Plans, for the location of proposed trail easements.

All final cut slopes, on the perimeter of the excavated area would be reclaimed to a maximum 3H:1V gradient. A single bench would be cut between the pit bottom and the 150-foot setback. Brow ditches and berms would be placed at the top of the slopes to prevent slope erosion. Disturbed land to be reclaimed (including reclamation revegetation and habitat mitigation restoration), including the golf course pit and roads would be approximately 241 acres (i.e., the entire temporary impact area associated with the mining phases). Based on the slope stability study conducted for the site, all final, slopes would have a factor of safety of 1.5 for static and 1.0 for pseudostatic conditions. (Attachment D)



SOURCE: Enviromine

Figure 3.3-1
Reclaimed Bench Design

The onsite materials and sand production by-products should provide adequate quality fill material provided they are free from organic matter and other deleterious materials. Fill should be inorganic, non-expansive granular soils.

Fill would be spread in near-horizontal layers, approximately 8 inches thick. Thicker lifts may be approved by the geotechnical engineer if testing indicates that the grading procedures are adequate to achieve the required compaction. Each lift would be spread evenly, thoroughly mixed during spreading to attain uniformity of the material

and moisture in each layer, brought to near optimum moisture content and compacted to a minimum relative compaction of 90 percent in accordance with ASTM D1557 or as approved by the geotechnical engineer.

The final slopes would also be track-walked to compact/stabilize the soils and create depressions for erosion control and water retention. Disturbed areas would be seeded at regular rainy season intervals during the course of the project as final slope areas become available for hydroseeding or planting. If necessary, over compaction of the surface soil would be relieved by ripper and/or disc to improve seed bed conditions for plant growth.

3.4 SMARA Revegetation

The objective of revegetation discussed in this plan is to provide vegetative cover for disturbance created by extractive operations, controlling erosion, and stabilizing slopes. Revegetation for the purpose of habitat mitigation and restoration is provided in the Conceptual Revegetation Plan and is not part of this Reclamation Plan. Plant materials to be used are capable of self-regeneration without continued dependence on irrigation, soil amendments or fertilizer. Revegetation would be sufficient to stabilize the surface against the effects of long-term erosion and is designed to meet the post-extraction land use objectives of the site. Native species seed mixes would be used to establish vegetative cover and are designed to meet the variety of physical characteristics present.

In response to a request from the County to revise some of the plant palettes and seed mixes to include a higher proportion of transitional and upland species (due to fluctuations in hydrology conditions onsite and a drier climatic trend including potentially lower groundwater elevations over time), particular plant palettes and seed mixes were revised below. The County approved the revised plant palettes and seed mixes on August 15, 2017.

Seed mixes and container plants for the RP area are presented in Tables 6A through 6H. Container plants are not required for reclamation but may be used to supplement seed application and the reclamation process.

Table 6A Vegetated Streambed Seed Mix

Species	Common Name	Lbs per Acre	Min. Percent Purity/ Germination	Lbs Pure Live Seed (PLS) per Acre
Ambrosia psilostachya	Western ragweed	5.0	45/45	1.01
Artemisia douglasiana	Douglas' mugwort	6.0	15/40	0.36
Artemisia palmeri	San Diego sagewort	4.0	20/50	0.40
Iva hayesiana	San Diego Marsh elder	4.0	30/30	0.36
Juncus bufonius	Toad rush	3.0	95/60	1.71
	Total:	22		3.84

Table 6B Riparian Forest Seed Mix

Species	Common Name	Lbs per Acre	Min. Percent Purity/ Germination	Lbs Pure Live Seed (PLS) per Acre
Ambrosia psilostachya	Western ragweed	4.0	45/45	0.81
Artemisia californica	California sagebrush	3.0	30/60	0.54
Artemisia douglasiana	Douglas' mugwort	4.0	15/40	0.24
Artemisia palmeri	San Diego sagewort	3.0	20/50	0.30
Baccharis pilularis	Coyote brush	3.0	10/50	0.15
Camissoniopsis bistorta	California sun cup	1.0	90/80	0.72
Isocoma menziesii var. *menziesii*	Coastal goldenbush	3.0	18/40	0.22
Lupinus hirsutissimus	Stinging lupine	1.0	98/75	0.74
Oenothera elata ssp. *elata*	Tall evening primrose	1.0	98/84	0.82
Phacelia cicutaria	Catterpillar phacelia	1.0	98/90	0.88
Pluchea sericea	Arrowweed	5.0	7/20	0.07
Rosa californica	California rose	1.0	85/53	0.45
	Total:	30.0		5.94

Table 6C Riparian Scrub Seed Mix

Species	Common Name	Lbs per Acre	Min. Percent Purity/ Germination	Lbs Pure Live Seed (PLS) per Acre
Acmispon glaber	Deerweed	3.0	95/80	2.28
Amsinckia menziesii var. *intermedia*	Fiddleneck	3.0	45/65	0.87
Artemisia californica	California sagebrush	4.0	30/60	0.72
Artemisia dracunculus	Tarragon	3.0	10/50	0.15
Baccharis pilularis	Coyote brush	2.0	10/50	0.10
Camissoniopsis bistorta	California sun cup	2.0	90/80	1.44
Heterotheca grandiflora	Telegraph weed	2.0	60/55	0.66
Isocoma menziesii var. *menziesii*	Coastal goldenbush	3.0	18/40	0.21
Lupinus bicolor	Dove lupine	2.0	98/85	0.83
Lupinus hirsutissimus	Stinging lupine	2.0	98/75	0.74
Oenothera elata ssp. *Hookeri*	Evening primrose	2.0	98/84	0.82
Phacelia cicutara		2.0	98/90	0.88
Pseudognaphalium beneolens	Fragrant everlasting	3.0	5/45	0.06
Pseudognaphalium biolettii	Bicolor cudweed	3.0	4/45	0.06
	Total:	32.0		9.82

Table 6D Coastal Sage Scrub Seed Mix

Species	Common Name	Lbs per Acre	Min. Percent Purity/ Germination	Lbs Pure Live Seed (PLS) per Acre
Acmispon glaber	*Deerweed*	5.0	95/80	3.80
Amsinckia menziesii var. *intermedia*	Fiddleneck	2.0	45/65	0.58
Artemisia californica	California sagebrush	5.0	30/60	0.90
Camissoniopsis bisorta	California suncup	2.0	90/80	1.44
Chaenactis glabriuscula	Yellow pincushion	2.0	15/55	0.16
Croton californicus	California croton	2.0	90/40	0.72
Eschscholzia californica	California poppy	1.0	98/80	0.78
Heterotheca grandiflora	Telegraph weed	2.0	60/55	0.66
Lupinus bicolor	Dove lupine	3.0	98/85	2.49
Mimulus aurantiacus	Bush monkeyflower	2.0	4/70	0.06
Pseudognaphalium biolettii	Bicolor cudweed	3.0	4/45	0.06
Pseudognaphalium californicum	California everlasting	3.0	5/50	0.06
Sisyrinchium bellum	Blue-eyed grass	1.0	98/80	0.78
Stipa lepida	Foothill needlegrass	3.0	90/71	1.92
Stipa pulchra	Purple needlegrass	2 .0	90/75	1.36
Vulpia microstachys	Small fescue	4.0	90/80	2.88
	Total:	42.0		18.65

Table 6E Vegetated Streambed Container Plants

Species	Common Name	Container Size	Spacing (feet on center)	Density per Acre
Artemisia douglasiana	Douglas' mugwort	1 gallon	6	220
Artemisia palmeri	San Diego sagewort	1 gallon	12	140
Iva hayesiana	San Diego Marsh elder	1 gallon	12	60
Muhlenbergia rigens	Deergrass	1 gallon	8	130
Rosa californica	California rose	1 gallon	6	130
	Total:			680

Table 6F Riparian Forest Container Plants

Species	Common Name	Container Size	Spacing (feet on center)	Density per Acre
Artemisia douglasiana	Douglas' mugwort	1 gallon	10	100
Artemisia palmeri	San Diego sagewort	1 gallon	12	60
Baccharis salicifolia	Mulefat	1 gallon	14	160
Ericameria palmeri var. Palmeri	Palmer's sagewort	1 gallon	25	50
Muhlenbergia rigens	Deergrass	1 gallon	10	82
Platanus racemosa	Western sycamore	5 gallon	60	20
Pluchea sericea	Arrow weed	1 gallon	15	70
Populus fremontii	Fremont cottonwood	5 gallon	40	40
Quercus agrifolia	Coast live oak	5 gallon	60	16
Salix exigua	Sandbar willow	1 gallon	15	50
Salix gooddingii	Black willow	1 gallon	50	16
Salix laevigata	Red willow	1 gallon	20	64
Salix lasiolepis	Arroyo willow	1 gallon	16	92
Sambucus mexicana	Blue elderberry	5 gallon	35	40
Thalictrum fendleri var. *polycarpum*	Many fruit meadow-rue	1 gallon	30	30
	Total:			890

Table 6G Riparian Scrub Container Plant5

Species	Common Name	Container Size	Spacing (feet on center)	Density per Acre
Artemisia californica	California sagebrush	1 gallon	25	70
Artemisia dracunculus	Tarragon	1 gallon	12	80
Artemisia palmeri	San Diego sagewort	1 gallon	14	110
Baccharis pilularis	Coyote brush	1 gallon	35	50
Baccharis salicifolia	Mulefat	1 gallon	10	270
Ericameria palmeri var. *palmeri*	Palmer's sagewort	1 gallon	30	80
Isocoma menziesii var. *menziesii*	Coastal goldenbush	1 gallon	35	50
Pluchea sericea	Arrow weed	1 gallon	16	50
Salix exigua	Sandbar willow	1 gallon	16	40
Salix lasiolepis	Arroyo willow	1 gallon	35	30
Sambucus mexicana	Blue elderberry	5 gallon	40	60
	Total:			890

Table 6H Coastal Sage Scrub Container Plants

Species	Common Name	Container Size	Spacing (feet on center)	Density per Acre
Artemisia californica	California sagebrush	1 gallon	10	235
Eriogonum fasciculatum	California buckwheat	1 gallon	30	30
Isocoma menziesii var. *menziesii*	Coastal goldenbush	1 gallon	20	60
Malacothamnus fasciculatus	Bush mallow	1 gallon	30	30
Malosma laurina	Laurel sumac	1 gallon	50	15
Mimulus aurantiacus	Bush monkeyflower	1 gallon	30	40
Nassella lepida	Foothill needlegrass	1 gallon	12	160
Nassella pulchra	Purple needlegrass	1 gallon	12	110
	Total:			680

Reclamation revegetation and habitat mitigation restoration would be conducted on the entire area disturbed from mining and processing activities. Prior to seeding, materials utilized as final cover would be analyzed to determine the presence of elements essential for plant growth. If the soils analysis shows that fertility levels or soil constituents are inadequate to successfully implement the revegetation program, amendments may be incorporated into the soil through hand planting, sowing and/or hydroseeding. Wire cages would be installed as necessary to protect to plants from herbivore damage if necessary.

The planned distribution of reclamation revegetation areas and sensitive habitat mitigation areas is presented in Figure 3.4-1. Within the temporary impact area of the mining phases totaling 226.40 acres, 113.92 acres are specified for habitat mitigation for impacts to sensitive habitats and the remainder, 112.48 acres, are specified for reclamation revegetation. This figure also depicts the proposed trail system.

Four seed mixes have been developed (see Tables 6A-6D). The following seed specifications shall be followed to the extent practicable.

- Seed shall be provided by a qualified supplier and seed shall be collected from the project vicinity (within the same watershed or a 25-mile radius) to the extent feasible. Preferably, seed shall be legally collected from the immediate project area. All seed must be delivered to the site in sealed and labeled packaging along with a California State Agricultural Code seed certification including the supplier's name, geographic location and collection date, and the tested purity and germination percentage rates. The restoration ecologist shall inspect the seed prior to its application onsite and shall reject seed lacking certified tags or not conforming to specifications.

- Seed application rates are provided in Tables 6A-6D. If the delivered seed differs from specified purity and germination rates, the total pounds per acre rates shall be adjusted accordingly to achieve the specified pounds of pure live seed (PLS).

- Prior to seeding, the restoration ecologist shall confirm that the seed bed is properly prepared. Site preparation shall include removal of weed species and weed litter/debris and trash, sufficient de-compaction and roughening (i.e., scarification) of the soil surface, and implementation of erosion-control materials where necessary. Seed shall be applied after site preparation, container plant installation (in areas where container plants are proposed), and the installation of any erosion-control measures.

- The specified seed mixes for the riparian areas shall be applied as dry-seed mixes. Hydroseed mixes tend to float when exposed to stream flows, transporting the seeds downstream. The riparian transitional and upland mixes shall be applied as a hydro seed mix and shall include natural fiber mulch or bonded fiber matrix in the slurry for erosion control. The seeds shall be ordered and delivered in separate, original containers by species and inspected by the restoration ecologist. The restoration ecologist shall reject any seed that contains weeds or is otherwise not as specified.

Container plants shall be used to supplement seed mix (see Tables 6E-6H). The restoration ecologist shall direct the final placement of container plants in the field. The following container plant specifications shall be followed to the extent practicable.

- Container plants shall be provided by a qualified nursery and plants shall be propagated from propagules from the project vicinity (within a 10-mile radius) to the extent feasible. Preferably, plants shall be propagated from materials from the immediate project area. Plants shall be certified to be free of Argentine ants prior to delivery onsite.

- The restoration ecologist shall confirm all plants are delivered to the site in a healthy and vigorous condition before they are installed. Larger container sizes are acceptable if approved by the restoration ecologist. The restoration ecologist shall also help direct plant layout before they are installed.

- Container Plant Installation Steps:

    - Dig a hole 2 times as deep and 3 times as wide as the container. Break up soil clods and avoid a smooth-sided "bathtub" effect in the hole. Fill the planting hole with water and allow it to drain completely into the soil.

    - Partially backfill the hole with native soil to allow planting at the proper depth. Moisten and gently tamp the backfill into place. Remove the plant from its container and place on top of the moistened backfill so the plant collar is approximately 1 inch above finish grade. Then backfill the remaining hole with native soil.

    - Create a planting basin berm, roughly 2 feet in diameter around the plant, and apply 1 to 2 inches of coarse, organic, weed-free mulch inside the berm. Then water thoroughly and allow to drain.

3.5 Irrigation

If needed to assist with the propagation of reclamation revegetation, irrigation of reclaimed lands shall be used during the first two years after planting to augment natural precipitation. If used, an irrigation plan shall be developed in accordance with County Ordinance and submitted to the County for approval prior to implementation. Watering shall only occur to assist in initial establishment and/or in long periods of extended dryness. Irrigation shall not be used continuously after seeding.

Water purchased from a public utility shall be utilized if irrigation is implemented. Irrigation shall be completed in compliance with County's Water Conservation in Landscaping Ordinance.

3.6 Interim Seeding

Where final landforms have been established, but are not yet available for final reclamation, erosion control shall be provided through revegetation with a general erosion control seed mix. The application of the seed mix shall be completed on an as-needed basis to control erosion and weed propagation.

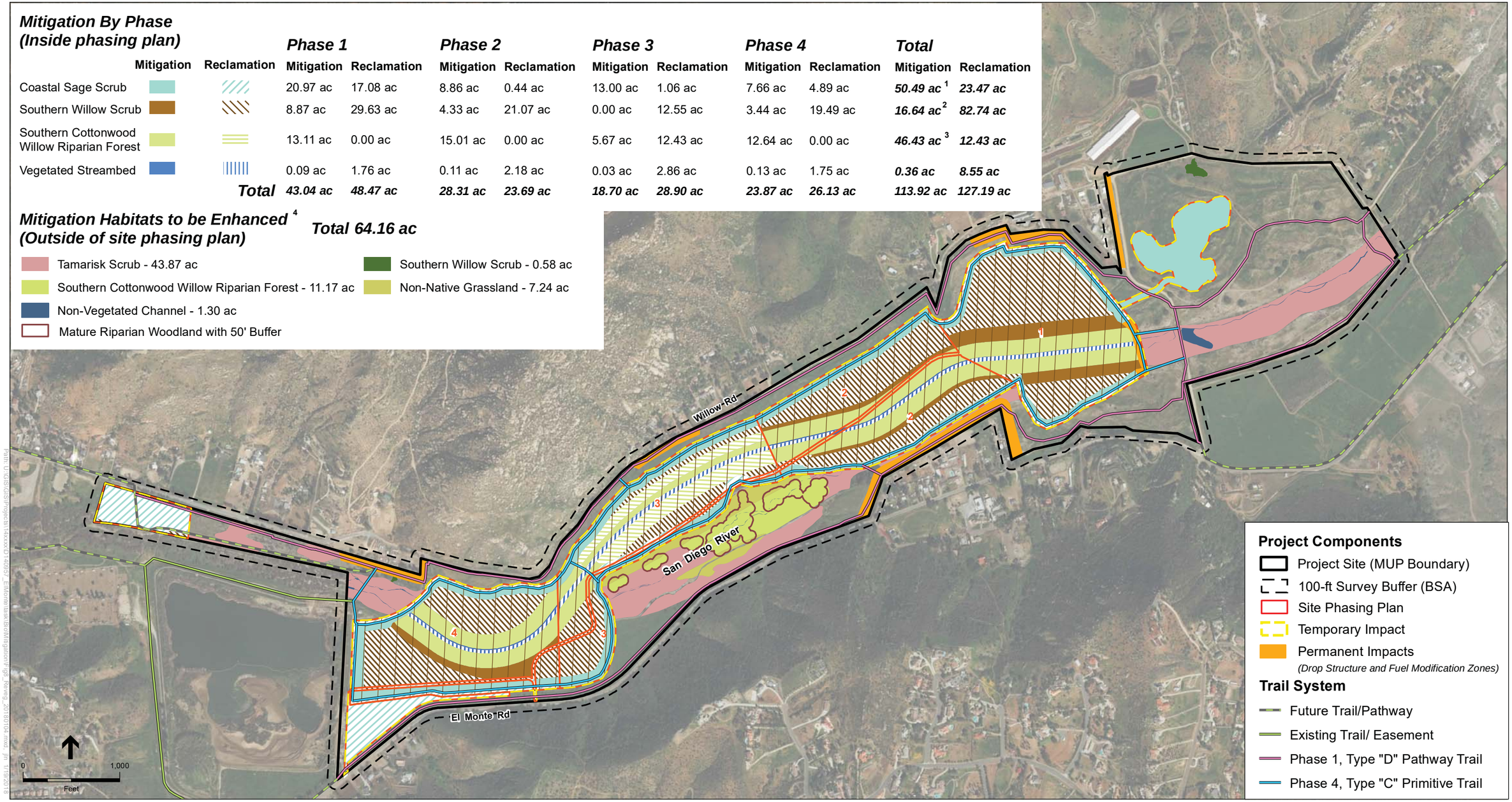
Mitigation By Phase (Inside phasing plan)

	Mitigation	Reclamation	Phase 1 Mitigation	Phase 1 Reclamation	Phase 2 Mitigation	Phase 2 Reclamation	Phase 3 Mitigation	Phase 3 Reclamation	Phase 4 Mitigation	Phase 4 Reclamation	Total Mitigation	Total Reclamation
Coastal Sage Scrub			20.97 ac	17.08 ac	8.86 ac	0.44 ac	13.00 ac	1.06 ac	7.66 ac	4.89 ac	***50.49 ac*** [1]	***23.47 ac***
Southern Willow Scrub			8.87 ac	29.63 ac	4.33 ac	21.07 ac	0.00 ac	12.55 ac	3.44 ac	19.49 ac	***16.64 ac*** [2]	***82.74 ac***
Southern Cottonwood Willow Riparian Forest			13.11 ac	0.00 ac	15.01 ac	0.00 ac	5.67 ac	12.43 ac	12.64 ac	0.00 ac	***46.43 ac*** [3]	***12.43 ac***
Vegetated Streambed			0.09 ac	1.76 ac	0.11 ac	2.18 ac	0.03 ac	2.86 ac	0.13 ac	1.75 ac	***0.36 ac***	***8.55 ac***
Total			***43.04 ac***	***48.47 ac***	***28.31 ac***	***23.69 ac***	***18.70 ac***	***28.90 ac***	***23.87 ac***	***26.13 ac***	***113.92 ac***	***127.19 ac***

Mitigation Habitats to be Enhanced [4] *(Outside of site phasing plan)*

Total 64.16 ac

- Tamarisk Scrub - 43.87 ac
- Southern Willow Scrub - 0.58 ac
- Southern Cottonwood Willow Riparian Forest - 11.17 ac
- Non-Native Grassland - 7.24 ac
- Non-Vegetated Channel - 1.30 ac
- Mature Riparian Woodland with 50' Buffer



Project Components

- Project Site (MUP Boundary)
- 100-ft Survey Buffer (BSA)
- Site Phasing Plan
- Temporary Impact
- Permanent Impacts
  (Drop Structure and Fuel Modification Zones)

Trail System

- Future Trail/Pathway
- Existing Trail/ Easement
- Phase 1, Type "D" Pathway Trail
- Phase 4, Type "C" Primitive Trail

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SOURCE: ESRI; ESA 2016; EnviroMine 2016

[1] Coastal sage scrub mitigation includes mitigation for coastal sage scrub (7.22 acres) and nonnative grassland (43.27 acres).

