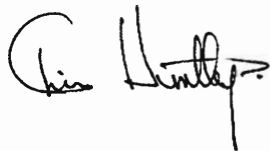

C.3 Biological Assessment

THOUSAND PALMS FLOOD CONTROL PROJECT BIOLOGICAL ASSESSMENT

RIVERSIDE COUNTY
CALIFORNIA

COACHELLA VALLEY WATER DISTRICT
U.S. ARMY CORPS OF ENGINEERS

December 2021



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Contents

1. Introduction	1
1.1 Project Sponsor.....	3
1.2 Agency Coordination	3
1.3 Coachella Valley Multiple Species Habitat Conservation Plan	4
1.4 Management for Conservation Lands	5
2. Background	8
2.1 Project Location.....	8
2.2 Definition of Action Area	9
2.3 Project Environmental Commitments and Mitigation Measures.....	9
2.4 Proposed Action	31
Project Description	31
Construction	35
Operations and Maintenance.....	39
3. Affected Environment.....	41
3.1 Past USFWS Consultations in the Action Area.....	42
3.2 Ecological Setting.....	42
3.2.1 General Description.....	42
3.2.2 Vegetation and Landforms	43
3.2.3 Wildlife.....	47
4. Federally Listed Species and Critical Habitat.....	48
5. Effects of the Proposed Action and Determination Statements.....	50
5.1 Federally Listed Plants	50
5.1.1 Coachella Valley Milk-vetch.....	50
5.2 Federally Listed Wildlife	55
5.2.1 Desert Tortoise	55
5.2.2 Coachella Valley Fringe-toed Lizard.....	58
6. Preparers and Reviewers	64
7. References.....	64

Tables

Table 1. Species Considered for Analysis in This BA	2
Table 2. Project Disturbance Area	5
Table 3. Permanent Project Features and Dimensions.....	32
Table 4. Construction Equipment by Task	38
Table 5. Vegetation and Cover Types in Disturbance Areas	44
Table 6. Invasive Plant Species Identified in the Study Area	47
Table 7. Species Range, Habitats, and Surveys.....	48
Table 8. Project Affects to Coachella Valley Milk Vetch Designated Critical Habitat	53
Table 9. Coachella Valley Fringe-Toed Lizard Habitat.....	60
Table 10. Coachella Valley Fringe-Toed Lizard Designated Critical Habitat on Federal Lands	61

Figures

Figure 1: Proposed Project Vicinity and Action Area

Figure 2a: Land Ownership on Proposed Project Alignment

Figure 2b: Impacts to Federal Lands

Figure 2c: Sand Source and Transport Areas

Figure 3a: Vegetation Cover in Reach 1 and 2 Alignments

Figure 3b: Vegetation Cover in Reach 3

Figure 3c: Vegetation Cover in Reach 4

Figure 4: Levee and Channel Construction Cross-Sections

Figure 5: Proposed Sand Disposal Areas

Figure 6: Critical Habitat

Figure 7a: Coachella Valley Fringe-Toed Lizard Habitat Reach 1 and 2 Alignments

Figure 7b: Coachella Valley Fringe-Toed Lizard Habitat Reach 3

Figure 7c: Coachella Valley Fringe-Toed Lizard Habitat Reach 4

Appendices

Appendix A: Coachella Valley Conservation Commission Consistency Determination Letter

1. Introduction

This Biological Assessment (BA) was prepared to support the Clean Water Act Section 404 permit review and approval process for the construction, operation, and maintenance of the proposed Thousand Palms Flood Control Project (Project or Proposed Action) located in Riverside County, California. The Coachella Valley Water District (CVWD) proposes to construct and operate the Project, formerly known as the Whitewater River Basin Flood Control Project, which includes a series of flood control structures to minimize flooding hazards in and near Thousand Palms, California and enhance sand transport to the Coachella Valley Fringe Toed Lizard (CVFTL) Preserve/Coachella Valley National Wildlife Refuge (CVNWR, Refuge) (see Figure 1: Proposed Project Vicinity and Action Area). Because the project will affect waters of the U.S., a 404 permit is required from the U.S. Army Corps of Engineers (USACE), the federal lead agency for this Project.

The purpose of this BA is to review the proposed Project in sufficient detail to determine to what extent the USACE permitting action may affect any threatened, endangered, proposed, and candidate (TE) wild-life, fish, and plant species of record and their associated critical habitat (if any) within the scope of USACE's proposed Action. This BA is prepared in accordance with legal requirements set forth under Section 7 of the Endangered Species Act (16 U.S.C. 1536 (c)), to streamline federal to federal consultation.

This BA describes impacts from the proposed Action on private and federal lands. Impacts to listed species on private lands are covered through participation in the Coachella Valley Multiple Species Habitat Conservation Plan/Natural Community Conservation Plan (CVMSHCP/NCCP) (CVAG 2007a). The CVWD is a CVMSHCP/NCCP permittee and has take authorization for impacts to covered species and their habitat. This coverage is authorized provided CVWD complies with and implements the requirements of the CVMSHCP/NCCP. As described in Section 7.0 (Take Authorization for Covered Activities and Term of Permit) of the MSHCP/NCCP, take authorized as part of the Plan applies only to non-federal lands (CVAG, 2007b). Therefore, this BA analyzes impacts to and provides mitigation for effects to listed species on federal lands.

Summary of Impacts. Implementation of the proposed Action will result in approximately 175.47 acres of permanent and approximately 286.35 acres of temporary disturbance. Of these impacts:

- 168.51 acres of permanent and 285.68 acres of temporary disturbance occur on private lands which are covered by the CVMSCHP/NCCP.
- 9.96 acres of permanent impacts to federal lands would occur on the Refuge. This includes 8.38 acres of permanent and 0.67 acres of temporary during construction and 1.42 acres of refuge land that would be isolated by the physical presence of Reach 3. These impacts require take authorization from the USFWS through a Biological Opinion.
- The Project would result in direct impacts to 14.32 acres of designated critical habitat for the Coachella Valley milk-vetch (CVMV) and 109.49 acres for the Coachella Valley Fringe-toed lizard (CVFTL). Of these, 7.09 acres of CVMV critical habitat and 8.08 acres of CVFTL critical habitat will be disturbed on federal lands at Reach 3.

Summary of Mitigation. On private lands, Project impacts are covered through participation in the CVMSHCP/NCCP, the acquisition and preservation of a 550-acre floodway, and where applicable, targeted minimization measures required by the CVMSHCP/NCCP. On federal lands, Project impacts would be reduced through the implementation of mitigation and avoidance measures specifically developed for listed species including the Coachella Valley fringe-toed lizard (*Uma inornata*), desert tortoise (*Gopherus*

agassizii), and Coachella Valley milk-vetch (*Astragalus lentiginosus var. coachellae*). Mitigation for the proposed Action would include:

- The acquisition and preservation of a 550-acre floodway within the Thousand Palms Conservation Area (see Figure 2a: Land Ownership on Proposed Project Alignment).
- The acquisition of 24.9 acres of private lands located near Reach 3 that will be transferred to the USFWS to offset 8.81 acres of impacts that would occur to federal lands on the Refuge.
- The preservation of 32 acres of aeolian sand habitat to mitigate impacts to the National Wildlife Refuge. The acquisition of the 24.9 acres would be considered part of the 32-acre requirement.
- Mitigation and avoidance measures that would be applied to federal and private lands.

All relevant Environmental Commitments and Mitigation Measures are specified in Section 2.4 below.

Coordination with regulatory and resource agency personnel, field surveys, consultation with technical experts, and review of pertinent biological and management literature occurred as part of the analysis. The federally listed threatened, endangered, and candidate species considered in this document are identified below in Table 1.

Table 1. Species Considered for Analysis in This BA				
Common Name	Scientific Name	Status	Critical Habitat	Effect Determination
Plants				
Coachella Valley milk-vetch	<i>Astragalus lentiginosus var. coachellae</i>	T	Designated	May Affect
Triple-ribbed milk-vetch	<i>Astragalus tricarinatus</i>	E	None	No Effect
Parish's daisy	<i>Erigeron parishii</i>	T	None	No Effect
Invertebrates				
Casey's June beetle	<i>Dinocoma caseyi</i>	E	Designated	No Effect
Fish				
Desert pupfish	<i>Cyprinodon macularius</i>	E	Designated	No Effect
Reptiles				
Desert tortoise	<i>Gopherus agassizii</i>	T	Designated	May Affect
Coachella Valley fringe-toed lizard	<i>Uma inornata</i>	T	Designated	May Affect
Birds				
Southwestern Willow Flycatcher	<i>Empidonax traillii extimus</i>	E	Designated	No Effect
Least Bell's Vireo	<i>Vireo bellii pusillus</i>	E	Designated	No Effect
Mammals				
Peninsular bighorn sheep	<i>Ovis canadensis nelsoni</i> DPS	E	Designated	No Effect
Critical Habitat				
Coachella Valley milk-vetch			Unit 4 Designated	May Affect
Coachella Valley fringe-toed lizard			Designated	May Affect

Three federally listed species are present or have the potential to occur in the Action Area. These include desert tortoise, Coachella Valley fringe-toed lizard (CVFTL), and Coachella Valley milk-vetch (CVMV). These

species are described in Section 5 (Effects of the Proposed Action and Determination Statements). Designated critical habitat for two species (CVFTL and CVMV) occur in the Action Area. The remaining species identified above have not been carried forward for analysis because they are not expected to occur within the Action Area. No critical habitat for these species is located in the Action Area.

1.1 Project Sponsor

The United States Army Corps of Engineers, Los Angeles District Regulatory Division (USACE) is the Lead Agency under the National Environmental Policy Act (NEPA), and the Coachella Valley Water District (CVWD) is the Lead Agency under the California Environmental Quality Act (CEQA). For the purposes of this BA, USACE is the Federal Action Agency for Consultation under the Endangered Species Act (ESA). The federal action triggering this consultation is the issuance of a Clean Water Act Section 404 permit. In addition, the Sonny Bono Salton Sea National Wildlife Refuge Complex will be administering federal lands within the Action Area and is acting as a cooperating agency under the NEPA.

1.2 Agency Coordination

Agency coordination has been ongoing and includes biological resource staff from the CVWD, California Department of Fish and Wildlife (CDFW), and USFWS. The USACE and USFWS have consulted extensively on the Project. The USFWS completed a Fish and Wildlife Coordination Act Report in 2000 (USFWS, 2000a), which included several recommendations. In 2000, the USACE and USFWS completed Section 7 consultation for the Project (then known as the Whitewater River Basin Flood Control Project) as described in the 2000 Environmental Impact Statement/Environmental Impact Report (EIS/EIR), and a No Jeopardy determination was made in the Biological Opinion (BO; USFWS, 2000b). Subsequent to the BO, the Whitewater River Basin Flood Control Project was identified as a covered activity under the CVMSHCP/NCCP, subject to terms and conditions of the 2000 USFWS Section 7 consultation (CVMSHCP/NCCP, page 7-29; CVAG, 2007). However, due to modifications of Project design and delay in Project implementation the USFWS indicated the BO would not be applicable and the current Project should be re-evaluated to reflect current conditions in the Action Area.

Pursuant to the CVMSHCP/NCCP, the CVMV, desert tortoise, and CVFTL are covered species and impacts to these species are considered a covered activity on designated lands within the Preserve and mitigated through participation in the CVMSHCP/NCCP. In August 2021, CVAG determined that the proposed Action as modified retains its status as a Covered Action within the CVMSHCP (see Appendix A: Coachella Valley Conservation Commission Consistency Determination). Therefore, all Project-related actions that occur within private lands are covered activities and are considered mitigated through participation in the CVMSHCP/NCCP. The CVMSHCP/NCCP does not specify avoidance and minimization requirements for CVMV that would apply to the proposed Action on private lands; however, mitigation measures have been identified to reduce affects to this species and its habitat on federal lands. The CVMSHCP/NCCP, and the Project's relationship to it, are described further in Section 1.3, below.

On federal lands the CVMV, desert tortoise, and CVFTL are not authorized for take under CVMSHCP/NCCP section 10a permit and would require project-specific take authorization from the USFWS (CVAG 2007b). The USACE must obtain a "no jeopardy" opinion from the USFWS if the Project would result in an adverse modification to CVMV or CVFTL designated critical habitat, or may adversely affect CVMV, desert tortoise, and CVFTL. This BA analyzes impacts to federally listed species and their designated critical habitat that occur on federally owned lands (Coachella Valley National Wildlife Refuge) within the proposed Action disturbance area.

1.3 Coachella Valley Multiple Species Habitat Conservation Plan

The CVMSHCP/NCCP provides long-term conservation and habitat protection for the 27 species of special-status plants and animals that are covered under the plan, including desert tortoise, CVFTL, and CVMV. It provides ESA and California Endangered Species Act (CESA) ‘take’¹ authorization for these covered species for conforming projects, subject to the plan’s administrative and mitigation requirements and USFWS and California Department of Fish and Wildlife (CDFW) take authorizations (CVAG, 2007). The CVMSHCP/NCCP is managed by the Coachella Valley Conservation Commission (CVCC), a joint powers authority of elected representatives, and funded through a combination of development impact fees, open space trust funds, and funding from permittees for infrastructure projects (CVAG, 2007a).

The Project site is within the CVMSHCP/NCCP plan area and the CVWD is a CVMSHCP/NCCP permittee. As a permittee, CVWD has a section 10a incidental take authorization for covered species (Appendix A) on private lands as specified in the CVMSHCP/NCCP permits, so long as compliance with the requirements of the CVMSHCP/NCCP is achieved.

The CVMSHCP/NCCP identifies twenty-one distinct conservation areas in the Coachella Valley also referred to as reserve management units (RMU): The Project site is partially within the Thousand Palms Conservation Area. According to the CVMSHCP/NCCP, the Project’s levees, as they were planned in the 2000 EIS/EIR, would define the southern edge of this Conservation Area. The final Project design and alignment of the levees were expected to cause a minor adjustment of the Conservation Area boundary such that the levees would not be within the Conservation Area but would define the edge of the area (CVMSHCP/NCCP, page 4-96; CVAG, 2007a). In the intervening years, the Conservation Area was established as shown in Appendix A, and the current Project design has been modified somewhat from that described in the 2000 EIS/EIR. In August 2021 CVAG conducted an analysis of the proposed Action and determined the design of the Project and Conservation Area boundary adjustment do not conflict with the goals of the CVMSHCP/NCCP a (see Appendix A). Based on this analysis the levee footprint does not occur within the Conservation area. The current design, including changes in design from that described in the 2000 EIS/EIR and BO are assessed in the context of this BA.

For CVWD flood control facilities, covered operations, and maintenance (O&M) activities are defined in the CVMSHCP/NCCP (Table 7-6, page 7-29):

- The removal of sand, silt, sediment, debris, rubbish, woody, and herbaceous vegetation in existing flood control facilities to maintain design capacity of the facility and/or compliance with local fire regulations.
- Control of weeds and vegetation by non-chemical means, and control of debris on all access roads and CVWD rights-of-way.
- The repair or replacement of constructed flood control facilities, such as channels, basins, drop structures, and levees, as necessary to maintain the structural integrity and hydraulic capacity of the facility.

The CVMSHCP/NCCP identifies specific avoidance and minimization requirements for certain species in particular conservation areas. The species with avoidance and minimization requirements applicable to

¹ Under the Federal Endangered Species Act, ‘take’ is defined as, “...to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct” (USFWS, 2011b). Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity (USFWS, 2008). Under Section 86 of the California Fish and Game Code, ‘take’ is defined as “...hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill” (CDFW, 2015d).

the proposed Project (such as Palm Springs pocket mouse, Coachella Valley round-tailed ground squirrel, burrowing owl, crissal thrasher, and Le Conte’s thrasher) do not include any federally listed or candidate species. However, the CVMSHCP/NCCP identifies specific conservation objectives for Sections 7 and 8 (i.e., the location of Project Reach 1) to limit development in the sand transport corridor that supports downwind habitat for CVFTL and CVMV.

The CVMSHCP/NCCP requires a Joint Project Review Process for all projects under a permittee’s jurisdiction within a Conservation Area that would result in disturbance to habitat, natural communities, biological corridors, or essential ecological processes. This process is designed to ensure consistent implementation and oversight of the CVMSHCP/NCCP and involves the CVCC, the permittee (CVWD in this case), and wildlife agencies (USFWS and CDFW). During the process, the CVCC conducts an analysis of the proposed Project’s potential impact to Conservation Objectives for the Conservation Area, CVMSHCP/NCCP Required Measures for the Conservation Area, Covered Species’ Goals and Objectives, and maintenance of Rough Step in the Conservation Area (Rough Step analysis is done to ensure that CVMSHCP/NCCP objectives are being met). If the analysis identifies inconsistencies between the proposed Project and CVMSHCP/NCCP objectives and requirements, the permittee and CVCC staff meet and confer to identify requirements necessary to achieve compliance (CVAG, 2007).

In August 2021, CVCC determined that the proposed Action is consistent with the CVMSHCP and constitutes a Covered Action under Section 7.3.1 (see Appendix A). Therefore, CVWD has “take” authorization for covered species and their habitats within lands managed by the CVMSHCP, including portions of the Thousand Palms Conservation Area that overlap with the proposed Action. The proposed 2021 alignment Project alignment will result in an approximately 1.16 percent (301 acres) change to the existing Thousand Palms Conservation Area. Reaches 1, 2, and 3 will redefine portions of the western boundary of the Conservation Area and Reach 4 will establish a physical barrier to the existing southern boundary of the Conservation Area. No permanent impacts to Thousand Palms Conservation Area lands will occur. Minor temporary impacts (approximately 9.49 acres) near Reach 1 associated with widening existing access roads will occur (see Section 2.4).

1.4 Management for Conservation Lands

There are several designated conservation lands in the Project vicinity (see Figure 2a): the state-owned Reserve; the CVNWR, which is primarily federal land managed by the USFWS and includes part of the Reserve; and the Coachella Valley Preserve (Preserve), as well as privately-owned conservation lands that contribute to the conservation of the covered species authorized for take under the with the CVMSHCP (see Appendix A). Together these conservation lands help to protect a large dune system, the only remaining undeveloped sand dune ecosystem within the Coachella Valley, and its biological resources. Disturbance areas for the proposed Project will include portions of the Reserve, CVNWR, and CVFTL Preserve (see Table 2). Designated Critical Habitat is described for each species in Section 4 (Federally Listed Species and Critical Habitat). Impacts to the Thousand Palms Conservation Area, are discussed in Section 1.3 and in Appendix A.

Table 2. Project Disturbance Area			
	Temporary	Permanent	Total
Total Project Disturbance Area			
Reach 1	17.98	43.04	61.02
Reach 2	0.97	4.66	5.63
Reach 3	6.19	40.51	46.7

Table 2. Project Disturbance Area			
	Temporary	Permanent	Total
Reach 4	10.77	87.26	98.03
New Soil Deposition Site	213.40	0.00	213.40
Concrete Batch Plant/ Marshaling Yard	37.04	0.00	37.04
Grand Total	286.35	175.47	461.82
Coachella Valley National Wildlife Refuge (USFWS)^{1,2}			
Reach 1	0.00	0.00	0.00
Reach 2	0.00	0.00	0.00
Reach 3	0.67	8.14	8.81
Reach 4	0.00	0.00	0.00
New Soil Deposition Site	0.00	0.00	0.00
Subtotal	0.67	8.14	8.81
Coachella Valley Ecological Reserve (State lands)			
Reach 1	1.03	6.88	7.91
Reach 2	0.00	0.00	0.00
Reach 3	0.46	2.32	2.78
Reach 4	0.00	0.00	0.00
New Soil Deposition Site	0.00	0.00	0.00
Subtotal	1.49	9.20	10.69
Coachella Valley Preserve¹			
Reach 1	15.02	40.35	55.37
Reach 2	8.60	4.40	13.00
Reach 3	3.54	23.19	26.73
Reach 4	0.00	0.00	0.00
New Soil Deposition Site	0.00	0.00	0.00
Subtotal	27.16	67.94	95.10

1 - Federal lands: Impacts are not additive as they occur within the greater Coachella Valley Preserve.

2 - Permanent Impacts to National Wildlife Refuge includes 6.72 acres of direct impacts and 1.42 acres of indirect, but permanent, impacts associated with the construction of Reach 3.

Coachella Valley National Wildlife Refuge. The approximately 3,600-acre CVNWR was established in 1985 and is administered by USFWS as part of the Sonny Bono Salton Sea National Wildlife Refuge Complex. The Refuge is located within the greater boundary of the Coachella Valley Preserve. The CVMSHCP describes the refuge as being operated consistently with the CVMSHCP goals and objectives (CVMSHCP 4.1.1). The management of the refuge is guided by a Comprehensive Conservation Plan (USFWS, 2014), which identifies goals, objectives, and strategies to conserve endangered or threatened plants and wildlife and protect blowsand habitat and natural sand transport processes in the CVNWR. These objectives include:

- Maintain and protect high quality desert dune habitat and adjacent creosote bush scrub to support CVFTL. Manage desert dune habitat to maximize areas of active sandy substrate to support CVMV.
- Reduce the total coverage of Sahara mustard (*Brassica tournefortii*) and other invasive, non-native plants within habitat for CVFTL and CVMV.
- Conserve and enhance aeolian sand communities, including active and stabilized dunes.

- Implement a long-term strategy for monitoring, assessing, and addressing the effects of climate change on habitat and listed and sensitive species.
- Coordinated management for conservation lands within the Valley Floor Reserve Management Unit of the CVMSHCP/NCCP planning area.

The proposed Action is anticipated to directly disturb approximately 7.63 acres of the Coachella Valley National Wildlife Refuge. All disturbance to the Refuge will occur due to the construction of Reach 3 and will comprise approximately 6.96 acres of permanent impacts and 0.67 acres of temporary impacts (Table 2). In addition, 1.42 acres of Refuge lands would be cut off from the Refuge on the west side Reach 3 (see Figure 2b: Impacts to Federal Lands). Direct and temporary impacts to the Refuge would occur from the construction of the 5,300-foot incised trapezoidal channel lined with soil cement. Refer to Section 2.4 Project Description for further information.

In addition to the acquisition and preservation of the 550-acre floodway CVWD will acquire four parcels totaling 24.9 acres that would be deeded to the USFWS as a land swap to offset the direct and indirect impacts to Refuge (see Figure 2b). These lands are required to be of equal or greater acreage than those disturbed due to construction and be comprised of ecologically equivalent habitat to support sensitive species. Four parcels were identified as acquisition parcels:

- APN 695-030-013: 0.28 acres
- APN 695-070-011: 4.88 acres
- APN 695-030-014: 17.20 acres
- Parcel 695-070-015: 2.54 acres

All four parcels are located adjacent to the Refuge and are comprised of ecologically similar habitat to those impacted by proposed Action. A Habitat Conservation Plan will be prepared to describe all mitigation land acquisition, management, and compensation actions (see MM BIO- 6).

Coachella Valley Ecological Reserve. The 1,900-acre Reserve is state-owned land managed by CDFW. It was designated as an ecological reserve by the Fish and Game Commission in 1983. The Reserve was acquired to preserve blowsand habitat and the native plants and wildlife dependent upon it, including CVFTL. A land management plan for the Reserve has not been completed (CDFW, 2016a; 2016b). The CVMSHCP describes the reserve as being operated consistently with the CVMSHCP goals and Objectives (CVMSHCP 4.1.1). The proposed Action is anticipated to disturb approximately 10.69 total acres of the Coachella Valley Ecological Reserve, all in proximity to the development of Reach 1 and Reach 3 (Table 2). Approximately 6.88 acres of permanent impacts and 1.03 acres of temporary impacts will occur due to the construction of Reach 1, and approximately 2.32 acres of permanent impacts and 0.46 acres of temporary impacts will occur due to the construction of Reach 3 (see Figure 2a). Construction activities associated with Reach 2 will not overlap with Reserve lands. Reach 4 was designed to follow adjacent to, and not impact, the existing southern boundary of the Coachella Valley Ecological Reserve, Coachella Valley National Wildlife Refuge, and the greater Coachella Valley Preserve.

Coachella Valley Preserve. The Preserve is privately held land cooperatively managed by the California Department of Parks and Recreation, Nature Conservancy, BLM, CDFW, USFWS, and the Center for Natural Lands Management (CNLM). The CVMSHCP describes the preserve as managed per an MOU as part of the CVFTL Preserve, incorporated into the MSHCP, and management of State Parks' lands consistent with the Conservation Area and Covered Species Goals and Objectives of the CVMSHCP. State Parks is a Permittee under the CVMSHCP and has management and monitoring obligations of approximately 6,800 acres within the Conservation Areas (CVMSHCP 4.1.1). Management of the Preserve is guided by a Management Plan (CNLM, 2000) that identifies ecological goals and objectives, including:

- Maintain sufficient acreage of aeolian habitat to support viable populations of CVFTL.

- Protect the natural processes that maintain the dune ecosystem.
- Control exotic species that negatively impact CVFTL or their habitat quality.
- Protect and maintain a desert ecosystem that surrounds, supports, and buffers CVFTL habitat.

The proposed Action is anticipated to disturb approximately 95.10 total acres of the Coachella Valley Preserve, all within proximity to Reaches 1, 2, and 3 (Table 2). Approximately 40.35 acres of permanent impacts and 15.02 acres of temporary impacts will occur due to the construction of Reach 1, approximately 4.4 acres of permanent impacts and 8.6 acres of temporary impacts will occur due to the construction of Reach 2, and approximately 23.19 acres of permanent impacts and 3.54 acres of temporary impacts will occur due to the construction of Reach 3 (Figure 2a). Reach 4 was designed to follow adjacent to, and not impact, the existing southern boundary of the Coachella Valley Preserve.

2. Background

The purpose for the proposed Project is to provide flood hazard protection to the community of Thousand Palms (see Figure 1), while avoiding adverse effects to wildlife and habitat within the Preserve and CVNWR. The community of Thousand Palms is without flood protection and is therefore subject to flooding during large rain events. The Federal Emergency Management Agency (FEMA) Flood Hazard Area designation indicates that this area would be inundated by stormwater flows associated with the 100-year storm event, or the magnitude storm with a one percent chance of occurring during any given year.

In September 2014, flash flooding associated with rainfall and runoff from Hurricane Norbert resulted in floodwaters as deep as five feet in some areas, including roadways in Thousand Palms. More recent storms have also resulted in localized flooding. Multiple emergency rescue incidents were required in response to the flooding. Total cost of the clean-up and repair effort has not been quantified, but is on the order of millions (CBS, 2014). The proposed Project is designed to protect this area from flooding hazards associated with large storm events.

Development in the Thousand Palms area continues to expand despite the current lack of flood protection. The proposed Project has been studied in various forms since the 1990s, with the current Project design and alignment influenced by development that has continued to occur in the area since the need for flood protection was originally recognized.

The Project consists of construction and operation of flood control structures that would reduce flooding hazards in and near the community of Thousand Palms, in the area between the Indio Hills (to the north) and Interstate 10 (I-10) (to the south). The Project would be designed to support aeolian (wind-driven) and fluvial (water-driven) transport of sand to the Preserve and CVNWR to maintain habitat for CVFTL, CVMV, and other sensitive sand-dwelling species (see Figure 2c: Sand Source and Transport Areas).

2.1 Project Location

The proposed Project is located in the unincorporated community of Thousand Palms, Riverside County, California (see Figure 1). Thousand Palms is located within the Coachella Valley, about ten miles east of the City of Palm Springs and immediately north of the City of Palm Desert, and north of I-10. The Project site is near the center of the Coachella Valley on a broad alluvial fan near the base of the Indio Hills. It is located north of the I-10 freeway, bounded by Rio del Sol Road on the west and Washington Street on the east (see Figure 2a). This area is characterized as a rural urban interface supporting residential, commercial, and industrial developments, plant nurseries, educational facilities, golf courses, utility corridors, and open space, including lands managed for the preservation of sensitive plants and wildlife.

2.2 Definition of Action Area

The implementing regulations to Section 7(a)(2) of the federal ESA describe the Action Area to be all areas affected directly or indirectly by the federal action and not merely the immediate area affected by the proposed Project (50 CFR §402.02). The “Project site” is defined as all permanent and temporary impact areas associated with construction and O&M of the Project. The Action Area includes the Project site, the floodway, existing sand deposition area and access road, and habitat in areas immediately downwind or downstream of the Project site (see Figure 1).

Biological resource field surveys were conducted on the Project site and a surrounding buffer, collectively referred to as the Project Study Area. For habitat assessments, vegetation mapping, and surveys for most species, the Study Area is defined as the Project site with a 200-foot buffer. For CVFTL surveys, the Study Area is defined as the Project site and a 500-foot buffer.