[2] Southern willow scrub mitigation includes mitigation for southern willow scrub (0.36 acre) and a portion of mitigation for tamarisk scrub (16.28 acres) within the site phasing plan.

[3] Southern cottonwood willow riparian forest mitigation includes mitigation for a portion of mitigation for tamarisk scrub within the site phasing plan (46.43 acres)

[4] Mitigation habitats to be enhanced include restoration of riparian and transitional habitat via exotic plant removal and activities to promote native plant revegetation (62.72 acres required, rounded to 64.16 acres).

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Figure 3.4-1
Revegtation Map

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3.7 Timing

Seeding shall be performed and completed between November 1 and January 15.

During this time period, seeding shall follow the first soaking rains of the season. All efforts shall be made to plant during this time period since beneficial temperatures and anticipated rainfall shall aid in germination, establishment and growth of target species.

3.8 SMARA Revegetation Performance Standards

Following seeding and before release of financial assurance, the revegetated areas must meet performance criteria. For this site, the most meaningful performance criteria for erosion control and visual mitigation are based on vegetative cover and species-richness. Comparison with off-site reference areas is not necessary as the revegetation project consists of common native plant species and habitats whose parameters are well known. Also, no currently suitable reference conditions exist in the El Monte Valley floor as the available reference sites are either too disturbed or otherwise undesirable in their species composition (non-native or invasive species. While it is expected that the revegetated slopes would have benefit to wildlife, the revegetation efforts within this plan are not intended to meet natural habitat performance standards. Habitat restoration and mitigation are presented in theonceptual Revegetation Plan. The performance standards presented in Table 7 are considered to be sufficient for SMARA.

Table 7. Revegetation Performance Standards

Vegetative Cover (m: meters)	Species Composition / Species Richness	Percent Cover	Density
Seed Mixes	Target Goal: 100% of the most prevalent species shall be native species 12 randomly placed 50 - meter by 1-meter transects.	Target Goal: 50% cover (all native species combined) 12 randomly placed 50 - meter by 1-meter transects.	N/A

Revegetated areas shall be monitored once per year to compare the actual revegetation success rates with the success criteria.

Since revegetation would occur concurrently with extractive operations, revegetation practices shall be continually evaluated as revegetation is completed throughout the site. Records shall be kept of soil preparation, including the addition of amendments as determined to be necessary, seeding techniques and erosion control measures.

Revegetated areas shall be identified on a map and tested to assure that standards are adequately achieved to within a minimum of 80 percent confidence interval. Annual monitoring reports shall be submitted to the County until the approved success criteria have been met and approved by the County. When the County agrees that revegetated areas meet success criteria for two consecutive years, no further

monitoring would be required and the operator may apply for release of financial assurances.

3.9 Test Plots Locations and Treatment

Two test plot areas shall be placed on the site, with the first to be located on the pit bottom of the eastern end of the extraction area, and the second one to be located on the bench and slopes further to the west from Test Plot 1. The approximate location of each test plot is indicated on Sheet 5 of the Grading Plan Sheets included as Attachment B. Test plots would help to ensure successful implementation of the revegetation plan. The lead agency may waive any requirement to conduct test plots when the success of the proposed revegetation plan can be documented from experience with similar species and conditions or by relying on competent professional advice based on experience with the species to be planted.

Success of these test plots shall be judged based upon the effectiveness of the vegetation for the approved end use, and by comparing the quantified measures of vegetative cover, density and species richness of the reclaimed mined-lands similar to that of the surrounding area. Comparisons shall be made by a qualified individual until performance standards have been met.

3.10 Weed Control

Primary weed species to be addressed in weed control efforts include Giant Reed, Arundo (*Arundo donax),* Mustard (*Brassica sp.),* Ripgut Brome *(Bromus diandrus),* Cheat Grass, Downy Brome *(Bromus tectorum),* Pampas Grass *(Cortaderia spp.),* Eucalyptus *(Eucalyptus spp.),* Pepperweed *(Lepidium latifolium),* Tree Tobacco *(Nicotiana glauca),* Castor Bean *(Ricinus communis),* Russian Thistle, Tumbleweed *(Salsola tragus),* Tamarisk, Salt Cedar *(Tamarix spp.)*

After start up, the project site shall be monitored periodically by means of visual observation to identify the potential for uncontrolled weed propagation. Should weed control be necessary, the operator shall hire the services of a biologist or agriculturalist to make recommendations for the control of noxious weeds that may invade the project area. The operator shall carry out treatments recommended to eradicate the undesired vegetation.

3.11 Post Extraction Land Use

Upon completion of resource extraction, the extraction area site shall be reclaimed to passive open space uses and recreational trails. After reclamation is complete and financial assurances mechanisms released, other uses may require separate permitting requirements. Reclamation of the site shall be considered complete when revegetation standards are met on the areas disturbed by the mining operation.

3.12 Post Extraction Drainage and Erosion Control

Small de-siltation basins shall be constructed as appropriate on the surface of the bench and bottom of slopes to capture sediment and avoid potential off-site impacts. In addition, silt fences, straw waddles geotextiles or lined drains shall be installed as

appropriate as BMPs during the revegetation process. Erosion control measures shall be designed for the 20-year 1-hour storm intensity event or higher intensity storm. These measures shall be implemented to control surface runoff and drainage to protect surrounding land and water resources. Silt fences or other temporary erosion control devices shall be removed from the site after vegetation has been established.

Slope rounding shall be used along the top of slopes to prevent runoff from flowing from flat areas onto slopes. The proposed bench shall be graded at approximately 1 percent slope to minimize the potential for erosion and sediment transport. Additional erosion and sediment controls shall be implemented around work areas as mining progresses to avoid increased erosion and sedimentation from the project area. Permanent measures to be installed to address erosion for post-extraction drainage and erosion control include the drop structure that would be installed in mining phase 4 at the western extent of the mining phases to control headward erosion, and implementation of the habitat mitigation program within the mining basins and reclamation revegetation which would stabilize soil and minimize sediment transport. In addition, after mining is complete the project applicant intends to transfer the property in fee title to a qualified land steward (non-profit) conservancy so that the property would be maintained and managed in perpetuity. Part of this management would include adaptive management and installation of erosion control measures as needed to address areas that may be subject to erosion. For detailed analysis of how post extraction drainages would avoid increased erosion and sedimentation, please see the project CEQA Drainage Study in Attachment A. Additionally, for an evaluation of whether proposed storage of materials within the floodway would create a hazard to the health and safety of persons or property in the event the materials are inundated, please see the project CEQA Drainage Study.

3.13 Post-Extraction Public Safety

No refuse or dangerous material would remain onsite. Access onto the property would be blocked by a locked gate at the site entrance. Where appropriate, the site would be protected from intruder access by fencing and warning signs posted to restrict unlawful access. Fencing would consist of a four-strand barbed wire. Security fencing would be removed after reclamation is complete. Fencing shall be consistent with any required County or other oversight agency guidelines.

3.14 Effect of Reclamation on Future Recovery of Mineral Resources

Extractive operations would recover unrestricted, economically recoverable resources within the project footprint, at the western end of the overall site. The establishment of open space areas within the overall project site, after the planned removal of the available resources at the western end of the site, would eliminate the ability to extract the remainder of the resource at the eastern end of the site, and that remaining resource would effectively be lost as a result.

The Mineral Resource Technical Report (MRTR) states that the alluvial materials that are of MRZ 2 quality on the site are a potentially significant resource that currently could be recovered if the County were to approve the modification of the existing MUP (PDS2015-MUP-98-014W2) for their extraction. However, with the extraction of only the western portion of the available resource followed by site restoration, the

remainder of this resource may effectively be lost once the pit excavation and habitat restoration are complete. The planned removal of 10.3 million tons of sand and aggregate provides only a partial recovery of this resource. Specifically, the MRTR estimates that roughly 19.7 million tons of sand and aggregate would be effectively lost following mitigation (reclamation and restoration) associated with the proposed mining activities at the project site.

3.15 Reclamation Monitoring and Maintenance

Reclamation and post-reclamation efforts would be monitored pursuant to SMARA requirements and according to the approved Revegetation Plan. Data for cover, density, and species richness would be collected along 12 randomly placed 50-meter by 1-meter transects. The operator would be required, under SMARA (Public Resources Code §2207), to submit an annual status report on forms provided by the Department of Conservation and directs the lead agency to conduct an inspection of the operations within six months of receipt of the required Annual Report.

4.0 Financial Assurances

In addition to annual monitoring, all SMARA regulated sites are required to provide financial assurances. The financial assurances are required to ensure that the site can be reclaimed, should the operator default on this obligation. The financial assurances may be in the form of surety bonds, irrevocable letter of credit, trust funds, or other forms of financial assurances approved by the Lead Agency. The amount of the financial assurance is reviewed annually by the lead agency to determine the adequacy for completing reclamation.

5.0 Compliance with Reclamation Standards

5.1 Purpose

The Surface Mining and Reclamation Act requires that all newly approved Reclamation

Plans incorporate verifiable standards to assure adequate completion of Reclamation Plan objectives. The verifiable standards were adopted by the State Board of Mining and Geology as regulations to implement these requirements. These regulations are known as the “Reclamation Standards” (PRC Article 9, Sections 3700 *et seq.*). The following discussion addresses compliance with these standards as outlined in the

El Monte Mine & Nature Preserve Reclamation Plan dated May 30, 2012.

5.2 Financial Assurances (§3702)

The project is required to provide financial assurances to ensure reclamation is performed in accordance with the reclamation plan. Financial assurances are reviewed annually by the lead agency and adjusted as necessary.

5.3 Wildlife Habitat (§3703)

No federal or state threatened or endangered species were found onsite as the site has been disturbed and active for several decades. Although wildlife is likely to utilize the reclaimed site, this reclamation plan does not propose reclamation specifically for wildlife habitat uses.

5.4 Backfilling, Regarding, Slope Stability, and Recontouring (§3704)

The reclamation plan calls for continued resource extraction and reclamation over an area of about 236 acres, and would result in the creation of nearly level areas and maximum slopes of 3H:1V. All cut and fill slopes shall have a minimum slope stability factor of safety that is suitable for the proposed end use and conforms to the surrounding topography. All reclaimed slopes shall follow the recommendations of the geotechnical report (See Attachment D, Geotechnical Report). Areas within the reclamation boundary would be backfilled to specific elevations as shown on the Plot Plan to achieve final, reclaimed contours.

5.5 Revegetation (§3705)

The objective of revegetation is to provide vegetative cover on final slopes that would visually integrate the site with surrounding areas and stabilize the site against erosion and sedimentation. Native plant species would be used for revegetation. Section 3.4 of this Reclamation Plan sets forth planting and maintenance practices, as well as verifiable monitoring standards to assure vegetative success. Examples of maintenance practices and verifiable monitoring standards include, but are not limited to: managing noxious weeds, planting during appropriate seasons, planting methods, soil fertility analysis. Test plots are required to assist with determination of successful revegetation measures. Irrigation is not expected to be necessary for revegetation as planting during the correct time of the year would allow for comparable revegetation success to surrounding areas.

5.6 Drainage, Diversion Structures, Waterways, and Erosion Control (§3706)

The quality of water, recharge potential, and storage capacity of groundwater aquifers are not expected to be diminished as a result of reclamation of this extraction operation. Operational erosion control methods are designed in compliance with storm water regulations. Erosion and sedimentation control would be implemented during all phases of operations, according to the CEQA Drainage Study (Attachment A of this Reclamation Plan).

As discussed in the preliminary CEQA drainage study, preliminary CEQA existing and proposed condition 100-year hydrologic analyses have been performed for the reclamation plan submittal of the El Monte Sand Mining Project. The analyses cover the processing plant, which would be outside of the proposed condition floodplain. Separate hydraulic analyses have been performed for the extraction area, which would be within the floodplain. The hydrologic/hydraulic results show that the processing plant would not cause an adverse increase in flow rates. The proposed time of concentration over the ground surface is long at over 20 minutes, which indicates that the overall velocities would not be erosive.

The existing drainage patterns would not be altered. Under existing conditions, the processing plant area is in the floodplain. Under proposed conditions, runoff from the processing plant would be directed north to the realigned floodplain. The 100-year flow rates at the processing plant are less than 4 cfs, while the 100-year flow rate in the river is 20,000 cfs. Therefore, the processing plant would not cause substantial erosion or siltation on- or offsite. In addition, the processing plant would not result in flooding on- or offsite since its flow contribution is so small.

The processing plant runoff would be conveyed by the San Diego River. The relatively small runoff generated by the plant would not create or contribute runoff that would exceed the capacity of downstream drainage facilities beyond their current capacities. The project does not propose housing, so would not place housing in a 100-year flood hazard area.

5.7 Prime Agricultural Land Reclamation (§3707)

Not applicable. The land is classified as Farmland of Local Importance, (G) Grazing and Other by the Department of Conservation. The land would not be reclaimed to agricultural uses.

5.8 Other Agricultural Land (§3708)

In the past, the property has been used for agricultural purposes including production of animal feed crops and livestock grazing. Heavy irrigation is required for some crops due to the porosity of the soil materials at the site. The property has not been used for agricultural purpose for more than 20 years. The RP area is not located on lands that are currently under a Williamson Contract agreement.

5.9 Building, Structure and Equipment Removal (§3709)

All structures and portable equipment would be removed from the excavation area unless they are to be used by the property owner following reclamation.

5.10 Stream Protection, Including Surface and Groundwater (§3710)

Mining and reclamation activities include storm water protection measures to eliminate the potential for erosion and sedimentation discharges off-site. These measures are compliant with appropriate sections of the Federal Clean Water Act, Porter-Cologne Act, and the California Regional Water Quality Control Board. The revegetation practices outlined in Section 3.4 of this Reclamation Plan identify measures to establish a self-regenerating vegetative complex that is designed to control erosion and sedimentation. In addition to these plan measures, the Lead Agency would conduct annual inspections to ensure implementation of these water quality protection measures.

5.11 Topsoil Management (§3711)

Topsoil would be salvaged to aid in reclamation. It is expected that topsoil would be stripped in advance of the pit and directly placed on previously disturbed surfaces immediately prior to revegetation. This would limit damage to soil structure and

preserve soil biological processes. Top soil and suitable growth stockpiles shall be clearly identified to distinguish them from mine waste dumps.

5.12 Tailing and Extraction Waste Management (§3712)

Most extracted material would be transported off-site. If not, the material would be used as backfill. No stockpiles would be left on site.

5.13 Closure of Surface Openings (§3713)

Not Applicable.

5.14 Public Safety

Public health and safety are protected in accordance with County standards for open space. Access is controlled through locked gates at the site entrance and fencing.

Initial segments of the planned trail system would be established during Phase 1 within the setback areas north and south of the area to be disturbed by the mining operations (see Attachment B). The remaining planned segments of the trail system would be installed Phase 4 when mining extraction activities are complete. A three-strand, barbed wire fence and an earthen berm would separate the initial trail segments from the operation (see Attachment B). Once installation of the trail system is complete, wood split-rail fence will be installed to keep users on the trails.

A gate would be installed at the ingress/egress roads to restrict public vehicular access. This gate would be closed and locked during periods of non-operation. Signs would be posted at the entrance identifying the name of the operation, permit number and emergency contact information. The site would be patrolled on a regular basis to discourage trespass.

5.15 Administrative Contacts

Lead Agency Information:

Lead Agency:	County of San Diego,
Staff Contact:	Ms. Heather Steven
Address:	5510 Overland Avenue, Suite 310, San Diego, CA 92123
Telephone:	(858) 495-5802

6.0 PROJECT SUMMARY

A summary of pertinent details for the project is presented in Table 8 as follows:

Table 8. Project Summary

General Site Information	
Applicant	El Monte Sand Mine
Project Proponent	El Monte Nature Preserve, LLC
Property Owner (s)	El Monte Nature Preserve, LLC
Project APN's	392-150-17, 391-061-01, 391-071-04,393-011-01, 390-040-51, 392-060-29
Major Use Permit Boundary	479.5 acres
Reclamation Plan Boundary	479.5 acres
Surface Elevation	Approximately 430' to 490' AMSL
General Plan Designation	Public Agency Lands
Zoning	S-82, Extractive Use; A-70, Agriculture
Williamson Act Contract	No
MRZ Designation	MRZ-2
Current Land Use	Undeveloped Land
Mining	
Mining Area	Approximately 243 acres including the depression from golf course excavation that will be filled
Maximum Mining Depth	400 feet AMSL
Average Groundwater Elevation	Approximately 390 feet AMSL. (40 feet bgs)
Mining Slopes	3H:1V (horizontal:vertical) maximum
Type of Minerals	Alluvium
Maximum Total Production	6.9-million cubic yards (10.3-million tons)
Maximum Annual Production	733,000 cubic yards (1.1-million tons)
Commencement of Mining	Within 1 Year After Permit Approval
Duration of Mining	12 years
Mining Permit Expiration	January 31, 2035
Reclamation	
Revegetated Area	Approximately 241 acres of temporary impact areas including depressions from golf course excavations (127.19 acres of reclamation revegetation and 113.92 acres of sensitive habitat mitigation)
Duration of Reclamation	Continuous extending for 4 Years following cessation of mining
Completion of Reclamation	2035 estimated
Post Mining Land-Use	Open Space with recreational trail easements

7.0 Statement of Responsibility

I, the undersigned, hereby agree to accept full responsibility for reclamation of all mined lands as described and submitted herein and in conformance with the applicable requirements of Articles 1 and 9 (commencing with Sections 3500 et seq. and 3700 et seq., respectively) of Chapter 8 of Division 2 of Title 14 of the California

Code of Regulations, the Surface Mining and Reclamation Act commencing with

Section 2710 et seq., and with any modifications requested by the administering agency as conditions of approval.

El Monte Nature Preserve, LLC:

Signature: _____

Title: _____

Date: _____

Attachment A.

Hydraulic Analyses and CEQA Drainage Study (separate documents)

Attachment B.

Plot Plan

Attachment C.

Groundwater Evaluation Technical Memorandum

AECOM Environment

Prepared for:
County of San Diego

Prepared by:
AECOM
San Diego, CA
May 2018

Groundwater Evaluation Technical Memorandum

El Monte Sand Mine Project, Lakeside, San Diego County, California

Prepared by:

Douglas F. Roff, PG 4537, CHg 293
Senior Hydrogeologist

Michelle Clodfelter
Staff Geologist

ACRONYMS AND ABBREVIATIONS

afy	acre-feet per year
amsl	above mean sea level
APN	Assessor's Parcel Number
bgs	below ground surface
CEQA	California Environmental Quality Act
CIMIS	California Irrigation Management Information System
CN	curve number
CNM	curve number method
DTW	depth to water
ET	Evapotranspiration
ETo	reference evapotranspiration
HWD	Helix Water District
MCL	maximum contaminant level
mg/L	milligram per liter
N	Nitrogen
NRCS	Natural Resources Conservation Service
PET	potential evapotranspiration
RO	run-off
S	Soil moisture retention
SMC	soil moisture-holding capacity
SWRCB	State Water Resources Control Board
USDA	United States Department of Agriculture
USGS	United States Geological Survey

Figures

Tables

1.0 Executive Summary

The proposed El Monte Sand Mine Project (project) covers approximately 479.5 acres and is located downstream of the El Capitan Reservoir in San Diego County. The project proposes to mine and export sand and will result in an estimated 228-acre reclaimed mining pit with maximum depths of 30 to 35 feet below ground surface.

Table 1-1: Proposed Activities and Areas of Disturbance

Activity	Area of Disturbance (acres)*
Mining Area (including trails, filled depression, and drop structure within mining footprint)	228
Northern Staging Area	8
Southern Staging Area	7
Subtotal Inside Mining Footprint	*243*
Trails (outside of mining area)	7
Fuel Modification (outside of mining area and not including trails	12
Subtotal Outside Mining Footprint	*19*
Impact Area Total	**262**
Open Space	217.5
MUP Boundary Total	**479.5**

*rounded to the nearest acre
Source: ESA 2018

The project will not use onsite surface water or groundwater per se, but will result in changes to the "water budget" as a consequence of the reclaimed pit topography. These include: 1) inflow of rainfall that runs off from upgradient in the watershed and runs into the pit, 2) potential evaporation losses if exposed water stands within the reclaimed pit, and 3) potential changes in the amount of evapotranspiration from on-site groundwater-dependent habitat. Based on our evaluation, the project is expected to result in a net-benefit to the groundwater system.

2.0 Site Background Information

2.1 Purpose

The purpose of this report is to document the existing groundwater resources of the El Monte Sand Mine Project (project) site and to evaluate potential impacts to groundwater resources as a result of the final configuration of the pit. The report will also document the existing conditions and, if necessary, recommend measures to avoid, minimize, and/or mitigate significant impacts consistent with federal, state, and local rules and regulations including California Environmental Quality Act (CEQA).

2.2 Applicable Groundwater Regulations

CEQA requires the review of all discretionary projects as defined within Section 21080 of CEQA. The project requires discretionary approval from the County of San Diego, and as a result, this evaluation has been completed. This groundwater investigation was performed in conformance with the County's Guidelines for Determining Significance and Report Format and Content Requirements – Groundwater Resources (Guidelines) (County 2007).

2.3 Project Location and Description

The proposed project covers approximately 479.5 acres located parallel to and between El Monte Road and Willow Road downstream of the El Capitan Reservoir in San Diego County (Figure 1). The project site is located on Assessor's Parcel Numbers (APNs) 390-040-51, 391-061-01, 391-071-04, 392-050-47, 392-060-29, 392-130-42, 392-150-17, and 393-011-01.

The tributary watershed area is about 8,862 acres and is located in portions of the San Vicente Reservoir, El Cajon, Alpine and El Cajon Mountain, California, U.S. Geological Survey (USGS) 7.5-minute quadrangles.

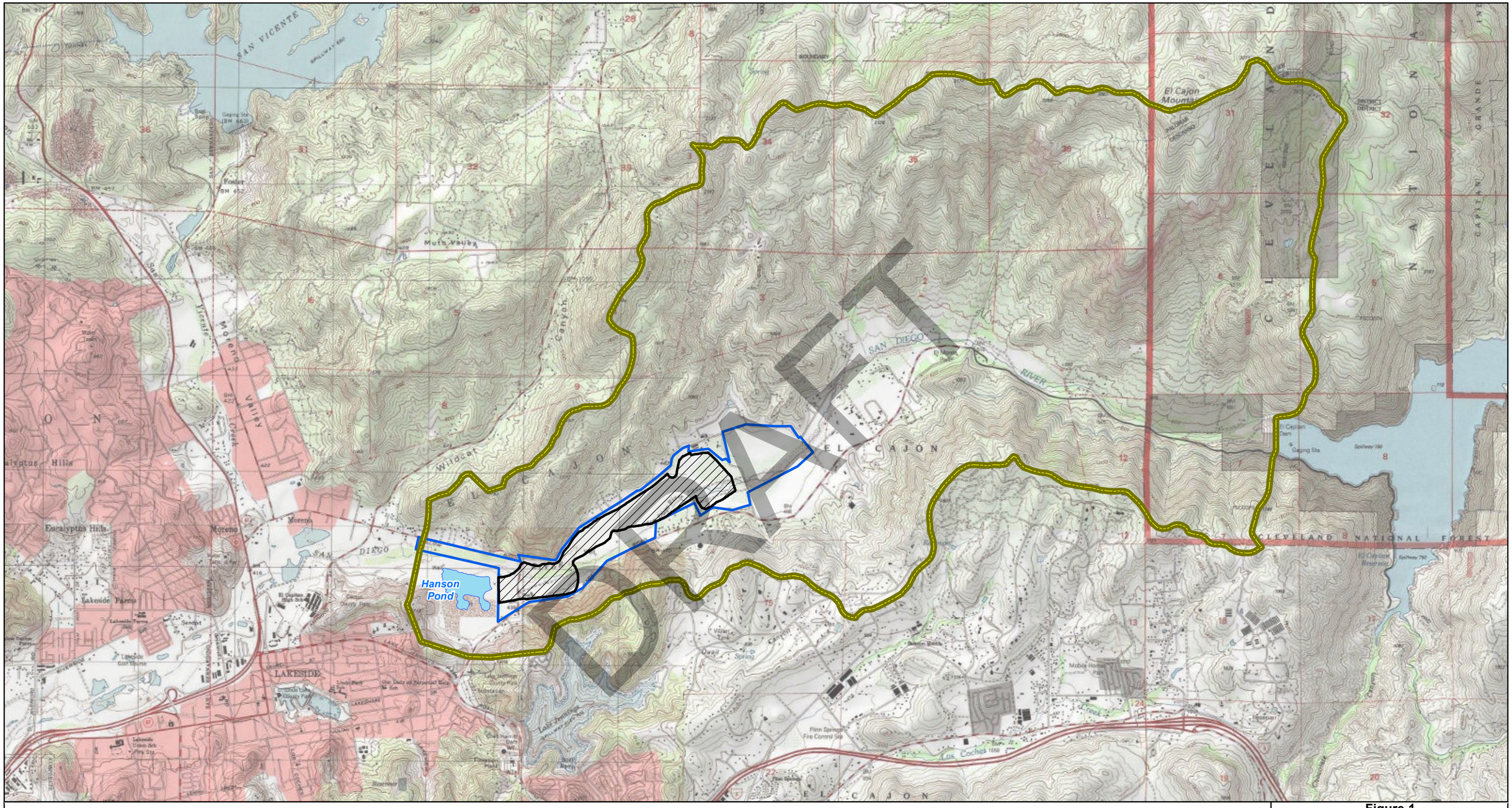
The project proposes to mine sand suitable for Portland cement concrete over an extended period of several designated phases. Excavation of an estimated 228-acre pit area will be to a maximum depth of 30 to 35 feet below ground surface (bgs). The Reclamation Plan estimates about 479.5 acres will be phased with mining operations and will be initiated immediately after the conclusion of resource extraction in an area of the project (EnviroMine, AECOM, and ESA 2017).

The anticipated maximum rate of aggregate production is 1.1 million tons per year. This production rate will be realized after 1 to 3 years of site and market development. Actual production rates and project life will depend on market demand but will not exceed the maximum permitted production level. The project is expected to continue for 16 years. This will include 12 years of extraction and reclamation of previously disturbed areas beginning in year 4. Final reclamation of the Phase 4 area and vegetation monitoring will continue for 4 years after cessation of mining. The site is designed to yield approximately 10.3 million tons, or 6.9 million cubic yards, of construction aggregate product.

The proposed project will not use groundwater directly. Any water needed for mining operations and habitat establishment will be imported.

If enough water runs off surrounding slopes of the tributary watershed and/or water is released from the El Capitan Reservoir during flood events, a pond would form in the pit. If the pit is filled to capacity, the water in the pit would be a maximum of 20 feet deep at the west end and impound 75 acres of surface water. This would equate to roughly 1200 acre feet of water stored in the pit.

The end use in the project area is proposed to be undeveloped open space with recreational trail easements.



Legend

- Tributary Watershed Area
- Project Boundary
- Pit Boundary

Notes:
Watershed boundaries only show those within the project vicinity.

N

0 3,000 6,000
Feet

Figure 1
Tributary Watershed Boundary and Proposed Project

El Monte Sand Mine Project
San Diego, Ca

AECOM
September 2017

Path: L:\ENV\ArcGIS\Shell\Criterion Catalysts\Updated MXDs\Figure 2 Watershed Boundary Proposed Project.mxd

3.0 Existing Conditions

The following paragraphs describe the regional topography, geology, and hydrogeology of the project site.

3.1 Topographic Setting

The site is situated within the San Diego River watershed, in the floodplain. The river flows through the central part of the project. It is located parallel to and between El Monte Road and Willow Road in Lakeside, California; an unincorporated area of San Diego County.

The project site is relatively flat; but grading activities associated with the development of an unfinished golf course in 2005–2006 have created undulating terrain in the eastern portion of the property. This area includes several large pits. Elevations range from approximately 490 feet above mean sea level (amsl) at the eastern portion of the property to approximately 430 feet amsl at the western end of the site. Elevations within the excavation area range from approximately 430 feet amsl to 475 feet amsl. The San Diego River extends in a general east-west direction and consists of a low-flow channel and associated floodplain.

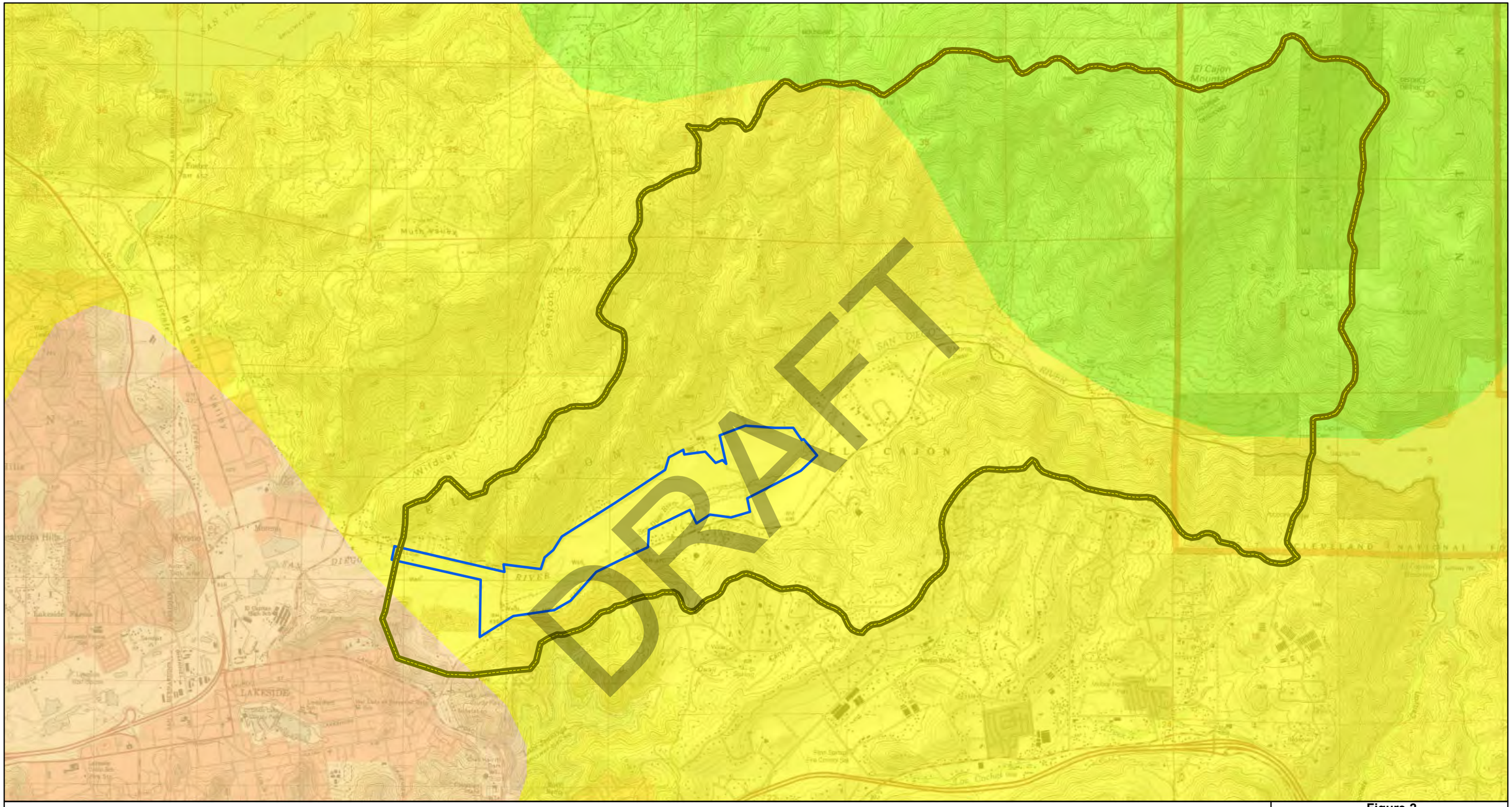
3.2 Climate

Precipitation

Precipitation data were collected from two rainfall gauges within the general area of the project: El Capitan Reservoir rainfall station and Lake Jennings rainfall station. The El Capitan Reservoir provided the majority of the data, with the Lake Jennings Reservoir supplementing the gaps. Complete monthly data were available from at least one of the two gauges for the rainfall years (July through June) 1974/1975 through 2014/2015 with the exception of one month. In that case, a single monthly data point was used from the Alpine rainfall station for December 1997.

The El Capitan rainfall station is located on the eastern edge of the tributary watershed at an elevation of approximately 600 feet amsl. The Lake Jennings rainfall station is located 0.75 miles south of the watershed at an approximate elevation of roughly 700 feet amsl. The Alpine rainfall station is located approximately four miles to the southeast of the project area watershed at an elevation of approximately 500 feet amsl. The average annual rainfall between the El Capitan and Lake Jennings rainfall stations (and one month's data from Alpine) was about 16 inches per year over the last 40 years, and has ranged between 5 and 31 inches.

According to the County's *Groundwater Limitations and Precipitation Map* (County 2004), the project site and the study area are located in the 15-to-18-inch and 18-to-21-inch mean annual rainfall belts (Figure 2).



Legend

- Tributary Watershed Area
- Project Boundary

Precipitation (Inches)
County of San Diego/SanGIS 2009)

3 - 6	15 - 18	27 - 30
6 - 9	18 - 21	30 - 33
9 - 12	21 -24	33 - 35
12 - 15	24 - 27	

N

0 3,000 6,000
Feet

Figure 2
County Groundwater Limitations and Precipitation Map

El Monte Sand Mine Project
San Diego, Ca

AECOM
September 2017

Notes:
Watershed boundaries only show those within the project vicinity.

Path: P:\ENV\60480712 El Monte\GIS_CAD\MXDs\Sand Extraction Nature Project Report\Figure 3 County Groundwater Limitations and Precipitation Map.mxd

Evapotranspiration

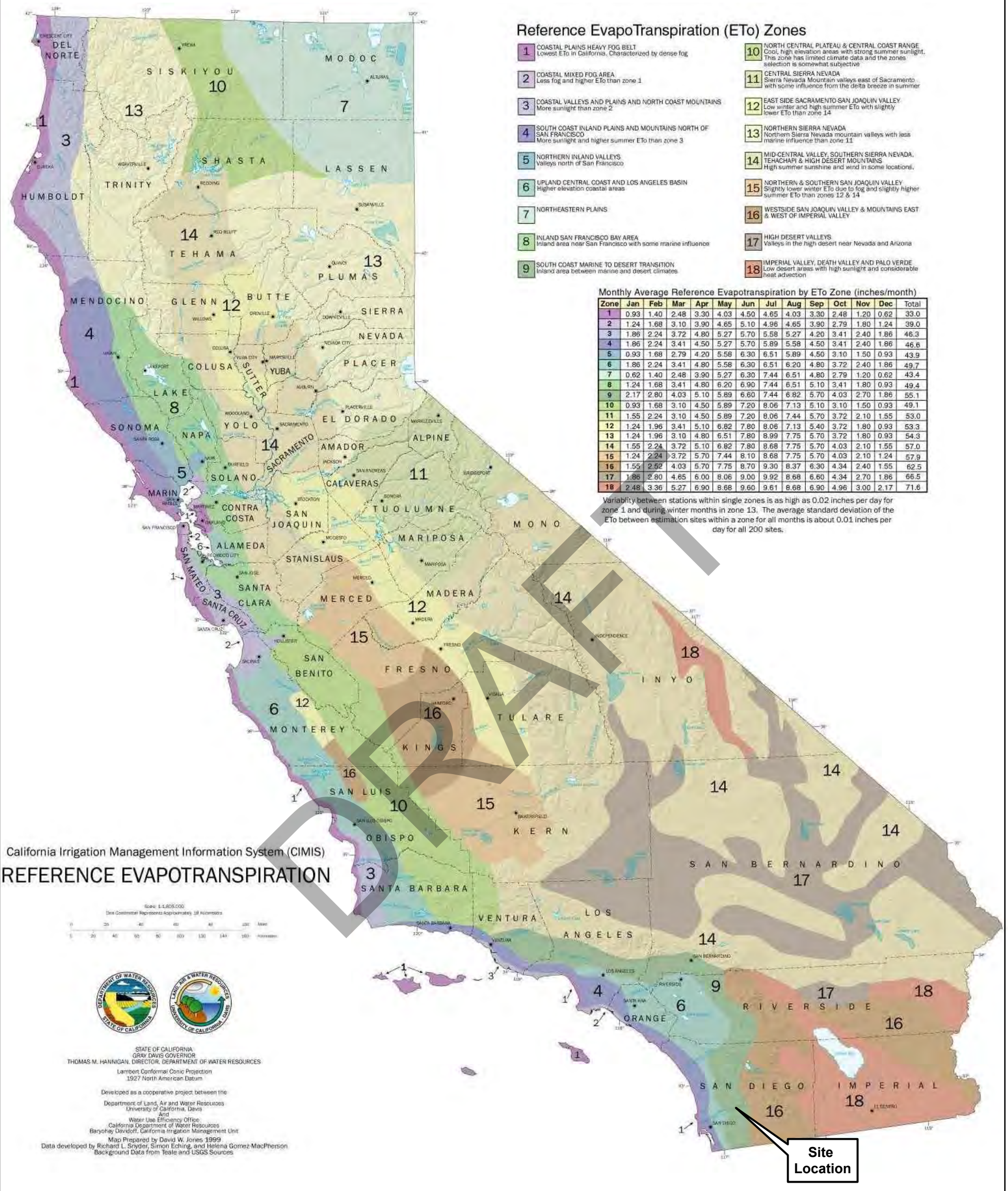
Potential evapotranspiration (PET) is the amount of water that could be evaporated and transpired typically through an irrigated nonspecific short green crop, if there was sufficient water available. Evapotranspiration is defined as the sum of water loss from evaporation from soil and plant surfaces, and plant transpiration. Reference evapotranspiration rates (ET_O), obtained from the California Irrigation Management Information System (CIMIS) ET_O map is a measure of PET from a known surface, such as grass or alfalfa (State of California 1999). The ET_O for this zone (Zone 9) is 55.1 inches as shown on Figure 3 and Table 1.

Evaporation

The reported average (1935 to 2005) annual pan-corrected evaporation rate of 54.63 inches, from the El Capitan Reservoir is also provided on Table 1. El Capitan Reservoir, located approximately 4 miles east of the project site, is within the same CIMIS Zone (Zone 9). Evaporation from the reservoir is reasonable to approximate on-site evaporation from standing water in the proposed excavation pit.