2.3 Project Environmental Commitments and Mitigation Measures

The EIR/EIS identifies Project Environmental Commitments (ECs) that will be applied to each phase of the Project to reduce or avoid impacts to biological resources. In addition, the EIR/EIS identifies Mitigation Measures to augment or enhance existing ECs to ensure impacts to listed biological resources are minimized and supersede existing ECs as needed. ECs and Mitigation Measures will be implemented through each phase of the Project including construction and O&M except where specifically noted below. For example, on private lands the CVMV, desert tortoise, and CVFTL are authorized for take under the CVMSHCP/NCCP Section 10(a) permit. Direct impacts to these species and their habitat are considered a covered activity and mitigated through participation in the CVMSHCP/NCCP. Mitigation measures will only be applied on private lands for species not covered by the MSHCP/NCCP or when the MSHCP/NCCP identifies specific avoidance and minimization requirements. On federal lands, the project will implement the Mitigation Measures identified below.

MM SM-1 **Minimize Sand Impacts.** This mitigation measure shall apply to the construction and O&M phases of the Project on federal lands. CVWD shall develop and implement best management practices (BMPs) to avoid and minimize impacts to sand and sand transport. BMPs shall include, but not be limited to, the following:

- Fencing or other temporary or permanent barriers shall be designed, oriented, and installed to minimize impacts to sand and sand transport.
- Construction activities that would create temporary or permanent barriers shall be avoided and minimized to the extent feasible.
- Application of water to control dust shall be minimized to the extent necessary to meet air quality and other Project requirements. Water sources (e.g., hydrants, tanks, etc.) shall be checked periodically by biological monitors to ensure they are not impacting sand mobility (e.g., by leaking or consistently overfilling trucks, causing wet ground where sand is immobile).
- Areas of active dunes shall be avoided. If active dunes cannot be avoided, disturbance to the dune sand shall be minimized.

CVMSHCP/NCCP: The Project is covered under the CVMSHCP/NCCP. This measure is only relevant to the portion of the project on federal lands.

MM SM-2 Prepare and Implement a Sand Migration Management Plan. This measure augments EC SM-2 (Adaptive Management Plan) and requires CVWD to prepare and implement a Sand Migration Management Plan (SMMP) for federal lands to guide the management of the sand resource during the construction and O&M phases of the Project. The Adaptive Management Plan required by EC SM-2 may be included as a component of the SMMP.

The SMMP shall be prepared and submitted to USACE, USFWS, and CDFW for review and comment at least 60 days prior to initiation of construction on the Project. CVWD shall ensure that personnel involved in sand removal and other activities that impact sand and sand transport are familiar with the requirements and guidelines in the SMMP.

The SMMP shall include EC SM-1 (Sand Removal and Distribution or Disposal) and specific guidance on the implementation of EC SM-1, including but not limited to:

- Inspection schedules for accumulation of sand in all Project levees and channels, including inspections after precipitation events.
- Requirements for pre-activity biological surveys for sand removal, including surveys of sand removal areas and areas of associated disturbance, sand distribution sites and access roads, and biological monitoring of sand removal and distribution activities. Based on the results of pre-activity surveys, CVWD or its contractor shall observe no-disturbance buffer areas or other access or activity restrictions to minimize potential impacts to any sensitive resources or special-status species.
- Guidelines on determining if removed sand is suitable for placement in a sand distribution site. The guidelines shall include specific parameters that define suitable versus unsuitable sand. Procedures for conducting sampling and analysis of sand shall be included, as applicable. Cleanup requirements for trash abatement, and accidental spills.
- Procedures and guidelines for the distribution of sand, including parameters for selection of sand distribution sites, appropriate placement of sand (as described in EC SM-1), and procedures for disposal of unsuitable material.
- Maps showing the locations of the sand distribution site(s), including approved access routes and turn-around areas. Disturbance areas at sand distribution sites shall be the minimum size necessary. Maps will clearly indicate the boundaries of sand distribution sites, including GPS points and any physical landmarks, and will be updated as needed. Traffic cones, traffic delineators, staking and flagging or other markers will be put in place for the duration of each sand distribution event to clearly mark these boundaries on the ground. Markers will be completely removed at the end of the sand distribution event. The SMMP shall also include the requirement for all Project-related activities to remain within the marked boundaries and on the approved access route and turn-arounds.
- The SMMP shall include the BMPs identified or developed under Mitigation Measure SM-1.

CVMSHCP/NCCP: The Project is covered under the CVMSHCP/NCCP. This measure is only relevant to the portion of the Project on federal lands.

MM BIO-1 Conduct Pre-construction Biological Resources Surveys. This mitigation measure shall apply to the pre-construction and construction phases of the Project on private and federal lands.

Lead Biologist: CVWD shall assign a contact representative (Lead Biologist, MM BIO-2) in coordination with the USACE who will be responsible for overseeing compliance with all biological resource measures, including measures required by USFWS. The contact representative will serve as primary point of contact with the USFWS. In addition, CVWD shall assign Authorized/Acceptable Biologists to perform pre-construction biological surveys at each Project work area and access route, and in the 200-foot area surrounding each work site. See MM BIO-9 through 12 for additional required species-specific authorizations.

USFWS Authorized Biologist/CVMSHCP Acceptable Biologist: CVWD shall appoint at least one Authorized Biologist/Acceptable Biologist to conduct pre-construction surveys and monitor construction and O&M activities (see additional responsibility descriptions below and MM BIO-7). An Authorized Biologist is approved by USFWS and is responsible for being aware of the latest information on USFWS protocols and guidelines for the desert tortoise, as well as handling desert tortoise (see MM BIO-12 for additional responsibility information). An Acceptable Biologist is a biologist whose name is on a list maintained by the CVCC of biologists who are acceptable to Coachella Valley Conservation Commission (CVCC), CDFW, and USFWS for the purposes of conducting surveys of Covered Species as defined in the CVMSHCP. On federal lands, the Acceptable Biologist is required to have the appropriate authorizations (desert tortoise, CVFTL, CVMV) as further described in MM BIO-9 through 12.

CVWD will submit a resume for each proposed Authorized Biologist/Acceptable Biologist, with at least three references and contact information, to the appropriate authorized officer for confirmation that the applicant meets the minimum qualifications.

The Authorized Biologist/Acceptable Biologist(s) must meet the following minimum qualifications:

- Bachelor's degree in biological sciences, zoology, botany, ecology, or a closely related field.
- Thorough and current knowledge of special-status wildlife species behavior, natural history, ecology, and physiology, and demonstrate substantial field experience and training to safely and successfully conduct their required duties, especially for desert tortoise.
- Three years of experience in field biology.
- At least 1 year of field experience with biological resources found in or near the Project area.
- Meet the USFWS's current Authorized Biologist qualifications criteria (USFWS, 2009a), demonstrate familiarity with protocols and guidelines for the desert tortoise, and be approved by the Service.

Pre-construction surveys shall be planned and implemented to identify locations of special-status plants and wildlife and nesting birds occurring at work areas, staging areas, and other Project-related disturbance area, and in adjacent buffer areas. Specific pre-

construction survey methods or protocols will vary according to the resources which may be present at any given site, and according to season. At minimum, CVWD shall complete pre-construction surveys 10 days prior to beginning work in any given area and repeat the surveys if the work site remains inactive for a period of 10 days or more. During nesting season, an Authorized/Acceptable Biologist shall complete nesting bird surveys no more than four days prior to beginning work at any given area and repeat the surveys regularly so long as work continues at the site during the nesting season.

Pre-construction survey reports shall document survey methodology and results. Each pre-construction survey report shall include a list of biological resources detected at each site during the pre-construction survey along with any relevant additional details of sightings of special-status species (e.g., size, gender, apparent health, reproductive status, etc.).

CVWD also shall conduct pre-construction “sweeps” of each work site immediately prior to beginning construction or disturbance work, to ensure that any special-status resources present have been identified, and to note any vulnerable wildlife that may have entered the site. Based on the results of pre-construction surveys and sweeps, CVWD or its contractor shall observe species-specific no-disturbance buffer areas or other access or activity restrictions to minimize potential impacts to the resources, such as lizard-specific exclusionary fencing along the northern side of Avenue 38 to prevent CVFTL from accessing the Project area.

CVMSHCP/NCCP: This measure is required for private and federal lands.

MM BIO-2 Conduct Biological Monitoring and Reporting. This measure supersedes EC B-2 (Biological Monitoring and Relocation of Sensitive Species) as described in the EIR/EIS for the proposed Project. This measure applies to the construction phase of the Project on private and federal lands. Refer to MM BIO-7 for additional information on biological monitoring during the O&M phase of the Project. Roles of biologists conducting biological surveying and monitoring will include a Lead Biologist (that is also an Authorized Biologist/Acceptable Biologist as described in MM BIO-1), a Designated Desert Tortoise Biologist (see MM BIO-12), and at least one or more Authorized/Acceptable Biologist(s).

Lead Biologist: CVWD shall appoint a lead biologist in coordination with the USACE, no less than 60 days prior to the start of any ground-disturbing activities, including those occurring prior to site mobilization (e.g., geotechnical borings, etc.). This lead biologist may be the same lead biologist as described in MM BIO-1. The lead biologist will hold a bachelor’s degree in biological sciences, zoology, botany, ecology, or a closely related field; have at least three years of experience in field biology and at least one year of direct field experience with biological resources found in or near the Project area. The lead biologist shall possess the appropriate education and experience to successfully accomplish the assigned biological resources tasks.

The lead biologist will be CVWD’s primary point of contact to CDFW and USFWS and other agencies regarding any biological resource issues and implementation of related mitigation measures and permit conditions throughout Project construction and post-construction restoration work. In addition, the lead biologist will be responsible for supervising and training biological monitors and preparing monitoring reports and documentation (below).

Biological Monitors (Authorized Biologist(s)/Acceptable Biologist(s): CVWD shall assign qualified biological monitors that are Authorized Biologist(s)/Acceptable Biologist(s) to the Project to monitor all work activities during the construction phase (see MM BIO-1). A Designated Desert Tortoise Biologist will also be present to conduct desert tortoise specific surveying and monitoring (see MM BIO-12).

Monitors are responsible for ensuring that impacts to special-status species, native vegetation, wildlife habitat, and sensitive or unique biological resources, including desert dune and sand field habitat, are avoided or minimized to the fullest extent safely possible. Monitors are also responsible to ensure that work activities are conducted in compliance with ECs, Mitigation Measures, permit conditions, and other Project requirements.

CVWD shall provide training to biological monitors, in addition to WEAP (see Mitigation Measure BIO-3) and prior to the monitor commencing field duties, on biological resources present or potentially present on the Project, as well as ECs, mitigation measures, permit requirements, Project protocols, and the duties and responsibilities of a biological monitor.

Biological monitors shall inform construction crews daily of any environmentally sensitive areas (ESAs), nest buffers, or other resource issues or restrictions that affect the work sites for that day. Biological monitors shall communicate with construction supervisors and crews as needed (e.g., at daily tailgate safety meetings (“tailboards”), by telephone, text message, or email) to provide guidance to maintain compliance with ECs, mitigation measures, and permit conditions. CVWD shall ensure that adequate numbers of monitors are assigned to effectively monitor work activities and that communications from biological monitors are promptly directed to crews at each work site for incorporation into daily work activities. If biological monitors are unavailable for a tailboard meeting, the construction supervisors shall communicate all ESAs, nest buffers, or other resource restrictions to crews during the meeting. CVWD shall ensure that biological monitors are provided with an accurate daily construction work schedule as well as updated information on any alterations to the daily construction work schedule. CVWD shall ensure that biological monitors are provided with up-to-date biological resource maps and construction maps in hardcopy or digital format.

Monitors shall be familiar with the biological resources present or potentially present, ESAs, nest buffers, and any other resource issues at the site(s) they are monitoring, as well as the applicable ECs, Mitigation Measures, and permit requirements. Monitors shall exhibit diligence in their monitoring duties and refrain from any conduct or potential conflict of interest that may compromise their ability to effectively carry out their monitoring duties.

Biological monitor duties and responsibilities: Throughout the duration of construction, Authorized/Acceptable Biologist(s) shall conduct biological monitoring of all work activities in the Project area, including work sites, staging areas, access roads, and any area subject to Project disturbance. All pre-construction activities (e.g., for geotechnical borings, etc.) and post-construction restoration (if any) shall also be monitored by a biological monitor or lead biologist. Refer to MM BIO-7 for a description of biological monitor duties and responsibilities during the O&M phase of the Project.

Each day, prior to work activities at each site, a biological monitor shall conduct clearance surveys (“sweeps”) for sensitive plant or wildlife resources that may be located within or

adjacent to the construction areas. If sensitive resources are found, the biological monitor shall take appropriate action as defined in all ECs, mitigation measures, and permit conditions. Work activities shall not commence at any work site until the clearance survey has been completed and the biological monitor communicates to the contractor that work may begin.

Biological monitors shall clearly mark sensitive biological resource areas with staking, flagging, or other appropriate materials that are readily visible and durable. The monitors will inform work crews of these areas and the requirements for avoidance and will inspect these areas at appropriate intervals for compliance with regulatory terms and conditions. The biological monitors shall ensure that work activities are contained within approved disturbance area boundaries at all times.

Biological monitors shall have the authority and responsibility to halt any Project activities that are not in compliance with applicable mitigation measures, ECs, permit conditions, or other Project requirements, or will have an unauthorized adverse effect on biological resources.

Handling, relocation, release from entrapment, or other interaction with wildlife shall be performed consistent with mitigation measures, safety protocols, permits (including CDFW and USFWS permits), and other Project requirements (and only done by an Authorized Biologist approved by USFWS, as described in MM BIO-1 and MM BIO-12).

Biological monitors shall use handling measures that are safe, practicable, and consistent with mitigation measures and permit conditions, to actively or passively relocate wildlife out of harm's way. On a daily basis, biological monitors shall inspect construction areas where animals may have become trapped, including equipment covered with bird exclusion netting (if any), and release any trapped animals. Daily inspections shall also include areas with high vehicle activity (e.g., staging areas), to locate animals in harm's way and relocate them if necessary. If safety or other considerations prevent biological monitors from aiding trapped wildlife or wildlife in harm's way, CVWD shall consult with the construction contractor, CDFW, wildlife rehabilitator, or other appropriate party to obtain aid for the animal, consistent with applicable mitigation measures.

At the end of each workday, biological monitors shall verify that all excavations, open tanks, trenches, pits, or similar wildlife entrapment hazards have been covered or have ramps installed to prevent wildlife entrapment, and communicate with work crews to ensure these structures are installed and functioning properly.

Biological monitors shall inspect any wildlife exclusion fencing daily to ensure that it remains intact and functional. Any need for repairs to exclusion fencing shall be immediately communicated to the responsible party, and repairs shall be carried out in a timely manner, generally within one workday.

CVWD shall prepare and implement a procedure for communication among biological monitors and construction crews, to ensure timely notification (i.e., daily or sooner, as needed) to crews of any resource issues or restrictions.

Monitoring activities shall be thoroughly and accurately documented on a daily basis. CVWD shall develop protocols for documentation of monitoring prior to the initiation of construction to include:

- All special status species observations, including location of observation, location and description of Project activities in the vicinity, and any avoidance or other measures taken to avoid the species. In addition, all special-status species observations shall be reported to the California Natural Diversity Database (CNDDDB).
- All non-compliance incidents, including nest buffer incursions, with resolution or remedial actions taken.
- Bird nesting activities and buffers established.
- Final post-construction compilation of permanent and temporary impact acreages by habitat.

CVMSHCP/NCCP: The Project is covered under the CVMSHCP/NCCP. However, to ensure the protection of non-covered sensitive species this measure is required for private and federal lands.

MM BIO-3 **Prepare and Implement a Worker Environmental Awareness Program (WEAP).** This mitigation measure shall apply to the construction and O&M phases of the Project on private and federal lands.

CVWD shall prepare and implement a Project-specific Worker Environmental Awareness Program (WEAP) to educate on-site workers about the Project's sensitive environmental issues. Contents of the WEAP will be coordinated with the USFWS prior to finalizing it. The WEAP shall be administered by the lead biologist or a biological monitor to all personnel on-site during the construction phase, including but not limited to surveyors, engineers, inspectors, contractors, subcontractors, supervisors, employees, monitors, visitors, and delivery drivers. If the WEAP presentation is recorded on video, it may be administered by any competent Project personnel. Throughout the duration of construction, CVWD shall be responsible for ensuring that all on-site Project personnel receive this training prior to beginning work. A construction worker may work in the field along with a WEAP-trained crew for up to five days prior to attending the WEAP. CVWD shall maintain a list of all personnel who have completed the WEAP training. Employees will sign a statement indicating that they have completed the education program and understand fully its provisions and the specific measures, terms, and conditions included in the EIR/EIS and Biological Opinion.

The WEAP shall consist of a training presentation, with supporting written materials provided to all participants.

The WEAP training shall include, at minimum:

- Overview of the Project, the jurisdictions the Project route passes through or adjacent to (e.g., CVMSHCP/NCCP, Coachella Valley Preserve) and any special requirements of those jurisdictions.
- Overview of the federal and State Endangered Species Acts, Bald and Golden Eagle Protection Act, Migratory Bird Treaty Act, including the definition of "take," and the consequences of non-compliance with these acts including potential penalties (up to \$25,000 in fines and 6 months in prison) for taking a federally listed threatened species. Review of the take permit authorized for the project and applicable locations
- Overview of the Project mitigation in the final EIS and biological permit requirements included in the Biological Assessment, the Biological Opinion, and any other resource agency agreements or authorizations, as well as the consequences of non-compliance

with these requirements. They would also be informed of the environmental commitments, specific measures, terms and (when delivered).

- Sensitive biological resources and potential for impacts to them on the Project site and adjacent areas, including nesting birds, listed species (Coachella Valley milk-vetch, CVFTL, desert tortoise) and other special-status plants and wildlife, and sensitive habitats known or likely to occur on the Project site, Project requirements for protecting these resources, and the consequences of non-compliance. Review of the take permit authorized for the project and applicable locations.
- Sand habitats and sand transport, Project requirements for protecting these resources, and the consequences of non-compliance.
- Construction restrictions such as limited operating periods, environmentally sensitive areas (ESAs), and buffers.
- Avoidance of invasive weed introductions onto the Project site and surrounding areas, and description of the Project's Integrated Weed Management Plan (see MM BIO-8) and associated compliance requirements for workers on the site.
- Function, responsibilities, and authority of biological and environmental monitors and how they interact with construction crews.
- Requirement to remain within authorized work areas and on approved roads, with examples of the flagging and signage used to designate these areas and roads, and the consequences of non-compliance.
- Procedure for obtaining clearance from a biological monitor to enter a work site and begin work (including moving or mobilizing equipment), and the requirement to wait for that clearance.
- One-hour hold (or other method CVWD will use to halt work when necessary to maintain compliance) and the requirement for compliance.
- ESAs and associated restrictions, and other restrictions such as no grading areas, flagging or signage designations, and consequences of non-compliance.
- Nest buffers and associated restrictions and the consequences of non-compliance. Procedure and time frame for halting work and removing equipment when a new buffer is established. Discussion of nest deterrents when no active nests are found during surveys.
- Explanation that wildlife must not be harmed or harassed. Procedures for covering pipes, securing excavations, and installing ramps to prevent wildlife entrapment. What to do and who to contact if dead, injured, or entrapped animals are encountered.
- General safety protocols such as hazardous substance spill prevention, containment, and cleanup measures; fire prevention and protection measures; designated smoking areas (if any) and cigarette disposal; safety hazards that may be caused by plants and animals; and procedure for dealing with rattlesnakes in or near work areas or access roads.
- Printed training materials, including photographs and brief descriptions of all special-status plants and animals that may be encountered on the Project, including behavior,

ecology, sensitivity to human activities, legal protection, penalties for violations, reporting requirements, and protection measures.

- Contact information for CVWD, construction management, and contractor environmental personnel, and who to contact with questions.
- Training acknowledgment form to be signed by each worker indicating that they understand and will abide by the guidelines, and a hardhat sticker so WEAP attendance may be easily verified in the field.

Focused WEAP. An abbreviated version of WEAP training (“focused WEAP”) may be used for individuals who are exclusively delivery drivers or visitors to the Project site, and will be provided by a qualified Project biologist, biological monitor, or environmental field staff prior to those individuals entering or working on the Project. Short-term visitors (total of five days or less per year) to the Project site who will be riding with and in the company of WEAP-trained Project personnel for the entire duration of their visit(s) are not required to attend WEAP or focused WEAP training.

WEAP lite training will provide sufficient information for the individual to understand and maintain compliance with Project mitigation measures and permit conditions. WEAP lite presentations will be tailored to the situation and emphasize Project requirements that are relevant to that situation (e.g., dust control, speed limits, and staying within Project roads and work areas for delivery drivers).

A training acknowledgment form will be signed by each participant indicating that they understand and will abide by the guidelines, and a hardhat sticker will be provided so WEAP lite attendance may be easily verified in the field. CVWD will maintain a list of personnel who have completed WEAP lite training.

WEAP Refreshers. Biological monitors or environmental field staff will periodically present brief WEAP refresher presentations at tailboards to help construction crews and other personnel maintain awareness of environmental sensitivities and requirements. A 5- to 10-minute informal talk will be presented at each of the Project’s main contractor/subcontractor tailboards at least once a week.

When a contractor or subcontractor resumes work after a long break (more than six (6) consecutive calendar days with no substantial work on Project construction in the field), a biological monitor or environmental field staff will provide an extended WEAP refresher presentation (10-20 minutes) at each of the contractor/subcontractor tailboards on the first day back to work.

The monitor will note the date, contractor or subcontractor, tailboard location and time, and topic(s) discussed during the WEAP refresher and include this information in their daily monitoring log.

CVMSHCP/NCCP: The Project is covered under the CVMSHCP/NCCP. However, to ensure the protection of non-covered sensitive species this measure is required for private and federal lands.

MM BIO-4 Minimize Native Vegetation and Habitat Loss. This mitigation measure shall apply to the construction phase of the Project on private and federal lands. Final engineering of the Project shall minimize the extent of disturbance and removal of native vegetation and habitat, including sand habitat, to the extent safe and feasible.

To the extent feasible, vegetation removal within work areas will be minimized and construction activities will implement mowing or drive and crush access and site preparation rather than grading. To the extent feasible, stockpiling of spoils and salvaged topsoil will be located in previously disturbed areas, and will avoid native vegetation and habitat, including sand habitat and be stored in way to avoid attracting wildlife.

Prior to any construction equipment or crew mobilization at each work site, work areas will be marked with staking or flagging to identify the limits of work and will be verified by Project environmental staff. Staking and flagging will clearly indicate the work area boundaries. Where staking cannot be used, traffic cones, traffic delineators, or other markers will be used. Staking and flagging or other markers will be in place during construction activities at each work site and will be refreshed as needed. Coded flagging colors or color combinations will be consistent and uniform across the Project. All work activities, vehicles, and equipment will be confined to approved roads and staked and flagged or marked work areas.

CVMSHCP/NCCP: The Project is covered under the CVMSHCP/NCCP. However, to ensure the protection of non-covered sensitive species this measure is required for private and federal lands.

MM BIO-5 Utilize Native Species for Revegetation of Temporary Disturbance Areas. This mitigation measure shall apply to the construction phases of the Project on federal lands. Given the slow recovery rates of desert vegetation, it is unlikely that ecological restoration techniques can dependably establish a trend toward restoration of habitat values within a five (5) year period unless vegetation disturbance was limited to mowing. Therefore, habitat impacts (excluding impacts to sand habitat) in temporary disturbance areas will be considered permanent habitat loss and mitigated as described Mitigation Measure BIO-6.

If revegetation is necessary as determined by CVWD, revegetation in temporary disturbance areas (e.g., for erosion control or to prevent the spread of weeds or mitigation of visual impacts, etc.) shall utilize only native species appropriate for the area and habitat type. No non-native species will be planted.

Within appropriate habitat, native plants that provide foraging opportunities for Coachella Valley fringe-toed lizard and desert tortoise shall be included in seed mixes, as determined by a qualified biologist. These species may include, but are not limited to, bugseed (*Dicoria canescens*), globe mallow (*Sphaeralcea ambigua*), and dwarf white milk-vetch (*Astragalus didymocarpus*).

CVWD will coordinate all restoration activities within the federally owned Coachella National Wildlife Refuge lands with Refuge managers to ensure that the restoration activities align with Refuge-specific guidelines and management objectives.

CVMSHCP/NCCP: The Project is covered under the CVMSHCP/NCCP. This measure is only required for federal lands.

MM BIO-6 Compensate for Habitat Loss. The CVWD will acquire and protect approximately 550 acres of floodway lands as habitat for special-status plants and wildlife, located within the Thousand Palms Conservation Area. The floodway lands will be transferred to the CVCC for conservation and management under the CVMSHCP in support of the goals and objectives of the CVMSHCP. CVWD will ensure acquisition and protection of approximately 32 acres of aeolian sand habitat that contribute to the recovery of Coachella Valley fringe-toed lizard and suitable for other aeolian sand dependent species. Habitat compensation

will be accomplished by acquisition of mitigation land or conservation easements or by providing funding for specific land acquisition, endowment, restoration, and management actions.

CVWD shall be responsible for the acquisition, initial protection and habitat improvement, of compensation lands. Alternatively, CVWD may provide funding to CVAG for the acquisition of mitigation lands. The compensation lands will be placed under conservation management to be funded through the terms described herein. The requirements of this mitigation measure shall be fully accomplished within five years from the completion of Project construction.

Compensation Land Selection Criteria. Criteria for the acquisition, initial protection and habitat improvement, and long-term maintenance and management of compensation lands for impacts to biological resources shall include all of the following:

- Compensation lands shall provide habitat value that is equal to or better than the quality and function of the habitat impacted by the Project, taking into consideration soils, vegetation, topography, human-related disturbance, wildlife movement opportunity, proximity to other protected lands, management feasibility, sand source and sand transport, and other habitat values;
- To the extent that proposed compensation habitat may have been degraded by previous uses or activities, the site quality and nature of degradation must support the expectation that it will regenerate naturally when disturbances are removed;
- Be near larger blocks of lands that are either already protected or planned for protection, or which could feasibly be protected long-term by a public resource agency or a non-governmental organization dedicated to habitat preservation;
- Not have a history of intensive recreational use or other disturbance that might cause future erosion or other habitat damage, and make habitat recovery and restoration infeasible;
- Invasive species that might jeopardize habitat recovery and restoration, either on or immediately adjacent to the parcels under consideration, must not occur at higher density than found on the lands affected directly and indirectly by the proposed Project;
- Not contain hazardous wastes that cannot be removed to the extent that the site could not provide suitable habitat;
- Must provide wildlife movement value equal to that on the Project site, based on topography, presence and nature of movement barriers or crossing points, location in relationship to other habitat areas, management feasibility, and other habitat values;
- Have water and mineral rights included as part of the acquisition, unless CDFW and USFWS agree in writing to the acceptability of land without these rights.

Review and Approval of Compensation Lands Prior to Acquisition. Prior to the initiation of construction, CVWD will prepare and implement a Habitat Compensation Plan in coordination with USFWS and CDFW, identifying the proposed compensation lands and detailing all proposed improvement, management, protection activities. This Plan shall discuss the suitability of the proposed parcel(s) as compensation lands in relation to the selection criteria listed above.

CVMSCHP/NCCP: The Project is covered under the CVMSHCP/NCCP. This measure is only relevant to the portion of the project on federal lands.

IMM BIO-7 Prepare and Implement an Operations and Maintenance Plan. This mitigation measure shall apply to the O&M phase of the Project for private and federal lands. CVWD, in coordination with the USACE, shall implement their existing Operations and Maintenance Plan (O&M Plan) for the Project or create a new O&M Plan, and submit it to USFWS and CDFW for review prior to the start of construction of the Project. As described in the CVMSHCP/NCCP (page 7-29), this plan will minimize impacts to CVMSHCP/NCCP covered species and natural communities and protect non-covered special status species. Additionally, the O&M Plan will also minimize impacts to species and native habitat that are not covered by the CVMSHCP/NCCP, including sand habitat.

The O&M Plan shall include, but is not limited to:

- **Pre-maintenance biological surveys and monitoring.** The O&M Plan shall specify the types of O&M activities (e.g., clearing of accumulated sand, deposition of sand, vegetation clearing, etc.) requiring pre-maintenance biological surveys. Depending on the results of the survey, biological monitoring during the O&M activity may be required to avoid or minimize impacts to special-status species and native habitat. The O&M Plan shall integrate the relevant portions of Mitigation Measures BIO-1 and BIO-2.
- **Minimize impacts.** The O&M Plan shall incorporate Mitigation Measures BIO-2 and BIO-3.
- **Weed control.** The O&M Plan shall incorporate the Integrated Weed Management Plan (Mitigation Measure BIO-8) and Mitigation Measure BIO-4.
- **Nesting birds.** The O&M Plan shall incorporate the Nesting Bird Management Plan (Mitigation Measure BIO-15).
- **Restrict OHV access.** The O&M Plan shall include methods to restrict unauthorized use of the Project facilities, with emphasis on restricting OHV access, to avoid and minimize impacts to sensitive habitats, including sand habitats, and special-status species. Any OHV restrictions (e.g., fencing) will be designed to minimize OHV access while maintaining biological connectivity and wildlife movement and sand transport.

CVMSHCP/NCCP: The Project is covered under the CVMSHCP/NCCP. However, to ensure the protection of non-covered sensitive species this measure is required for private and federal lands. In addition, any O&M activities that occur within the indirect permanently impacted Coachella Valley Wildlife Refuge lands (see Sections 1 and 1.4) will be covered under the CVMSHCP/NCCP.

MM BIO-8 Prepare and Implement an Integrated Weed Management Plan. This mitigation measure shall apply to the construction and O&M phase of the Project on federal lands and will augment EC B-1 (Weed Abatement Program).

CVWD, in coordination with the USACE, shall prepare and implement an Integrated Weed Management Plan (IWMP) describing the proposed methods of preventing or controlling Project-related spread of weeds or new weed infestations. No pre-construction activities (e.g., for geotechnical borings, etc.), construction, equipment or crew mobilization, or Project-related ground-disturbing activity shall proceed until the IWMP is completed and

implemented. The IWMP will be incorporated into the O&M Plan (Mitigation Measure BIO-7).

For the purposes of the IWMP, “weeds” shall include designated noxious weeds, as well as any other non-native weeds or pest plants identified on the weed lists of the California Department of Food and Agriculture or the California Invasive Plant Council. The IWMP shall be implemented throughout Project construction and O&M. The IWMP shall include the information listed in the following paragraphs.

Background. The background section shall provide an assessment of the Project’s potential to cause spread of invasive non-native weeds into new areas, or to introduce new non-native invasive weeds into the Project site. This section must list known and potential non-native and invasive weeds occurring on the Project site and in the Project region, and identify threat rankings and potential consequences of Project-related occurrence or spread for each species. This assessment shall include, but is not limited to, weeds that (1) are rated high or moderate for negative ecological impact in the California Invasive Plant Inventory Database (Cal-IPC, 2020), and (2) aid and promote the spread of wildfires (such as cheatgrass, Sahara mustard, and medusa head), and (3) stabilize sand dunes and fields (such as Sahara mustard). This section shall identify goals for control of each species (e.g., eradication, suppression, or containment) likely to be found within the Project area.

Pre-construction weed inventory. CVWD shall inventory the entire Project site, including all areas subject to ground-disturbing activity, including, but not limited to, construction work sites, staging areas, and any potential new or improved access roads. Weed occurrences shall be mapped and described according to density and area covered. The map shall be updated at least once a year during the construction phase.

Pre-construction weed treatment. Weed infestations identified in the pre-construction weed inventory shall be evaluated to identify potential for Project-related spread. The IWMP shall identify any infestations to be controlled or eradicated prior to Project construction, or other site-specific weed management requirements (e.g., avoidance of soil transport and site-specific vehicle washing where threat or spread potential is high). Control and follow-up monitoring of pre-construction weed treatment sites will follow methods identified in appropriate sections of the IWMP.

Prevention. The IWMP shall specify methods to minimize potential transport of weed seeds onto the Project site, or from one section of the Project site to another. The Project site may be divided into “weed zones,” based on known or likely invasive weeds in any portion of the Project site. The IWMP will specify inspection procedures for construction materials and equipment entering the Project area. Vehicles and equipment may be inspected and cleaned at entry points to specified portions of the Project site, and before leaving work sites where weed occurrences must be contained locally. Construction equipment shall be cleaned of dirt and mud that could contain weed seeds, roots, or rhizomes. Equipment shall be inspected to ensure it is free of any dirt or mud that could contain weed seeds, and the tracks, outriggers, tires, and undercarriage will be carefully washed, if needed, with special attention being paid to axles, frame, cross members, motor mounts, underneath steps, running boards, and front bumper/brush guard assemblies. Other construction vehicles (e.g., pick-up trucks) that will be frequently entering and exiting the site will be inspected and washed on an as-needed basis. Tools such as chainsaws, hand clippers, pruners, etc., shall be cleaned of dirt and mud before entering Project work areas.

All vehicles shall be washed off-site when possible. If off-site washing is infeasible, on-site cleaning stations will be set up at specified locations to clean equipment before it enters the work area. Wash stations shall be located away from native habitat or special-status species occurrences. Wastewater from cleaning stations will not be allowed to run off the cleaning station site. When vehicles and equipment are washed, a daily log shall be kept stating the location, date and time, types of equipment, methods used, and personnel present.

Erosion control materials (e.g., straw wattles, hay bales) must be certified free of weed seed before they are brought onto the site. The IWMP must prohibit on-site storage or disposal of mulch or green waste that may contain weed material. Mulch or green waste shall be removed from the site in a covered vehicle to prevent seed dispersal, and transported to a licensed landfill or composting facility.

The IWMP shall specify guidelines for any soil, sand, gravel, mulch, or fill material to be imported into the Project area, transported from site to site within the Project area, or transported from the Project area to an off-site location, to prevent the introduction or spread of weeds to or from the Project area.

Monitoring. The IWMP shall specify methods to survey for weeds during construction and O&M; and shall specify qualifications of botanists responsible for weed monitoring and identification. It must include a monitoring schedule to ensure timely detection and immediate control of weed infestations to prevent further spread. Surveying and monitoring for weed infestations shall occur at least two times per year, to coincide with the early detection period for early season and late season weeds (i.e., species germinating in winter and flowering in late winter or spring, and species germinating later in the season and flowering in summer or fall). It also must include methods for marking invasive weeds on the Project site, and recording and communicating these locations to weed control staff. The map of weed locations (discussed above) shall be updated at least once a year. The monitoring section shall also describe methods for post-eradication monitoring to evaluate success of control efforts and any need for follow-up control.

Control. The IWMP must specify manual and chemical weed control methods to be employed. The IWMP shall include only weed control measures with a demonstrated record of success for target weeds, based on the best available information. The plan shall describe proposed methods for promptly scheduling and implementing control activity when any weed infestation is located, to ensure effective and timely weed control. Weed infestations must be controlled or eradicated as soon as possible upon discovery, and before they go to seed, to prevent further spread. All proposed weed control methods must minimize the extent of any disturbance to native vegetation, limit ingress and egress to defined routes, and avoid damage from herbicide use or other control methods to any environmentally sensitive areas identified within or adjacent to the Project site.

Weed infestations shall be treated at a minimum of once annually until eradication, suppression, or containment goals are met. For eradication, when no new seedlings or resprouts are observed for three consecutive, normal rainfall years, the weed occurrence can be considered eradicated and weed control efforts may cease for the site.

Manual control shall specify well-timed removal of weeds or their seed heads with hand tools; seed heads and plants must be disposed of in accordance with guidelines from the Riverside County Agricultural Commissioner, if such guidelines are available.

The chemical control section must include specific and detailed plans for any herbicide use. It must indicate where herbicides will be used, which herbicides will be used, and specify techniques to be used to avoid drift or residual toxicity to native vegetation or special-status plants and wildlife. Only state-approved herbicides may be used. Herbicide treatment will be implemented by a Licensed Qualified Applicator. Herbicides shall not be applied during or within 72 hours of predicted rain. Only water-safe herbicides shall be used in riparian areas or within channels (engineered or not) where they could run off into downstream areas. Herbicides shall not be applied when wind velocities exceed six (6) mph. All herbicide applications will follow U.S. Environmental Protection Agency label instructions and will be in accordance with federal, state, and local laws and regulations.

Reporting schedule and contents. The IWMP shall specify a reporting schedule and contents of each report that shall be prepared by CVWD to document weed control efforts.

CVMSHCP/NCCP: The Project is covered under the CVMSHCP/NCCP. This measure is required for federal lands.

MM BIO-9 Minimize and Mitigate Impacts to Special-status Plants. This mitigation measure will be applied to the construction and O&M phases of the Project on private and federal lands. This mitigation measure enhances EC B-3 (Avoid Impacts to Sensitive Species).

Pre-construction survey. CVWD shall conduct focused pre-construction surveys for federal- and State-listed and other special-status plants. All special-status plant species (including listed threatened or endangered species, and all CRPR 1A, 1B, 2, 3, and 4 ranked species) impacted by Project activities shall be documented in pre-construction survey reports. Surveys shall be conducted during the appropriate season in all suitable habitat located within the Project disturbance areas and access roads and within 200 feet of disturbance areas. Surveys shall be conducted by a qualified botanist. The field surveys and reporting must conform to current CDFW botanical field survey protocol (CDFG, 2009) or more recent updates, if available. The results will be submitted to USFWS within 30 days of completing the surveys. The reports shall describe any conditions that may have prevented target species from being located or identified, even if they are present as dormant seed or below-ground rootstock (e.g., poor rainfall, recent grazing, or wildfire). In some cases, follow-up surveys may be necessary to adequately evaluate impacts. Pre-construction field survey reports shall include maps showing locations of survey areas and special-status plants.

Mitigation. CVWD shall mitigate impacts to any state or federally listed plants or CRPR 1 or 2 ranked plants on federal lands or species that are not covered by the MSHCP that may be located on the Project disturbance areas where direct or indirect effects to soils, vegetation, or sand transport could affect special-status plants through one or a combination of the following strategies.

- **Avoidance of special-status plants** is the preferred strategy wherever feasible. Where avoidance is not feasible, and the Project would directly or indirectly affect more than 10 percent of a local occurrence on federal lands or to non-covered species,² by either number of plants or extent of occupied habitat, CVWD shall prepare and implement a

² An occurrence for a plant is defined as any population or group of nearby populations located more than 0.25 miles from any other population (CNPS, 2010).

mitigation plan to consist of off-site compensation, salvage or horticultural propagation, and off-site introduction (see MM BIO-5 and MM BIO-7).

- **Avoidance.** Where feasible, Project work areas shall be located to avoid or minimize impacts to special-status plants. Effective avoidance through Project design shall include a buffer area surrounding each avoided occurrence, where no Project activities will take place. The buffer area shall be clearly staked, flagged, and signed for avoidance prior to the beginning of ground-disturbing activities, and maintained throughout the construction phase. The buffer zone shall be of sufficient size to prevent direct or indirect disturbance to the plants from construction activities, erosion, inundation, or dust. The size of the buffer will depend upon the proposed use of the immediately adjacent lands and the plant's ecological requirements (e.g., sunlight, moisture, shade tolerance, water availability, edaphic physical and chemical characteristics), to be specified by a qualified biologist or botanist. At minimum, the buffer for tree or shrub species shall be equal to twice the drip line (i.e., two times the distance from the trunk to the canopy edge) to protect and preserve the root systems. The buffer for herbaceous species shall be a minimum of 50 feet from the perimeter of the occupied habitat or the individual. If a smaller buffer is necessary due to other Project constraints, CVWD, in coordination with the USACE, shall develop and implement site-specific monitoring and put other measures in place to avoid the take of the species if possible, in consultation with USFWS and CDFW.
- **Off-site compensation.** CVWD shall provide compensation lands for impacts to federal lands or for non-covered species consisting of habitat occupied by the impacted CRPR 1 or 2 ranked plants at a 1:1 ratio of acreage and number of plants for any occupied habitat affected by the Project. Occupied habitat will be calculated on the Project site and on the compensation lands as including each special-status plant occurrence and a surrounding 100-foot buffer area. Off-site compensation shall be incorporated into the Project's Habitat Compensation Plan (Mitigation Measure BIO-6). Compensation acreage for special-status plants may be included ("nested" or "layered" within the 550-acre floodway) in compensation land also designated to offset other impacts such as habitat loss for special-status wildlife.
- **Salvage.** CVWD shall consult with horticulturists at a qualified institution, such as Rancho Santa Ana Botanic Garden, regarding the feasibility and likely success of salvage efforts for each species. If salvage is deemed to be feasible, then CVWD shall prepare and implement a Special-status Plant Salvage and Relocation Plan (Plan) to be reviewed by CDFW and USFWS, prior to direct or indirect disturbance of any occupied habitat. The goal shall be establishment of a new viable occurrence, equal or greater in extent and numbers to the affected occurrence. The Plan shall include at minimum: (a) species and locations of plants identified for salvage; (b) criteria for determining whether an individual plant is appropriate for salvage; (c) the appropriate season for salvage; (d) equipment and methods for collection, transport, and re-planting plants or seed banks, to retain intact soil conditions and maximize success; for shrubs, cacti, and yucca, a requirement to mark each plant to identify the north-facing side prior to transport, and replant it in the same orientation; (f) details regarding storage of plants or seed banks for each species; (g) location of the proposed recipient site, and detailed site preparation and plant introduction techniques for top soil storage, as applicable; (h) a descrip-

tion of the irrigation, weed control, and other maintenance activities; (i) success criteria, including specific timeframe for survivorship and reproduction of each species; and (j) a detailed monitoring program, commensurate with the Plan's goals.

Annual monitoring and documentation of salvaged plants shall include, but not be limited to, details of plants salvaged, stored, and transplanted (salvage and transplanting locations, species, number, size, condition, etc.); adaptive management efforts implemented (date, location, type of treatment, results, etc.); and evaluation of success of transplantation.

- **Horticultural propagation and off-site introduction.** If salvage and relocation is not believed to be feasible for special-status plants, then CVWD shall consult with Rancho Santa Ana Botanic Garden, or another qualified entity, to develop an appropriate experimental propagation and relocation strategy, based on the life history of the species affected. The Plan shall include at minimum: (a) collection and salvage measures for plant materials (e.g., cuttings), seed, or seed banks, to maximize success likelihood; (b) details regarding storage of plant, plant materials, or seed banks; (c) location of the proposed propagation facility, and proposed methods; (d) time of year that the salvage and other practices will occur (e) success criteria; and (f) a detailed monitoring program, commensurate with the Plan's goals.

CVMSHCP/NCCP: Impacts to covered special-status plants on private land are covered under the CVMSHCP/NCCP. This measure is required for impacts to special-status plants not covered under the CVMSHCP/NCCP and for plants located on federal land.

MM BIO-10 Ensure Wildlife Impact Avoidance and Minimization and Prepare a Wildlife Protection and Relocation Plan. CVWD shall undertake the following measures during the construction and O&M phases of the Project on private and federal lands to avoid or minimize impacts to wildlife resources. This mitigation measure enhances EC B-3 (Avoid Impacts to Sensitive Species). A Wildlife Protection and Relocation Plan (WPRP) will be prepared to provide guidance and protocols when avoiding or handling sensitive species that are located within the proposed Project area. The following section summarizes some of the guidelines to be included within the WPRP. The WPRP will be prepared in coordination with representatives from the different Conservation Areas as described in Sections 1.3 and 1.4, above.

Impacts to nesting birds are addressed separately in Mitigation Measure BIO-15 (Prepare and Implement a Nesting Bird Management Plan). Additionally, permanent wildlife ramps shall be incorporated into the Project design and maintained during the O&M phase, as described below.

- **Minimize traffic impacts.** CVWD shall specify and enforce a maximum 15 mile per hour vehicle speed limit on access roads within the Project and vicinity, not including public roadways. Scrapers may need to operate at higher speeds while excavating soils. No Project-related pedestrian or vehicle traffic shall be permitted outside defined work site boundaries (as marked on the site according to Mitigation Measure BIO-4 (Minimize Native Vegetation and Habitat Loss)).
- **Minimize impacts to nocturnal wildlife.** CVWD shall restrict work to daylight hours, as feasible, in order to avoid nighttime activities that may impact nocturnal species. Exceptions may be made during the application of slurry or concrete during periods of

high heat. Night lighting, if and when used, shall be designed, installed, and maintained to prevent side casting of light towards surrounding habitat.

- **Avoid use of toxic substances.** Soil bonding and weighting agents used for dust suppression on unpaved surfaces shall be non-toxic to wildlife and plants.
- **Minimize noise and vibration impacts.** To minimize disturbance to wildlife nesting or breeding activities in surrounding habitat, unnecessary noise and vibration (e.g., blaring radios, etc.) shall be avoided.
- **Water.** Potable and non-potable water sources such as tanks, ponds, and pipes shall be covered or otherwise secured to prevent animals (including birds) from entering. Prevention methods may include storing all water within closed tanks, covering open storage ponds or tanks with 2-centimeter netting, or other means, as applicable. Water applied to dirt roads and construction areas for dust abatement shall use the minimal amount needed to meet safety and air quality standards and avoid puddling. Water sources (e.g., hydrants, tanks, etc.) shall be checked periodically by biological monitors to ensure they are not creating open water sources by leaking or consistently overfilling trucks.
- **Worker guidelines.** All trash and food-related waste shall be contained in vehicles or covered trash containers and removed from the site regularly. Workers shall not feed wildlife or bring pets to the Project site. Except for law enforcement personnel, no workers or visitors to the site shall bring firearms or weapons.
- **Wildlife netting or exclusion fencing.** CVWD may install temporary or permanent netting or fencing around equipment, work areas, or Project facilities to prevent wildlife exposure to hazards such as toxic materials or vehicle strikes or prevent birds from nesting on equipment or facilities. Bird deterrent netting shall be maintained free of large holes and be deployed and secured on the equipment in a manner that, insofar as possible, prevents wildlife from becoming trapped inside the netted area or within the excess netting. The biological monitor shall inspect netting (if installed) daily. The biological monitor shall inspect exclusion fences (if installed) weekly and shall inform CVWD of any needed repairs; CVWD shall promptly repair any damage to the exclusion fencing.
- **Wildlife entrapment.** Project-related excavations greater than 6 inches deep shall be secured to prevent wildlife entry and entrapment. Holes and trenches shall be back-filled, securely covered, or fenced. Excavations that cannot be fully secured shall incorporate appropriate wildlife ramp(s) at a slope of no more than a 3:1 ratio (horizontal: vertical, equivalent to a 33.3 percent or 18.4-degree slope), or other means to allow trapped animals to escape. Biological monitors shall provide guidance to construction crews to ensure that wildlife ramps or other means are sufficient to allow trapped animals to escape. At the end of each workday, a biological monitor shall document that excavations have been secured or provided with appropriate means for wildlife escape.
- Project structures that pose a wildlife entrapment hazard and have sides with a slope steeper than 1:1, including but not limited to channels and basins, shall incorporate permanent wildlife ramps into the structure design. Structures with a slope of 1:1 or less steep do not require wildlife ramps. For structures that require wildlife ramps, at least one ramp shall be provided for each channel, basin, or other structure. Channels shall

have one or more ramps for every half-mile of contiguous channel length. Basins or similar structures shall have one or more ramps for every one-half acre of area. A biologist shall review the wildlife ramp design prior to implementation to ensure that it is sufficient to allow trapped animals to escape. Wildlife ramps installed in permanent structures shall be maintained during the O&M phase to ensure continued functionality.

All pipes or other construction materials or supplies shall be covered or capped in storage or laydown areas. No pipes or tubing shall be left open either temporarily or permanently, except during use or installation. Any construction pipe, culvert, or other hollow materials shall be inspected for wildlife before it is moved, buried, or capped.

- **Dead animals.** Dead animals of non-special-status species found on Project roads or work areas shall be reported to the appropriate local animal control agency within 24 hours. A biological monitor shall safely move the carcass out of the road or work area as needed. Dead animals of special-status species found on Project roads or work areas shall be reported to CDFW within one workday and the carcass handled as directed by CDFW.
- **Injured wildlife.** CVWD shall create and implement guidelines for dealing with injured or entrapped wildlife found on or near Project roads or work areas, whether or not the injuries are Project-related, and provide these guidelines to all biological monitors. CVWD shall ensure that one or more qualified biological monitors receive training in the safe and proper handling and transport of injured wildlife and are provided with the appropriate equipment. These trained and equipped monitors shall be available to capture and transport injured wildlife to a local wildlife rehabilitator or veterinarian as needed. If an animal is entrapped, a qualified biological monitor shall free the animal if feasible, or work with construction crews to free the animal, in compliance with applicable safety regulations and Project requirements. If biological monitors cannot free the animal or the animal is too large or dangerous for monitors to handle, CVWD shall contact and work with a local wildlife rehabilitator, animal control, CDFW, or other qualified party to obtain assistance for the animal as soon as possible. CVWD shall bear the costs of veterinary treatment and rehabilitation for any injured wildlife found on or near Project roads or work areas and any wildlife injured by Project-related activities. Additionally, any entrapped or injured special-status species found on Project roads or work areas shall be reported to the appropriate resource agency within one workday.
- **Sidewinders, rattlesnakes, and other snake guidelines.** Prior to the start of construction, CVWD shall prepare and implement guidelines within a Wildlife Protection and Relocation Plan for handling sidewinders, rattlesnakes, or other snakes found in or near Project work areas and access roads and provide these guidelines to all biological monitors, safety staff, and other personnel. Killing or harming rattlesnakes or other wildlife is not authorized. In the Wildlife Protection and Relocation Plan, CVWD will coordinate with Refuge managers to develop protocol aligned with any National Wildlife Refuge-specific guidelines for handling or relocation wildlife while working within Refuge lands.

CVMSHCP/NCCP: The Project is covered under the CVMSHCP/NCCP. However, to ensure the protection of non-covered sensitive species this measure is required for private and federal lands.

MM BIO-11 Conduct Coachella Valley Fringe-toed Lizard and Flat-tailed Horned Lizard Surveys, Monitoring, and Avoidance. This mitigation measure enhances the surveying and monitoring requirements as described in MM BIO-2 and MM BIO-7, and will be applied to the pre-construction, construction, and O&M phases of the proposed Project as needed.

Surveys for Coachella Valley fringe-toed lizard and flat-tailed horned lizard shall be conducted during the appropriate seasons (May 1 through the end of summer) and conditions for species identification on federal lands. The duration of the surveys shall coincide with the duration of construction activities in potential habitat for these species during the summer season. Surveys shall be conducted in appropriate habitat in all Project disturbance areas and within 500 feet of these areas on federal lands, and as required by Mitigation Measure BIO-1. Results of the surveys shall be submitted to USFWS within 30 days of completion.

Biological monitoring will occur as specified in Mitigation Measure BIO-2. The monitor shall be a qualified biologist with the appropriate experience and permits (as needed) to recognize and handle Coachella Valley fringe-toed lizard and flat-tailed horned lizard, as further outlined in the WPRP (MM BIO-10).

In work areas within ranked as high suitable habitat, exclusionary fencing that does not allow lizards to enter the work areas shall be constructed around the perimeter of each of the work areas if required by the USFWS. Any lizards found within the barrier shall be relocated to appropriate habitat outside of the work areas by the qualified biologist. The fence or barrier will be maintained as needed to ensure its effectiveness.

To the extent feasible, all construction activities within suitable habitat will be conducted during the active season, between April 1 and October 31. Construction activities in suitable habitat may be extended beyond the active season in consultation with the USFWS.

CVMSHCP/NCCP: The Project is covered under the CVMSHCP/NCCP. This measure is required for federal lands.

MM BIO-12 Conduct Desert Tortoise Surveys, Monitoring, and Avoidance and Prepare a Desert Tortoise Relocation Plan. The CVWD will assign a USFWS-approved Designated Desert Tortoise Biologist who will oversee all pre-construction, construction, and O&M activities that could result in take of desert tortoise. The biologist will be available to accompany each work crew to ensure that tortoises, burrows, and habitat are not disturbed during these activities to the extent possible. Desert tortoise shall be handled only by a USFWS/CDFW permitted and authorized biologist (Authorized Biologist), who is also an Acceptable Biologist (see MM BIO-1 and MM BIO-2), following appropriate USFWS protocols and in compliance with appropriate regulatory permits. If a live tortoise is in imminent danger of harm, and an Authorized Biologist is not readily available, a crew member will need to notify the Authorized Biologist (MM BIO-3). A biological monitor, who is also an Authorized Biologist and an Acceptable Biologist, shall monitor construction activities in all areas with the potential to support desert tortoise.

Methods for clearance surveys, exclusion fence specification and installation (if any), tortoise handling, artificial burrow construction, egg handling, and other procedures shall be consistent with those described in the USFWS (2009) *Desert Tortoise Field Manual* or more current guidance provided by CDFW and USFWS.

Within suitable habitat for desert tortoise, an Acceptable Biologist shall survey the Project area for desert tortoise burrows and pallets within five (5) days preceding the initial start of construction on private and federal lands. Follow-up surveys shall also be conducted within fourteen (14) days preceding additional construction after a gap in significant construction activities of 60 calendar days or more. Surveys shall include 100 percent of the area to be disturbed and a surrounding buffer of 200 feet.

Subject to authorization by CDFW and USFWS, tortoise burrows and pallets encountered within the disturbance area (if any) shall be conspicuously flagged by the surveying biologist(s) and avoided during construction activities. A Desert Tortoise Relocation Plan will outline approved protocol for excavating burrows and relocating any desert tortoise found within the Project site in accordance with the *Translocation of Mojave Desert Tortoises from Project Sites: Plan Development Guidance* (June 2020).

Project personnel shall inspect for desert tortoises under parked vehicles or equipment prior to moving same. If a desert tortoise is found beneath a vehicle or equipment, the vehicle or equipment shall not be moved or started until the tortoise has voluntarily moved to a safe distance away. If the tortoise does not move on its own accord after 20 minutes, the tortoise may be moved by an Authorized and Acceptable Biologist, subject to authorization by CDFW and USFWS.

If a desert tortoise is found in a work area, the tortoise shall be allowed to passively traverse the site while construction in the immediate area is halted. If the tortoise does not move out of harm's way after 20 minutes, the tortoise may be moved by an Authorized and Acceptable Biologist, subject to conditions and authorization by CDFW and USFWS.

Subject to authorization by CDFW and USFWS, desert tortoises shall be moved the minimum distance possible within appropriate habitat (less than 300 m). A Desert Tortoise Relocation Plan will describe all protocols. In general, desert tortoise will be moved a distance of less than 300 m (*Translocation of Mojave Desert Tortoises from Project Sites: Plan Development Guidance, June 2020*). Desert tortoises that are moved shall be placed in the shade of a shrub or in a natural unoccupied burrow similar to the hibernaculum in which it was found or in an artificially constructed burrow following the protocol provided by the Fish and Wildlife Service. After being moved, the desert tortoise shall be monitored to ensure its safety. Any time a tortoise is handled, the Authorized Biologist shall take photographs and record pertinent data in their daily monitoring log. Tortoises showing symptoms of Upper Respiratory Disease Syndrome will be, at the discretion of the Corps: (1) provided to research or translocation projects approved and permitted by the Fish and Wildlife Service; (2) provided to educational facilities holding appropriate State and Federal permits; or (3) made available for adoption.

Subject to authorization by CDFW and USFWS, a desert tortoise removed from its burrow shall be placed in an unoccupied burrow of approximately the same size and orientation. If an existing burrow is unavailable, the Authorized Biologist will construct or direct the construction of a burrow of similar shape, size, depth, and orientation as the original burrow. Desert tortoises moved during inactive periods will be monitored for at least two days after placement in the new burrow to ensure their safety.

Subject to authorization by CDFW and USFWS, if a desert tortoise is moved at a time of the day when ambient temperatures are unfavorable (less than 40 degrees F or greater

than 90 degrees F), it shall be held overnight in a clean cardboard box. The desert tortoise shall be kept in the care of the Authorized Biologist under appropriate controlled temperatures and released the following day when temperatures are favorable. All cardboard boxes will be appropriately discarded after one use.

CVMSHCP/NCCP: Desert tortoise is a covered species under the CVMSHCP/NCCP, however the CVMSHCP/NCCP provides specific requirements for the protection of this species. This measure aligns with most USFWS guidelines for desert tortoise and is required on private and federal lands.