Table 1. Evaporation and Reference Evapotranspiration Rates

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
ET_O (inches)	7.44	6.82	5.70	4.03	2.70	1.86	2.17	2.80	4.03	5.10	5.89	6.60	55.1
Pan-Corrected Evaporation (inches)	7.54	7.37	6.29	4.81	3.13	2,27	2.03	2.13	2.87	4.20	5.41	6.58	54.6



Reference EvapoTranspiration (ETo) Zones

1. COASTAL PLAINS HEAVY FOG BELT — Lowest ETo in California. Characterized by dense fog
2. COASTAL MIXED FOG AREA — Less fog and higher ETo than zone 1
3. COASTAL VALLEYS AND PLAINS AND NORTH COAST MOUNTAINS — More sunlight than zone 2
4. SOUTH COAST INLAND PLAINS AND MOUNTAINS NORTH OF SAN FRANCISCO — More sunlight and higher summer ETo than zone 3
5. NORTHERN INLAND VALLEYS — Valleys north of San Francisco
6. UPLAND CENTRAL COAST AND LOS ANGELES BASIN — Higher elevation coastal areas
7. NORTHEASTERN PLAINS
8. INLAND SAN FRANCISCO BAY AREA — Inland area near San Francisco with some marine influence
9. SOUTH COAST MARINE TO DESERT TRANSITION — Inland area between marine and desert climates
10. NORTH CENTRAL PLATEAU & CENTRAL COAST RANGE — Cool, high elevation areas with strong summer sunlight. This zone has limited climate data and the zones selection is somewhat subjective
11. CENTRAL SIERRA NEVADA — Sierra Nevada Mountain valleys east of Sacramento with some influence from the delta breeze in summer
12. EAST SIDE SACRAMENTO-SAN JOAQUIN VALLEY — Low winter and high summer ETo with slightly lower ETo than zone 14
13. NORTHERN SIERRA NEVADA — Northern Sierra Nevada mountain valleys with less marine influence than zone 11
14. MID-CENTRAL VALLEY, SOUTHERN SIERRA NEVADA, TEHACHAPI & HIGH DESERT MOUNTAINS — High summer sunshine and wind in some locations.
15. NORTHERN & SOUTHERN SAN JOAQUIN VALLEY — Slightly lower winter ETo due to fog and slightly higher summer ETo than zones 12 & 14
16. WESTSIDE SAN JOAQUIN VALLEY & MOUNTAINS EAST & WEST OF IMPERIAL VALLEY
17. HIGH DESERT VALLEYS — Valleys in the high desert near Nevada and Arizona
18. IMPERIAL VALLEY, DEATH VALLEY AND PALO VERDE — Low desert areas with high sunlight and considerable heat advection

Monthly Average Reference Evapotranspiration by ETo Zone (inches/month)

Zone	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1	0.93	1.40	2.48	3.30	4.03	4.50	4.65	4.03	3.30	2.48	1.20	0.62	33.0
2	1.24	1.68	3.10	3.90	4.65	5.10	4.96	4.65	3.90	2.79	1.80	1.24	39.0
3	1.86	2.24	3.72	4.80	5.27	5.70	5.58	5.27	4.20	3.41	2.40	1.86	46.3
4	1.86	2.24	3.41	4.50	5.27	5.70	5.89	5.58	4.50	3.41	2.40	1.86	46.6
5	0.93	1.68	2.79	4.20	5.58	6.30	6.51	5.89	4.50	3.10	1.50	0.93	43.9
6	1.86	2.24	3.41	4.80	5.58	6.30	6.51	6.20	4.80	3.72	2.40	1.86	49.7
7	0.62	1.40	2.48	3.90	5.27	6.30	7.44	6.51	4.80	2.79	1.20	0.62	43.4
8	1.24	1.68	3.41	4.80	6.20	6.90	7.44	6.51	5.10	3.41	1.80	0.93	49.4
9	2.17	2.80	4.03	5.10	5.89	6.60	7.44	6.82	5.70	4.03	2.70	1.86	55.1
10	0.93	1.68	3.10	4.50	5.89	7.20	8.06	7.13	5.10	3.10	1.50	0.93	49.1
11	1.55	2.24	3.10	4.50	5.89	7.20	8.06	7.44	5.70	3.72	2.10	1.55	53.0
12	1.24	1.96	3.41	5.10	6.82	7.80	8.06	7.13	5.40	3.72	1.80	0.93	53.3
13	1.24	1.96	3.10	4.80	6.51	7.80	8.99	7.75	5.70	3.72	1.80	0.93	54.3
14	1.55	2.24	3.72	5.10	6.82	7.80	8.68	7.75	5.70	4.03	2.10	1.55	57.0
15	1.24	2.24	3.72	5.70	7.44	8.10	8.68	7.75	5.70	4.03	2.10	1.24	57.9
16	1.55	2.52	4.03	5.70	7.75	8.70	9.30	8.37	6.30	4.34	2.40	1.55	62.5
17	1.86	2.80	4.65	6.00	8.06	9.00	9.92	8.68	6.60	4.34	2.70	1.86	66.5
18	2.48	3.36	5.27	6.90	8.68	9.60	9.61	8.68	6.90	4.96	3.00	2.17	71.6

Variablity between stations within single zones is as high as 0.02 inches per day for zone 1 and during winter months in zone 13. The average standard deviation of the ETo between estimation sites within a zone for all months is about 0.01 inches per day for all 200 sites.

California Irrigation Management Information System (CIMIS)

REFERENCE EVAPOTRANSPIRATION

Scale: 1:1,805,000
One Centimeter Represents Approximately 18 Kilometers

STATE OF CALIFORNIA
GRAY DAVIS GOVERNOR
THOMAS M. HANNIGAN, DIRECTOR, DEPARTMENT OF WATER RESOURCES

Lambert Conformal Conic Projection
1927 North American Datum

Developed as a cooperative project between the

Department of Land, Air and Water Resources
University of California, Davis
And
Water Use Efficiency Office
California Department of Water Resources
Baryohay Davidoff, California Irrigation Management Unit

Map Prepared by David W. Jones 1999
Data developed by Richard L. Snyder, Simon Eching, and Helena Gomez-MacPherson
Background Data from Teale and USGS Sources

Figure 3
CIMIS ETo Map

El Monte Sand Mine Project
San Diego, Ca

AECOM
September 2017

Path: P:\ENV\60480712 El Monte\GIS_CAD\MXDs\Sand Extraction Nature Project Report\Figure 4 CIMIS ETo Map.mxd

3.3 Land Use

Existing land uses within the 8,862-acre tributary watershed area were evaluated by review of current aerial photographs, the Land Use Element of the San Diego County General Plan/Lakeside Community Plan, recorded subdivision maps, and approved Specific Plans. The proposed project site represents approximately 5% of the tributary watershed surface area.

Many factors contribute to the ultimate land use for a vacant general plan land use designated property, including environmental constraints, access, slope, geotechnical considerations, wildfire hazard, and utility availability. Many of the parcels included in the tributary watershed area have already been developed with residential, agriculture, an equestrian facility, or recreational land uses. Large areas of the watershed are in public ownership and/or in permanent conservation/recreation areas. Approximately 4,744 acres (54%) of the watershed area are located within designated open space or public agency lands, and it is assumed that these lands will not be developed.

3.4 Current Water Demand

Total groundwater demands within the tributary watershed over the 40+ years from 1974/1975 to 2016/2017 have been estimated to range from about 1,240 acre feet per year (afy) to about 2,300 afy with a 40-year average annual groundwater demand of about 1,700 afy.

Current annual groundwater consumption within the study area includes residential water usage; Helix Water District (HWD) pumping; City of San Diego pumping; County of San Diego pumping for El Monte County Park; agricultural irrigation, transpiration of groundwater-dependent vegetation (phreatophytes), and surface water evaporation in Hanson Pond. Evapotranspiration losses from native vegetation (non-groundwater-dependent habitat) are accounted for in calculating groundwater recharge from rainfall.

Annual groundwater consumption within the study area over the last 40 years has fluctuated based on area-wide water levels affecting pond evaporation and phreatophyte demand, increase in residential water demand and corresponding decrease in agricultural irrigation, and changes in HWD and City of San Diego pumping. HWD pumping in the basin has varied historically from 0 to 446 afy. The City of San Diego has installed two wells downgradient of the El Capitan Dam. They began pumping one of the wells in 2013 and plan to bring the other online in the coming year. In the future, the City plans to pump these wells whenever water is being transferred from the El Capitan Reservoir to one of its surface water treatment plants via the existing raw water line located in El Monte Road. The County of San Diego receives raw water for irrigation of the El Monte Regional Park from the City of San Diego. The County of San Diego provides water for potable uses to the park from two wells located north of the park. This system is regulated by the County of San Diego Department of Environmental Health Small Water Systems program.

3.5 Geology and Soils

General

The proposed project is located in a complex geologic region that is part of the Peninsular Ranges Geomorphic Province. Prominent in the watershed are metavolcanics, monzogranite, and a few types of tonalite. The steep side slopes are underlain by exposed bedrock.

Bedrock underlying the study area has a mantle of weathered rock known as residuum or colloquially “decomposed granite,” which is formed from the in-place chemical weathering of rock. The contact between the residuum and the unweathered bedrock varies throughout the area. In general, weathering is deeper in flat and valley bottom areas, and thinner in steeper upland areas; however, there are many exceptions to this generalization.

The El Monte Basin floor consists of recent alluvium including sand, silt, and gravel in the modern streambed. Recent alluvium is derived by weathering and erosion of granitic rock along the valley slopes and deposited by the San Diego River and tributary streams.

Colluvium, which is derived by rock falls and erosion which accumulates at the base of the slopes, as well as the alluvium underlie the San Diego River valleys and tributary.

Surficial Soils

Based on the San Diego Area Soil Survey (United States Department of Agriculture [USDA] 1973), soils that underlie the study area are grouped and described as follows:

Soil Group A

Comprising Riverwash, Stony land, and Tujunga sand with a slope of 0–5%, these soils underlie about 19% of the basin and are found primarily in the valley floor. This group has high infiltration and permeability rates with a low run-off potential.

Soil Groups B/C

This group is a combination of soil types B and C and consists primarily of the Cieneba series, with smaller areas of the Greenfield, Visalia, Vista, Fallbrook and Ramona series. These soils underlie about 34% of the basin. These soils are variably shallow to steep rocky sandy loam, and have a moderate to low infiltration rate. These soil groups were combined into one because there was very little soil type C.

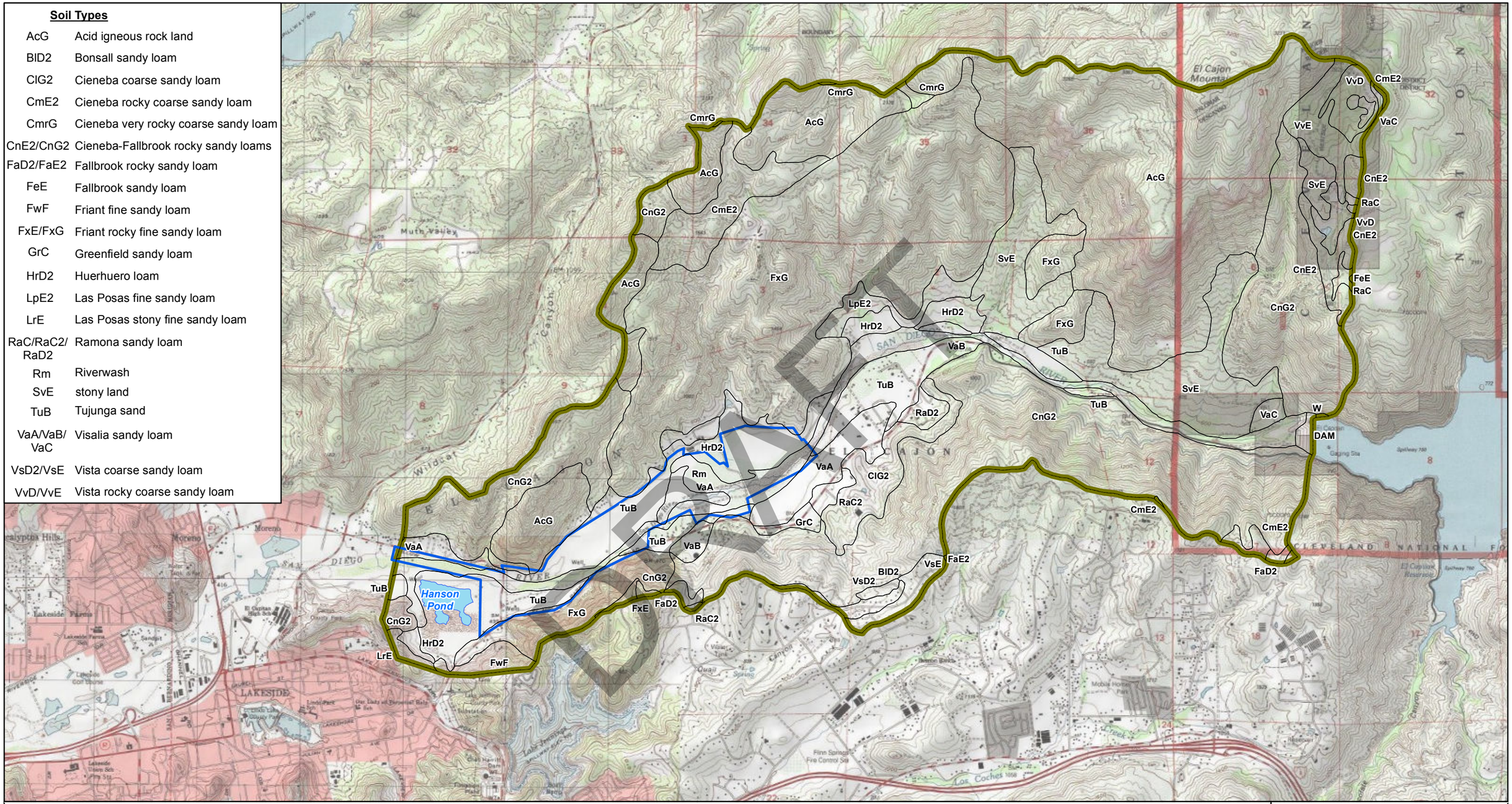
Soil Group D

Comprised primarily of Acid igneous rock land and the Friant series with minimal sections of Bonsall sandy loam, Huerhuero loam, and the Las Posas series, this group underlies about 47% of the basin and has a high run-off potential with very low infiltration rates.

A soils map is provided as Figure 4.

Soil Types

AcG	Acid igneous rock land
BlD2	Bonsall sandy loam
ClG2	Cieneba coarse sandy loam
CmE2	Cieneba rocky coarse sandy loam
CmrG	Cieneba very rocky coarse sandy loam
CnE2/CnG2	Cieneba-Fallbrook rocky sandy loams
FaD2/FaE2	Fallbrook rocky sandy loam
FeE	Fallbrook sandy loam
FwF	Friant fine sandy loam
FxE/FxG	Friant rocky fine sandy loam
GrC	Greenfield sandy loam
HrD2	Huerhuero loam
LpE2	Las Posas fine sandy loam
LrE	Las Posas stony fine sandy loam
RaC/RaC2/ RaD2	Ramona sandy loam
Rm	Riverwash
SvE	stony land
TuB	Tujunga sand
VaA/VaB/ VaC	Visalia sandy loam
VsD2/VsE	Vista coarse sandy loam
VvD/VvE	Vista rocky coarse sandy loam



Legend

- Tributary Watershed Area
- Project Boundary
- USDA Soil Type Boundaries

Notes:
Watershed boundaries only show those within the project vicinity.

N

0 3,000 6,000
Feet

Figure 4
USDA Soil Types

El Monte Sand Mine Project
San Diego, Ca

AECOM
September 2017

Path: P:\ENV\60480712 El Monte\GIS_CAD\MXDs\Sand Extraction Nature Project Report\Figure 5 USDA Soil Types.mxd

3.6 Hydrogeologic Units

Aquifer watershed boundaries are generally assumed coincident with surface topographic boundaries. The proposed project area is part of the larger El Monte Basin watershed and begins at the toe of the El Capitan Dam on the east and exits to the larger San Diego River watershed to the west. The upper reaches of the watershed were artificially cut off from the downstream portions by the construction of the dam in 1935. The El Monte (907.15), Santee (907.12), and Coches (907.14) Hydrologic Subareas compose the eastern end of the San Diego River hydrologic unit (907.00) as defined in California Regional Water Quality Control Board Basin Plan (RWQCB 1994).

Groundwater levels in upland areas are generally deeper than the alluvium, colluvium, and/or residuum contact with bedrock, therefore fractured bedrock represents the only viable water-bearing unit in side slopes of the study area. Because water can only occupy the fractures (joints and/or faults) in the unweathered rock, specific yields (essentially equivalent to the interconnected [or effective] porosity) in this rock are generally lower than in residuum and alluvium. Specific yields in fractured rock wells are generally reported on the order of 10^{-6} to 10^{-2} (0.0001% to 1%). Specific yield values of 10^{-4} and 10^{-3} (0.01% and 0.1%, respectively) were used for fractured rock in the slopes (greater than or equal to 25%) and flatter areas (slopes flatter than 25%), respectively.

Residuum is a zone of relatively high intergranular porosity and moderate permeability. Water that infiltrates this zone fills the voids and slowly leaks into the underlying fractured rock. Based on review of Bondy and Huntley (2001) saturated residuum is up to 15 feet thick in the lower elevations in the central part of the study area but is nonexistent elsewhere, especially on steeper slopes. Specific yields in residuum were reported to be on the order of 10^{-2} (1%) in nearby Lee Valley (Bondy and Huntley, 2001).

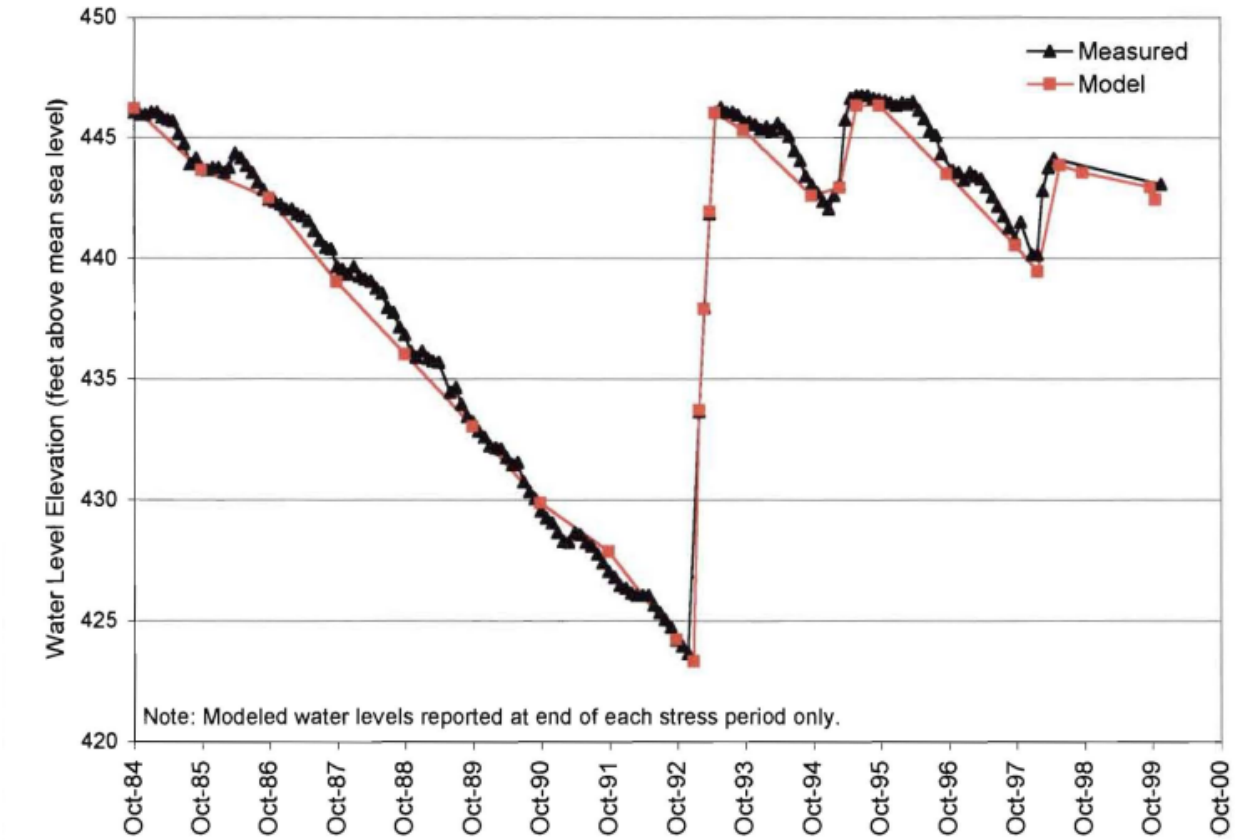
Alluvium ranges up to about 234 feet thick in the tributary watershed (Bondy and Huntley 2001). As developed during calibration of their numerical groundwater flow model, a specific yield value of 0.18 (18%) was used for this investigation. This value is within County Guidelines, where “typical ranges in sediments [are] from approximately 1% to 30%” (County 2007).

3.7 Hydrologic Inventory and Groundwater Levels

Sparse water level records have been maintained in the basin, but those available have been reviewed for this report. Well El Monte #14 water levels, located approximately between 423 and 447 ft amsl was recorded from 1984 to 1999. Inspection of Figure 5 (El Monte #14 hydrograph) reveals that the groundwater rose to an elevation of 446 feet amsl in 1984, 1994, 1995, and 1996. Between 1974/1975 and 2014/2015, the El Capitan Reservoir has spilled in 5 different rain years (1979/1980, 1980/1981, 1982/1983, 1983/1984, and 1992/1993). There were also unmeasured overtopping events in 1937, 1938, 1939, and 1941 (Bondy and Huntley 2001). Releases in the rain years 1979/1980, 1980/1981, 1982/1983, and 1983/1984, were significant (between about 15,900 acre-feet and 98,600 acre-feet) and essentially reset the groundwater storage basin to 100% full. At that point, the groundwater was approximately 5 to 10 feet bgs at El Monte #14. As depicted in Figure 5, groundwater rose to its highest elevation that was roughly equal to the ground surface elevation within the San Diego River at that cross section. Therefore, it was assumed that, at that elevation, the groundwater basin was essentially full.

It should be noted that the most recent dam spill event happened in 1993, and thus, groundwater levels have been declining thereafter. Dam releases are governed by the City of San Diego as a means to manage excess water stored in El Capitan Reservoir. It is in the interest of the City to limit the frequency of releases. Water utilization policy for the City’s reservoirs requires the use of local runoff first before imported water. The City's primary objective for the operation of these reservoirs is to maximize the capture and utilization of local runoff water. For this reason, the City Council has an established policy that requires El Capitan Reservoir to maintain 60 percent of the annual water requirement as active available storage (City of San Diego 1973). This policy sets the lower level of storage. It is a normal practice to maintain minimum water storage in these reservoirs each fall, just before the winter rainy season. This policy has reduced the chances for water releases and for an overtopping even to occur. However, predictions regarding future overtoppings/spills are highly uncertain.

Figure 5. Hydrograph of El Monte #14 vs. Modeled Water Levels



Notes:

Figure from Bondy & Huntley, 2001. Ground elevation at El Monte #14 is at approximately 455 ft amsl.

Well Furrier 1 water levels have been recorded since 1939. Figure 6 below presents the hydrograph from Furrier 1, located just outside the west end of the project site, from the late 1930s through the late 1990s, with a brief interruption in the early 1950s (Bondy & Huntley, 2001). Historic water levels in Furrier 1 ranged from approximately 365 feet above mean sea level to 425 ft above mean sea level. As discussed above, overtopping events occurred in different rain years (1937, 1938, 1939, 1941, 1979/1980, 1980/1981, 1982/1983, 1983/1984, and 1992/1993 [indicated by the yellow bands below]). These overtopping events are apparent in the Furrier 1 graph by the steep increase in groundwater levels over a relatively short period of time.

Figure 6. Hydrograph of Furrier 1

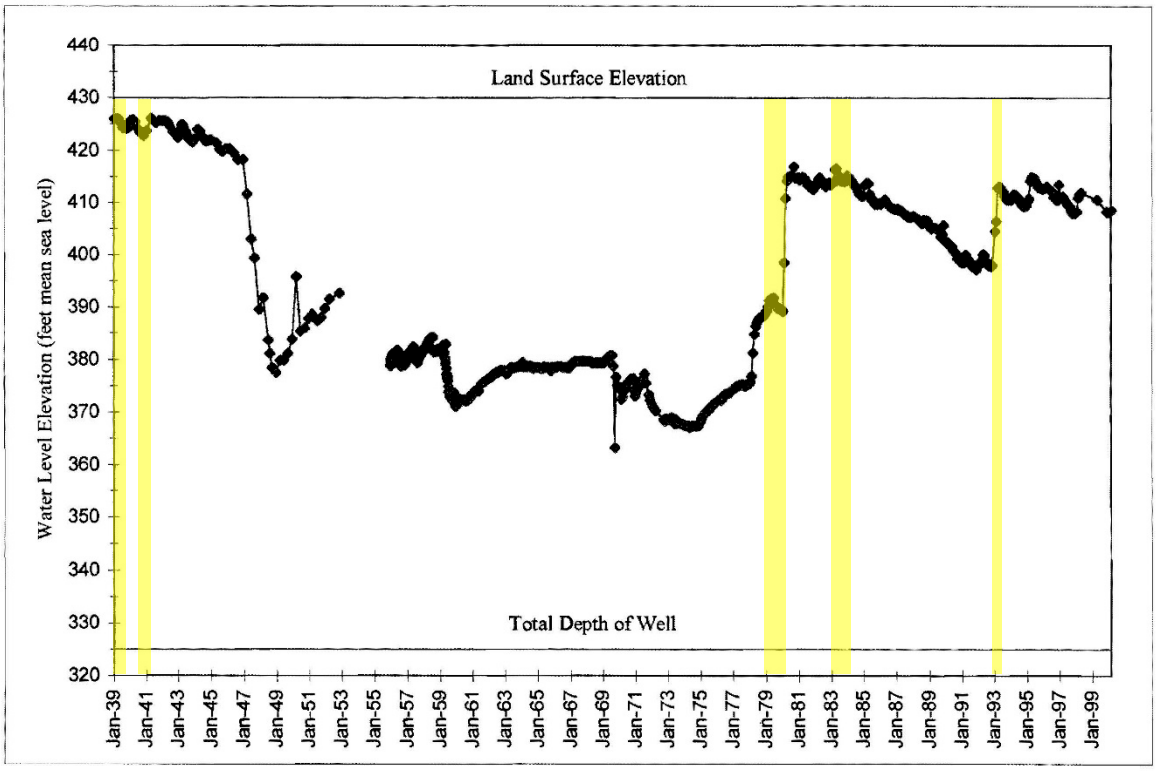
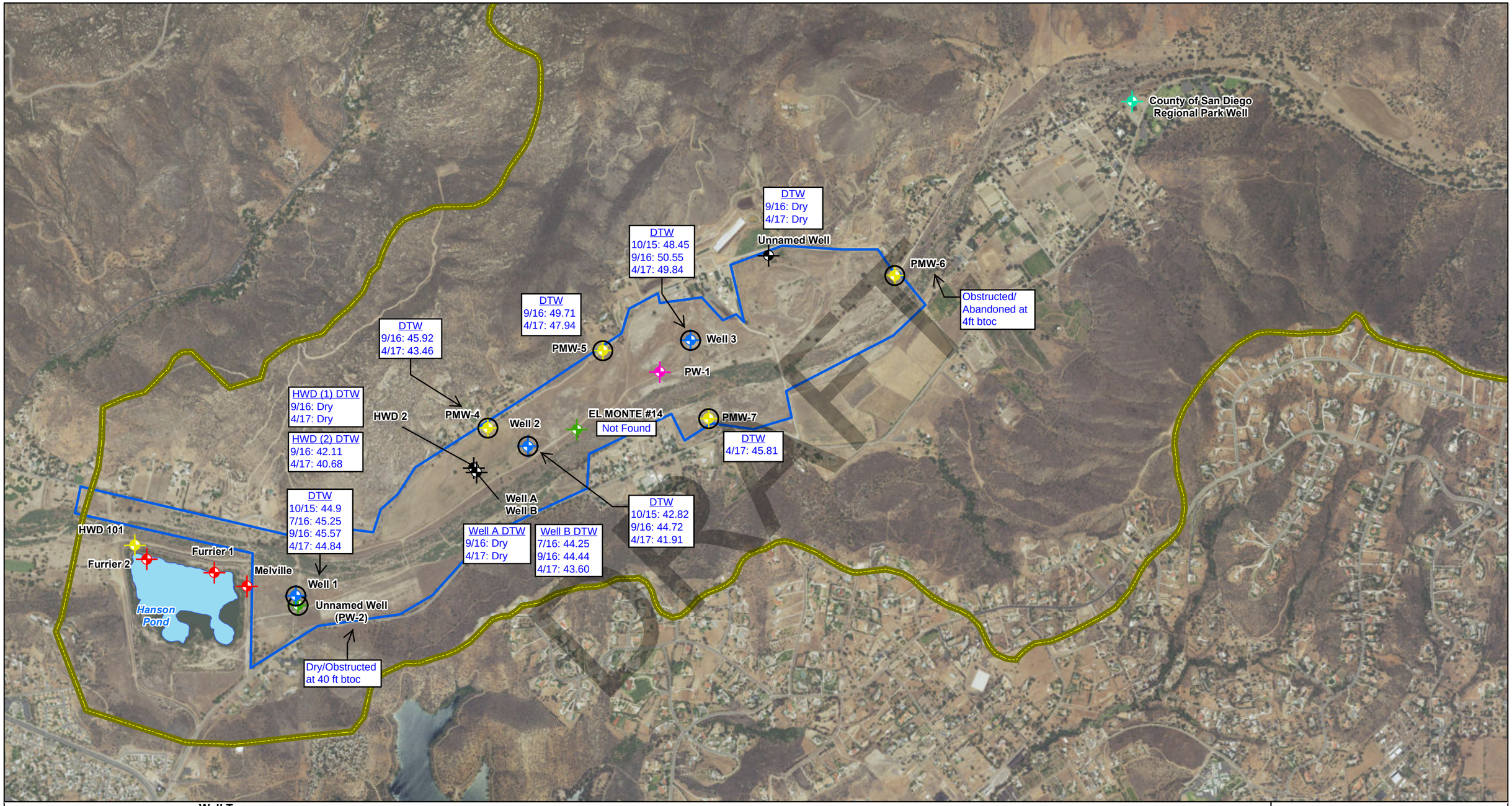


Figure E-2. Water Level Hydrograph Well Furrier 1

Source: Figure E-2 from Bondy and Huntley 2001. Yellow bands represent spill events that occurred between January 1939 and 1999.

Depth to water (DTW) measurements have been collected sporadically across the site. Groundwater levels onsite during the 1990s were approximately 15 to 25 ft bgs, and since then levels have declined to 40-50 ft bgs. A groundwater monitoring network was recently established, and measurements were collected from 2015 to 2017. From the first round of monitoring in 2015 to the second round of monitoring in late 2016, the groundwater elevations dropped sitewide. From late 2016 to the most recent monitoring event in April 2017, groundwater rose roughly half a foot to 2 feet across the site. This will not likely have a significant impact on the overall downward trend in water levels in the basin since the last overtopping event. A site map with the most recent DTW measurements is presented below as Figure 7.



Legend

- Tributary Watershed Area
- Project Boundary

Well Type

- Installed by Woodward-Clyde
- Installed by Ninyo & Moore
- Identified by Wiedlin & Associates
- Identified by Southern California Soil & Testing
- Identified by Earth Tech (1998)
- Owned and Operated by County of San Diego
- Identified by AECOM
- Wells with circle border verified/found by AECOM

N

0 1,500 3,000

Feet

Notes:
Watershed boundaries only show those within the project vicinity.
Additional wells identified by Bondy & Huntley Were not located or presented on this figure.

Figure 7
Depth to Water Measurements

El Monte Watershed
San Diego County, California.

AECOM
September 2017

Path: P:\ENV\60480712 El Monte\GIS_CAD\MXDs\Figure X El Monte Site Map with Updated Wells.mxd

4.0 Groundwater Impact Analysis

4.1 Groundwater Inflows and Outflows

The components of inflows and outflows of groundwater at the project site are represented below (Table 2). “Existing Conditions” represent current inflows and outflows prior to mining excavation, while “Future Conditions” represent components of inflow and outflow in post mining conditions. There are three significant expected changes to the groundwater system following excavation: (1) inflow to the pit and underlying groundwater system from rainfall run-on, (2) changes in the amount of evapotranspiration from on-site groundwater-dependent plant species, and (3) potential outflow from pit evaporation.

Table 2. Groundwater Fluxes

	Existing Conditions	Future Conditions
Inflows		
Rainfall recharge	X	X
Underflow beneath the El Capitan Dam	X	X
Stream bed infiltration	X	X
Return flows from landscape irrigation and septic systems	X	X
Rainfall Run-on into Mining Pit		XX
Spills and overtopping of El Capitan Reservoir	X	X
Outflows		
Evapotranspiration of groundwater-dependent plant species	X	XX
Groundwater pumping for residential, municipal supply, and irrigation purposes	X	X
Groundwater outflow into the basin to the west.	X	X
Evaporation off of existing water surfaces (e.g., Hanson Pond)	X	X
Evaporation from reclaimed pit pond (El Monte Sand Mine project)		XX

Note: double X's (XX) denotes a change in the groundwater flow component

These are described further below:

4.1.1 Inflow - Rainfall Run-on into Mining Pit

Following reclamation of the mining pit, a new source recharge is expected as a consequence of rainfall run-on into the pit. This is water that would have otherwise run out of the basin as surface water during periods of heavy rainfall not accompanied by overtopping of the El Capitan Dam. In addition to the recharge, the reclaimed pit has the potential to reduce damage further downstream due to catastrophic flooding events. This is a function of precipitation, run-off, and soil type. Precipitation was described in section 3.0, and the other components are described below:

The tributary watershed falls within the 18-to-21-inch and 15-to-18-inch rainfall belts on the San Diego County Groundwater Limitations Map (Figure 2). As discussed in Section 3.0, the average annual rainfall between El Capitan and Lake Jennings stations was about 16 inches per year over the last 40 years, and has ranged between 5 and 31 inches.

Run-on

Run-off to the pit, also called pit run-on (RO), can be estimated using the USDA Natural Resources Conservation Service (NRCS) curve number method (CNM) as expounded in the County of San Diego Hydrology Manual (County 2003). The CNM was designed to estimate run-off for watersheds in which no direct measurement was available. The CNM is based on a simplified infiltration model of run-off and empirical approximations. To compute RO using the CNM, two parameters must be known: precipitation (P) and the maximum soil moisture retention (S) after run-off has begun based on the following relationship.

$$RO = (P-.2S)^2 / (P+0.8S)$$

S is a function of soil type, with all soils having been classified by the NRCS into one of four hydrologic groups, A through D, based on the soil's run-off potential. Group A generally has the smallest run-off potential and highest infiltration rates and group D the greatest run-off potential, lowest infiltration rates, and lowest soil moisture retention. As discussed in Section 3.5, the soils within the project watershed were generally split into one of three hydrologic soil groups based on their respective soil moisture holding capacities and the *San Diego County Hydrology Manual* (County 2003) mapping (Figure 8).

The CNM requires the selection of a curve number (CN) based on a combination of soil conditions, land use (ground cover), and hydrologic conditions. These run-off factors, called run-off CNs, indicate the run-off potential of an area. The higher the CN is, the higher the run-off potential (County 2003).

CNs were selected from Table 3-2 (*Linking Land Uses and Hydrologic Soil Groups to Soil Curve Number*) of the *County of San Diego General Plan Update Groundwater Study* (County 2010) based on the 0.2 dwelling unit per acre cover code for each hydrologic soil group.

S is calculated from the CNs based on the following relationship:

$$S = 1000/CN-10$$

Soils

The soil types, average moisture holding capacities (SMCs), curve numbers, their corresponding hydrologic groups, and respective areas for each USDA soil group are shown in Table 3.

Table 3. Project Study Area Hydrologic Soil Groups

USDA Soil Group	Average SMC (inches)	NRCS CN	S	Approximate Area (acres)
Soil Group A	2.05	39	15.64	1,648
Soil Group B/C	2.18	67	5.15	3,028
Soil Group D	0.93	80	2.50	4,173

Using the monthly precipitation record and the assigned CNs, anticipated monthly run-off values for the project area were calculated for the 42-year period of record (1974–2016) of the precipitation data. A calibration analysis included in the County of San Diego General Plan Update Groundwater Study (County 2010) compared the run-off values using the CNM to existing conditions for periods when historical groundwater level data were available in the Lee Valley Basin. The County concluded that run-off values calculated using the CNM is generally overestimated. A reasonable relative match between calculated groundwater in storage compared to historical groundwater levels was obtained by applying an adjustment factor of 0.5 to the calculated run-off values. This adjustment factor of 0.5 was also used in the General Plan Update Groundwater Study (County 2010). A similar exercise was performed in the 22.5-square-mile Guejito Basin on the north side of San Pasqual Valley in San Diego County. In that relatively undeveloped basin (with available rainfall and stream gauge data) an adjustment value of 0.2 gave the best match.

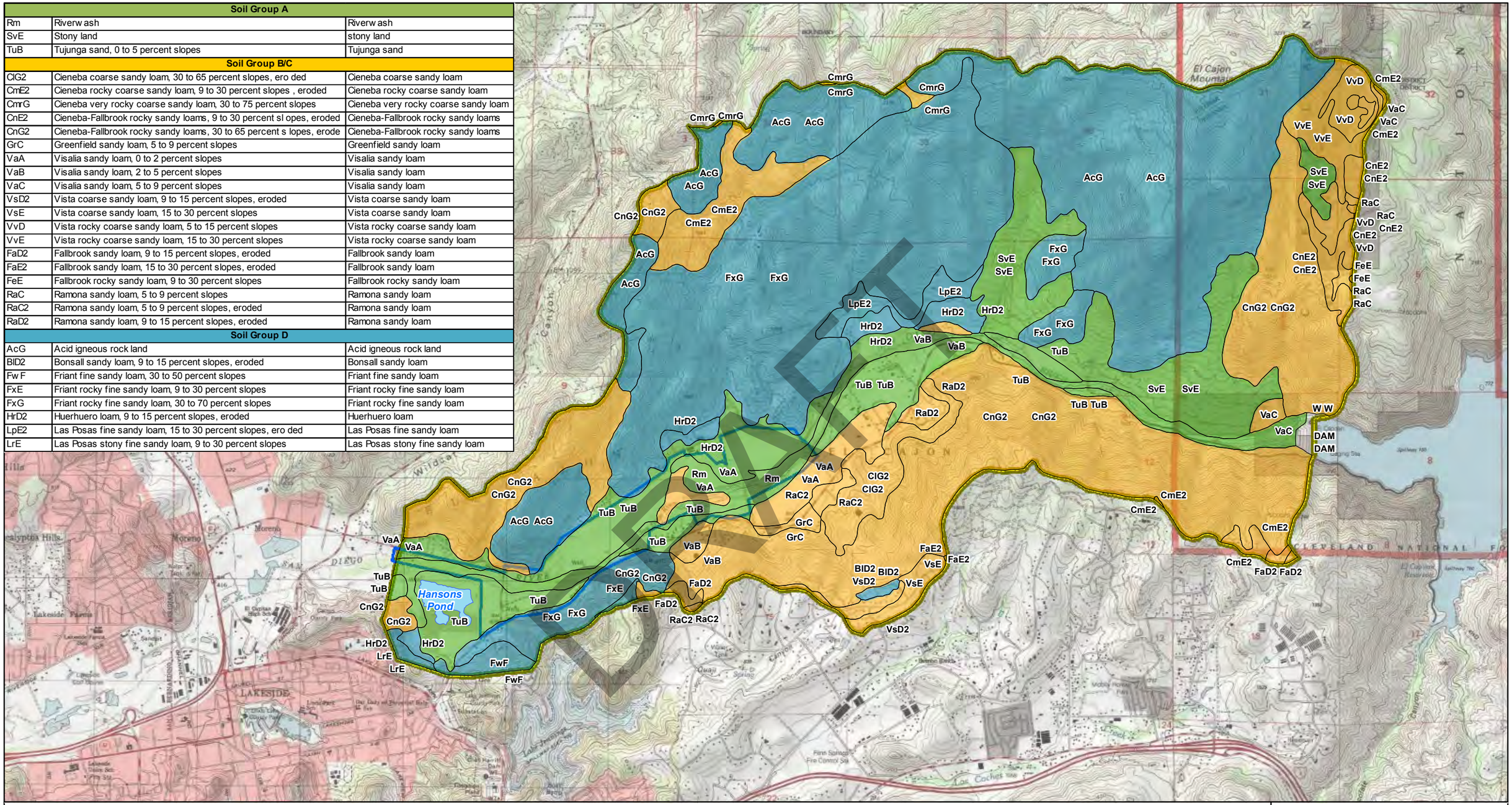
Due to potential overestimation using the CNM, a run-on adjustment coefficient of 0.1 was used to conservatively constrain the results. Using this method and the 1974/1975 to 2016/2017 rainfall record, it was estimated that pit run-on would range from about 19 to 1061 afy with an average of about 368 afy (Table 4).