MM BIO-13 Prepare and Implement Raven Monitoring, Management, and Reporting Plan. In coordination with USACE and in consultation with USFWS and CDFW, CVWD shall prepare and implement a Raven Monitoring, Management, and Reporting Plan (Raven Plan) consistent with USFWS raven management guidelines. The purpose of the Raven Plan shall be to minimize Project-related predator subsidies and prevent any increases in raven numbers or activity within desert tortoise habitat during construction and O&M phases. The Plan shall address all Project components and their potential effects on raven numbers and activity. If monitoring leads to any documented raven predation on tortoises, based on occurrence of tortoise remains beneath active raven nests in or adjacent to the project site, the CVWD will report that information to the USFWS immediately. The CVWD will not implement raven control (i.e., destroy ravens or their nests). Regardless of raven monitoring results, CVWD shall be responsible for all other aspects of raven management described in the Raven Plan, such as avoidance and minimization of Project-related trash, water sources, or perch/roost/nest sites that could contribute to increased raven numbers. In addition, to offset the cumulative contributions of the Project to desert tortoise impacts from increased raven numbers, CVWD shall contribute to the USFWS Regional Raven Management Program. CVWD shall:

- 1. Prepare and Implement a Raven Monitoring, Management, and Reporting Plan** that shall include, but not be limited to, the following components. The Plan shall be reviewed and approved by USFWS and CDFW prior to the start of construction activities.
 - a. Identify all potential Project activities, structures, components, and other effects that could provide predator subsidies or attractants, including potential sources of food and water, and nesting materials, as well as nest or perch sites. These will include, but will not be limited to: waste food material; road-killed animals; water storage; potential pooling from leaks, dust control, or waste water; debris from brush clearing; and perch or roost sites on Project facilities.
 - b. Describe management practices to avoid or minimize conditions that might increase raven numbers and predatory activities.
 - c. Appoint a qualified biologist and specify a program, including monitoring schedule, field methods, and reporting procedure to monitor raven presence in the Project vicinity and detect any evidence of raven predation on tortoises.
- 2. Contribute to the USFWS Regional Raven Management Program.** No later than 30 days prior to the start of construction, CVWD shall contribute to the USFWS Regional Raven Management Program by making a one-time payment of \$105 per acre of long-term or permanent Project disturbance to the national Fish and Wildlife Federation Renewable Energy Action Team raven control account.

CVMSHCP/NCCP: The Project is covered under the CVMSHCP/NCCP. This measure is only relevant to the portion of the project on federal lands.

2.4 Proposed Action

Project Description

The Project consists of four segments referred to as Reaches 1 through 4. Each reach is composed of a levee or channel and associated structures. Reach 3 is a levee at the west end transitioning to a channel at the east end. The Project is generally located on the northern and eastern margins of the community of Thousand Palms between Rio Del Sol Road and Washington Street (see Figures 1 and 2a). The Project would connect to existing stormwater conveyance facilities at the Classic Club Golf Course and the Del Webb/Sun City residential development. Reaches 1 and 2 would convey storm flows towards Reach 3. Reach 3 would convey flow into the floodway at the Classic Club Golf Course and Reach 4 would convey storm flows through the existing channel in the Del Webb/Sun City residential development located on the east side of Washington Street.

The Proposed Action consists of the following components:

- Construction of levees and channels for Reaches 1 through 4.
- Construction of a conveyance system to direct stormwater flows under Washington Street and into an existing stormwater conveyance system.
- Acquisition of an approximate 550-acre floodway located along the levees and in the active wind corridor between Reach 1 and Reach 3 (Figure 2a). Development would be prohibited in this floodway to protect the wind corridor and limit disruptions to sand migration. During O&M of the proposed Project, suitable material (e.g., fine sands) that accumulate along the levees and channels would be excavated and distributed in the floodway area for natural distribution onto the Preserve or placed in the proposed USFWS sediment disposal area.
- Placement of and blow sand on an existing USFWS sand augmentation area to provide fine grain sands to the Refuge/Preserve near Reach 3 (see SM-2 in Section 2.3 and Figure 1). This action would be done in coordination with the Sonny Bono Salton Sea National Wildlife Refuge Complex and Coachella Valley National Wildlife Refuge managers.
- Operations and maintenance of the Project.

The proposed Project includes levees, channels, culverts, and a sediment basin (at the east end of Reach 1), as shown in Figure 2a and Table 3. Figure 4 provides a cross-section view of the levee and channel designs, access roads, and maintenance/patrol roads. Soils generated by the proposed Project would either be used to construct the levees or disposed of off-site.

All levees would have an underground “toe” (levee toe) extending to a depth of approximately 15 feet. The top, upstream/northern sides and the toe of the levees would be covered with soil cement, while the southern/downstream side would be comprised of earthen materials (soil). Soil cement is a compacted high-density mix of pulverized native rocks and soils bonded with cement and water that is highly resistant to erosion while maintaining an earthen color. The channels would also be fully lined with soil cement to protect the structures during large flow events.

Reach 1

Reach 1 (see Figure 2a) is comprised of an approximately 12,700-foot-long (2.4-mile) levee (Levee 1). Water and sediment from the Indio Hills would flow naturally toward Reach 1 and be diverted to the 550-acre floodway located at the terminus of Reach 1 (described below). The height of Levee 1 would vary from 5 feet to 14 feet depending on topography and ground slope and be designed to accommodate a 100-year flood event. A minimum 12-foot access (patrol) road would be constructed on the top of the levee and an unpaved access road would be located on the downstream (west side) of the levee to support operations and maintenance (O&M) activities. Levee 1 would range from 75 to 100 feet in width and initiate approximately 0.1 mile to the east of the intersection of 28th Avenue and Rio del Sol Road, on the south side of 28th Avenue, and extend in an east-southeasterly direction. The levee would generally run parallel and north of an existing Southern California Edison (SCE) utility corridor. Levee 1 would cross Sierra del Sol, Desert Moon Drive, and Via Las Palmas. Culverts and road crossings of the levee would be constructed at Desert Moon Drive and Via Las Palmas.

The proposed alignment of Reach 1 would cross 37 non-residential properties and 7 residential properties, as shown in Figure 2a. These properties would need to be obtained by the CVWD for this reach to be constructed. The limits of land acquisition depend on the percent of the parcel crossed by the final Project alignment and the temporary construction access needs. If the existing use of any parcel impacted by the Project cannot be maintained, the entire parcel may be acquired.

Sediment Basin. A sediment basin would be installed at the downstream end of Reach 1 to trap sediment, slow the velocity of stormwater flow across the Preserve, and avoid adverse effects associated with erosion or channel migration (Figure 2a). The sediment basin would be approximately 2.1 acres in size and would consist of an excavated basin with riprap protection on the upstream side. The sediment basin would also induce deposition of fluvially-transported sediment on the wind corridor for natural transport onto the Preserve. Storm water directed by Reach 1 would flow through the sediment basin, overland in a southeast direction towards Reaches 2 and 3, described below.

Project Component	Excavate; (Fill) (cu.yd.)	Soil Cement (cu.yd.)	Height (ft.)	Length (ft.)	Width (ft.)	Surface Area (acres)
Reach 1						
Levee Toe	165,000; (142,000)	(132,000) ¹	—	12,700	15–16	4.5
Levee Embankment	(117,000) ¹		5-14	12,700	35–56	12
Sediment Basin	5,000 ¹	—	—	220	220	1.1
Reach 2						
Levee Toe	21,000; (17,000) ²	(14,000)	—	1,700	21	0.6
Levee Embankment	3,000		5	1,700	25	1.2
Reach 3						
Levee Toe	85,000; (70,000)	(65,000) ³	—	6,500	15–18	2.3
Levee Embankment	42,000 ³		5-14	6,500	22–57	6.0
Channel	401,000 ⁴	(120,000)	—	5,300	132–145	17
Reach 4						
Channel	1,154,000 ⁵	(292,000)	—	10,300	166–176	40

Table 3. Permanent Project Features and Dimensions

Project Component	Excavate; (Fill) (cu.yd.)	Soil Cement (cu.yd.)	Height (ft.)	Length (ft.)	Width (ft.)	Surface Area (acres)
Reach 1						
Reach 4 Washington St. Crossing	9,000 ⁵	—	—	624	180–325	13
Washington St. Widening	—	—	—	500	30	0.04
Avenue 38 (south of Reach 4)	—	—	—	7,600	76	13
Floodway	—	—	—	See Figure 2a		550
Soil Disposal Area (South of Avenue 38)	(726,000)	—	2	1,200– 2,700	3,000– 5,000	250
Sand Disposal Area (Preserve)	(100,000)	—	8	660	330	5.0

Notes: All quantities are based on preliminary engineering estimates and may change as part of final engineering.

- 1 - Reach 1 Levee embankment includes 89,000 cubic yards (CY) imported from the Reach 3 Channel excavation, with the remainder coming from the excavated material for the Reach 1 toe and sediment basin. Soil cement for Reach 1 consists of soil excavated from the Reach 4 Channel mixed with cement from a batch plant.
- 2 - Reach 2 would generate a net surplus of approximately 1,000 CY of soil, which is within the range of calculation error and has been ignored in subsequent calculations. Soil cement for Reach 2 would consist of soil excavated from the Reach 4 Channel.
- 3 - Reach 3 Levee embankment includes remaining 15,000 CY from Reach 3 levee toe excavation and import of 27,000 CY from Reach 3 Channel excavation. Soil cement for Reach 3 consists of soil excavated from the Reach 4 Channel.
- 4 - Excavated materials from the Reach 3 Channel would be exported to Reach 1 Levee (89,000 CY), Reach 3 Levee (27,000 CY), Coachella Valley Preserve/sand disposal area (100,000 CY), and the soil disposal site south of Avenue 38 (66,000 CY).
- 5 - Excavated materials from the Reach 4 Channel and the Washington Street Crossing would be used for soil cement on Reach 1 (132,000 CY), Reach 2 (14,000 CY), and Reach 3 (65,000 CY), and the Reach 4 Channel (292,000 CY). Remaining would be placed on the soil disposal site south of Avenue 38 (660,000 CY).

Road Crossing. Roads would be constructed over the Reach 1 levee at Via Las Palmas and at Desert Moon Drive to maintain access between the communities north and south of Levee 1. The road crossings would generally match the width of the existing roadways and be consistent with Riverside County standards. The design speed is 35 miles per hour (mph) at Via Las Palmas and 25 mph at Desert Moon Drive. The road crossings are designed to have the smallest permanent footprint to minimize impacts to sand migration. Stormwater directed by Reach 1 would flow through the sediment basin, overland in a southeast direction towards Reaches 2 and 3, described below.

Reservoir 4602. Reservoir 4602 is an existing above ground water tank owned and operated by CVWD. The reservoir is located west of Via Las Palmas and north of the proposed Reach 1 alignment. The reservoir is protected by a small berm with established vegetation and would be protected and maintained in-place during construction of the proposed Project. Additional flood protection may be provided in the future to ensure the integrity of the structure after the construction of Reach 1.

Reach 2

Reach 2 (see Figure 2a) is comprised of an approximately 1,700-foot long (0.32 mile) levee (Levee 2) with a height of approximately 5 feet. The levee would range from 12 to 135 feet in width and is positioned in the mid-alluvial fan just northeast of SCE’s Mirage Substation to protect the substation and to facilitate the diversion of water in a southeasterly direction. A minimum 12-foot access (patrol) road would be constructed on the top of the levee and an unpaved access road would be located on the downstream (west side) of the levee to support O&M activities. Levee 2 is aligned in the direction of the prevailing wind to avoid interference with Aeolian transport in this area (see Figure 2c). Reach 2 would capture large storm events from Reach 1 and direct flow towards Reach 3.

Reach 3

Reach 3 (see Figure 2a) is comprised of an approximately 6,500-foot long (1.2 miles) levee (Levee 3) and a 5,300-foot long (1.0 mile) incised trapezoidal channel lined with soil cement (Reach 3 Channel). A minimum 12-foot-wide access road would be located on top of the levee and an unpaved access road would occur on the downstream (west side) of the levee. Levee 3 would vary from approximately 5 feet to 14 feet in height depending upon the topography and ground slope to accommodate the volume and velocity of water associated with the 100-year flood event. Levee 3 would range from 12 to 200 feet in width and initiate 1,000 feet south of E. Ramon Road and approximately 2,000 feet southwest of the downstream end of Levee 2. Reach 3 would cross natural lands, private lands owned by Xavier College Preparatory High School, portions of the Preserve/Refuge, and the Pegasus Riding Academy. As noted above, the limits of land acquisition depend on the percent of the parcel crossed by the final Project alignment and the temporary construction access needs. If the existing use of any parcel impacted by the Project cannot be maintained, the entire parcel may be acquired. Although not constructed, new residential developments have been proposed south of Reach 3; however, the Project alignment is not expected to interfere with these developments should they occur.

An existing earthen berm located approximately one-half mile north of Xavier High School would also be crossed by Reach 3. This berm would be crossed where the reach transitions from a levee to a channel configuration. At the terminus of Reach 3 the channel would divert flows into an existing storm water conveyance system located on the Classic Club Golf Course before connecting to Reach 4. The transition of Reach 3 to a channel configuration is intended to minimize land use conflicts with athletic fields located at Xavier College Preparatory High School and to minimize the disruption to aeolian sand transport patterns. The channel configuration would curve around the athletic fields, whereas a levee would need to maintain a straighter alignment through the high school property to maintain storm conveyance. As described in Section 1.2 (Project History and Previous Studies), the Project was previously designed and assessed by the Corps Planning Division (Los Angeles District). During that planning process, the Corps communicated with Xavier College Preparatory High School regarding the design of Reach 3 and the high school property. The design of Reach 3 was selected because it minimizes disruptions to the high school property while providing flood protection and preserving sand migration on to the Preserve/Refuge.

The curved channel configuration would minimize disruptions to sand migration onto the Preserve/Refuge because, in comparison to a levee design, the channel would not create a vertical obstruction to sand migration (except for a short length of the Reach 3 Channel where the embankment would be approximately 3 feet high). Sand that blows into the channel or is deposited during storm events would be removed from the channel and placed on the active wind corridor for natural migration onto the Preserve/Refuge (see Section 2.2.3, Operations and Maintenance).

Storm flows leaving Reach 3 would flow into the existing stormwater conveyance system located within the Classic Club Golf Course. Section 1.2 (Project History and Previous Studies) describes the previous coordination undertaken regarding flood conveyance through the Classic Club Golf Course. It was determined that with or without the proposed Project's flood control system, the Classic Club Golf Course system has sufficient capacity to safely convey on-site and off-site flows (Tettermer & Associates, 2004). Since the time of that determination substantial development has occurred throughout the Project area. However, the flows that would be conveyed by the Project through the Classic Club Golf Course system are the same as those considered in the 2004 analysis. Sand that blows into the channel or is deposited during storm events would be removed from the channel and placed on the active wind corridor for natural migration onto the Preserve/CVNWR. This action would be done in coordination with the Sonny Bono Salton Sea National Wildlife Refuge Complex and Coachella Valley National Wildlife Refuge managers (see Operations and Maintenance, below, and SM-2 in Section 2.3).

Reach 4

Reach 4 (see Figure 2a) is comprised of an approximately 10,300-foot long (2.0-mile) incised trapezoidal channel (Reach 4 Channel). The Reach 4 Channel would range from 200 to 350 feet in width and convey stormwater flows from the southeast end of the Classic Club Golf Course and continue south then east, adjacent to the south of the existing alignment of Avenue 38. The channel would span a fallow jojoba farm and be immediately adjacent to, but not overlap with, the Preserve/CVNWR.

Avenue 38 Realignment

The Riverside County Board of Supervisors previously approved the realignment of Avenue 38 as a county project which would move Avenue 38 adjacent and south of the proposed Reach 4 Channel. Realignment of the road would occur as a component of the proposed Project, where CVWD would build two of the four proposed lanes, including shoulders and gutters. The Reach 4 Channel would terminate at Washington Street and tie into existing stormwater conveyance facilities located in the Del Webb/Sun City development (see Washington Street Crossing, below).

Washington Street Crossing

At Washington Street, the Project would include a new conveyance system to direct stormwater flows under Washington Street and into an existing stormwater conveyance system with the capacity to transmit Project-related flows (see Figure 2a). The maximum area that could be affected by this crossing is estimated to be five acres, accounting for any road realignment that may be necessary. On the downstream side of the Washington Street crossing, an existing stormwater basin (Sun City Collection Basin) would be deepened (excavate approximately 9,000 cubic yards [CY]) to accommodate flows diverted by the Project. This basin is currently landscaped and would be fully restored to conditions agreed to by the Sun City development following completion of the Project. The southbound side of Washington Street, south of the realigned Avenue 38 and just north of Las Montanas Road/Del Webb Blvd., where the current road is three lanes (one southbound and two northbound), would be widened as part of the Project to provide safe access to the relocated Avenue 38.

Floodway

The Project includes acquisition of an approximate 550-acre floodway located along the levees and in the active wind corridor between Reach 1 and Reach 3 (see Figure 2a). Development would be prohibited in this floodway to protect the wind corridor and limit disruptions to sand migration (see Figure 2c). During O&M, suitable material (e.g., fine sands) that accumulate along the levees and channels would be excavated and distributed in the floodway area for natural distribution onto the Preserve or placed in the proposed USFWS sediment disposal area.

Construction

Biological Surveys and Monitoring

Mitigation measures for the Project include pre-construction surveys, monitoring, and avoidance measures for special-status plants and wildlife. These measures would be implemented during construction and O&M phases of the Project. Under the Project ECs and MMs (see Section 2.3), CVWD would conduct pre-construction surveys and establish exclusion areas or implement other avoidance measures before beginning construction or O&M activities that have the potential to impact sensitive biological resources, including desert tortoise, CVFTL, and CVMV, and their habitat.

Invasive weeds. Noxious and invasive weeds compete with native species for space, nutrients, and water. The spread of non-native invasive plants destroys wildlife habitat and forage, threatens native and special-status plants, and increases soil erosion and groundwater loss. Invasion of Sahara mustard in aeolian sand habitat is a concern as it causes dune stabilization and reduction in native annuals and associated plant-eating arthropods. This results in reduced habitat suitability for endemic dune plants and animals, such as CVMV and CVFTL (Barrows and Murphy, 2010).

EC B-1 (Weed Abatement Program) requires implementation of a weed abatement program and Project mitigation measures would further require development of an Integrated Weed Management Plan (IWMP) to be implemented during construction and O&M phases of the Project. The IWMP would specify weed inventory and monitoring, pre-construction weed treatments, preventative measures, and control methods.

Construction Overview

Construction of the Project includes trenching and excavation to build the levees and channels, road construction and paving, relocation of sewer facilities at Avenue 38, and constructing tie-ins to existing stormwater conveyance systems.

To construct the Reach 4 Channel and Washington Street Crossing approximately 871,000 CY of material would be removed. Some of this material would be used to create soil cement for the Reach 1, 2, and 3 levees (211,000 CY), and the remainder (660,000) would be placed in sand disposal areas (described below). Additional material to construct the other levees would be provided by using native materials in the Project footprint and borrowed material from the Reach 3 Channel. Surplus material from Reach 3 Channel excavation would also be placed in sand disposal areas (66,000 CY). Cement for soil cement and concrete would be obtained from a Project batch plant to be located south of Avenue 38 or may be locally sourced by the contractor. Approximately 68 acre-feet of water would be needed to prepare the soil cement.

Asphalt and other materials would be provided by the contractor, likely from the nearest supplier. Cleared and grubbed materials, stumps, trash, and other items not suitable for fill or levee construction would be transported to the appropriate local landfill. Silt fencing or other suitable fencing would be placed around active construction areas to prevent species, including CVFTL, from entering areas where heavy equipment and machinery would be used. This temporary fencing would be removed at the end of construction.

Sand Disposal Areas. Material excavated from the Project footprint area that is not used for construction of the levees would be placed within two existing USFWS sand disposal areas (see Figure 2a and Figure 5: Proposed Sand Disposal Areas). The placement of suitable blowsand within the two sand disposal areas will occur in coordination with Sonny Bono Salton Sea National Wildlife Refuge Complex and Coachella Valley National Wildlife Refuge managers. Suitable blowsand material (approximately 100,000 CY) would be salvaged and placed at a blowsand augmentation area on the CVNWR identified by the USFWS (see Figures 2a and 5). The placement of approximately 100,000 CY of blowsand in this area would result in an approximately 8-foot sand dune. Material from this location would then be transported by wind back onto the Preserve/CVNWR to replace sand lost through wind driven erosion. See Operation and Maintenance, below, for additional information on distribution of blowsand to the Preserve/CVNWR.

Disturbance Areas. Temporary disturbance areas associated with construction of the proposed Project would be limited to those areas south of the permanent Project footprint (see Figures 2a, 3a, 3b, and 3c). Disturbance on the upstream sides (bordering the Preserve/CVNWR) would be limited to the Project's

permanent footprint extending to the limit of soil cement trench excavation (right-of-way limit), which includes a 20-foot work area for future O&M activities (see Operation and Maintenance, below).

Construction of the proposed Project would result in approximately 175.47 acres of permanent disturbance and 286.35 acres of temporary disturbance, where temporary disturbance areas are any that are beyond the permanent impact areas.

Access. During construction, existing roadways in the area would be utilized for access of personnel, vehicles, and equipment. These roads include Varner Road, Rio Del Sol Road, Sierra Del Sol, Desert Moon Drive, Via Las Palmas, East Ramon Road, Shadow Valley Drive, Avenue 38, and Washington Street, as well as local connector roads. To support operations and maintenance activities, a 12-foot patrol road will be constructed at the top of the levee and an approximate 20-foot access road will be constructed along the westside of the levees at Reach 1, 2, and 3 (see Figure 4: Levee and Channel Construction Cross-Sections). Any improvements to existing recreational-use access roads such as equestrian and hiking trails along the right-of-way within the Refuge, will be conducted in coordination with Wildlife Complex and Refuge managers.

Construction Schedule

Construction is anticipated to occur in two phases for a duration of approximately 27 months. Except as otherwise required for the safety or protection of persons or property, all construction work would be performed Monday through Friday between 7:00 a.m. and 3:30 p.m. No work would occur at night or on Saturday, Sunday, or holidays without CVWD's written consent. Construction would occur year-round.

Construction of the channels and levees would occur in phases beginning at the downstream end of the Project at the Reach 4 Channel and ending with the construction of Reach 1. Phasing is required to ensure that any storm flows that may occur during construction may flow into existing conveyance facilities. In addition, the phasing of construction would provide materials needed to create the upstream levees and soil cement.

Phase One. This initial construction phase would require approximately one year to complete and includes these major features.

- **Washington Street Crossing.** The Washington Street crossing would consist of a multi-barrel culvert under Washington Street. This would be built to direct flows from the Reach 4 Channel into existing stormwater conveyance facilities located in the Del Webb/Sun City development.
- **Stormwater Collection Basin.** The existing stormwater collection basin located at the east/downstream end of Washington Street would be deepened by up to 3 feet, to accommodate concentrated flows diverted by the proposed Project. This basin would be restored to conditions agreed to by the Sun City development concurrent with the development of other reaches.
- **Connector Facilities.** Connector facilities on the downstream end of Reach 3 would be implemented to direct flows from the Reach 3 Channel into the Classic Club Golf Course conveyance system. This would include the acquisition and redevelopment of property located adjacent and to the north of the golf course. Connector facilities would also be constructed on the upstream end of Reach 4, directing flows out of the Classic Club Golf Course conveyance system and into the Reach 4 Channel.
- **Road Improvements.** Avenue 38 would be realigned as part of the initial construction effort to avoid having to cross the Reach 4 Channel and to provide flood protection to Avenue 38. In addition, road crossings over the Reach 1 Levee at Desert Moon Drive and at Via Las Palmas would begin. The road crossings on Reach 1 would be constructed before the completion of the Reach 1 Levee.

- **Sewer Line Modifications.** Realignment of Avenue 38 would require modifications to the sewer line located within the current road alignment. Such modifications may include crossing beneath the Reach 4 Channel from Varner Road to Avenue 38 or the installation of a new sewer line situated within the realigned Avenue 38. Depending upon the alternative selected, a sewage pump station may be required.

Phase Two. The second phase of construction would require approximately one year to complete and would include the construction of the levees and channels of Reaches 1 through 3. Construction would commence at Reach 3. This would allow for excavated material from Reach 4 to be used in creating soil cement for Reaches 1 through 3. This material would be staged in the Project’s temporary disturbance area prior to the creation of soil cement. All staged materials would be protected against erosion and measures would be applied to reduce impacts to CVFTL, CVMV, and other sensitive resources. A soil cement mill would be staged onsite or within the immediate Project vicinity to create soil cement for constructing the levees.

Construction Workforce and Equipment

Construction of the proposed Project would include various inspectors and management staff throughout the duration of construction, as well as construction personnel to operate the construction equipment. Equipment and methods used during excavation and other construction activities varies with soil conditions, trench depth, terrain, and contractor preference. Typical construction equipment for the construction tasks are provided in Table 4. In addition, a temporary concrete batch plant (electric) would be constructed to support Project construction south of Avenue 38 (see Figure 2a). The cement batch plant would include a set of hoppers (containers) to hold cement and sand, mixing system, water tank, fan (for ventilation), ductwork to a baghouse (to limit dust emissions), and a bin vent filter to control emissions during pneumatic loading.

Task	Equipment
Site Preparation (staking, install BMPs, soil cement batch plant, relocate utilities and fencing)	pickups, medium-size trucks, flatbed trucks, water trucks/pulls, backhoes, excavators, compactors, loaders, graders, dozers
Washington Street Crossing	pickups, medium-size trucks, flatbed trucks, dump trucks, concrete trucks, water trucks/pulls, backhoes, excavators, compactors, loaders, graders, dozers, asphalt pavers,
Classic Club Golf Course Culvert	pickups, medium-size trucks, dump trucks, concrete trucks, water truck/pulls, backhoes, excavators, loaders, dozers, compactors, graders, asphalt pavers
Via Las Palmas Culvert	pickups, medium-size trucks, dump trucks, concrete trucks, water trucks/pulls, backhoes, excavators, loaders, dozers, compactors, graders, asphalt pavers
Desert Moon Drive Culvert	pickups, medium-size trucks, dump trucks, concrete trucks, water trucks/pulls, backhoes, excavators, loaders, dozers, compactors, graders
Reach 4 Channel	pickup trucks, medium-size trucks, dump trucks, concrete trucks, water trucks/pulls, backhoes, loaders, dozers, scrapers, compactors, graders
Reach 3 Channel	pickup trucks, medium-size trucks, dump trucks, concrete trucks, water trucks/pulls, backhoes, loaders, dozers, scrapers, compactors, graders
Reach 3 Levee	pickup trucks, flatbed trucks, dump trucks, water trucks/pulls, loaders, dozers, scrapers, compactors, graders
Reach 2 Levee	pickup trucks, flatbed trucks, dump trucks, water trucks/pulls, loaders, dozers, scrapers, compactors, graders
Reach 1 Levee Downstream of Desert Moon	pickup trucks, flatbed trucks, dump trucks, water trucks/pulls, loaders, dozers, scrapers, compactors, graders

Task	Equipment
Reach 1 Levee Upstream of Desert Moon	pickup trucks, flatbed trucks, dump trucks, water trucks/pulls, loaders, dozers, scrapers, compactors, graders
Avenue 38 Relocation	pickup trucks, medium-size trucks, flatbed trucks, dump trucks, concrete trucks, water trucks/pulls, backhoes, loaders, dozers, scrapers, compactors, graders, asphalt pavers
Washington Street Widening	pickup trucks, medium-size trucks, flatbed trucks, dump trucks, concrete trucks, water trucks/pulls, backhoes, loaders, dozers, scrapers, compactors, graders, asphalt pavers

Construction Materials

The proposed Project would require approximately 14,000 CY of concrete, 1,200 tons of reinforced steel, 93,000 tons of cement (for soil cement), 12,000 tons of asphalt cement (pavement material), and 13,000 tons of aggregate base to construct the levees and channels. Approximately 650 acre-feet of water would be needed to support construction, dust control (assuming ½-inch of water applied to active work area daily), soil moisture conditioning, and preparation of the soil cement. Additional water would be needed for structural concrete, which would be supplied by the batch plant, and is not included in the estimated water use noted above.

At this time, it is assumed that non-hazardous construction debris would be sent to Desert Recycling (27105 Sierra Del Sol, Thousand Palms, near Reach 1).

Restoration

Given the slow recovery rates of desert vegetation, it is unlikely that ecological restoration techniques can dependably establish a trend toward restoration of habitat values within the typical five-year monitoring period. Therefore, under Project mitigation measures, habitat impacts in temporary disturbance areas, as well as permanent disturbance areas, would be considered permanent habitat loss and mitigated through acquisition and protection and management in perpetuity of compensation lands, primarily in the floodway.

Temporary disturbance areas to vegetated communities on federal lands would be revegetated for erosion control and mitigation of visual impacts using native species appropriate for the area and habitat type. As stated in MM BIO-5, all restoration activities on federal lands will be conducted in coordination with Sonny Bono Salton Sea National Wildlife Refuge Complex and Coachella Valley National Wildlife Refuge managers.

Operations and Maintenance

Biological Surveys and Monitoring

As described in Section 2.4 (Proposed Action: Construction), mitigation measures for the proposed Project include pre-construction surveys, monitoring, and avoidance measures for sensitive biological resources, including desert tortoise, CVMFTL, and CVMV, and their habitat. An IWMP would specify weed inventory and monitoring, pre-construction weed treatments, preventative measures, and control methods. Mitigation measures would apply during the O&M phase of the Project, as well as the construction phase. No O&M access or activities will occur on Refuge or other federal lands.

O&M Activities

O&M activities include:

- Sand removal, distribution, or disposal;
- Adaptive management;
- Facility repair; and
- Vegetation removal.

Sand Removal, Distribution, or Disposal. To ensure that sand migration through the existing wind corridor is not disrupted and that sand dune habitat in the Preserve/CVNWR continues to be replenished, O&M activities would include the removal of excess sand which collects along the Project levees and within the Project channels. All sand removal and disposal activities will occur in coordination with Sonny Bono Salton Sea National Wildlife Refuge Complex and Coachella Valley National Wildlife Refuge managers on use of existing sediment disposal site to provide fine grain sands to the Refuge/Preserve near Reach 3 (see Section 2.3 and Figure 1).

Two types of sand removal activities would occur:

- Sand that accumulates along the levees would be removed approximately once per year and after major flood events (inspections would occur after major storm events to determine whether sediments have accumulated along the facilities).
- Sand removal from the channels will vary based on the accumulation of sand and other debris. Sand removal may be daily or periodic, such as occurring one week each month, depending upon the actual rate of sand accumulation and the frequency preferred by the CVWD or their sand removal contractor. It is anticipated that approximately 0.5 feet of sand would accumulate per year in Reach 3 and one foot per year in Reach 4. Inspections would be performed to determine the necessary frequency of sand removal activities for Project channels.

The County of Riverside currently removes sand that accumulates along Avenue 38 several times per year depending on weather conditions and storm frequency (which determine how quickly sand accumulates). The frequency of sand removal activities associated with the proposed Project would vary for levees versus channels because sand is expected to accumulate within the channels more quickly than along the levees, where most of sand would continue to be blown downwind. All Project facilities would be regularly inspected to assess the rate of sand accumulation, and sand would be regularly removed to maintain flow capacity. To maintain the Project's flow capacity, the levee and channel facilities would be cleared of accumulated sand or other material prior to major storm events and inspected immediately following large storms.

In addition to maintaining flood capacity, the regular removal of accumulated sand is important to reduce the likelihood that CVFTL colonize portions of the channels and levees. The presence of colonizing wildlife like CVFTL could hinder Project O&M activities. Sand removed from the channel would be spread within the wind corridor for aeolian transport onto the Preserve. Material deemed unsuitable for redistribution would be disposed of in an approved area or facility.

Adaptive Management. An adaptive management plan would be enacted to maximize the amount of aeolian sand transport into the Preserve (see Section 2.3, Environmental Commitments). Preserve management would continue to monitor habitat functions and dune characteristics. Resource agencies would meet with the CVWD, as needed, to assess habitat quality on the Preserve and determine if any changes to the manual transport system are required.

Facility Repair. O&M activities may include occasional excavation to rebuild or reinforce levee toe(s), and placement of new fill material or soil cement to repair damage, particularly after large storm events. Fill material required during O&M may be obtained from an existing sand and gravel mine (commercial source) near the northwest end of the Project.

Vegetation Removal. The earthen/soil portions of the levees located on the downstream/southern sides of the levee would be periodically sprayed/treated with a dust palliative (soil stabilizer) consisting of a high purity grade co-polymer emulsion to reduce wind-driven erosion and prevent the colonization of vegetation or weeds on the levees. Vegetation can degrade the structural integrity of the levee due to root penetration and is not allowed to become established on earthen flood control structures. Maintenance activities may include removal of vegetation along Project levees to provide reliable access to and along the flood control structure, and to comply with federal levee requirements. Maintenance may also include selective removal of non-native vegetation within the Project right-of-way.

Restoration

O&M impacts in temporary disturbance areas, as well as permanent disturbance areas, would be mitigated through acquisition, protection, and management in perpetuity of compensation lands, primarily in the floodway. Temporary disturbance to areas supporting native vegetation on federal lands may be revegetated for erosion control and to reduce the spread of non-native plants using only native species appropriate for the area and habitat type.

3. Affected Environment

Regulations implementing the Endangered Species Act (50 CFR § 402.02) define the environmental baseline as the past and present impacts of all federal, state, or private actions and other human activities in the Action Area. Also included in the environmental baseline are the anticipated impacts of all proposed federal projects in the Action Area that have undergone Section 7 consultation, and the impacts of state and private actions which are contemporaneous with the consultation in progress. This section describes the biological resources that occur in the Action Area. It includes a general description of federally listed and candidate species of plants and wildlife, followed by an assessment of potential effects to these resources. Information used in preparing this section was derived from the following data sources:

- State and Federally Listed Endangered and Threatened Animals of California (CDFW, 2020b);
- Special Animals List (CDFW, 2020c);
- California Natural Communities (CDFG, 2010);
- Inventory of Rare and Endangered Vascular Plants of California (CNPS, 2020);
- Consortium of California Herbaria (CCH, 2020);
- Coachella Valley fringe-toed lizard (*Uma inornata*) 5-Year Review: Summary and Evaluation (USFWS 2010);
- Coachella Valley Multiple Species Habitat Conservation Plan/Natural Community Conservation Plan Annual Monitoring Program Reports;
- Monitoring data compiled by Southern California Edison and submitted to California Public Utilities Commission during surveys and construction for the Devers to Palo Verde II Transmission Line (SCE, 2013).

- Coachella Valley Multiple Species Habitat Conservation Plan (CVAG, 2007); and
- Aerial images of Thousand Palms and surrounding areas (1994 to 2014).

3.1 Past USFWS Consultations in the Action Area

The USACE and USFWS have consulted extensively on the Project from the late 1990s through the present (2016); see Section 1.2 (Agency Coordination). In addition, the USFWS has conducted ESA consultations for the following projects located in or near the Project Action Area:

- Coachella Valley Multiple Species Habitat Conservation Plan (USFWS, 2008),
- Devers–Palo Verde No. 2 Transmission Line Project (USFWS, 2011c),
- Establishment of a Sand Relocation Site at the Coachella National Wildlife Refuge (USFWS, 2013b), and
- The Amendment to the Memo Establishment of a Sand Relocation Site at the Coachella National Wildlife Refuge (USFWS, 2017b).

3.2 Ecological Setting

3.2.1 General Description

The Project site is located near the center of the Coachella Valley and consists primarily of intersecting alluvial fans and a portion of the Indio Hills. The alluvial fans which cover most of this area were formed by sediment washing down from the Little San Bernardino Mountains and the Indio Hills. Elevations within the region range from 1,614 feet above mean sea level at Edom Hill near the northwestern end of the Indio Hills, to about 30 feet above mean sea level at the southern end near Indio.

The Coachella Valley is defined by the San Jacinto and Santa Rosa Mountains to the southwest and the Little San Bernardino Mountains to the north and northeast. The Coachella Valley slopes gradually from the San Gorgonio Pass toward the Salton Sea for about 40 miles. The Whitewater River is the main drainage course in the Coachella Valley, originating on the southern slopes of the San Bernardino Mountains and flowing in a southeasterly direction through the valley to the Salton Sea (USACE, 2000). The Coachella Valley is within the Colorado Desert (part of the larger Sonoran Desert) and the climate is hot and dry. Annual rainfall averages four inches but varies by location and from year to year. Common habitat types in the Coachella Valley include, but are not limited to, creosote bush scrub, desert saltbush scrub, desert wash, and sand dunes and sand fields (CVAG, 2007).

The Coachella Valley is influenced by infrequent seasonal heavy rains, and prevalent northwest winds (SLA, 1997). During rain events, sand and sediment is carried by flowing water (fluvial transport) from the surrounding hills and mountains and deposited in the Coachella Valley. The sand that has been deposited fluvially is often carried by the wind (aeolian transport) and deposited toward the southeast, throughout the valley. Sand that has been subject to aeolian transport is often referred to as blowsand, which is generally very fine sand that creates a loose and unstabilized surface (SLA, 1996). The combined effect of the fluvial and aeolian transport of sand creates a series of sand formations that form dynamic and continuously altering environments. These sand formations include hummocks (mounds), dunes, and sandy plains. Many plant and wildlife species in the Coachella Valley are uniquely adapted to this type of habitat.

There are four main sand transport systems in the Coachella Valley that maintain blowsand habitat. These include the Thousand Palms, Whitewater Floodplain, Willow Hole, and Snow Creek systems. Each system

is composed of sand source areas, fluvial transport zones, fluvial deposition/aeolian erosion areas, wind transport corridors, and aeolian sand deposition areas. The Project site is located within the Thousand Palms system. Sand erodes from canyons and hillsides and is deposited onto alluvial plains. Strong winds blow through the Coachella Valley from the west and pick up the sand particles. Shrubs, structures, and topographic features slow the winds near the ground surface and the sand particles drop out and accumulate into dunes and hummocks.

3.2.2 Vegetation and Landforms

The alluvial fans, sand fields, and shallow drainages present in the Study Area support a broad assemblage of native xerophytic³ vegetation and invasive non-native species. Vegetation mapping of the Study Area has been completed several times over the last 15 years, to support the 2000 EIR/EIS and for subsequent Project-related efforts. The conditions in the Study Area fluctuate due to anthropogenic disturbances (e.g., development, off-highway vehicle [OHV] use, trash dumping, etc.) and natural processes (e.g., fluvial and aeolian sand deposition and associated shifts in vegetation composition). Vegetation maps were updated in 2013 to reflect current vegetation communities. The vegetation types described in this report use the Sawyer et al. (2009) classification. Other commonly used vegetation classification manuals may use different names for similar vegetation types or define them somewhat differently. To facilitate a comparison of information in various project-related documents, Table 5 provides a list of the Sawyer et al. (2009) vegetation community names used in the EIR/EIS and the roughly equivalent Holland (1986) vegetation community names used in the 2000 EIR/EIS and the CVMSHCP/NCCP. See Figures 3a through 3c for vegetation and cover types found within the Study Area.

Reach 1

Reach 1 begins near the corner of Rio del Sol Road and Vista Chino and terminates about 0.5 miles east of Via Las Palmas. It is parallel to and north of the SCE utility corridor. Chain link fences surround multiple parcels along the reach, and a quarry on the north side of Vista Chino generates regular truck traffic along the road adjacent to the northwest end of Reach 1. Most of Reach 1 is within the CVMSHCP/NCCP-designated Thousand Palms Conservation Area, and portions of Reach 1 are on or adjacent to Reserve lands.

³ Xerophytic plants are adapted to dry conditions.

Table 5. Vegetation and Cover Types in Disturbance Areas (acres)

Vegetation Type	Reach 1		Reach 2		Reach 3		Reach 4		New Soil Deposition Site ¹	Concrete Batch Plant/ Marshaling Yard	Total	
	Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp	Temp	Temp	Perm	Temp
Abandoned Agriculture	0.00	0.00	0.00	0.00	0.00	0.00	5.12	0.65	35.99	0.00	5.12	36.64
Active Sand Dune/ Stabilized Sand Field (Desert dunes)	0.00	0.00	0.00	0.00	0.00	0.00	26.78	2.57	46.08	0.00	26.78	48.65
Asian Mustard Stand (Non-native vegetation)	0.58	0.25	0.00	0.00	17.66	1.90	7.12	0.74	0.00	0.00	25.36	2.89
Cheesebush scrub	0.00	0.00	0.00	0.00	3.62	0.84	0.00	0.00	0.00	0.00	3.62	0.84
Creosote Hummocks	0.00	0.00	0.00	0.00	0.00	0.00	32.53	0.52	51.83	37.04	32.53	89.39
Creosote Scrub	32.28	13.63	4.66	0.97	13.64	2.48	4.31	0.02	0.00	0.00	54.89	17.10
Disturbed/Developed (Ruderal)	10.18	4.10	0.00	0.00	5.59	0.97	11.40	6.27	79.50	0.00	27.17	90.84
Total	43.04	17.98	4.66	0.97	40.51	6.19	87.26	10.77	213.40	37.04	175.47	286.35

¹ - No permanent impacts anticipated at the soil deposition site

Reach 1 is located on a broad alluvial fan dominated by sparse creosote scrub and developed or disturbed (ruderal) areas (see Figure 3a: Vegetation Cover in Reach 1 and 2 Alignments). The westernmost portion of the reach includes the largest amount of abandoned agricultural land, with smaller ruderal areas near development in the central portion of the reach and adjacent to the CVWD water tank (referred to as Reservoir 4602). Unvegetated areas in this reach are generally limited to roadways and rural residential development, which also include some non-native vegetation (Asian mustard stand).

In the western portion of the reach, soils are mostly consolidated sandy and rocky alluvium with very little windblown sand on the surface. Blowsand is primarily found along road edges and at the bases of larger shrubs in this area. Illegal trash dumping and debris are prevalent across the western portion of Reach 1, especially in areas mapped as disturbed/developed (ruderal). Compared to other reaches, this reach has the highest level of habitat disturbance.

The eastern portion of Reach 1 is near a small community, and scattered residences, transmission lines, a nursery, and water tank (Reservoir 4602) are located within otherwise open creosote scrub.

Reach 2

Reach 2 is the shortest reach and is immediately north of an existing electrical substation. Vegetation along this reach consists of creosote scrub and nonnative Asian mustard stands (see Figure 3a) with silty soils and no loose windblown sand. Several washes are in this reach. Dirt roads cross the area, including roads used to access the power lines associated with the substation. Reach 2 is within the CVMSHCP/NCCP-designated Thousand Palms Conservation Area and the northwestern end of Reach 2 is near Reserve lands.

Reach 3

Vegetation and soil conditions vary greatly along this reach. Cheesebush and creosote scrub with windblown sand hummocks occurs over the majority of the alignment from west to east. There is a large ruderal (i.e., weedy) component in the southeastern portion of Reach 3 dominated by Asian mustard stands (see Figure 3b: Vegetation Cover in Reach 3). Electrical distribution and subtransmission lines are present. Localized areas of dry, cracked silty soil indicate depressions that experience brief episodes of ponded water after stormflow. There is no wetland vegetation present in these depressions, and they do not possess the characteristics of vernal pools. Soils are hard packed in some areas, and the western portion of this reach contains complex topography with several incised channels, some over six feet deep. There is evidence of periodic vegetation clearing and grading. OHV use and illegal dumping is common in this portion of the reach. Soils vary from loose, windblown sand dunes to compacted areas. Weeds are present, including non-native annual grasses and mustards, and a few scattered tamarisk groves (*Tamarix aphylla*), also known as athel are located north and east of Xavier College Preparatory High School. Evidence of bonfires and illegal dumping were observed near the center of the reach. This area has heavy OHV use. Reach 3 crosses a detention basin on the northern portion of the Xavier College Preparatory High School property. Sand dunes occur just to the north of the Reach. About half of Reach 3 is within the MSHCP-designated Thousand Palms Conservation Area, the northwestern end of Reach 3 is on or adjacent to Reserve lands, and a small portion of Reach 3 is within the CVNWR.

Reach 4

The west end of Reach 4 crosses a former jojoba farm dominated by Asian mustard stands near the I-10 freeway. This reach is adjacent to the southern boundary of designated conservation lands but it is not located within the Thousand Palms Conservation Area, Reserve lands, or the CVNWR. Soils are sandy,

windblown dunes. North-south windrows of tamarisk and other weeds are regularly spaced from Reach 4 south to Varner Road, and large sandy berms have formed along the windrows. These open areas will be used to stockpile excess spoils from the realignment of Avenue 38 and from construction of the channel. Open sandy flats occur between the berms, supporting creosote scrub and hummocks in the western end of the reach and disturbed/developed land (ruderal) in the eastern half (see Figure 3c: Vegetation Cover in Reach 4). Trash is scattered throughout this area, and it is heavily infested with African mustard. OHV use is common in the flats between the large sand berms. To the north of Avenue 38, in the CVNWR, sand dunes are more extensive, and less disturbance is evident than on the south side where Reach 4 would be constructed. Compared to other reaches, this reach has the lowest level of habitat disturbance and the best dune habitat. Industrial development is located just south of the eastern end of the reach.

Downstream

The area downstream of the Project site consists of interspersed developed and undeveloped areas. Some of the undeveloped habitat is in isolated patches surrounded by development. Development includes housing tracts, golf courses, and industrial facilities. Interstate-10 is located southwest of the Project site (see Figure 2a). Downstream habitat is similar to adjacent reaches. An area of approximately 178 acres south of Reach 4 would be used for storage of spoils from the Project (see Figure 2a).

Downwind

The prevailing winds are from the northwest to the southeast and support aeolian sand habitat in the CVNWR. Downwind areas have similar habitat as the adjacent reaches, with large areas of dune and sand field habitat, particularly near Reach 4.

Floodway

The Reach 1 and Reach 2 levees will direct water into a 550-acre floodway area between Reaches 1 and 3. Habitat in the floodway is similar to adjacent reaches.

Invasive Weeds

For purposes of this document, “weeds” includes noxious weeds and any other weed or pest plant identified on weed lists of the California Department of Food and Agriculture or the California Invasive Plant Council. The term “noxious weeds” includes all plants formally designated as such by the Secretary of Agriculture or other responsible State official. These species usually possess one or more of the following characteristics: “aggressive and difficult to manage, poisonous, toxic, parasitic, a carrier or host of serious insects or disease, and being non-native or new to or not common to the United States or parts thereof” (USDA, 2011).

Surveys within the Study Area identified 20 non-native plant species. Ten of these are considered invasive weeds by the California Invasive Plant Council (Cal-IPC). Table 6 lists the noxious and invasive plant species that were identified in the Study Area during surveys.

Invasion of Sahara mustard in aeolian sand habitat is of particular concern as it causes dune stabilization and reduction in native annuals and associated plant-eating arthropods. This results in reduced habitat suitability for endemic dune plants and animals, such as Coachella Valley milk-vetch and Coachella Valley fringe-toed lizard (Barrows and Murphy, 2010).

Table 6. Invasive Plant Species Identified in the Study Area

Scientific Name	Common Name	Threat Level ¹
<i>Brassica tournefortii</i>	Sahara mustard	High
<i>Cynodon dactylon</i>	Bermuda grass	Moderate
<i>Erodium cicutarium</i>	Red-stemmed filaree	Limited
<i>Eucalyptus sp.</i>	Eucalyptus, gum	Limited or Watch, depending on species
<i>Salsola tragus</i>	Russian thistle	Limited
<i>Schismus arabicus</i>	Mediterranean schismus	Limited
<i>Schismus barbatus</i>	Mediterranean schismus	Limited
<i>Sisymbrium irio</i>	London rocket	Limited
<i>Tamarix aphylla</i>	Athel	Limited
<i>Tamarix ramosissima</i>	Tamarisk	High

1 - Source: Cal-IPC, 2020.

High – severe ecological impacts, moderate to high rates of dispersal and establishment, widely distributed.

Moderate – substantial but generally not severe ecological impacts, moderate to high rates of dispersal but establishment dependent on ecological disturbance, distribution ranges from limited to widespread.

Limited – minor ecological impacts, low to moderately invasive, distribution limited but may be locally problematic.

3.2.3 Wildlife

Habitat in the Study Area provides microhabitat conditions for a wide variety of terrestrial and other invertebrates. Some of the orders identified in the Study Area include Hemiptera (true bugs), Coleoptera (beetles), and Diptera (flies), but common invertebrates were not identified to species. Although not detected during surveys, several species of air breathing land snails including shoulderband snails are known from desert regions of San Bernardino and Riverside counties. Southern California shoulderband snail (*Helminthoglypta tudiculata*) is known from the region and the Coachella Valley Jerusalem cricket (*Stenopelmatus cahuilensis*) may be present on the Project alignment.

There is no aquatic habitat in the Study Area and no fish or amphibians were observed or are expected to occur.

Common reptiles observed in the Study Area in both disturbed and natural areas include desert iguana (*Dipsosaurus dorsalis*), zebra-tailed lizard (*Callisaurus draconoides*), western whiptail (*Aspidoscelis tigris tigris*), sidewinder (*Crotalus cerastes*), desert spiny lizard (*Sceloporus magister uniformis*), and side-blotched lizard (*Uta stansburiana*). Although not observed, several other common reptiles are likely to occur in the Study Area.

Common bird species detected within or in the immediate vicinity of the Study Area include verdin (*Auriparus flaviceps*), common raven (*Corvus corax*), greater roadrunner (*Geococcyx californianus*), great horned owl (*Bubo virginianus*), turkey vulture (*Cathartes aura*), Say's phoebe (*Sayornis saya*), northern rough-winged swallow (*Stelgidopteryx serripennis*), house finch (*Haemorhous mexicanus*), Costa's hummingbird (*Calypte costae*), American kestrel (*Falco sparverius*), lesser nighthawk (*Chordeiles acute-pennis*), killdeer (*Charadrius vociferous*), rock dove (*Columba livia*), mourning dove (*Zenaida macroura*), Cassin's kingbirds (*Tyrannus vociferans*), western kingbird (*Tyrannus verticalis*), northern mockingbird (*Mimus polyglottos*), cactus wren (*Campylorhynchus brunneicapillus*), cliff swallow (*Petrochelidon pyrrhota*), house sparrow (*Passer domesticus*), and Gambel's quail (*Callipepla gambelii*).

Nesting red-tailed hawks (*Buteo jamaicensis*) and verdins were observed during surveys. Many other bird species may use the site either as wintering or seasonal breeding habitat; migrants may use the site as temporary resting or foraging habitat.

The distribution of mammals in the Study Area is associated with the presence of such factors as access to perennial water, topographical and structural components (i.e., rock piles, and vegetation) that provide cover and support prey base, and the presence of sui7 soils for burrowing mammals. Common mammals or their sign observed during surveys include white-tailed antelope squirrel (*Ammospermophilus leucurus*), black-tailed jackrabbit (*Lepus californicus deserticola*), desert cottontail (*Sylvilagus audubonii*), and coyote (*Canis latrans*).

4. Federally Listed Species and Critical Habitat

Table 7 summarizes the three federally listed species with the potential to occur in the Action Area.

Species Status	Range and Preferred Habitat Occurrences in Project Study Area	Surveys^{1, 2, 3}
Coachella Valley milk-vetch <i>Astragalus lentiginosus</i> <i>var. coachellae</i> E / CVMSHCP/NCCP	Endemic to Coachella Valley and primarily found on loose aeolian or alluvial sands on dunes or flats, and along disturbed margins of sandy washes. One individual was observed in Reach 4 on the north side of Avenue 38 during 2010 surveys. Not found at this location in 2013 or 2016 but may be due to poor rainfall. Suitable habitat in Reaches 3 and 4.	Focused survey and habitat assessment June 29-July 1, 2003. Habitat assessment May 2010. Special-status plant surveys April 29-30, 2010; March 26-28, 2013; and May 10-12, 2016. Multiple reconnaissance surveys from 1997 through 2019.
Critical habitat: Coachella Valley milk-vetch	Portions of the Project site are within designated critical habitat, although these areas support the sand transport system and are not expected to be occupied habitat (Figure 6).	Review of UCR CVMSHCP Annual Report 2019, 2020 for additional data on presence and population trends around the Action Area (UCR 2019; 2020).

Table 7. Species Range, Habitats, and Surveys

Species Status	Range and Preferred Habitat Occurrences in Project Study Area	Surveys ^{1, 2, 3}
<p>Desert tortoise <i>Gopherus agassizii</i> T / CVMSHCP/NCCP</p>	<p>Mojave and Sonoran Deserts in southern California, southern Nevada, Arizona, southwestern tip of Utah, Sonora and northern Sinaloa in Mexico. Habitats from creosote bush scrub on flats and slopes at lower elevations to rocky slopes in blackbrush scrub and juniper woodland ecotones at higher elevations. Occurs most commonly on gently sloping terrain with sandy-gravel soils, herbaceous plants, and sparse cover of low-growing shrubs.</p> <p>The Project site is within the known range, although desert tortoise is very uncommon on floor of Coachella Valley. Suitable habitat occurs in all reaches, although much is only marginally suitable. Nearest documented occurrence is just east of the Project site, within the Thousand Palms Conservation Area. Several unoccupied potential burrows found in Reach 1 during surveys. No live tortoises or other tortoise sign observed. Desert tortoise has a moderate potential for occurrence in the Study Area, although, if present, it would be found only in low numbers.</p>	<p>Habitat assessment May 2010.</p> <p>Multiple reconnaissance surveys from 1997 through 2016.</p> <p>Based on consultation with CDFW, USFWS, and CVAG (Coachella Valley Association of Governments, for CVMSHCP/NCCP), it was determined that protocol surveys for desert tortoise were not required for the Project.</p> <p>Review of UCR CVMSHCP Annual Report 2019, 2020 for additional data on presence and population trends around the Action Area (UCR 2019; 2020).</p>
<p>Critical habitat: Desert tortoise</p>	<p>There is no designated critical habitat in the Action Area.</p>	
<p>Coachella Valley fringe-toed lizard <i>Uma inornata</i> T / CVMSHCP/NCCP</p>	<p>Endemic to Coachella Valley and found in fine blowsand habitat and sandy inter-dune areas of aeolian sand hummock habitat.</p> <p>Observed in Reaches 3 and 4 during surveys in 2010 and in Reach 4 during 2015, also observed in 1997 and 2003. Suitable habitat in Reaches 3 and 4.</p>	<p>Focused survey and habitat assessment June 29-July 1, 2003.</p> <p>Habitat assessment May 2010; April 8, 2013.</p> <p>Focused surveys June 20, 2010; March 26-28, 2013.</p> <p>Multiple reconnaissance surveys from 1997 through 2019.</p>
<p>Critical habitat: Coachella Valley fringe-toed lizard</p>	<p>Most of the Action Area is within or adjacent to designated critical habitat. Some of the critical habitat on the Project site (Reaches 1 and 2) supports the sand transport system and is not expected to be occupied habitat (Figure 6).</p>	<p>Review of UCR CVMSHCP Annual Report 2019, 2020 for additional data on presence and population trends around the Action Area (UCR 2019; 2020).</p>

E = Federally Endangered

T = Federally Threatened

CVMSHCP/NCCP = CVMSHCP/NCCP covered species

1 - Reconnaissance surveys = general surveys to document biotic and abiotic conditions.

2 - Focused surveys = surveys conducted to identify a specific species or group of species.

3 - Protocol surveys = surveys conducted in accordance with an accepted standard protocol for a particular species.

5. Effects of the Proposed Action and Determination Statements

This section discusses the action and determination statements for those species that are listed by the USFWS as either threatened, endangered, or candidate species and for designated critical habitat. Species included in this section are protected under the Endangered Species Act of 1973 (*Federal Register* 41(110):22915-22922, June 7, 1976), as amended (P.L. 94-325, P.L. 94-359, P.L. 95-212, P.L., 95-632, P.L. 96-159, P.L. 97-304). Section 3 of this legislation defines an endangered species as a species that is “...in danger of extinction throughout all or a significant portion of its range...” and a threatened species as a species that is “likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.”

For Federally listed species, direct effects in this document are those effects which would lead to the “taking” of an individual of those species analyzed in this document and as defined in Section 9 and/or Section 10 of the Endangered Species Act of 1974, as amended (Act). Section 9 of the Act prohibits take (i.e., to harass, harm, pursue, hunt, wound, kill, etc.) of listed species of fish, wildlife, and plants without special exemption. “Harm” is further defined as the performance of an act that kills or injures wildlife and includes significant habitat disturbance or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns such as breeding, feeding, or sheltering. “Harass” is further defined as actions that create the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, and sheltering.

Critical habitat is the specific areas within the geographic area, occupied by the species at the time it was listed, that contain the physical or biological features that are essential to the conservation of endangered and threatened species and that may need special management or protection. Critical habitat may also include areas that were not occupied by the species at the time of listing but are essential to its conservation (USFWS, 2017a).

Indirect effects are those that are caused by the Proposed Action and are later in time, but still are reasonably certain to occur (50 CFR 402.02).

Cumulative effects can be described as the effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the Action Area of the Federal action subject to consultation (50 CFR 402.02).

The discussions of direct, indirect, and cumulative effects are described for the Action Area as a whole. Where appropriate, these impacts are separated into impacts occurring within the covered private lands under the MSHCP/NCCP, which are being mitigated within the context of that plan, and impacts occurring on federal land.

5.1 Federally Listed Plants

5.1.1 Coachella Valley Milk-vetch

Status

Coachella Valley Milk-vetch (*Astragalus lentiginosus var. coachellae*). Federal Status: Endangered; State Status: Not Listed; CVMHCP/NCCP: Covered. The CVMV was federally listed as endangered by the

USFWS on October 6, 1998 (63 FR 53596). Critical habitat was designated on February 13, 2013 (78 FR 10450).