Table 4. Estimated Run On

Rain Year	Total Rainfall (inches)	Pit Run-on (afy)
1974-1975	17.20	317
1975-1976	12.64	250
1976-1977	15.18	189
1977-1978	30.29	935
1978-1979	22.75	586
1979-1980	27.73	927
1980-1981	11.34	169
1981-1982	18.74	420
1982-1983	30.98	926
1983-1984	8.15	122
1984-1985	14.92	250
1985-1986	19.24	497
1986-1987	12.45	127

1987-1988	15.86	269
1988-1989	8.87	91
1989-1990	9.63	113
1990-1991	16.60	511
1991-1992	16.61	304
1992-1993	28.29	1061
1993-1994	9.42	246
1994-1995	29.18	939
1995-1996	10.82	193
1996-1997	10.12	262
1997-1998	27.29	884
1998-1999	9.53	99
1999-2000	9.86	171
2000-2001	13.80	233
2001-2002	5.04	19
2002-2003	17.79	334
2003-2004	10.34	191
2004-2005	26.29	846
2005-2006	3.36	44
2006-2007	7.88	76
2007-2008	9.27	300
2008-2009	12.03	291
2009-2010	21.39	573
2010-2011	22.71	611
2011-2012	12.27	199
2012-2013	9.92	115
2013-2014	7.91	52
2014-2015	11.94	154
2015-2016	16.41	257
2016-2017	22.58	657
Mean	**15.7**	**368**

Soil Group A		
Rm	Riverw ash	Riverw ash
SvE	Stony land	stony land
TuB	Tujunga sand, 0 to 5 percent slopes	Tujunga sand
Soil Group B/C		
ClG2	Cieneba coarse sandy loam, 30 to 65 percent slopes, ero ded	Cieneba coarse sandy loam
CmE2	Cieneba rocky coarse sandy loam, 9 to 30 percent slopes , eroded	Cieneba rocky coarse sandy loam
CmrG	Cieneba very rocky coarse sandy loam, 30 to 75 percent slopes	Cieneba very rocky coarse sandy loam
CnE2	Cieneba-Fallbrook rocky sandy loams, 9 to 30 percent sl opes, eroded	Cieneba-Fallbrook rocky sandy loams
CnG2	Cieneba-Fallbrook rocky sandy loams, 30 to 65 percent s lopes, erode	Cieneba-Fallbrook rocky sandy loams
GrC	Greenfield sandy loam, 5 to 9 percent slopes	Greenfield sandy loam
VaA	Visalia sandy loam, 0 to 2 percent slopes	Visalia sandy loam
VaB	Visalia sandy loam, 2 to 5 percent slopes	Visalia sandy loam
VaC	Visalia sandy loam, 5 to 9 percent slopes	Visalia sandy loam
VsD2	Vista coarse sandy loam, 9 to 15 percent slopes, eroded	Vista coarse sandy loam
VsE	Vista coarse sandy loam, 15 to 30 percent slopes	Vista coarse sandy loam
VvD	Vista rocky coarse sandy loam, 5 to 15 percent slopes	Vista rocky coarse sandy loam
VvE	Vista rocky coarse sandy loam, 15 to 30 percent slopes	Vista rocky coarse sandy loam
FaD2	Fallbrook sandy loam, 9 to 15 percent slopes, eroded	Fallbrook sandy loam
FaE2	Fallbrook sandy loam, 15 to 30 percent slopes, eroded	Fallbrook sandy loam
FeE	Fallbrook rocky sandy loam, 9 to 30 percent slopes	Fallbrook rocky sandy loam
RaC	Ramona sandy loam, 5 to 9 percent slopes	Ramona sandy loam
RaC2	Ramona sandy loam, 5 to 9 percent slopes, eroded	Ramona sandy loam
RaD2	Ramona sandy loam, 9 to 15 percent slopes, eroded	Ramona sandy loam
Soil Group D		
AcG	Acid igneous rock land	Acid igneous rock land
BlD2	Bonsall sandy loam, 9 to 15 percent slopes, eroded	Bonsall sandy loam
FwF	Friant fine sandy loam, 30 to 50 percent slopes	Friant fine sandy loam
FxE	Friant rocky fine sandy loam, 9 to 30 percent slopes	Friant rocky fine sandy loam
FxG	Friant rocky fine sandy loam, 30 to 70 percent slopes	Friant rocky fine sandy loam
HrD2	Huerhuero loam, 9 to 15 percent slopes, eroded	Huerhuero loam
LpE2	Las Posas fine sandy loam, 15 to 30 percent slopes, ero ded	Las Posas fine sandy loam
LrE	Las Posas stony fine sandy loam, 9 to 30 percent slopes	Las Posas stony fine sandy loam



Legend

- Watershed Area
- Project Boundary
- USDA Soil Type Boundaries

Notes:
Watershed boundaries only show those within the project vicinity.

N

0 3,000 6,000

Feet

Figure 8
Hydrological Soil Group

El Monte Sand Mine Project
San Diego, Ca

AECOM
September 2017

Path: P:\ENV\60480712 El Monte\GIS_CAD\MXDs\Sand Extraction Nature Project Report\Figure 10 Hydro Soil Groups.mxd

4.1.2 Outflow - Potential Evaporation From Within Pit

As noted above, the project proposes to excavate a portion of the basin's aquifer, which will result in the removal of alluvium and create a 228-acre mining pit. While this enhances the run-on and infiltration of precipitation into the groundwater system, it will also have the potential to create standing water in the pit following wet years that will evaporate an estimated 4.55 afy per acre of exposed water (pan-corrected evaporation from Table 1). As groundwater levels in the basin fluctuate, so will the volume of groundwater within the pit (until groundwater is deeper than the pit floor) and thus evaporative loss each year is expected to vary. However, water levels today are currently about 40 to 45 feet below ground surface. This would be equal to approximately 15 to 20 feet below the bottom of the reclaimed mining pit (Figure 7). The average decline in water level of 1.7 ft/yr was calculated from the hydrographs presented in Bondy & Huntley. If there is not another overtopping event within the next 15 years water levels will decline approximately an additional 25 feet. Thus, water levels would be approximately 75 to 85 feet below the ground surface, or roughly 40 to 50 feet below the bottom of the reclaimed mining pit. Unless another overtopping/spill event occurs, no standing water will exist within the pit, and therefore, no evaporation losses are assumed.

4.1.3 Outflow - Groundwater-dependent Habitat Demand

To determine potential significant impacts of the proposed El Monte project, the team biologist looked at the following groundwater-dependent habitat: Southern Cottonwood-Willow Riparian Forest, Vegetated Channel, Southern Willow Scrub, and Tamarisk Scrub (for current conditions only)[Jim Prine ESA, email communication, August 15, 2017].

During post-mining conditions, groundwater is anticipated to be approximately 40-50 ft below the bottom of the pit. Approximately 325 afy is predicted to be lost to evapotranspiration (ET) onsite. During post-mining if water conditions were same as existing conditions where groundwater is approximately 15-25 ft below the bottom of the pit, approximately 366 afy is predicted to be lost to ET onsite [Jim Prine ESA, email communication, September 6, 2017]. The amount of phreatophyte loss depends on several factors, including depth of groundwater, species factor, density factor, microclimate factor, and the reference evapotranspiration rate as shown in Table 5 below. .

Table 5. On-site Phreatophyte Evapotranspiration Estimates

Vegetation Community[2]	Species Factor (K_s)	Density Factor (K_d)	Microclimate Factor (K_{mc})	Landscape Coefficient (K_L)[2]	Reference Evapotranspiration Rate (inches/year)	Estimated Evapotranspiration (inches/year)[3]	Mapped Area (acres)	ET Loss (afy)
On-site Phreatophytes (Future Conditions) Depth to Water 40-45' below pit, 75-80' below ground outside pit[6]								
Southern Cottonwood-Willow Riparian Forest	0.44	1	1	0.44	55.1	24.24	58.86	118.9
Southern Willow Scrub	0.37	1	1	0.37	55.1	20.39	99.1	168.4
Southern Cottonwood-Willow Riparian Forest (existing - to remain)	0.42	1	1	0.42	55.1	23.14	11.26	21.7
Southern Willow Scrub (existing - to remain)	0.35	1	1	0.35	55.1	19.28	0.71	1.1
Vegetated Channel*	0.35	1	1	0.35	55.1	19.28	8.92	14.3
							Total Loss:	**324.4**

Vegetation Community[2]	Species Factor (K_s)	Density Factor (K_d)	Microclimate Factor (K_{mc})	Landscape Coefficient (K_L)[2]	Reference Evapotranspiration Rate (inches/year)	Estimated Evapotranspiration (inches/year)[3]	Mapped Area (acres)	ET Loss (afy)
On-site Phreatophytes (Future Conditions) Depth to Water 15-20' below pit, 50-55' below ground outside pit[5]								
Southern Cottonwood-Willow Riparian Forest	0.52	1	1	0.52	55.1	28.65	58.86	140.5
Southern Willow Scrub	0.41	1	1	0.41	55.1	22.59	99.1	186.6

Southern Cottonwood-Willow Riparian Forest (existing - to remain)	0.42	1	1	0.42	55.1	23.14	11.26	21.7
Southern Willow Scrub (existing - to remain)	0.35	1	1	0.35	55.1	19.28	0.71	1.1
Vegetated Channel*	0.39	1	1	0.39	55.1	21.49	8.92	16.0
							Total Loss:	**365.9**

Notes:

1. The Landscape Coefficients (K_L) for the vegetation communities was determined using The Landscape Coefficient Method and Water Use Classification of Landscape Species (WUCOLS) III in A Guide to Estimating Irrigation Water Needs of Landscape Plantings in California (University of California Cooperative Extension, California Department of Water Resources, August 2000).

2. K_S x K_d x K_{mc} = K_L. Landscape coefficient values for the project factor in site conditions and groundwater elevations, and post-mining planting palettes which include riparian species and transitional upland species due to conditions that are drier than typical riverine systems. As groundwater elevation drops, fewer riparian species are expected to persist and landscape coefficient values would be reduced.

3. Landscape Coefficient (K_L) x Reference Evapotranspiration = Evapotranspiration (inches/year).

4. Landscape coefficients for the existing condition assume much of the vegetation cannot access the deep groundwater.

5. Non-Vegetated Channel currently occurs on-site. In post-mining areas (lowered approximately 30-35 feet) the central channel will be revegetated with lower-growing species (i.e., Douglas mugwort, Deergrass, etc.) that are considered non-phreatophytes. However, species such as cottonwood, willow and mule fat, which are phreatophytes, are expected to volunteer in low numbers in the channel area from adjacent Cottonwood-Willow Riparian Forest habitat.

6. Existing Tamarisk Scrub in the river channel will either be removed by mining and the area will be revegetated post-mining with Cottonwood-Willow Riparian Forest habitat, or enhanced outside of mining areas as part of project mitigation (i.e., removal of tamarisk and other exotic species) and converted to non-phreatophytic alluvial scrub habitat.

7. The Species Factor and Landscape Coefficient are expected to decrease within Vegetated Channel as groundwater level decreases.

4.2 Groundwater Storage

The surface mining and resultant pit will remove material that would have otherwise had the potential to store groundwater. Under current conditions groundwater levels would be below the bottom of the pit, in which case, the excavated material would not affect groundwater storage. In the event of a dam overtopping, the water table may rise above the pit bottom and a pond would form. The quantity of water stored as surface water (approximately 1200 acre-feet) would be greater than if it was stored as groundwater. However, this increase in available storage would be subject to evaporation and induce groundwater inflow into the pit.

Because the first operations occurring onsite will be to clear the vegetation out of the mining pit area and the area east of the dairy, phreatophyte ET should be significantly less at that time than existing conditions. And since no groundwater will be used during mining operations, it is expected that impacts during mining will be less than significant.

4.3 Water Quality

In August 2016, AECOM collected water samples from Wells 1, 2, and 3 and analyzed for nitrate (as nitrogen [N]) and total dissolved solids (TDS). In addition, we obtained water quality data from one of the El Monte Regional Park supply wells. Sample results relative to the Primary State or Federal Maximum Contaminant Levels (MCLs) are summarized in Table 6.

Table 6. Summary of TDS and Nitrate Analytical Results – September 2016

Well	**Analytical Results**	
	TDS (mg/L)	**Nitrate (mg/L as N)**
Primary MCL	**1000**	**10**
County of San Diego El Monte Regional Park Well	N/A	2.5*
Well 1	350	0.21
Well 2	550	6.0
Well 3	500	10

Notes: * Well sampled April 18, 2016 by County of San Diego

Bondy and Huntley (2001) reviewed TDS data sourced from the U.S. Geological Survey from 1959 and 1983 (Figures 25 and 26 below, referenced from Bondy and Huntley [2001]). Those results indicate TDS concentrations of 290 to 1310 mg/L in the El Monte Basin.

Figures 25 and 26 from Bondy and Huntley (2001)

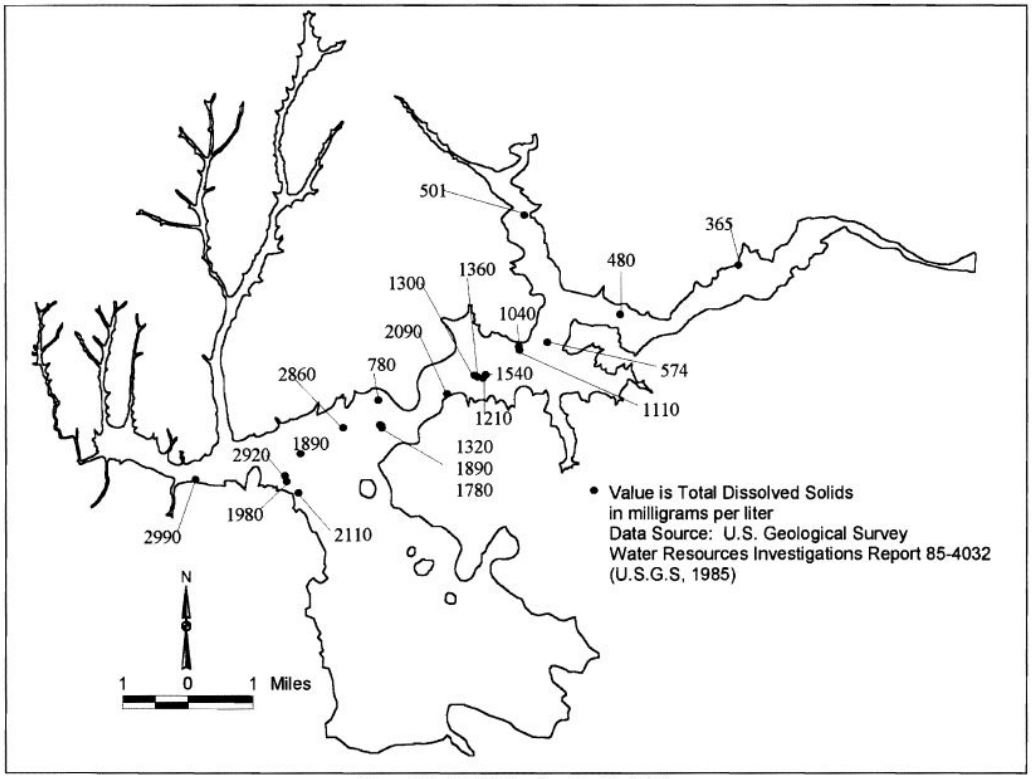


Figure 25. Total Dissolved Solids 1959

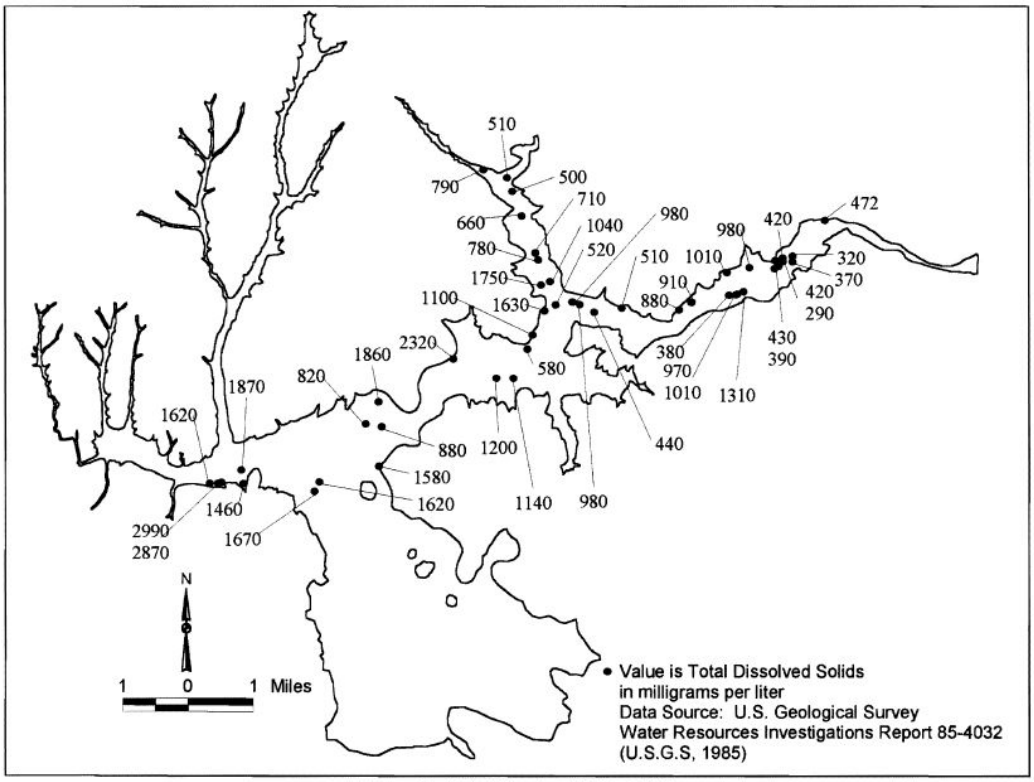


Figure 26. Total Dissolved Solids 1983

These data were provided to establish baseline conditions. Accordingly these results are not addressed further.

5.0 Summary of Project Impacts

Based upon the results of our study, we provide the following conclusions:

- El Capitan reservoir has spilled water episodically since its construction. Based on review of historic groundwater levels it appears that following in overtopping event the basin water levels rise to approximately 5 to 10 feet from the ground surface in the El Monte basin.

- In the absence of another spill event basin water levels have historically declined approximately 1.7 feet per year on average.

- Water levels today are currently about 40 to 50 feet below ground surface. This would be equal to approximately 15 to 25 feet below the bottom of the reclaimed mining pit.

- If there is not another spill event within the next 15 years water levels will decline approximately another 25 feet. That would mean water levels would be approximately 75 to 85 feet below the ground surface. That would be equal to 40 to 50 feet below the bottom of the reclaimed mining pit.

- In the event that another dam spill were to occur, the reclaimed pit will have another benefit and that is the storage of surface water within the pit. Approximately 1200 acre-feet would be temporarily stored if the pit were completely filled. Because the pit would be filling 100% of the air space in the 75 acres that would be inundated, this would provide significantly more surface water in the basin in the years following the overtopping event. While this water would also then be subject to evaporative losses, the temporary storage of surface water in the pit (until basin water levels decline below the bottom of the pit) could be an environmental benefit.

- Because the first operations occurring onsite will be to clear the vegetation out of the mining pit area and the area east of the dairy, phreatophyte ET should be significantly less at that time than existing conditions. And since no groundwater will be used during mining operations, it is expected that impacts during mining will be less than significant.

- The reclaimed pit has the potential to slightly reduce damage further downstream (e.g., Mission Valley) during catastrophic flooding events.

- Following reclamation, the project is expected to result in approximately 368 afy of rainfall run-on into the reclaimed mining pit

- Evapotranspiration from phreatophytes is expected range from about 325 to 366 afy assuming there are no more reservoir spills/overtopping in the next 15 years.

- **The *project can be considered a net benefit to the basin*** because induced run-on is greater than the anticipated evapotranspiration loss. The net effect of the induced run-on to the reclaimed pit would be a benefit to the groundwater system by allowing capture of water that would otherwise leave the basin.

6.0 Recommendations

We recommend that since all open wells could provide a conduit for groundwater contamination and could present a safety hazard, existing (and any future) on-site wells should be secured with locking covers. Wells that will not be used in the future should be properly abandoned.

7.0 References

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Attachment D.

Geologic Reconnaissance and Slope Stability Analysis

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January 27, 2016

El Monte Nature Preserve, LLC
1335 San Lucas Court
Solana Beach, California 92075
Attention: Mr. Bill Adams

Job No. 15383-8

Dear Mr. Adams:

This letter transmits two copies of our slope stability investigation report, prepared for the proposed El Monte Sand Mining Project, located at 13964 El Monte Road in Lakeside, California.

We appreciate this opportunity to provide geotechnical services for this project. If you have questions or comments concerning this report, please contact us at your convenience.