Species Description

CVMV is an annual or short-lived perennial herb. Depending on weather, plants may persist through the summer dry season to the following growing season. It may flower as early as February or as late as May (Wojciechowski and Spellenberg, 2012), depending on rainfall and temperature. During drought years, its seed may not germinate and established perennial plants may not survive. Occupied habitat is re-established from dormant seed during subsequent years of greater rainfall. It reportedly requires at least one winter storm producing an inch or more of rain to sprout (L. LaPre, USDI Bureau of Land Management, personal communication).

This species is endemic to the Coachella Valley and grows primarily on loose aeolian or fluvial sands on dunes or flats, and along disturbed margins of sandy washes.

Population Trends and Threats

There were less than 25 known occurrences at the time of listing in 1998. Additional occurrences have been identified, probably due to increased survey efforts, but the trend of habitat loss and degradation has continued. Development has replaced occupied habitat and altered the sand transport system that maintains habitat for CVMV; the USFWS estimates that CVMV has decreased since listing due to substantial losses of suitable habitat (USFWS, 2009b). Other threats include off-highway vehicles (CNPS, 2020) and degradation and loss of habitat due to invasive non-native plants, such as Sahara mustard (USFWS, 2009b).

Critical Habitat

Portions of the Action Area are within designated critical habitat, although these areas support the sand transport system and are not expected to be occupied by CVMV (see Figure 6: Critical Habitat).

Primary Constituent Elements (PCEs) are those physical and biological features of a landscape that a species needs to survive and reproduce. Each species has a unique set of PCEs related to the natural history of the organism. The PCE specific to CVMV is sand formations associated with the sand transport system in Coachella Valley (USFWS, 2013a). These sand formations have the following features:

- Active sand dunes, stabilized or partially stabilized sand dunes, active or stabilized sand fields (including hummocks), ephemeral sand fields or dunes, and fluvial sand deposits on floodplain terraces of active washes.
- Found within the fluvial sand depositional areas, and the aeolian sand source, transport, and depositional areas of the sand transport system.

Sand originates in the hills surrounding Coachella Valley and alluvial deposits at the base of the Indio Hills, which is moved into the valley by fluvial (water) transport and through the valley by aeolian (wind) transport. The fluvial sand depositional areas and the aeolian sand source, transport, and depositional areas of the sand transport system are within the area occupied by CVMV, but the fluvial sand transport areas are outside the area occupied by CVMV (USFWS, 2013).

The features essential to the conservation of CVMV may require special management or protection to reduce threats from development, non-native plants, OHV use, groundwater pumping, and other activities that may cause alteration of stream flow (USFWS, 2013).

Current Status of the CVMV in the Action Area

Multiple biological surveys have been done in the Study Area from 1997 through 2019, including habitat assessments and focused surveys for CVMV (see Table 7).

One individual was observed in Reach 4 on the north side of Avenue 38 during 2010 surveys. No CVMV were found at this location in 2013, 2016, or 2019 but this may have been due to poor rainfall. There is suitable habitat for CVMV in Reaches 3 and 4, and potentially south of Avenue 38 (UCR 2020). In 2020, one additional CVMV was observed within the Action Area, located approximately 0.35 miles (570 m) southeast of Reach 3 within the Coachella Valley National Wildlife Refuge (Calflora, 2020). Portions of the Action Area are within designated critical habitat, although these areas are not expected to support the large occurrences of the plants themselves. These areas were designated as critical habitat to protect sand transport functions, rather than occupied habitat (see Figure 6).

Direct Effects: Construction of the proposed Action will result in permanent impacts to approximately 175.47 acres of natural vegetation, disturbed areas, and dune communities. Approximately 286.36 acres of these communities will be subject to temporary disturbance. Potential habitat for Coachella Valley milk-vetch was observed in portions of Reaches 3 and Reach 4, generally in areas mapped as high or moderate suitability for Coachella Valley fringe-toed lizard (see Figures 7a through 7c: Coachella Fringe-toed Lizard Habitat). Impacts to high, moderate, and low-quality habitat for CVFTL are discussed in Section 5.2.2 (Table 8, below).

Habitat in these areas could support CVMV however only one plant was detected on Reach 4 on the north side of Avenue 38. Most of this habitat is located along disturbed road edges or areas that are currently subject to disturbance from off highway vehicle use, illegal dumping, the placement of lawn clippings, and existing maintenance operations (i.e., sand removal). Most of Reach 3 span disturbed areas including an access road and ruderal field before entering the Classic Club golf course. Similarly, most of Reach 4 would be in the present alignment of Avenue 38. Construction would affect portions of the dunes immediately adjacent to Avenue 38 but would not extend into the large dunes located within the Preserve. Most of the habitat loss would occur south of Avenue 38 where sand fields, and dunes also occur. Although unlikely, this region south of Avenue 38 has the potential to support CVMV and CVFTL. Construction of the Project and the placement of fill in these areas would not impact the large dunes in this area. Soil would be placed in the flat areas and covered with fines.

Potential direct effects to CVMV, if it occurs on the site during construction, would be unlikely to affect more than a few individual plants due to very limited area of occupied habitat in the Study Area. Construction and O&M of the Project could directly affect CVMV and its habitat, should it occur on or near the Project site or downstream or downwind of the Project site or in the floodway, by trampling or crushing plants with heavy equipment, vehicles, or foot traffic; loss or degradation of habitat; fugitive dust; release of hazardous materials; disruption of soil seed bank; sand compaction or other habitat effects that may prevent seeds from germinating or becoming established.

Impacts to Designated Critical Habitat

Construction of the Project would result in the permanent loss of 11.01 acres of designated critical habitat for CVMV and temporary disturbance to 3.31 acres (see Figure 6 and Table 8).

Of this total, federal lands comprise 6.44 acres of permanent disturbance and 0.65 acres of temporary disturbance to designated Critical Habitat for the CVMV.

Most of these areas are not expected to support the plants but were designated as critical habitat to protect sand transport functions rather than occupied habitat (see Section 3.6.1.4).

Table 8. Project Affects to Coachella Valley Milk Vetch Designated Critical Habitat (acres)¹

Location	Temporary	Permanent	Total
Reach 1	2.65	4.47	7.12
Reach 2	0.00	0.00	0.00
Reach 3	0.66	6.54	7.28
Reach 4	0.00	0.00	0.00
New Soil Deposition	0.00	0.00	0.00
Totals	3.31	11.01	14.32

1 - All CVMV critical habitat is within CVFTL critical habitat

The CVMV is a covered species under the CVMSHCP/NCCP/NCCP. Direct impacts to this species is considered a covered activity and mitigated through participation in the CVMSHCP/NCCP/NCCP.

Direct effects to CVMV on federal lands would be avoided or minimized through implementation of Project ECs (Section 2.3) and Mitigation Measures BIO-1 through BIO-9. CVMV is generally dependent on aeolian sand habitat; thus, ECs and mitigation measures (EC SM-1 and SM-2 and Mitigation Measure SM-1 and SM-2) related to sand migration would contribute to overall mitigation of impacts to CVMV.

Indirect Effects: Project-related introduction or spread of invasive species could indirectly affect CVMV. Non-native invasive plants that become established in a new area may displace native species (including special-status species or plants that provide food or cover for special-status wildlife), alter natural habitat structure, change the edaphic (soil-related) and hydrological conditions, and increase wildfire frequency (Zouhar et al., 2008; Lovich and Bainbridge, 1999). Invasive weeds also stabilize sand fields and dunes and degrade habitat for sand-dependent special-status species. Invasive weeds can create such an unfavorable environment for wildlife that associated, mutualistic species necessary for native plant life cycles, such as seed dispersers, fossorial mammals, or pollinators, are lost from the area. These plants are considered “weeds” or “pest plants” in natural landscapes (Bossard et al., 2000). Weeds are defined here to include any species of non-native plants identified on the weed lists of the California Department of Food and Agriculture or the California Invasive Plant Council.

Invasive weeds generally spread most readily in disturbed, graded, or cultivated soils, including soils disturbed by construction equipment. Construction and O&M activities could result in soil disturbance that could introduce new noxious weeds to the Project site. New introductions occur when seeds are inadvertently introduced, most often with mulch, hay bales, or wattles used for erosion control, or when they are transported on construction equipment or tires from off-site areas. Many invasive non-native species are adapted to and promoted by soil disturbance. Once introduced, they can out-compete native species because of minimal water requirements, high germination potential, and high seed production. Weeds can become locally dominant, representing a serious threat to native desert ecosystems (Lathrop and Archbold, 1980; Beatley, 1966).

Weeds are present throughout the Project site; Reach 4, in particular, is heavily infested with Sahara mustard. Several other invasive weeds were also identified on the Project site, including Mediterranean grass (*Schismus* spp.) and Russian thistle (*Salsola tragus*).

Other potential indirect impacts include alterations to upstream or downstream hydrology leading to alteration of habitat; and interference with fluvial and aeolian sand transport.

The sediment transport system that creates the aeolian dunes and sand fields in the Coachella Valley takes sand from upwind source areas (fluvial deposits on alluvial fans) and transports it to the southeast via strong winds moving along a distinct corridor (see Figure 2c). The entrained sediment travels to depositional areas where wind, topography, and other conditions promote the deposit and accumulation of sand (USGS, 2002). Sand transport in the Coachella Valley maintains and replenishes habitat for endemic sand-dependent plant and wildlife species, such as CVMV.

Construction of the Project is not expected to adversely affect the wind corridor and may result in beneficial effects overtime by trapping sediment that would otherwise be lost to the system as storms carry blowsand out of the wind corridor along the many drainages crossed by the levees. As compared to current conditions, this diversion of flow and resulting fluvial transport has the potential to increase the supply of sand moving into the wind corridor (Lancaster, 2015). In summary, the proposed Project will increase sand supply by 9 to 14 percent, mainly as a result of the diversion of water and sediment to the east and southeast to the primary sand deposition area by the levee and channel of Reach 1 (See Section 4.5 Sand Migration). Similarly, blowsand trapped in the levees or channels would be periodically removed and placed in the wind corridor above the Preserve.

As a part of the proposed project, CVWD would acquire approximately 550 acres of the floodway located along the levees and in the active wind corridor between Reach 1 and Reach 3. Land acquisition in the floodway would be managed and maintained as habitat for special-status species (e.g., as aeolian sand habitat or sand transport area). In addition, during Project O&M, the CVWD would transport sand removed from the project facilities (accumulated along the levees and channels) to the wind corridor upwind of suitable aeolian sand habitat, for aeolian transport onto the Preserve. These two components of the proposed Project would serve to protect and manage aeolian sand habitat for CVMV. The placement of the levee and channels may also hinder OHV use in many locations particularly in Reach 3 where OHV use is common along the western edge of the Refuge. By blocking the dirt road in this location, it may reduce vehicle traffic in areas that could support plants and reduce impacts to portions of the Thousand Palms Conservation Area.

Indirect effects to CVMV would be avoided or minimized through a series of actions as described under Direct Impacts, above.

Cumulative Effects: Cumulative effects are addressed in Section 5 of the EIR/EIS, including a list and map of cumulative projects and their locations. With regard to biological resources, including CVMV, all projects are within the CVMSHCP/NCCP area, subject to its terms and conditions. The CVMSHCP/NCCP mitigates the impacts of cumulative development throughout the Coachella Valley through coordinated habitat set-aside and management. Any potential take of CVMV or adverse modification of critical habitat, would be covered through the CVMSHCP/NCCP. Therefore, adverse cumulative effects are not anticipated.

Determination: Construction and O&M activities of the Proposed Action may affect individual CVMV should they occur within the construction footprint on federal lands. However, if present this is expected to be limited to only a few individuals. The action will affect designated critical habitat for CVMV, but with the implementation of the Project's mitigation measures and environmental commitments the Project would not adversely modify CVMV critical habitat. Most of the critical habitat that would be disturbed by the Action is not occupied by CVMV but has been designated because it contributes to the aeolian and hydraulic transport of fine sands to the Preserve. More importantly the placement of the levees will not disrupt the wind corridor and is expected to result in long term beneficial effects to sand transport in the region.

Rationale:

- Impacts to CVMV on private lands are mitigated through participation in the CVMSHCP/NCCP.
- Most of the project disturbance area on private lands do not support habitat or occurrences of the CVMV.
- One CVMV was observed in Reach 4 in 2010 and there is suitable habitat for CVMV in Reaches 3 and 4.
- Portions of the federal Action Area are within designated critical habitat. These areas support the sand transport system and are not expected to be occupied by CVMV.
- ECs and mitigation measures would require pre-construction clearance surveys, biological monitoring, avoidance of CVMV where possible, and off-site compensation for habitat loss. ECs and mitigation measures would also require avoidance and minimization of impacts to sand and sand transport.
- ECs and mitigation measures would require implementation of an Integrated Weed Management Plan Project to remove and limit the spread of nonnative and invasive plant species.
- Project design would not disrupt aeolian sand transport. Implementation of the proposed Action would result in increase of sand transport to the Refuge.
- ECs and mitigation measures would minimize or mitigate interference with fluvial sand transport.

Implementation of the Proposed Action is not expected to result in a change in population size of CVMV or affect the viability of the species in this area or result in adverse modification of critical habitat.

5.2 Federally Listed Wildlife

5.2.1 Desert Tortoise

Status

Desert Tortoise (*Gopherus agassizii*). Federal Status: Threatened; State Status: Threatened; CVMSHCP/NCCP: Covered. The Mojave population of desert tortoise was federally listed as threatened by the USFWS on April 2, 1990 (55 FR 12178) after an initial emergency listing as endangered on August 4, 1989 (54 FR 32326). The Mojave population includes those animals living north and west of the Colorado River and includes all wild desert tortoises in California (USFWS, 1990). Critical habitat for the desert tortoise was designated on February 8, 1994 (59 FR 5820). The desert tortoise was State listed as threatened in 1989.

Species Description

The desert tortoise is an herbivorous reptile that occurs in the Mojave and Sonoran Deserts in southern California, southern Nevada, Arizona, and the southwestern tip of Utah, as well as Sonora and northern Sinaloa in Mexico. The designated Mojave population of the desert tortoise includes those animals living north and west of the Colorado River in the Mojave Desert of California, Nevada, Arizona, and southwestern Utah, and in the Sonoran (Colorado) Desert in California (USFWS, 2011a). Desert tortoises east and south of the Colorado River are now recognized as a distinct species, Morafka’s desert tortoise (*G. morafkai*).

The desert tortoise occupies a variety of habitats from flats and slopes, typically characterized by creosote bush scrub at lower elevations, to rocky slopes in blackbrush scrub and juniper woodland ecotones (transition zones) at higher elevations. Tortoises occur most commonly on gently sloping terrain with sandy-gravel soils and where there are herbaceous (non-woody) plants and sparse cover of low-growing

shrubs. Soils must be friable (easily crumbled) enough for digging burrows, but firm enough so that burrows do not collapse.

During the winter, desert tortoises will opportunistically use burrows, small caves, rock and caliche crevices, or rock overhangs for cover. Hatchling desert tortoises use abandoned rodent burrows for daily and winter shelter (USFWS, 2011a). Desert tortoises spend much of their lives in burrows, even during their seasons of activity. In late winter or early spring, they emerge from over-wintering burrows and typically remain active through fall. Activity decreases in summer and is often crepuscular during the hottest times. Tortoises often emerge after summer rainstorms. Activity and movement is generally influenced by temperature and precipitation, which correlate with food and water resources. Extreme high and low temperatures and periods of drought typically result in reduced tortoise activity (Peterson, 1996). Mating occurs during spring and fall. Tortoises are long-lived and grow slowly, requiring 13 to 20 years to reach sexual maturity [at approximately 180mm midline carapace length (MCL)]. Eggs are generally laid in friable soil near burrow entrances between April and June and occasionally September and October. Eggs hatch within three to four months (Rostal et al., 1994).

Tortoises are found most often on gentle slopes with sandy-gravel soils. Soils must be appropriately soft for digging burrows, but firm enough so that burrows do not collapse (Anderson et al., 2000). Annual forbs and grasses constitute their primary food sources. Current research has suggested that plant species that have high potential for potassium excretion (high-PEP) may be critical to the diet of desert tortoise (Oftedal, 2002; Oftedal et al., 2002). Excess potassium can be detrimental to the health of tortoises. When excreting potassium salts from their bladder, tortoises risk expelling valuable water and protein in the process.

Desert tortoises occupy home ranges, which are generally defined as the area traversed while carrying out a range of normal activities (e.g., foraging and mating) (USFWS, 2011a). The size of their home ranges can vary with respect to sex, geographic location, substrate, topography, and climate. Tortoises are philopatric (tending to remain in a particular area), establishing home ranges between 15 and 45 hectares (Barrett, 1990; O'Connor et al., 1994; Harless et al., 2009) depending on region. Home ranges of females are generally smaller than those of males (Duda et al., 1999). Some tortoises have been known to travel great distances, although these movements may occur outside their usual home range (Berry, 1986).

Population Trends and Threats

At the time the desert tortoise was listed in 1990, available data indicated that populations were declining (USFWS, 2010a). Monitoring since that time shows that the downward trend in populations identified at the time of listing is ongoing, but no significant changes in the distribution of the species have been documented (USFWS, 2010a; 2011a).

Threats to the desert tortoise include degradation and loss of habitat, the spread of non-native invasive plants, disease, coyote or feral dog predation, raven predation on juvenile tortoises, collection for the pet trade, and direct mortality and crushing of burrows by OHVs.

Critical Habitat

The federal Action Area is not within designated critical habitat for desert tortoise. The nearest critical habitat for desert tortoise is located over 7 miles to the east of the Project site (USFWS, 2020).

Current Status of Desert Tortoise in the Action Area

The Action Area lies within the known range of the desert tortoise, although desert tortoises are very uncommon on the floor of the Coachella Valley, including the Project site and surrounding area. The CVMSHCP/NCCP/NCCP habitat models for desert tortoise do not include the Project site. Suitable habitat occurs in all the reaches, although much of this habitat is only marginally suitable due to fine sandy soil that will not support burrows, proximity to development and roads, and OHV use.

The nearest documented occurrence of desert tortoise is just east of the Action Area, within the Thousand Palms Conservation Area, where they have been observed infrequently (CDFW, 2020a). Several burrows which may have been unoccupied desert tortoise burrows, but could not be definitively attributed to desert tortoise, were found in the Reach 1 portion of the Action Area during reconnaissance surveys. No live tortoises, carcasses, scat, tracks, eggshell fragments, or other tortoise sign was observed. Desert tortoise has a moderate potential for occurrence in the Action Area, although, if present, it would be found only in low numbers.

Direct Effects: Construction and O&M of the Project could directly affect desert tortoise and its habitat, should tortoises occur on or near the Project site or downstream or downwind of the Project site or in the floodway. The primary impacts would be in the form of permanent habitat loss in the footprint of the levees. Additional direct impacts could result from mortality due to collisions with vehicles or heavy equipment, falling into or being trapped within channels, harassment due to handling or relocation of tortoises, crushing of burrows, fugitive dust, or release of hazardous materials; alterations to upstream or downstream hydrology leading to alteration of habitat (e.g., removing surface or soil water source, or causing inundation of an upland species occurrence); and increased noise and disturbance.

To avoid and minimize impacts to desert tortoise, CVWD would implement Project ECs (Section 2.3) and Mitigation Measures BIO-1 through BIO-8, BIO-10, BIO-12, and BIO-13.

Mitigation Measure BIO-12 (Conduct Desert Tortoise Surveys, Monitoring, and Avoidance) requires surveys for desert tortoise and monitoring of construction by a qualified biologist. It further requires that desert tortoises found within work areas be allowed to leave on their own or be relocated out of harm's way by an authorized and permitted biologist. Additionally, Project personnel would be required to check for desert tortoises before moving vehicles or equipment. This measure would avoid and minimize mortality of desert tortoise by ensuring that a qualified biologist is on-site during construction and that work areas have been surveyed for the presence of desert tortoise, and by relocating any individual found within a work area or allowing it to leave on its own. Desert tortoises may shelter in the shade of vehicles or equipment, and this measure would avoid and minimize mortality of desert tortoise by requiring vehicles and equipment be checked for desert tortoise before moving.

Indirect Effects: Indirect impacts to desert tortoise could include the introduction and spread of invasive weeds, providing predator subsidies, and increased human presence, including OHV use. Indirect effects to desert tortoise would be avoided or minimized through a series of actions as described under Direct Impacts, above.

Mitigation Measure BIO-13 (Prepare and Implement Raven Monitoring, Management, and Reporting Plan) requires the preparation and implementation of a Raven Monitoring, Management, and Reporting Plan and monetary contribution to the USFWS Regional Raven Management Program. Raven populations in the desert are artificially high due to human presence that provides subsidies to ravens. These subsidies are water or food sources or perching, roosting, or nesting sites (e.g., fences, structures, etc.) that would not naturally be present. Ravens prey on juvenile desert tortoises. Young tortoises cannot easily escape

predators and, until about age 5 or 6, their shells are soft enough to be punctured by a raven bill. Large numbers of juvenile tortoise shells have been found beneath raven nests throughout the desert (Kristan and Boarman, 2003). Implementation of a Raven Plan would avoid and minimize raven-caused mortality of juvenile desert tortoises by requiring management practices to avoid and minimize Project-related raven subsidies. Contribution to the Regional Raven Management Program would compensate for any Project-related raven subsidies by supporting raven control throughout the region.

Cumulative Effects: Cumulative effects are addressed in Section 5 of the EIR/EIS, including a list and map of cumulative projects and their locations. With regard to biological resources, including desert tortoise, all projects are within the CVMSHCP/NCCP area, subject to its terms and conditions. The CVMSHCP/NCCP mitigates the impacts of cumulative development throughout the Coachella Valley through coordinated habitat set-aside and management. Any potential take of desert tortoise would be covered through the CVMSHCP/NCCP. Therefore, adverse cumulative effects are not anticipated.

Determination: Construction and O&M activities of the Proposed Action may affect individual desert tortoise should they occur in the project area. The Proposed Action will have no effect on desert tortoise critical habitat, as critical habitat does not occur in the Action Area.

Rationale:

- Impacts to desert tortoise on private lands are mitigated through participation in the CVMSHCP/NCCP.
- Potential desert tortoise burrows (unoccupied) were found in Reach 1. No live tortoises or other tortoise sign have been observed during multiple years of field surveys. Desert tortoise has a moderate potential for occurrence in the Action Area, although, if present, would be found only in low numbers.
- There is no currently designated critical habitat for desert tortoise within the Action Area.
- ECs and mitigation measures would require pre-construction clearance surveys, biological monitoring, and avoidance measures, such as checking under vehicles for desert tortoise.
- Mitigation measures would require that desert tortoises found within work areas be allowed to leave on their own or be relocated out of harm's way by a qualified and permitted biologist.
- Mitigation measures would require the Project to avoid and minimize subsidies (e.g., food, water) to ravens (predators of juvenile tortoises) and provide funds to support raven control throughout the region.
- ECs and mitigation measures would require implementation of an Integrated Weed Management Plan Project to remove and limit the spread of nonnative and invasive plant species.

Implementation of the Proposed Action is not expected to result in a change in desert tortoise population size or affect the viability of the species in this area.

5.2.2 Coachella Valley Fringe-toed Lizard

Status

Coachella Valley Fringe-toed Lizard (*Uma inornata*). Federal listing status: Threatened; State Status: Endangered; CVMSHCP/NCCP: Covered. The CVFTL was federally listed as threatened by the USFWS on September 25, 1980 and critical habitat was also designated at that time (45 FR 63812). CVFTL was State listed as endangered in 1980.

Species Description

The CVFTL is found only in the Coachella Valley in and around blowsand habitat and in sandy inter-dune areas of aeolian sand hummock habitat. It prefers fine sand (0.180 to 0.355 mm in diameter; Barrows, 1997) on the lee side of dunes and hummocks. It is highly adapted to “swim” through sand and will burrow into loose sand to escape predators and to avoid high temperatures at the surface. CVFTL prefers fine sands with low compaction and deeper sand deposits with topographic relief. It is often found in sandy inter-dune areas consisting of aeolian sand hummock habitat, although these areas likely function as foraging habitat and as connections between dunes or blowsand areas that would otherwise be isolated.

CVFTL is generally active from March through mid-November, with most activity from April through October. CVFTL eats leaves, flowers, ants, and other insects. Vegetation in high CVFTL use areas includes four-winged saltbush (*Atriplex canescens*), twinbugs (*Dicoria* sp.), and non-native Russian thistle (*Salsola tragus*). Sahara mustard can be locally common to abundant in some areas.

Implementation of the CVMSHCP/NCCP created four conservation areas in the Coachella Valley that support CVFTL habitat: Thousand Palms, Whitewater Floodplain, Willow Hole, and Edom Hill. The Project site is adjacent to the Thousand Palms Conservation Area, which contains the largest amount of remaining contiguous habitat for CVFTL and probably the most robust population of the species. Within this Conservation Area, 901 acres of lands are designated as critical habitat. Total CVFTL habitat in this Conservation Area is approximately 1,850 acres.

Population Trends and Threats

CVFTL is endemic to the Coachella Valley. Since the species was listed in 1980, its distribution has decreased by more than 60 percent. Approximately 90-95 percent of historical habitat has been lost and only 15,000-20,000 acres remain available. Based on recent GIS analysis and mapping, only 9,000 to 11,000 acres of this area has the potential to be suitable habitat (USFWS, 2010b). At listing, there were 118 known occurrences, of which 43 were presumed extant. Since listing, additional occurrences have been identified and there are currently 59 presumed extant occurrences, most within CVMSHCP/NCCP conservation areas (USFWS, 2010b).

Results of monitoring in the conservation area suggest that populations of CVFTL fluctuate with annual precipitation. During droughts, population numbers fall to near zero, but rebound during years of average rainfall.

Threats to CVFTL are obstruction of sand transport systems, urban and agricultural growth, non-native invasive plants, and OHV use.

Critical Habitat

Portions of the Action Area are within designated critical habitat (see Figure 6). Portions of the designated critical habitat, including the habitat in Reaches 1 and 2, are not expected to support CVFTL. Instead, these areas were designated as critical habitat due to their role as a sand source, to supply occupied habitat farther downwind (USFWS, 1985; USFWS, 2013). Sand in the Thousand Palms area originates in alluvial deposits at the base of the Indio Hills, including lands along Reach 1 of the Project. Large flooding events, if not interrupted by intervening land uses, can carry the sand into fluvial deposition areas where the sand can be moved and sorted by wind. Based on field surveys and habitat assessments conducted for the Project, this portion of the designated critical habitat is not expected to be occupied by CVFTL.

The USFWS final rule designating critical habitat did not identify PCEs for CVFTL (USFWS, 1985), but habitat requirements (USFWS, 2010b) are:

- Accumulations of aeolian sand;
- Deeper sand deposits with more topographic relief are preferred over flatter sand sheets;
- Fine grain sand (0.1 to 0.5 millimeters) is preferred;
- Low sand compaction;
- Fluvial and aeolian sand transport system to maintain habitat.

Current Status of the CVFTL in the Action Area

The CNDDDB (CDFW, 2020a) reports numerous CVFTL occurrences near each Project Reach and individuals were observed several times during the course of field surveys. Habitat assessments conducted in 2013 and re-verified in 2016 and 2020 identified areas of high, moderate, and low habitat suitability in the Study Area (see Section 3.6.1.6 and Figures 7a through 7c and Table 9). The highest suitability habitat is in the large dunes located in Reach 4 and portions of Reach 3. Surveys conducted for this Project detected several CVFTL within Reach 4 and the adjacent sand deposition area as recently as 2013. This species may also occur in the dunes that have formed along the tamarisk windrows south of Avenue 38 adjacent to the proposed sediment disposal area.

Direct Effects: Construction of the proposed Action will result in permanent impacts to approximately 175.47 acres of natural vegetation, disturbed areas, and dune communities. Approximately 286.35 acres of these communities will be subject to temporary disturbance. Suitable habitat for CVFTL is found within Reaches 1, 3, and 4 of the Project Study Area (see Figures 7a through 7c). Based on this assessment approximately 51.92 acres of high to moderate quality habitat for CVFTL would be permanently impacted and 164.16 acres would be subject to temporary disturbance. Approximately 116.26 acres of low-quality habitat would be permanently impacted, and 117.30 acres would be subject to temporary disturbance (Table 9). These low-quality areas likely do not support the species but could be used for dispersal during periods of high reproduction.

Of this total, federal lands comprise 9.43 acres of permanent and 0.89 acres of temporary disturbance to high, moderate, and low-quality habitat for CVFTL.

CVFTL Habitat	Reach 1		Reach 2		Reach 3		Reach 4		New Soil Deposition Site ¹	Concrete Batch Plant/ Marshaling Yard ¹
	Perm (acres)	Temp (acres)	Perm (acres)	Temp (acres)	Perm (acres)	Temp (acres)	Perm (acres)	Temp (acres)	Temp (acres)	Temp (acres)
High	0.00	0.00	0.00	0.00	8.88	1.47	21.90	2.00	77.84	0.00
Moderate	0.00	0.00	0.00	0.00	13.84	1.75	7.30	0.80	80.3	0.00
Low	37.06	13.42	4.66	0.97	16.53	2.64	58.01	7.97	55.26	37.04
None	5.98	4.56	0.00	0.00	1.26	0.33	0.05	0.00	0.00	0.00
Total	43.04	17.98	4.66	0.97	40.51	6.19	87.26	10.77	213.4	37.04
Grand Total Permanent and Temporary Disturbance in Acres										461.82

1 - Impacts to the Soil Deposition Site and Concrete Batch Plant are considered temporary

Construction and O&M of the Project could directly affect CVFTL and its habitat, should it occur on or near the Project site or downstream or downwind of the Project site or in the floodway, by mortality due to collisions with vehicles or heavy equipment, loss or degradation of habitat, fugitive dust, release of hazardous materials, sand compaction, increased noise and disturbance, alterations to upstream or downstream hydrology leading to alteration of habitat (e.g., removing surface or soil water source, or causing inundation of an upland species occurrence), and disruption of fluvial and aeolian sand transport. The proposed Project could have similar direct effects on CVFTL critical habitat on or near the Project site, or downstream or downwind of the Project site or in the floodway.

The most likely areas to encounter this species is in the sandy fields of Reaches 3 and 4. While Reach 1 and Reach 2 supports pockets of sand and small sand hummocks the likelihood of encountering animals in these Reaches are low compared to other areas. Reaches 1 and 2 of the project are considered low suitability for CVFTL due to lack of windblown sand habitat, and there were no reports of CVFTL near these reaches during monitoring for the adjacent transmission line project (SCE, 2013). Apparently, windblown sand habitat formerly in this area has shifted toward the southeast in the years since the observations reported in the CNDDDB were made.

Most of this habitat is located along disturbed road edges or areas that are currently subject to disturbance from off highway vehicle use, illegal dumping, the placement of lawn clippings, and existing maintenance operations (i.e., sand removal). Most of Reach 3 span disturbed areas including an access road and ruderal field before entering the Classic Club golf course. Similarly, most of Reach 4 would be in the present alignment of Avenue 38. Construction would affect portions of the dunes immediately adjacent to Avenue 38 but would not extend into the large dunes located within the Preserve. Most of the habitat loss would occur south of Avenue 38 where sand fields, and dunes also occur. Construction of the Project and the placement of fill in these areas would not impact the large dunes in this area. Soil would be placed in the flat areas and covered with fines.

Designated Critical Habitat

Construction of the Project would result in the permanent loss of 85.72 acres of designated critical habitat for CVFTL and the temporary disturbance of 23.77 acres (see Figure 6).

Of this total, federal lands comprise 7.44 acres of permanent disturbance and 0.64 acres of temporary disturbance to designated Critical Habitat for the CVFTL (Table 10).

Table 10. Coachella Valley Fringe-Toed Lizard Designated Critical Habitat on Federal Lands (acres)			
Location	Temporary	Permanent	Total
Reach 1	0.00	0.00	0.00
Reach 2	0.00	0.00	0.00
Reach 3	0.64	6.70	7.34
Reach 4	0.00	0.74	0.74
New Soil Deposition Site	0.00	0.00	0.00
Totals	0.64	7.44	8.08

The boundary of the designated critical habitat extends beyond the limits of the species’ distribution to include the sand source, which is essential in maintaining aeolian sand habitat (USFWS, 1985). Most of the project’s potential effects to designated critical habitat would be to this sand source area rather than to occupied or suitable habitat. CVFTL are expected to be absent or occur in very low numbers in Reach 1,

Reach 2, and most of Reach 3. For example, even in Reach 4 most of the impact would occur to existing road surfaces or degraded habitat south of the Refuge. Nonetheless CVFTL can occur in these areas.

On private lands the CVFTL is a covered species under the CVMSHCP/NCCP. Direct impacts to this species is considered a covered activity and mitigated through participation in the CVMSHCP/NCCP.

Direct effects to CVFTL on federal lands would be avoided or minimized through implementation of Project ECs (Section 2.3) and Mitigation Measures BIO-1 through BIO-8, BIO-10, and BIO-11. CVFTL is generally dependent on aeolian sand habitat; thus, ECs and mitigation measures (EC SM-1 and SM-2 and Mitigation Measures SM-1 and SM-2) related to sand migration would contribute to overall mitigation of impacts to CVFTL.

Mitigation Measure BIO-11 requires surveys for CVFTL, monitoring of construction by a qualified biologist, and installation of exclusion fencing around work areas in areas supporting a high potential to occur on federal lands, and the development of a Wildlife Protection and Relocation Plan. This measure would avoid and minimize mortality of individual CVFTL by ensuring that a qualified biologist is on-site during construction and that work areas have been surveyed for the presence of CVFTL, and by physically excluding lizards from work areas and relocating any individual found within a work area using approved protocols as described in the Wildlife Protection and Relocation Plan (MM BIO-11).

Indirect Effects: Indirect impacts include increased human presence, including OHV use, and the introduction and spread of invasive weeds (particularly Sahara mustard) that stabilize sand dunes, outcompete food plants, and do not support the lizard's insect prey. The proposed Project could have similar indirect effects on CVFTL critical habitat on or near the Project site, or downstream or downwind of the Project site or in the floodway.

Weeds are present throughout the Project site; Reach 4, in particular, is heavily infested with Sahara mustard. Other potential indirect impacts include alterations to upstream or downstream hydrology leading to alteration of habitat; and interference with fluvial and aeolian sand transport.

Other potential indirect impacts include alterations to upstream or downstream hydrology leading to alteration of habitat; and interference with fluvial and aeolian sand transport.

The sediment transport system that creates the aeolian dunes and sand fields in the Coachella Valley takes sand from upwind source areas (fluvial deposits on alluvial fans) and transports it to the southeast via strong winds moving along a distinct corridor. The entrained sediment travels to depositional areas where wind, topography, and other conditions promote the deposit and accumulation of sand (USGS, 2002). Sand transport in the Coachella Valley maintains and replenishes habitat for endemic sand-dependent plant and wildlife species, such as CVMV. Construction of the levees would also prevent the transport of sediment out of the wind corridor as storms movement sediment to downstream areas. This material would be trapped by the levels and become available for long term sand replenishment to the Preserve. As compared to current conditions, implementation of the proposed Project may have long term benefits to CVFTL by increasing the supply of sand moving into the wind corridor. Lancaster (2015) found that construction of the proposed Project will increase sand supply by 9 – 14 percent, mainly because of the diversion of water and sediment to the east and southeast to the primary sand deposition area by the levee of Reach 1.

As a part of the proposed project, CVWD would acquire approximately 550 acres of the floodway located along the levees and in the active wind corridor between Reach 1 and Reach 3. Land acquisition in the floodway would be managed and maintained as habitat for special-status species (e.g., as aeolian sand habitat or sand transport area). In addition, during Project O&M, the CVWD would transport sand

removed from the project facilities (accumulated along the levees and channels) to the wind corridor upwind of suitable aeolian sand habitat, for aeolian transport onto the Preserve. These two components of the proposed Project would serve to restore, protect, and manage aeolian sand habitat for CVFTL.

Indirect effects to CVFTL would be avoided or minimized as described under Direct Impacts, above.

Cumulative Effects: Cumulative effects are addressed in Section 5 of the EIR/EIS, including a list and map of cumulative projects and their locations. With regard to biological resources, including CVFTL, all projects are within the CVMSHCP/NCCP area, subject to its terms and conditions. The CVMSHCP/NCCP mitigates the impacts of cumulative development throughout the Coachella Valley through coordinated habitat set-aside and management. Any potential take of CVFTL or adverse modification of critical habitat, would be covered through the CVMSHCP/NCCP. Therefore, adverse cumulative effects are not anticipated.

Determination: Construction and O&M activities of the Proposed Action may affect individual CVFTL should they occur in the disturbance area. The action will affect designated critical habitat for CVFTL, but with the implementation of the Project's mitigation measures and environmental commitments the Project would not adversely modify CVFTL critical habitat. Most of the critical habitat that would be disturbed by the Action is not occupied by CVMV but has been designated because it contributes to the aeolian and hydraulic transport of fine sands to the Preserve. More importantly the placement of the levees will not disrupt the wind corridor and is expected to result in long term beneficial affects to sand transport in the region.

Rationale:

- Impacts to CVFTL on private lands are mitigated through participation in the CVMSHCP/NCCP.
- There are numerous occurrences of CVFTL reported near the proposed Project near Reach 3 and Reach 4 and individuals were observed several times during the course of field surveys.
- The most likely location CVFTL to occur is in Reach 3, Reach 4, and in sand fields located south of Reach 4.
- Portions of the Action Area are within designated critical habitat for CVFTL. Portions of the designated critical habitat, including the habitat in Reaches 1 and 2, are not expected to support CVFTL. These portions of critical habitat support the sand transport system and are not expected to be occupied by CVFTL.
- ECs and mitigation measures would require pre-construction clearance surveys, biological monitoring, installation of CVFTL exclusion fencing around work areas, and off-site compensation for habitat loss. ECs and mitigation measures would also require avoidance and minimization of impacts to sand and sand transport.
- ECs and mitigation measures would require implementation of an Integrated Weed Management Plan Project to remove and limit the spread of nonnative and invasive plant species.
- Project design would have minimal interference with aeolian sand transport; ECs and mitigation measures would minimize or mitigate interference with fluvial sand transport.

Implementation of the Proposed Action is not expected to result in a change in population size of CVFTL or affect the viability of the species in this area.

6. Preparers and Reviewers

Multiple individuals contributed to the preparation and review of this Biological Assessment, including the following:

- Coachella Valley Water District
 - William Patterson
 - Solan Watts
- United States Army Corps of Engineers Regulatory Division
 - Michael Langley
- Aspen Environmental Group
 - Chris Huntley
 - Scott White
 - Brigit Harvey

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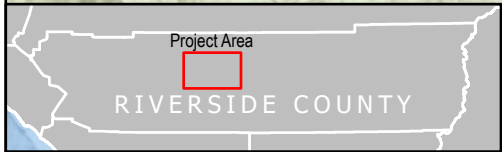
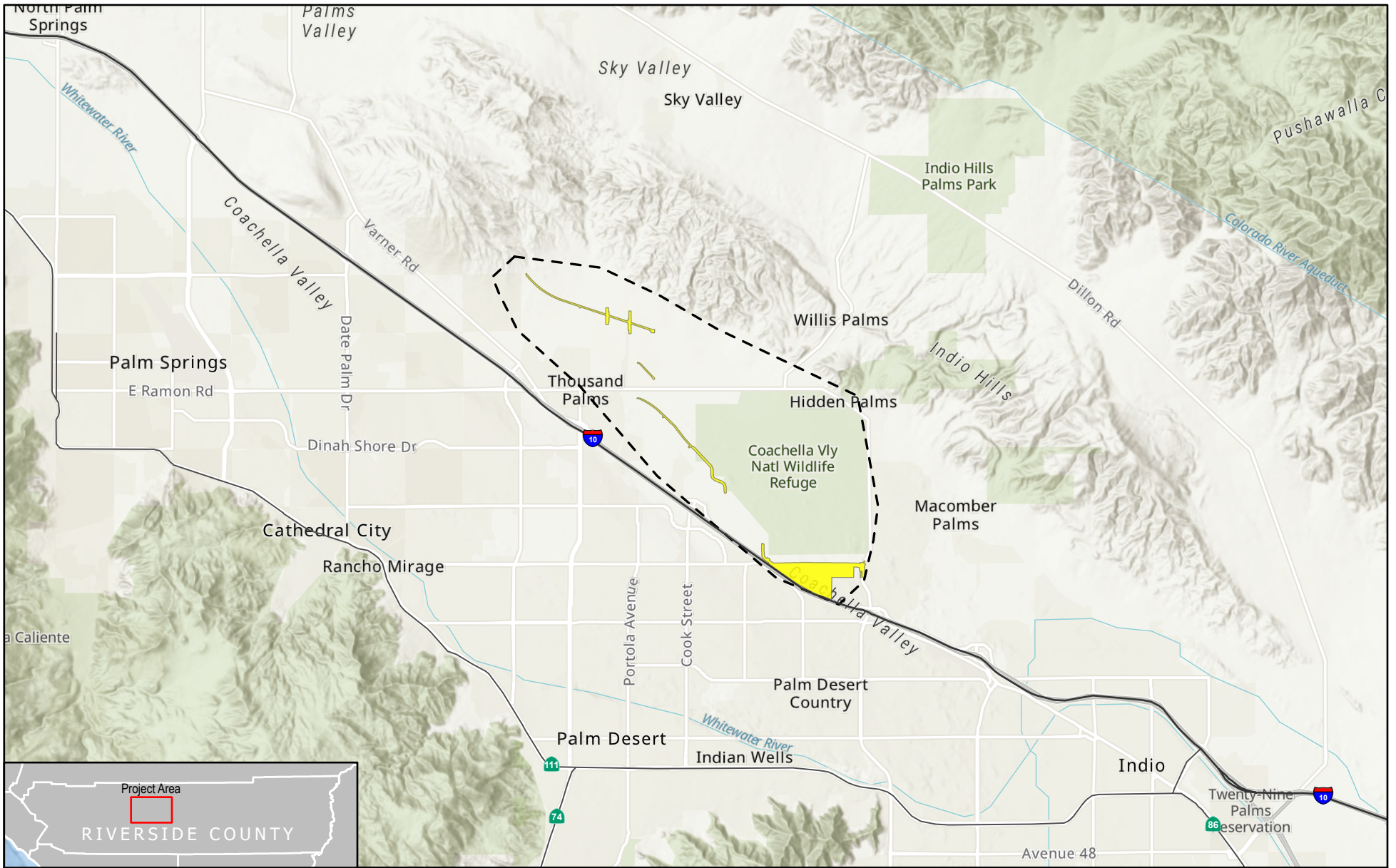
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Figures

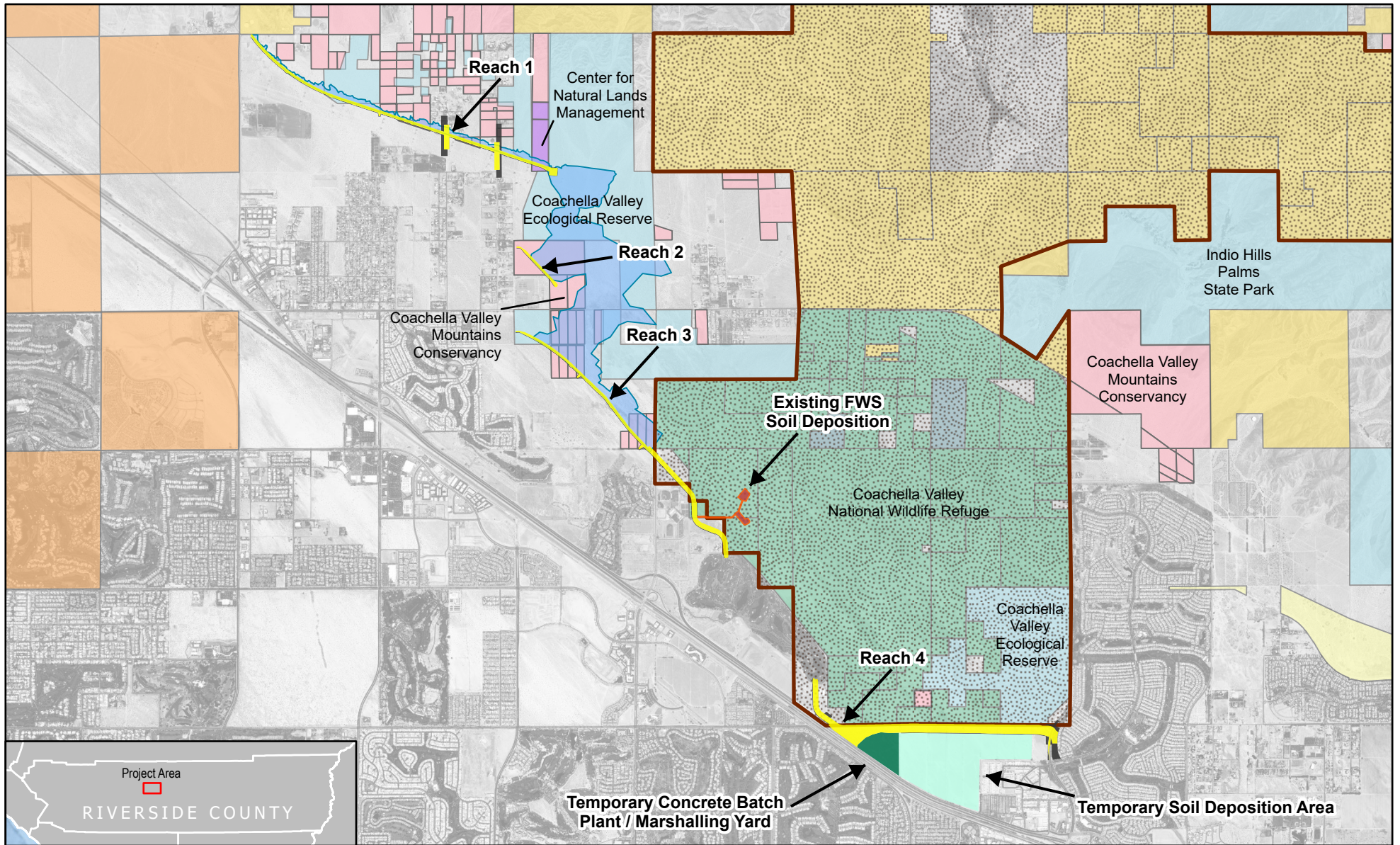


Proposed Project Area

Action Area

Figure 1

Proposed Project Vicinity and Action Area



- Permanent Impact Area
- Temporary Impact Area
- Temporary Soil Deposition Area
- Temporary Concrete Batch Plant/Marshalling Yard
- Existing FWS Soil Deposition
- 550-acre Floodplain Mitigation Lands

Land Ownership and Designations

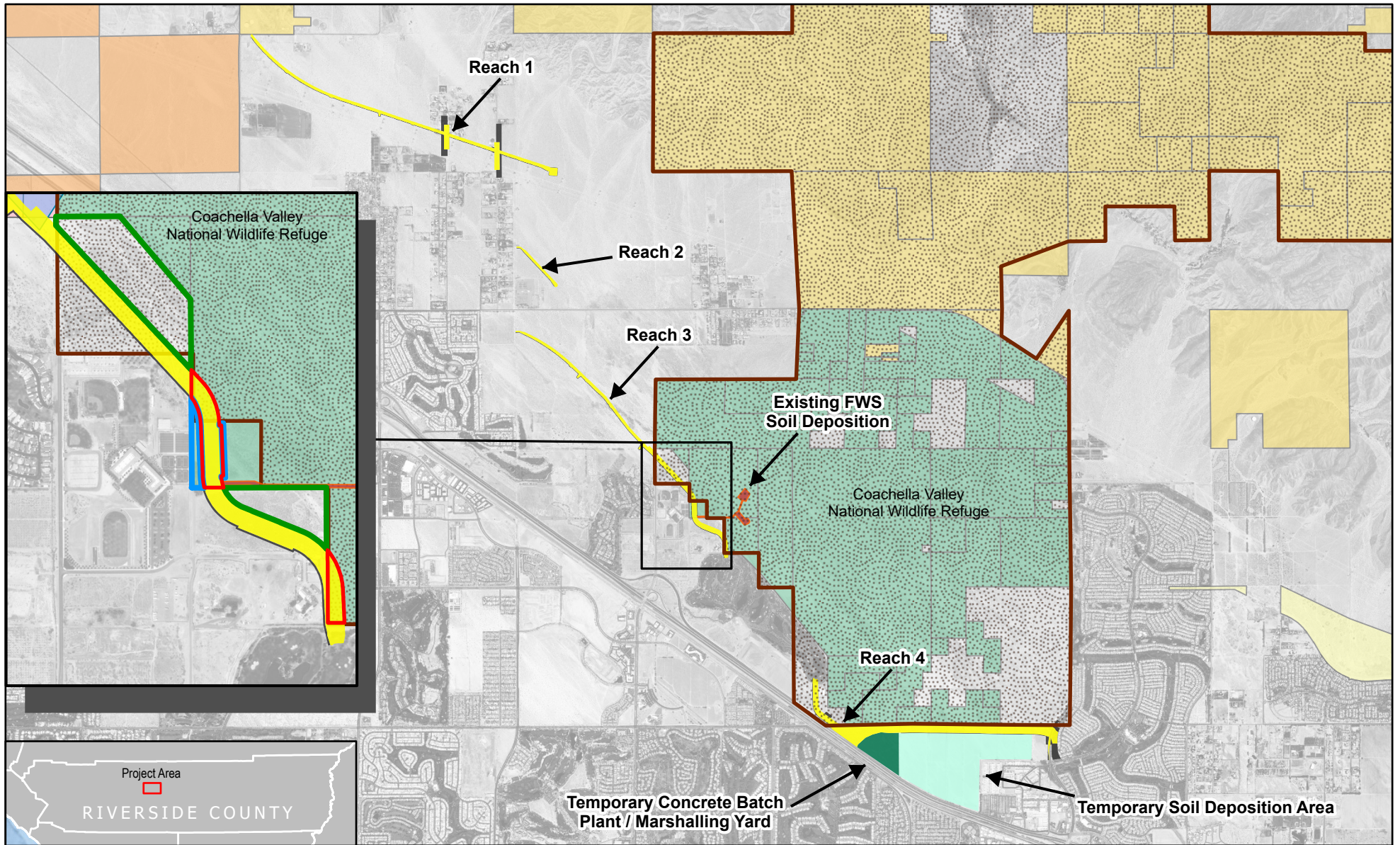
- | | |
|---|---|
| US Fish and Wildlife Service | Bureau of Indian Affairs |
| Bureau of Land Management | Center for Natural Lands Management |
| US Bureau of Reclamation | Coachella Valley Mountains Conservancy |
| State | Coachella Valley Preserve Boundary |
| Local Government | |

Figure 2a

**Land Ownership
Proposed Project Alignment**



0 1 Miles



- Permanent Impact Area
- Temporary Impact Area
- Temporary Soil Deposition Area
- Temporary Concrete Batch Plant / Marshalling Yard
- Existing FWS Soil Deposition

- Loss of CVNWR Lands due to Permanent Impacts
- Loss of CVNWR Lands due to Temporary or Indirect Impacts
- Proposed Mitigation Lands

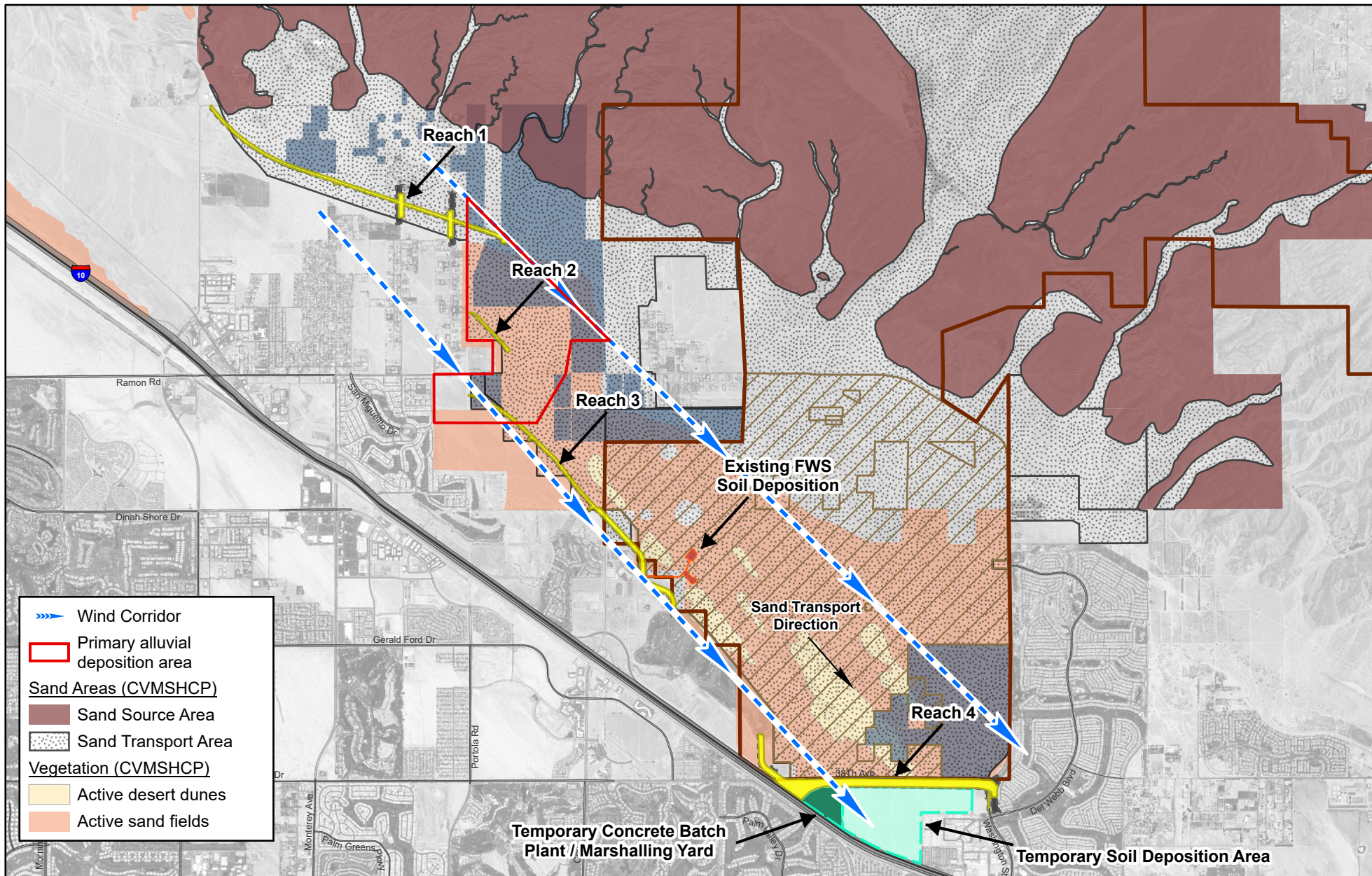
Land Ownership and Designations

- US Fish and Wildlife Service
- US Bureau of Reclamation
- Bureau of Land Management
- Bureau of Indian Affairs
- Coachella Valley Preserve Boundary

Figure 2b



0 1 Miles



- Wind Corridor
- Primary alluvial deposition area
- Sand Areas (CVMSHCP)**
- Sand Source Area
- Sand Transport Area
- Vegetation (CVMSHCP)**
- Active desert dunes
- Active sand fields