Respectfully submitted,
CHJ CONSULTANTS

Jay J. Martin, E.G.
Vice President

JJM:lb

Distribution: El Monte Nature Preserve, LLC (2 and electronic)

SLOPE STABILITY INVESTIGATION
PROPOSED EL MONTE SAND MINING PROJECT
LAKESIDE, CALIFORNIA
PREPARED FOR
EL MONTE NATURE PRESERVE, LLC
JOB NO. 15383-8

January 27, 2016

El Monte Nature Preserve, LLC
1335 San Lucas Court
Solana Beach, California 92075
Attention: Mr. Bill Adams

Job No. 15383-8

Dear Mr. Adams:

Attached herewith is the report of slope stability investigation prepared for the proposed El Monte Sand Mining project, located at 13964 El Monte Road in Lakeside, California.

This report was based upon a scope of services generally outlined in our proposal dated June 24, 2015, and other written and verbal communications.

We appreciate this opportunity to provide geotechnical services for this project. If you have questions or comments concerning this report, please contact us at your convenience.

Respectfully submitted,
CHJ CONSULTANTS

Jay J. Martin, E.G.
Vice President

JJM:lb

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PROPOSED EL MONTE SAND MINING
PROJECT
LAKESIDE, CALIFORNIA
PREPARED FOR
EL MONTE NATURE PRESERVE, LLC
JOB NO. 15383-8

INTRODUCTION

During August and September of 2015, this firm conducted exploratory drilling, laboratory testing and slope stability analysis for the proposed El Monte Sand Mining project that includes sand mining operations. A revised reclamation plan was evaluated during January 2016. The purposes of this investigation were to explore and evaluate the engineering geologic conditions at the subject site and to provide slope stability analysis for the mining and reclamation plan.

To orient our investigation, several documents and maps were provided for our use. These include the following:

- Project description for the El Monte Sand Mining and Nature Preserve project by EnviroMINE revised January 2016
- Reclaimed Bench Configuration Diagram dated January 20, 2016
- Reclamation Plan Set (6 sheets), dated January 24, 2016
- Preliminary Geotechnical Evaluation, El Monte Mining, Reclamation and Groundwater Recharge Project, by Ninyo & Moore, dated July 18, 2011
- Compendium Report of Geotechnical Investigations, El Capital Golf Course, Lakeside, California, by Shepardson Engineering Associates, Inc., dated July 28, 2003
- Attachment 1 of the Scope for Geotechnical Investigation document dated June 18, 2015

The approximate location of the site excavation area is shown on the attached Location Map (Enclosure A-1).

The results of our investigation, together with our conclusions and recommendations, are presented in this report.

SCOPE OF SERVICES

The scope of services provided during this investigation included the following:

- Review of published and unpublished literature and maps including geologic mapping by Todd (2004) and Tan (2002)
- Examination of aerial imagery dated 1953, 1964, 1966, 1968, 1971, 1980, 1981, 1989, 1994, 1996, 2002, 2004, 2005, 2006, 2010, 2011, 2012 and 2015
- Review of studies by prior consultants
- Geologic mapping of the site and adjacent area
- Marking of the exploration locations and notification of Underground Service Alert
- Coordination with County of San Diego Department of Environmental Health to obtain a waiver for grouting of the geotechnical borings
- Drilling and sampling four hollow-stem auger borings in the excavation area
- Laboratory testing of selected samples retrieved from the borings
- Slope stability calculations (limit equilibrium and surficial) for the proposed slopes under static and seismic conditions
- Evaluation of potential geologic hazards to the project including seismic shaking hazard

PROJECT CONSIDERATIONS

The project description indicates that the site will produce approximately 10 million tons of construction aggregate/sand material over a 12-year production period, followed by four years of reclamation. The project will include disturbance and reclamation of approximately 262 acres of a 479.5-acre site. Total reclaimed slope heights will be approximately 30 feet. A prior study considered deeper pit elevations; therefore, geotechnical borings up to 100 feet deep are available for the project. The purpose of the slope stability investigation is to provide reclaimed slope configurations consistent with the requirements of the Surface Mining and Reclamation Act, County of San Diego, and the Office of Mine Reclamation. This report addresses the items included in the County's "Scope for Geotechnical Investigation" dated June 18, 2015. That document includes requirements to address future groundwater levels as a result of an upstream dam breach, the stability of temporary slopes, and compaction of fill.

According to the Reclamation Plan (EnviroMINE, 2016), the project will be developed in four phases working from east to west. A drop structure to mitigate erosion by surface flows entering the pit along the upstream portion is planned at the east end. Wash fines will be used in backfilling excavations from water features (ponds) associated with a former golf course project. Wash fines will also be distributed on disturbed site areas. Excavations are not planned below the groundwater table. Reclamation of each phase area is planned to commence at the start of the subsequent phase.

A maximum pit depth of approximately 30 feet is anticipated based on proposed bottom elevations that range from 405 feet to 440 feet above mean sea level (amsl) and existing surfaces ranging from 438 feet amsl to 450 feet amsl at the west and east ends of the excavation area, respectively. Slopes are planned at 3 horizontal (h) to 1 vertical (v) inclination with an intervening bench. Excavation is not proposed beneath the groundwater table.

Our slope stability calculations for the proposed reclaimed slopes are based on configurations consistent with the Reclamation Plan. We modeled and evaluated a typical slope proposed for

development of the excavation area. Slopes flatter than 2 (h) to 1 (v) in alluvial materials situated above the groundwater table are typically considered stable. For completeness, we include engineering calculations of the gross stability of the proposed slope configuration under static and seismic conditions.

SITE DESCRIPTION

The site consists of an elongate area of undeveloped land within the margins of the San Diego River floodplain bounded by unpaved Willow Road to the north and paved El Monte Road to the south. The vegetated channel of the San Diego River trends roughly east to west as it bisects the site. A mine pit with surface water is adjacent to the site on the west, and residences are located near the southeast boundary. Land marginal to the floodplain is elevated above the active river channel forming terrace risers or benches north and south of the channel area. These benches were generally undeveloped at the time of our investigation. Site elevations range from approximately 450 feet amsl at the northeast limit of the proposed excavation area to 430 feet amsl at the western limit. Vegetation on the benches generally consists of a low growth of dried annual grasses and weeds with few large trees. The river channel includes a dense growth of trees. Bedrock slopes are locally bouldery north and south of the river floodplain. The eastern portion of the site includes areas formerly graded for an uncompleted golf course project that produced undulatory terrain and areas of fill.

Examination of aerial imagery indicates that the bench areas have previously been utilized for borrow material, material processing and equipment storage. Small structures were located in the northwest corner and southwest portion of the site as early as 1989. A covered open-sided structure remains in the northwest corner. No structures remain in the southwest portion of the site. Equipment and/or materials were stored in cleared areas adjacent to Willow Road and north of El Monte Road in the western portion of the site between 2005 and 2006. Materials processing areas were located in the western and northeastern portions of the site between 2005 and 2006 and included use of heavy equipment and sorting/stacking equipment. Grading for the golf course project in the eastern portion

of the site is visible in imagery dated May 2005. Changes to the site do not appear in aerial imagery since 2012 when equipment/materials were removed from an extensive fenced area in the southwest portion of the site.

Evidence of geologic hazards including landsliding or surface faulting was not observed in the aerial imagery examined.

The proposed reclamation configuration including the excavation area boundary and slope geometries is depicted on Enclosure A-2. Geologic cross sections are presented on Enclosures A-4.2 and A-4.4.

PREVIOUS INVESTIGATIONS

Several reports documenting geologic mapping, subsurface explorations and sampling, and groundwater monitoring for projects at and adjacent to the site were examined (Shepardson, 2003; Ninyo & Moore, 2011). Subsurface information and groundwater data from these investigations were utilized in our evaluation. Findings include:

- Alluvial soils up to 106 feet thick overlie granitic and metavolcanic bedrock along the floodplain axis.
- Groundwater occurs at elevations ranging from approximately 420 feet amsl on the east to 391 feet amsl on the west (Ninyo & Moore, 2011).
- Cut slopes at 2(h) to 1(v) should be grossly stable against deep-seated failure.
- Materials should be excavatable with standard heavy equipment; well drilling (depending on depth) may encounter hard bedrock formation below the alluvium.
- The site is subject to liquefaction.
- Faulting is not anticipated within the project area.
- Unprotected site soils are susceptible to erosion.

FIELD INVESTIGATION

Four hollow-stem auger borings were drilled to depths up to 100 feet below the existing ground surface (bgs) in the excavation area during August 2015 to supplement prior exploration by others. Existing roads were utilized and no access improvements were required. Drilling was performed using a CME 75 truck-mounted drilling rig equipped for soil sampling. The eastern portion of the project was added to the proposed excavation area after our field program was completed; therefore, we utilized prior explorations by others to characterize the subsurface conditions in the eastern portion of the project. The approximate locations of our exploratory borings are indicated on the attached Site Plan (Enclosure A-2).

Both a standard penetration test (SPT) sampler (2-inch outer diameter and 1-3/8-inch inner diameter) and a modified California ring sampler (3-inch outer diameter and 2.42-inch inner diameter) were utilized in our investigation. The penetration resistance was recorded on the boring logs as the number of hammer blows used to advance the sampler in 6-inch increments (or less if noted). The sampler was driven with an automatic hammer that drops a 140-pound weight 30 inches for each blow. After the required seating, samplers are advanced up to 18 inches, providing up to three sets of blowcounts at each sampling interval. The recorded blows are raw numbers without any corrections for hammer type (automatic vs. manual cathead) or sampler size (ring sampler vs. standard penetration test sampler). Both relatively undisturbed and bulk samples of typical soil types obtained were returned to the laboratory in sealed containers for testing and evaluation.

Exploratory boring logs, together with the uncorrected blowcount data and in-place density data, are presented in Appendix B. The stratification lines presented on the boring logs represent approximate boundaries between soil types, which may include gradual transitions.

At the completion of drilling, all borings were backfilled to the initial grade of the boring with soil drill cuttings and tamped using the drilling equipment augers. This backfilling operation is expected to compact the boring to a density approximating that of the existing soils. It is possible that some settlement of the backfilled material may occur. Our firm will not monitor boring locations for any settlement. This is deemed to be, and is accepted to be, the responsibility of our client.

Exploratory borings reported for prior investigations are included in Appendix B for reference.

A Site Plan indicating current and prior exploration locations, proposed slopes and the limits of proposed excavation is provided as Enclosure A-2.

LABORATORY ANALYSIS

Included in our laboratory testing program were field moisture content tests on all samples returned to the laboratory and field dry density tests on all relatively undisturbed samples. The results are included on the boring logs. Direct shear testing was performed on selected relatively undisturbed samples and one remolded sample in order to provide shear strength parameters for slope stability evaluations. Sieve analyses were performed on selected samples as an aid to classification.

Laboratory test results are presented in Appendix C. Soil classifications provided are in accordance with the Unified Soil Classification System (USCS).

SITE GEOLOGY

The site is located near the community of Lakeside in unincorporated San Diego County, east of Highway 67 and north of Interstate Highway 8. The site is situated in a broad river valley formed in bedrock terrain of the Peninsular Ranges geomorphic province. The Peninsular Ranges include plutonic and metamorphic crystalline rocks of Cretaceous and older age. The crystalline basement rocks are locally mantled by residual soils and capped by isolated alluvial/sedimentary remnants.

Valley bottoms are typically alluviated. Geologic units in the area include metavolcanic rocks likely coeval with the plutonic rocks of the Peninsular Ranges batholith, intrusive granitics and alluvial sediments deposited in the San Diego River floodplain.

GEOLOGIC UNITS:

The site was mapped on a topographic base using the geologic nomenclature of Todd (2004) for bedrock units, and alluvial nomenclature established for this investigation based on relative landscape position above the river channel. A Site Plan and Geologic Map is presented as Enclosure A-4.1. Cross sections are presented as Enclosures A-4.2 through A-4.4. The units designated for this investigation are described below. Structural examination of bedrock units was not included in the field investigation as excavations are not proposed within the bedrock materials and planned slope angles are very flat relative to the strength and ability of bedrock units to stand at steep angles.

Fill (f)

Fill associated with prior site use as a borrow area, dirt roads/tracks and pond/ river channel embankments are derived from local materials including sand, silt and gravel from alluvium and soil. The eastern portion of the proposed excavation area includes fill and disturbed native soils associated with an uncompleted golf course project. Based on examination of aerial imagery, the entire bench area above the active river channel has previously been disturbed by ploughing or disking. The entire site should be considered disturbed ground based on its history of ploughing/disking and use for materials storage, borrow and processing. Larger areas of fill are shown on the Site Plan and Geologic Map (Enclosure A-4.1). Minor areas of fill occur within the Qya unit, primarily within the northeastern area of the future excavation area that was graded for the golf course project. All fill materials are considered undocumented and unsuitable for support of engineered improvements.

Recent Wash Deposits (Qw)

Wash deposits consisting of sand, silt and gravel are present in the active San Diego River channel. These sediments are unconsolidated, include clasts of the more durable bedrock types in the larger size fraction and incise the Qya unit. A dense growth of trees is present within these sediments.

Young Alluvium (Qya)

Alluvium consisting of unconsolidated sand and silt with gravel forms the elevated bench area adjacent to the river channel. The upper surface of these sediments is commonly a gray-brown, fine-grained sand and micaceous silt that is compressible and soft. This surface is heavily disturbed by burrowing and plant growth. This unit was mapped as young alluvium (Qya) by Todd (2004). These sediments are derived from weathering and erosion of adjacent bedrock hillsides that include granitic and metavolcanic rock types and reflect the color and mineral composition of the parent materials. Overbank deposits of fine-grained sand and silt deposited during river flooding are also present locally.

Older Alluvium (Qoa)

An isolated remnant of older alluvium may occur northwest of the excavation area; however field relations suggest that a portion of these materials is either disturbed or imported. These materials consist of strong reddish-brown silty sands that form a bench elevated relative to the Qya surfaces. Geomorphic relations and soil color suggest that these are older than Qya and represent an old land surface preserved above the active modern floodplain; however, the southern margin of the bench includes abundant concrete and metavolcanic debris/clasts that are inconsistent with granitic outcrops nearby. Concrete debris was observed to be buried within/beneath the reddish materials along the margin of the bench, and pedogenic soil development (clay coating, prismatic structure) was lacking in soils exposed at the margin. Aerial imagery indicates that this area was ploughed/furrowed in 1994, fallow in 2002 and cleared/graded in 2005 with equipment stored on a flattened surface. Several large trees visible since imagery dated 1953 remain near the margin of the deposit and are rooted in the Qya surface. The reddish-brown materials terminate near the trees as if placed to avoid burying the trunks. For purposes of this investigation, we interpret the Qoa unit to consist of a

natural terrace deposit (reddish-brown sediments) that was partially altered by clearing and placement of a fill derived from the Qoa surface along the unit margin that incorporates imported debris and rock fragments. The alternative interpretation is that these materials were imported from an offsite area, end-dumped and spread/flattened with equipment. Explorations are not available to make a more definitive conclusion as to the source of the unit designated Qoa. This unit is not within the proposed excavations area.

Granitic Bedrock (Kgr)

As described by Todd (2004), these rocks consist of undivided tonalite and granodiorite of early Cretaceous age, most lithologically similar to tonalite of Alpine (Ka), Japatul Valley Tonalite (Kjv), and Corte Madera Monzogranite (Kcm). Includes lesser gabbro and metavolcanic rocks. This unit forms bouldery hillsides along the northwest margin of the proposed excavation area and is interpreted to underlie the site at depth. Clasts of this unit were observed as rounded cobbles in the Qya unit.

Metavolcanic Rocks (Kmv)

As described by Todd (2004), these rocks consist of amphibolite-facies tuff, tuffbreccia and volcanic flow rock of andesitic, dacitic and basaltic composition of early Cretaceous age. Also includes rare feldspathic metaquartzite, pelitic schist and granitoid-cobble metaconglomerate. Typically forms screens between and within plutons in the western part of the El Cajon quadrangle. These rocks form a more subdued topography along the southern boundary of the proposed excavation area, are exposed in rock cuts along El Monte Road and stand at very steep to vertical angles where cut. Clasts of this unit were observed as sub-rounded to angular clasts in the Qya unit and include boulder of angular breccia in a finer groundmass.

Chiquito Peak Monzogranite (Kcp)

As described by Todd (2004), these rocks consist of hornblende-biotite monzogranite and granodiorite and lesser tonalite, leucogranite, alaskite and pegmatite of early Cretaceous age. Forms lenticular plutons and narrow, sheet-like bodies. Medium grained; moderately to strongly foliated. Variable from one body to another; partly dependent on lithology of nearby units. These rocks are exposed in road cuts along El Monte Road at the southeastern portion of the proposed excavation area.

Consolidated Sediment

As encountered in geotechnical explorations, cemented sediments occur within the alluvial column at elevations below approximately 360 feet amsl. These materials are gray to dark gray, coarse-grained sand and silty sand with clay and gravel. The density of and clay content in these materials suggest possible weathered bedrock.

GEOLOGIC STRUCTURE:

The alluvial sediments of the San Diego River valley are anticipated to be crudely bedded and stratified due to deposition by alluvial processes. As encountered in subsurface explorations, alluvial units include thickly bedded silty sand and sand beds with gravel, and gravel lenses. Sands are locally coarse-grained where gravel content is higher. Few silt layers were encountered at intermediate and deeper depths in the borings. Individual units are anticipated to be discontinuous due to depositional processes that include channel meander, braided stream flow and variable transport energy. For slope stability, the alluvial units are anticipated to act as homogenous, relatively flat-lying layers that are not prone to slide on steep contacts or bedding planes.

FAULTING AND SEISMICITY

Regional seismic sources and historic earthquakes were assessed to determine ground motion conditions for evaluation of potential seismic effects on stability of proposed finished slopes. We calculated deterministic peak ground accelerations for the regional seismic sources. These data are presented in the following sections.

REGIONAL FAULTS:

The tectonics of Southern California are dominated by the interaction of the North American and Pacific tectonic plates, which slide past each other in transform motion. Although some motion may be accommodated by rotation of crustal blocks such as the western Transverse Ranges (Dickinson, 1996), the San Andreas fault zone is the major surface expression of the tectonic boundary and accommodates most transform slip between the Pacific and North American plates. The Rose Canyon – Newport-Inglewood, Elsinore and other offshore transform faults also accommodate strain between the Pacific and North American plates. Recent seismic activity in the greater San Diego region includes the magnitude 7.2 El Mayor – Cucapah earthquake of April 2010. This event occurred on the Laguna Salada fault zone at an epicentral distance of 165 kilometers (102 miles) from the site and was felt over a wide region.

Rose Canyon Fault Zone

The coastal San Diego region is traversed by a broad zone of faulting associated with the Rose Canyon fault zone (RCFZ), a system of faults that accommodates motion between the Pacific and North American tectonic plates. The RCFZ is considered a southern extension of the offshore Newport-Inglewood fault zone. North of downtown San Diego, the RCFZ diverges southward into three named strands—the Coronado, Silver Strand and Spanish Bight faults. The RCFZ is located approximately 30 kilometers (19 miles) southwest of the site.

Elsinore Fault Zone

The Julian segment of the Elsinore fault zone is located about 37 kilometers (23 miles) northeast of the site. The Elsinore fault zone is typified by multiple en echelon and diverging faults. To the north, the Elsinore zone splays into the Whittier and Chino faults. The Elsinore is primarily a strike-slip fault zone; however, transtentional features such as the graben of the Elsinore and Temecula Valleys also occur. Most Elsinore fault traces are demonstrably active (Holocene) as documented by Saul (1978), Rockwell and others (1986) and Wills (1988).

Coronado Bank Fault Zone

The Coronado Bank fault is located approximately 55 kilometers (35 miles) southwest of the site in the offshore region of San Diego. The Coronado Bank fault zone is a system of strike-slip and normal fault that trends nor th-northwest in the offshore region. The fault trend is reflected in alignment of bathymetric features including the Coronado Escarpment, Lasuen Knoll, and connection with the Palos Verdes fault zone is postulated.

San Jacinto Fault Zone

The Borrego segment of the San Jacinto fault zone (SJFZ) is located approximately 70 kilometers (43 miles) northeast of the site. The SJFZ is a system of northwest-trending, right-lateral, strike-slip faults that roughly parallels the trend of the southern San Andrea fault zone. More large historic earthquakes have occurred on the San Jacinto fault than any other fault in Southern California (Working Group on California Earthquake Probabilities, 1988).

REGIONAL SEISMICITY:

A map of recorded earthquake epicenters is included as Enclosure A-5 (Epi Software, 2000). The epicenters and magnitudes are based on data from the California Institute of Technology - Southern California Earthquake Data Center catalog. This enclosure presents circles as epicenters of earthquakes with magnitude equal to or greater than magnitude 4.0 recorded from 1932 through 2012.

The most significant fault with regard to generation of ground shaking is the Rose Canyon zone, about 30 kilometers (19 miles) to the southwest.

GROUND-SHAKING HAZARD

The ground-shaking hazard at the site was evaluated from a deterministic standpoint for use as a guide to formulate an appropriate seismic coefficient for use in slope stability analyses.

A deterministic evaluation of seismic hazard was performed for the Rose Canyon fault and other regional faults using the attenuation relations of Boore and Atkinson (2008), Campbell and Bozorgnia (2008) and Chiou and Youngs (2008). The deterministic evaluation considers the magnitude, distance and attenuation characteristics of the site based on soil conditions. These data are summarized in the following table.

Table 1: Summary of Seismic Sources

Fault Name	Distance (kilometers)	Direction	Magnitude	PGA (g)
Rose Canyon	30	SW	6.9	0.14
Elsinore (Julian)	37	NE	7.6	0.16
Coronado Bank	53	SW	7.4	0.11
San Jacinto (Borrego)	72	NE	7.4	0.09

We utilized $K_h = 0.12$ to model the psuedostatic condition for slope stability calculations, consistent with conservative application of methods described by Seed (1979). Seed (1979) considered the size of a sliding mass and earthquake magnitude in selection of K_h. For large slopes, Seed suggested $K_h = 0.15$ for sites near faults capable of generating magnitude 8.5 earthquakes. The closest fault to

the site, the Rose Canyon fault, is assigned a characteristic magnitude of 6.9. Based on the method of Seed (1979), selection of $K_h = 0.12$ is conservative based on the seismic setting of the site.

GROUNDWATER

The site is located in the San Diego River Valley groundwater basin and is underlain by an alluvial aquifer with variable recharge based on seasonal climatic conditions. Groundwater data compiled by State of California Department of Water Resources (2015) for Helix Water District observation well HWD-2 are summarized in the following table. This well is located in the north-central portion of the future excavation area.

Table 2.1: Summary of Water Level Data – HWD-2

Date of Measurement	Reference Point Elevation (feet amsl)	Water Surface Elevation (feet amsl)	Depth to Water at Well (feet bgs)
4/27/2012	447.24	414.61	32.63
10/9/2012		414.81	32.43
4/24/2013		414.62	33.62
6/6/2014		410.98	36.26
10/17/2014		409.74	34.50

Groundwater data from exploratory borings and monitoring wells that encountered groundwater utilized for site investigations is summarized in the following table.

Table 2.2: Summary of Groundwater Data from Explorations and Monitoring Wells			
Data ID	**Reference Point Elevation (feet amsl)**	**Water Surface Elevation (feet amsl)**	**Depth to Water at Well (feet bgs)**
CHJ (2015)			
B-1	435	394.9	40.1
B-2	440	397.7	42.3
B-3	448	405.7	42.3
B-4	443	406.3	36.7
Ninyo & Moore (2011)			
B-2	438	397	41
B-3	440	401	39
B-4	442	407	35
B-5	450	407	43
B-6	455	420	35
B-7	453	423	30
B-8	456	416	40
B-9	460	425	35
B-10	475	431	44
B-15	436	391	45
B-19	444	409	35
B-23	455	420	35
B-24	453	413	40
B-26	469	424	45
Shepardson (2003)			
B-7	465	444	21
B-8	455	440	15
B-9	457	434	23
B-10	455	436	19
B-11	453	434.4	18.6
B-12	449	432.2	16.8
B-14	447	428.2	18.8
B-16	447	418.8	28.2
EarthTech (1998)			
MW-1	450	435	15
MW-2	465	446	19
MW-5	458	445	13
MW-6	450	440	10

The water surface elevation (WSE) encountered in Boring No. 1 (current investigation) is consistent with the WSE (depicted on the topographic contour map dated April 21, 2013) in the existing pit adjacent to the western boundary of the site. The quarry bottom is planned at elevations between 400 and 440 feet amsl at the west and east ends, respectively. Surface water is not anticipated to occur in the final pit except during times of high flow in the San Diego River. Water elevation in the subsurface mimics the surface topography so that depth to water is relatively consistent along the river axis through the excavation area. For evaluation of liquefaction effects and slope stability, we have utilized a water surface elevation at 420 feet amsl based on an anticipated high groundwater surface and in consideration of potential flooding events.

SLOPE STABILITY

The term "landslide", as used in this report, refers to deep-seated slope failures that involve mine pit-scale features that have the potential to reduce the long-term stability of finished quarry reclamation slopes. Surficial failures refer to shallow failures within approximately 4 feet of the surface that may result in localized raveling of soil material.

The susceptibility of a geologic unit to landsliding is dependent upon various factors, primarily: 1) the presence and orientation of weak structures, such as fractures, faults or clay beds and degree of cementation of the material; 2) the height and steepness of the natural or cut slope; 3) the presence and quantity of groundwater and 4) the occurrence of strong seismic shaking. The primary influences on the stability of mine and reclaimed slopes are anticipated to be slope geometry and material strengths of native alluvial and planned fill units.

SLOPE STABILITY EVALUATION

We evaluated the global slope and surficial stability of the proposed slopes for representative material types. Material strength properties for stability calculations were modeled using Mohr-Coulomb criteria and the ultimate mining depth (tallest slopes) anticipated for the mine pit and reclaimed

geometries. We analyzed the reclamation configuration. Discussion and summary of these analyses are presented below. Slope stability data and calculations are presented in Appendix D.

GLOBAL STABILITY CALCULATIONS:

The global stability of future reclamation slopes, as depicted on the Mining and Reclamation Plan, was analyzed using Spencer's method under both static and seismic conditions for rotational and composite failure surfaces using the SLIDE computer program, version 6.038 (Rocscience, Inc., 2016). The materials strengths of the fill and native sedimentary units were determined by laboratory tests using samples from the current borings.

A representative slope, derived from the Mining and Reclamation Plan, was modeled as follows:

- 30-foot-high benched mine slope, cut into alluvium consisting of a 10-foot upper section and 20-foot lower section separated by a 20-foot-wide bench.

The seismic stability calculations were performed using a lateral pseudostatic coefficient "K_h" of 0.12, based on a very conservative interpretation of regional seismic conditions. Groundwater was not considered in the global stability evaluation as excavations will remain above the groundwater table.

Laboratory tests of samples collected from borings included sieve analysis and direct shear of relatively undisturbed samples and one remolded sample. The results of direct shear tests are summarized below and are based on saturated conditions.

Table 3: El Monte Sand Project—Shear Test Summary				
Sample	**Cohesion (psf)**		**ϕ (degrees)**	
	Peak	**Residual**	**Peak**	**Residual**
B-1 at 20 Feet (SP-SM)	134.0	57.5	36.8	33.6
B-1 at 90 Feet (SM)	362.2	229.9	40.7	36.2
B-2 at 45 Feet (SP-SM)	198.7	144.4	32.9	30.2
B-2 at 60 Feet (SM)	245.1	107.4	31.7	29.9
B-3 at 40 Feet (silt remolded to 80%)	214.2	250.0	29.8	28.1
B-4 at 15 Feet (SM)	117.0	108.6	30.0	30.1

The strength of sand and silty sand units in the Qya was taken as the average of the five results from Boring Nos. 1, 2 and 4 (residual cohesion = 129; residual ϕ = 32°). The silt sub-unit of Qya, represented by the sample from Boring No. 3, was modeled with cohesion = 220 pounds per square foot (psf); residual ϕ = 28°. Laboratory test results are included in Appendix C.

Bedrock units were not included in the model as mining is anticipated to terminate above the bedrock surface. Bedrock units under global stability conditions would exhibit infinite strength relative to alluvial and fill units.

The results of the global slope stability analyses are summarized below in Table 4. Details of stability calculations including material type boundaries, strength parameters and the minimum factor of safety and critical slip surface are included in Enclosures D-1.1 through D-1.3.

Table 4: Summary of Slope Stability Results—El Monte Sand Project			
Slope Configuration	**Static F.S.**	**Seismic F.S. (K_h=0.12)**	**Enclosure**
30-foot-High Cut Slope with 20-Foot-Wide Bench Separating Upper 3(h) to 1(v) and Lower 3(h):1(v) Sections	2.43	--	D-1.1
	--	1.73	D-1.2
Flooded Condition at 420 Feet Elevation	--	1.44	D-1.3

SURFICIAL STABILITY CALCULATIONS:

Surficial stability of reclamation slopes was modeled using the infinite slope model method as presented in Enclosure D-2. This model uses a saturated zone 4 feet thick extending downward from the slope surface. The factor of safety estimated by this model is 1.63.

SLOPE STABILITY CONCLUSIONS:

As indicated by calculation for global stability, a static factor of safety in excess of 1.5 and seismic factor of safety in excess of 1.1 were indicated for the modeled reclaimed slope configuration and satisfy Office of Mine Reclamation and County of San Diego criteria. The global slope configurations appear suitably stable for mining and reclamation of the proposed slopes according to regulatory requirements.

The surficial stability model indicates a suitably stable configuration for the proposed end use of the reclaimed mine slopes as open space. The proposed pit configuration and lack of structures within the future reclaimed pit preclude the potential for erosion or raveling to affect adjacent property or on-site improvements.

LIQUEFACTION POTENTIAL AND SEISMIC SETTLEMENT

Based on the groundwater, soil and seismic conditions of the site, the potential for liquefaction was evaluated. Liquefaction is a process in which strong ground shaking causes saturated soils to lose their strength and be have as a fluid (Matti and Carson, 1991). Ground failure associated with liquefaction can result in severe damage to structures. Soil types susceptible to liquefaction include sand, silty sand, sandy silt and silt, as well as soils having a plasticity index (PI) less than 7 (Boulanger and Idriss, 2006). Loose soils with a PI less than 12 and moisture content greater than 85 percent of the liquid limit are also susceptible to liquefaction (Bray and Sancio, 2006). For sandy soils, the geologic conditions for increased susceptibility to liquefaction are: 1) shallow groundwater (generally less than 50 feet in depth), 2) the presence of unconsolidated sandy alluvium, typically Holocene in age, and 3) strong ground shaking of sufficient duration. All three of these conditions must be present for liquefaction to occur.

Due to the potential for the presence of shallow groundwater beneath the site (34 feet), the liquefaction potential of site soils has been evaluated based on the SPT data obtained and using the simplified procedure described by Seed and Idriss (1982), Seed and others (1985), modified in the 1996 National Center for Earthquake Engineering Research (NCEER) and 1998 NCEER/National Science Foundation (NSF) workshops (Youd and Idriss, 2001) and recently summarized by Idriss and Boulanger (2008). The method of evaluating liquefaction potential consists of comparing the cyclic stress ratio (CSR) developed in the soil by the earthquake motion to cyclic resistance ratio (CRR), which will cause liquefaction of the soil for a given number of cycles. In the simplified procedure, the CSR developed in the soil is calculated from a formula that incorporates ground surface acceleration, total and effective stresses in the soil at different depths (which in turn are related to the location of the groundwater table), non-rigidity of the soil column and a number of simplifying assumptions.

For sandy soils, the CRR that will cause liquefaction is related to the relative density of the soil, expressed in terms of SPT blowcounts $(N_1)_{60}$ (Seed and Idriss, 1982; Seed and others, 1985; Youd and Idriss, 2001; Idriss and Boulanger, 2008), cone penetration resistance (q_{c1N}) (Robertson and Wride, 1998; Youd and Idriss, 2001; Idriss and Boulanger, 2008) or shear wave velocity (V_{s1}) (Andrus and Stokoe, 2000; Youd and Idriss, 2001; Andrus and others, 2004), all normalized for an effective overburden pressure of 1 ton per square foot and corrected to equivalent clean sand resistance. For clayey soils, the CRR is related to cyclic undrained shear strength ratio, s_u/σ_{vc}' (Idriss and Boulanger, 2008). For this investigation, SPT blowcounts were obtained and utilized in the analysis. A projected future depth to groundwater of 34 feet below the existing ground surface (bgs) was utilized to calculate the liquefaction potential in the area. A peak ground acceleration of 0.35g (geomean MCE level consistent with 2013 CBC) and a deaggregated earthquake magnitude of 6.2 were utilized as input into the liquefaction analysis program GeoSuite©, version 2.4 (Yi, 2015).

The procedures and corrections summarized by Idriss and Boulanger (2008) were utilized to evaluate the liquefaction potential of saturated sandy soils for SPT data. These methods were incorporated into a liquefaction and seismic settlement program, GeoSuite©, version 2.4 (Yi, 2015).

Liquefaction potential was evaluated for the soil profile encountered in Boring No. 3 with the SPT sampler. The results of liquefaction potential evaluations are shown in Enclosure E-1. Our calculation indicates that liquefaction could occur in layers at depths ranging from approximately 40 to 45 feet bgs and from approximately 70 to 75 feet bgs based on SPT data.

Ishihara (1985) published a paper containing observations on the protective effect that an upper layer of non-liquefied material had against the manifestation of liquefaction at the ground surface. The paper contained graphs that plotted thickness of the upper non-liquefied layer (H_1) and the thickness of underlying liquefied material (H_2). The maximum acceleration is 400 to 500 gal in Ishihara's graph. The term "surface manifestation" is utilized to describe liquefaction-induced surface damage.

A quantitative method using an index called the liquefaction potential index (LPI) was developed and presented by Iwasaki (1978, 1982). The LPI is defined as:

$$LPI = \int_0^{20} F_1 W(z) dz$$

where $W(z) = 10 - 0.5z$, $F_1 = 1 - FS$ for $FS < 1.0$, $F_1 = 0$ for $FS > 1.0$ and z is the depth below the ground surface in meters. The LPI presents the risk of liquefaction damage as a single value with the following indicators of liquefaction-induced damage:

Table 5: LPI Range and Damage

LPI Range	Damage
LPI = 0	Liquefaction risk is very low.
0 < LPI ≤ 5	Liquefaction risk is low.
5 < LPI ≤ 15	Liquefaction risk is high.
LPI > 15	Liquefaction risk is very high.

The most recent development for quantitative descriptions of liquefaction-induced surface damage, called "liquefaction vulnerability", was made by Tonlin & Taylor (2013) after the Christchurch, New Zealand earthquakes occurred between 2010 and 2011 and is based on field observations and analyses of approximately 7,500 cone penetrometer test (CPT) investigations. A new index, the liquefaction severity number (LSN), was proposed and defined as:

$$LSN = \int \frac{\varepsilon_v}{z} dz$$

where ε_v is the calculated volumetric densification strain in the subject layer from Zhang et al. (2002) and z is the depth to the layer of interest in meters below the ground surface. The typical behaviors of sites with a given LSN are summarized in following table.

Table 6: LSN Ranges and Observed Land Effects

LSN Range	Predominant Performance
0 – 10	Little to no expression of liquefaction, minor effects
10 – 20	Minor expression of liquefaction, some sand boils
20 – 30	Moderate expression of liquefaction, with sand boils and some structural damage
30 – 40	Moderate to severe expression of liquefaction, settlement can cause structural damage
40 – 50	Major expression of liquefaction, undulations and damage to ground surface, severe total and differential settlement of structures
>50	Severe damage, extensive evidence of liquefaction at surface, severe total and differential settlements affecting structures, damage to services

Both LPI and LSN indices were calculated. The results indicate that the liquefaction risk of the site is low as per the LPI index. The site exhibits little to minor expression of liquefaction as per the LSN index. A minor expression of liquefaction means that some sand boils may occur during or after earthquake shaking per Tonlin & Taylor (2013).

CONCLUSIONS

On the basis of our field investigation and slope stability analyses, it is the opinion of this firm that the proposed slope excavations and reclamation of the proposed mine slopes are feasible from geotechnical engineering and engineering geologic standpoints, provided the recommendations contained in this report are implemented during mining.

In general, it appears that the strength of the alluvial resource is sufficient to accommodate the proposed overall slope angles under static and seismic conditions. Transient flooding of the working pit is not anticipated to destabilize slopes cut to 3(h) to 1(v) or flatter.

Based on our analyses, the proposed overall reclamation slope configuration is suitably stable against gross failure for the anticipated long-term conditions, including the effects of seismic shaking and a flooded pit.

Adherence to an approved slope excavation plan and consideration/mitigation of newly exposed potentially adverse geologic features (if present) during mining can result in stable slopes after completion of reclamation.

Evidence of active faulting was not observed on the site during this investigation. The results of liquefaction analysis indicate that the risk of liquefaction effects to the proposed site end use/improvements is low.

Moderate seismic shaking of the site can be expected to occur during the lifetime of the proposed mining and reclamation. This potential has been considered in our analyses and evaluation of slope stability.

With time, natural processes during and after quarry operation will result in deposition of soil on benches and shallow slopes. This material can facilitate revegetation and lend a more natural appearance to the reclaimed slopes.

RECOMMENDATIONS

Overall final cut slopes in soil/alluvial materials should be no steeper than approximately 18-1/2 degrees [3(h) to 1(v)] up to the maximum proposed height (approximately 30 feet). The benching plan appears to be suitable for mining and reclamation.

Geotechnical evaluation and design, management of mine slope and bench geometry based on encountered conditions, or use of mechanical support systems can enhance the safety of or mitigate hazards in mining; however, monitoring of slope conditions for failure warning signs is the most important means for protecting mine workers (Girard and McHugh, 2000) as it can prevent exposure of personnel to potentially hazardous conditions. As is typical for any surface mining operation, we recommend periodic observation of mine benches above working areas for indications of potential instability during mine operations.

COMPACTED FILLS:

If engineered fills are needed, the on-site soils and sand production by products should provide adequate quality fill material provided they are free from organic matter and other deleterious materials. Fill should be inorganic, non-expansive granular soils.

Fill should be spread in near-horizontal layers, approximately 8 inches thick. Thicker lifts may be approved by the geotechnical engineer if testing indicates that the grading procedures are adequate to

achieve the required compaction. Each lift should be spread evenly, thoroughly mixed during spreading to attain uniformity of the material and moisture in each layer, brought to near optimum moisture content and compacted to a minimum relative compaction of 90 percent in accordance with ASTM D1557.

FILL SLOPE CONSTRUCTION:

Fill slopes should be constructed no steeper than 2(h):1(v). Fill slopes should be overfilled during construction and then cut back to expose fully compacted soil. A suitable alternative would be to compact the slopes during construction and then roll the final slopes to provide dense, erosion-resistant surfaces.

SLOPE PROTECTION:

Inasmuch as the native materials are susceptible to erosion by wind and running water, it is our recommendation that project slopes be protected from erosion by establishment of vegetation as soon as possible.

Slopes should be protected with drainage improvements such as berms and/or levees as necessary to prevent slope erosion.

LIMITATIONS

CHJ Consultants has striven to perform our services within the limits prescribed by our client, and in a manner consistent with the usual thoroughness and competence of reputable geotechnical engineers and engineering geologists practicing under similar circumstances. No other representation, express or implied, and no warranty or guarantee is included or intended by virtue of the services performed or reports, opinion, documents, or otherwise supplied.

This report reflects the testing conducted on the site as the site existed during the study, which is the subject of this report. However, changes in the conditions of a property can occur with the passage of time, due to natural processes or the works of man on this or adjacent properties. Changes in applicable or appropriate standards may also occur whether as a result of legislation, application, or the broadening of knowledge. Therefore, this report is indicative of only those conditions tested at the time of the subject study, and the findings of this report may be invalidated fully or partially by changes outside of the control of CHJ Consultants. This report is therefore subject to review and should not be relied upon after a period of one year.

The conclusions and recommendations in this report are based upon observations performed and data collected at separate locations, and interpolation between these locations, carried out for the project and the scope of services described. It is assumed and expected that the conditions between locations observed and/or sampled are similar to those encountered at the individual locations where observation and sampling was performed. However, conditions between these locations may vary significantly. Should conditions that appear different than those described herein be encountered in the field by the client, any firm performing services for the client or the client's assign, this firm should be contacted immediately in order that we might evaluate their effect.

If this report or portions thereof are provided to contractors or included in specifications, it should be understood by all parties that they are provided for information only and should be used as such.

The report and its contents resulting from this study are not intended or represented to be suitable for reuse on extensions or modifications of the project, or for use on any other project.

CLOSURE

We appreciate this opportunity to be of service and trust this report provides the information desired at this time. Should questions arise, please do not hesitate to contact this office.

Respectfully submitted,
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