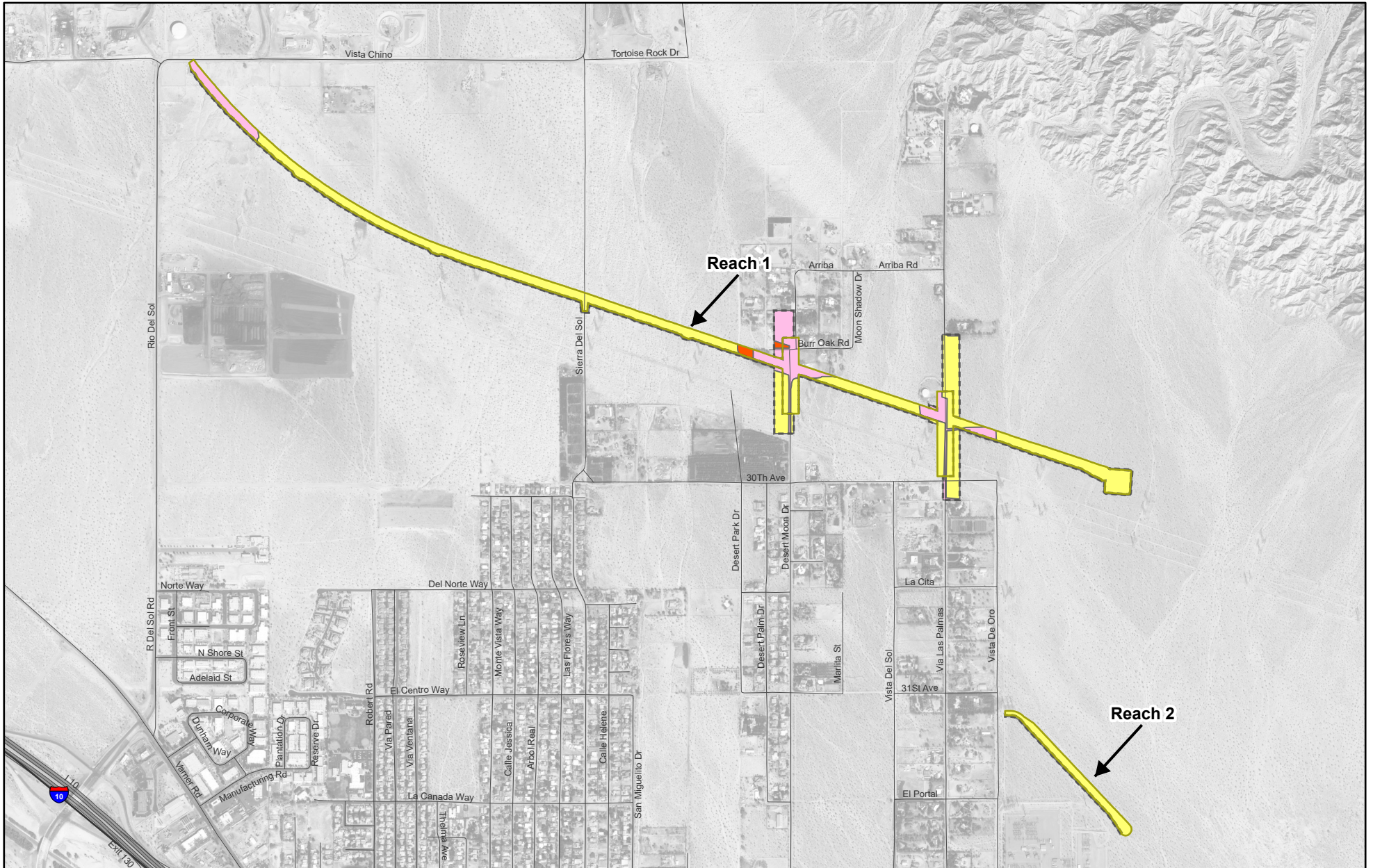
Source: Lancaster 2015; CVMSHCP 2008; CDFW 2016



- Permanent Impact Area
- Temporary Impact Area
- Temporary Soil Deposition Area
- Temporary Concrete Batch Plant/Marshalling Yard
- Existing FWS Soil Deposition CDFW Coachella Valley
- Ecological Reserve Lands
- Coachella Valley Preserve Boundary
- Coachella Valley National Wildlife Refuge

Figure 2c

Sand Source and Transport Areas



Permanent Impact Area
 Temporary Impact Area

Vegetation and Cover Types

Asian Mustard Stand
 Creosote Scrub
 Disturbed/Developed

Figure 3a

**Vegetation Cover
Reach 1 and 2 Alignments**



Reach 3



0 0.5 Miles

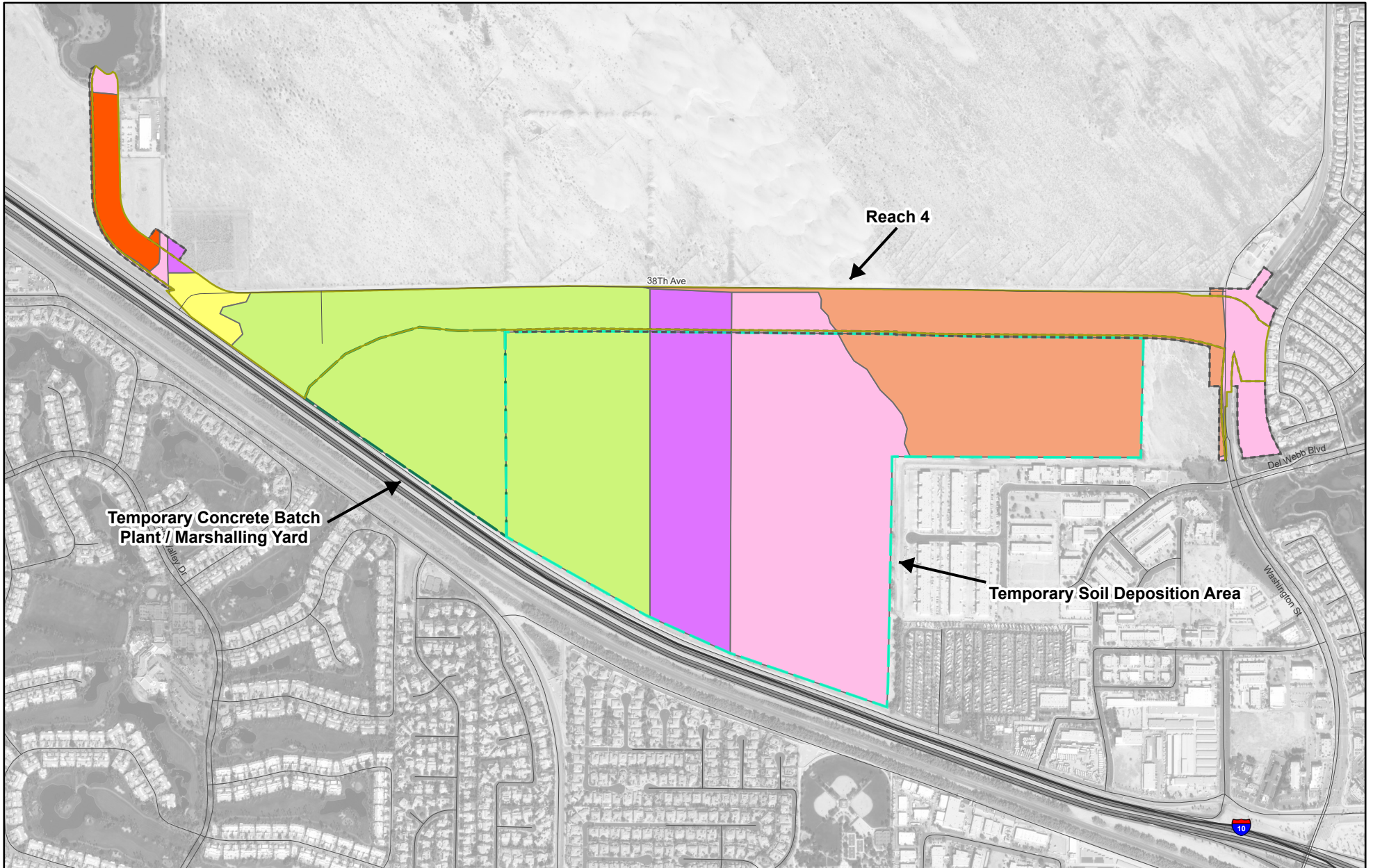
Permanent Impact Area
 Temporary Impact Area

Vegetation and Cover Types

Asian Mustard Stand
 Cheesebush Scrub
 Creosote Scrub
 Disturbed/Developed

Figure 3b

Vegetation Cover
 Reach 3



Temporary Concrete Batch Plant/ Marshalling Yard

Reach 4

Temporary Soil Deposition Area

38th Ave

Del Webb Blvd

Washington St

10

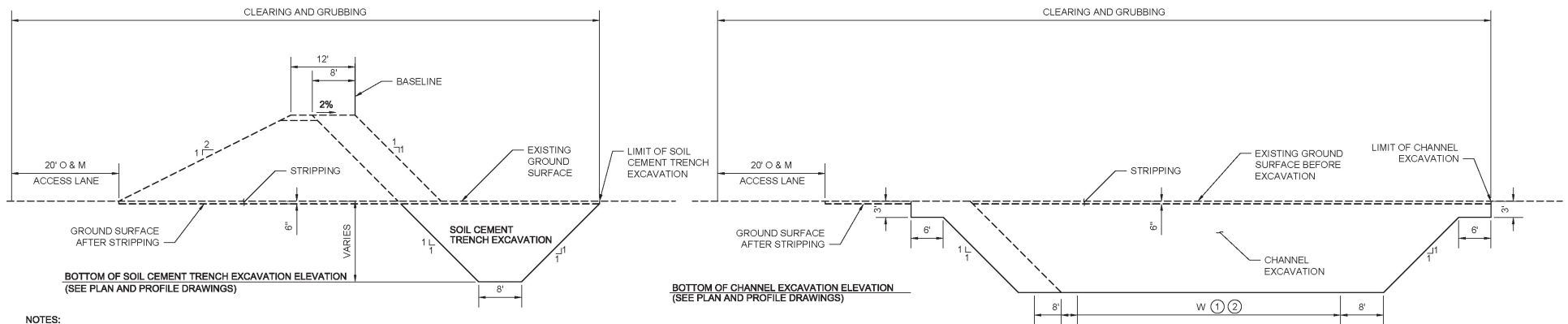


0 0.25 Miles

- | | | |
|--|--|---------------------|
| Permanent Impact Area | <u>Vegetation and Cover Types</u> | |
| Temporary Impact Area | Abandoned Agriculture | Creosote Hummocks |
| Temporary Soil Deposition Area | Active Sand Dune / Stabilized Sand Field | Creosote Scrub |
| Temporary Concrete Batch Plant/ Marshalling Yard | Asian Mustard Stand | Disturbed/Developed |

Figure 3c

Vegetation Cover
Reach 4



NOTES:

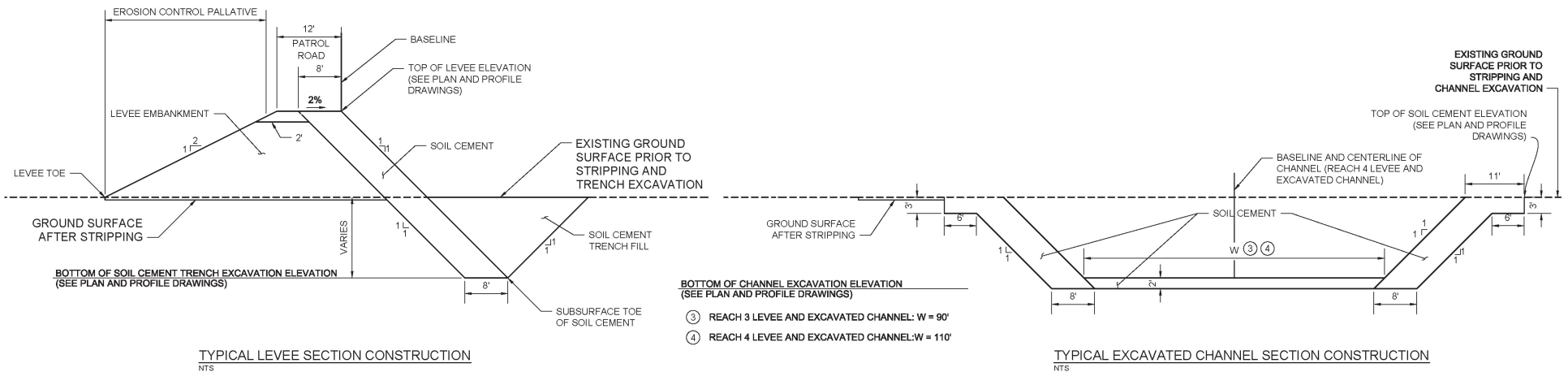
1. CLEARING, GRUBBING AND STRIPPING SHALL EXTEND TO THE LIMITS SHOWN ON THE CROSS SECTIONS.
2. CLEARING, GRUBBING AND STRIPPING SHALL BE COMPLETED PRIOR TO SOIL CEMENT TRENCH EXCAVATION.
3. SEE DRAWING G-3 FOR ADDITIONAL NOTES.
4. ALL FILLS ABOVE APPROVED FOUNDATION SOILS (EXCEPT STRUCTURE BACKFILL) ARE LEVEE EMBANKMENT. LEVEE EMBANKMENT INCLUDES MATERIAL PLACED IN EXCAVATIONS ABOVE AND BELOW THE "GROUND SURFACE AFTER STRIPPING" LINE.

TYPICAL LEVEE SECTION EXCAVATION
NTS

BOTTOM OF CHANNEL EXCAVATION ELEVATION
(SEE PLAN AND PROFILE DRAWINGS)

- ① REACH 3 LEVEE AND EXCAVATED CHANNEL: W = 86'
- ② REACH 4 LEVEE AND EXCAVATED CHANNEL: W = 106'

TYPICAL EXCAVATED CHANNEL SECTION EXCAVATION
NTS



TYPICAL LEVEE SECTION CONSTRUCTION
NTS

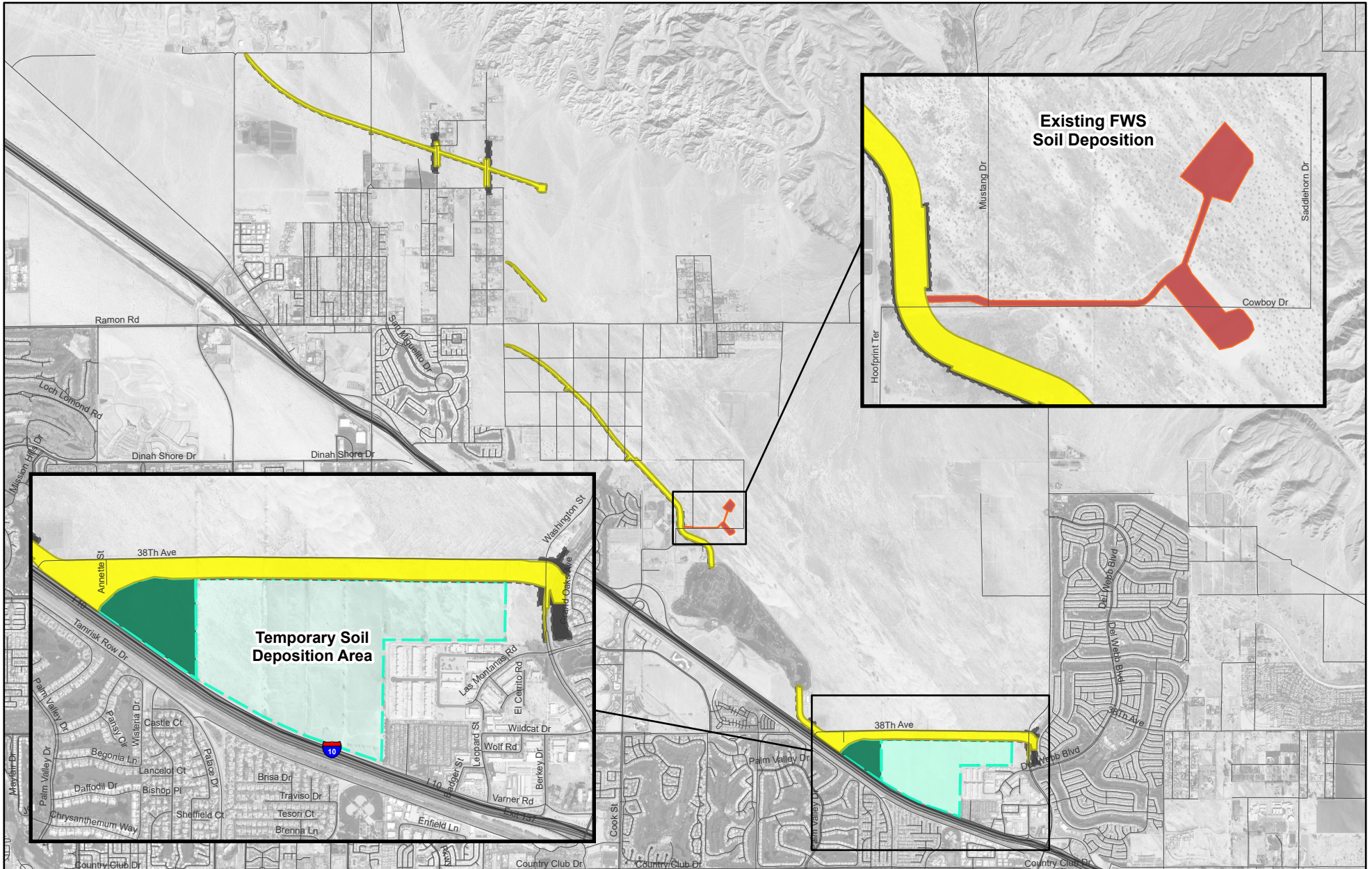
BOTTOM OF CHANNEL EXCAVATION ELEVATION
(SEE PLAN AND PROFILE DRAWINGS)

- ③ REACH 3 LEVEE AND EXCAVATED CHANNEL: W = 90'
- ④ REACH 4 LEVEE AND EXCAVATED CHANNEL: W = 110'

TYPICAL EXCAVATED CHANNEL SECTION CONSTRUCTION
NTS

Figure 4

Levee and Channel Construction Cross-Sections

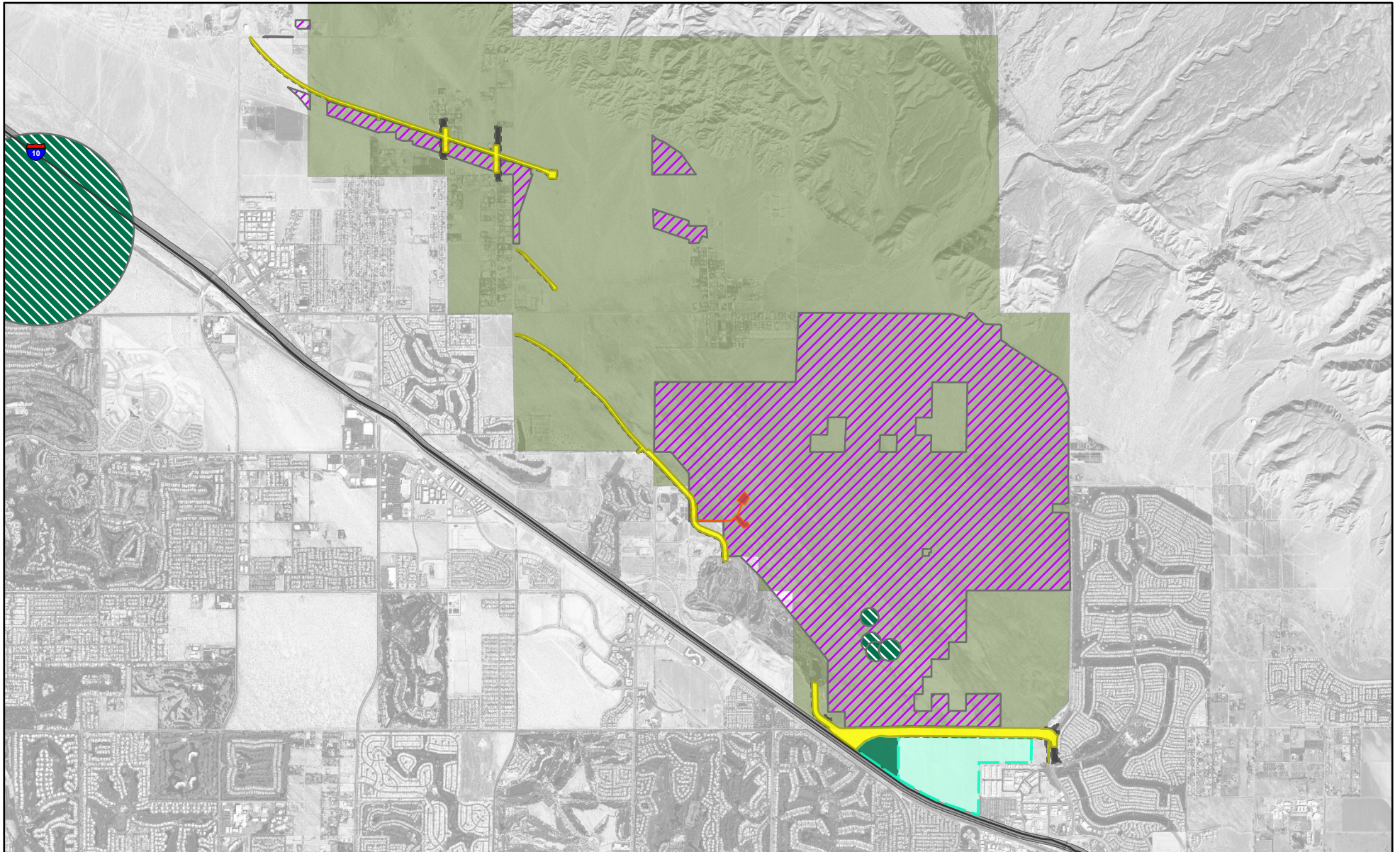







0 0.5 1 Miles

- Permanent Impact Area
- Temporary Concrete Batch Plant/Marshalling Yard
- Temporary Impact Area
- Existing FWS Soil Deposition
- Temporary Soil Deposition Area

Figure 5

Proposed Sand Disposal Areas



-  Permanent Impact Area
-  Temporary Impact Area
-  Temporary Soil Deposition Area
-  Temporary Concrete Batch Plant/ Marshalling Yard
-  Existing FWS Soil Deposition




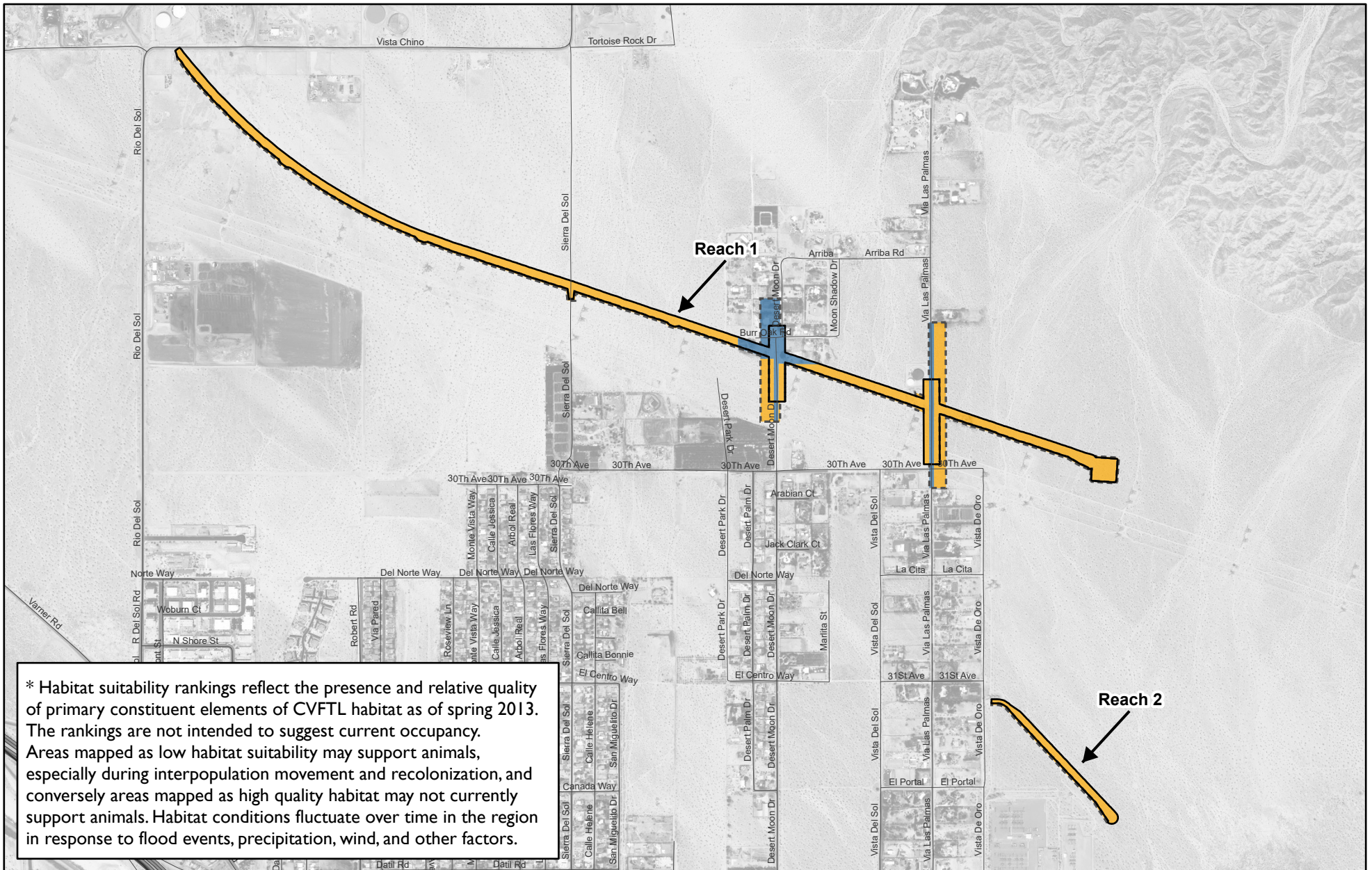
- USFWS Carlsbad Office Species Occurrence
-  Coachella Valley milk-vetch
- Critical Habitat (FWS, 2020)
-  Coachella Valley milk-vetch
 -  Coachella Valley fringe-toed lizard

Figure 6

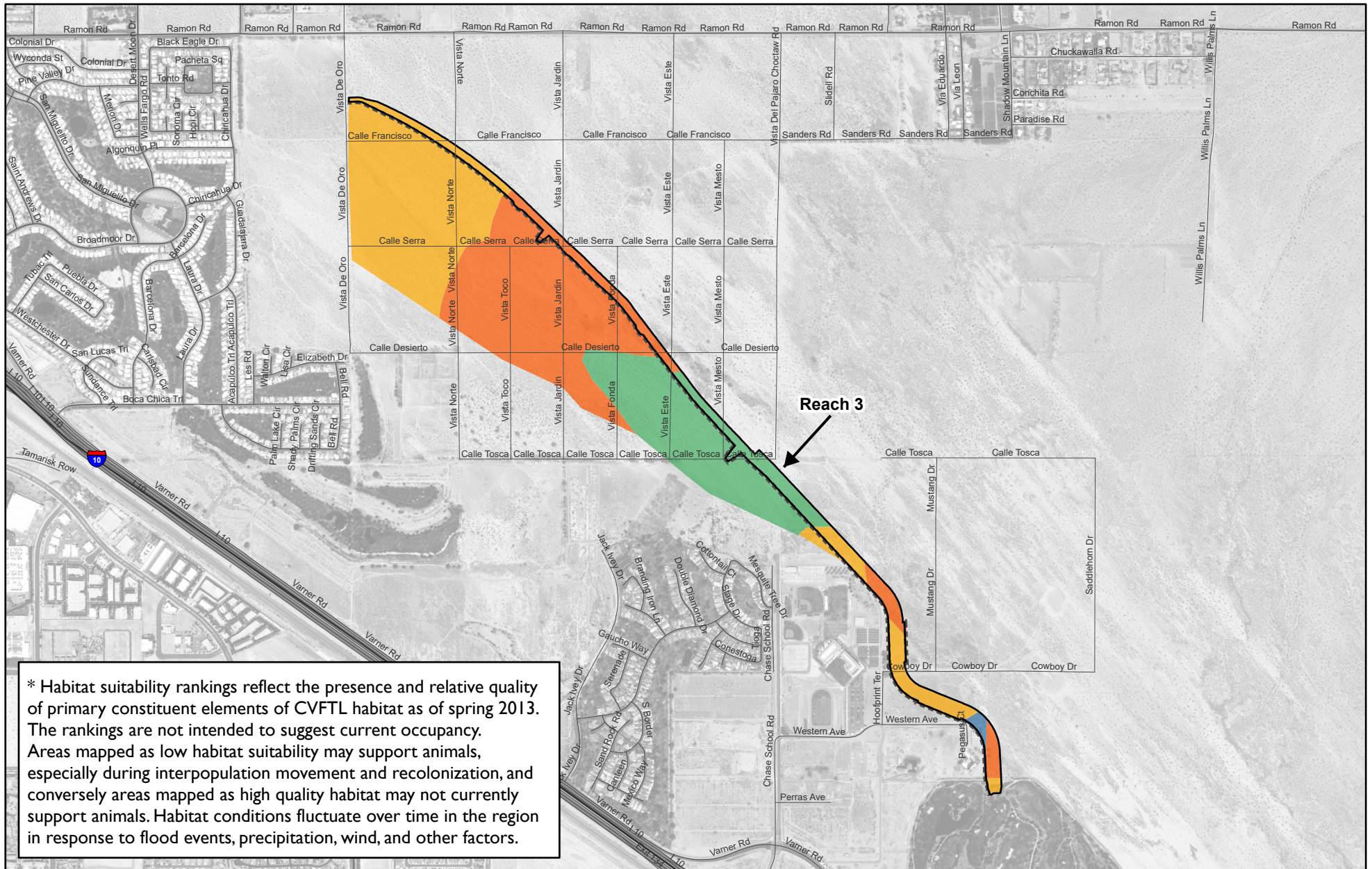
Critical Habitat



— Permanent Impact Area
 - - - Temporary Impact Area

CVFTL Habitat Suitability*
 Low Unlikely

Figure 7a
Coachella Valley
Fringe-Toed Lizard Habitat
Reach 1 and 2 Alignments

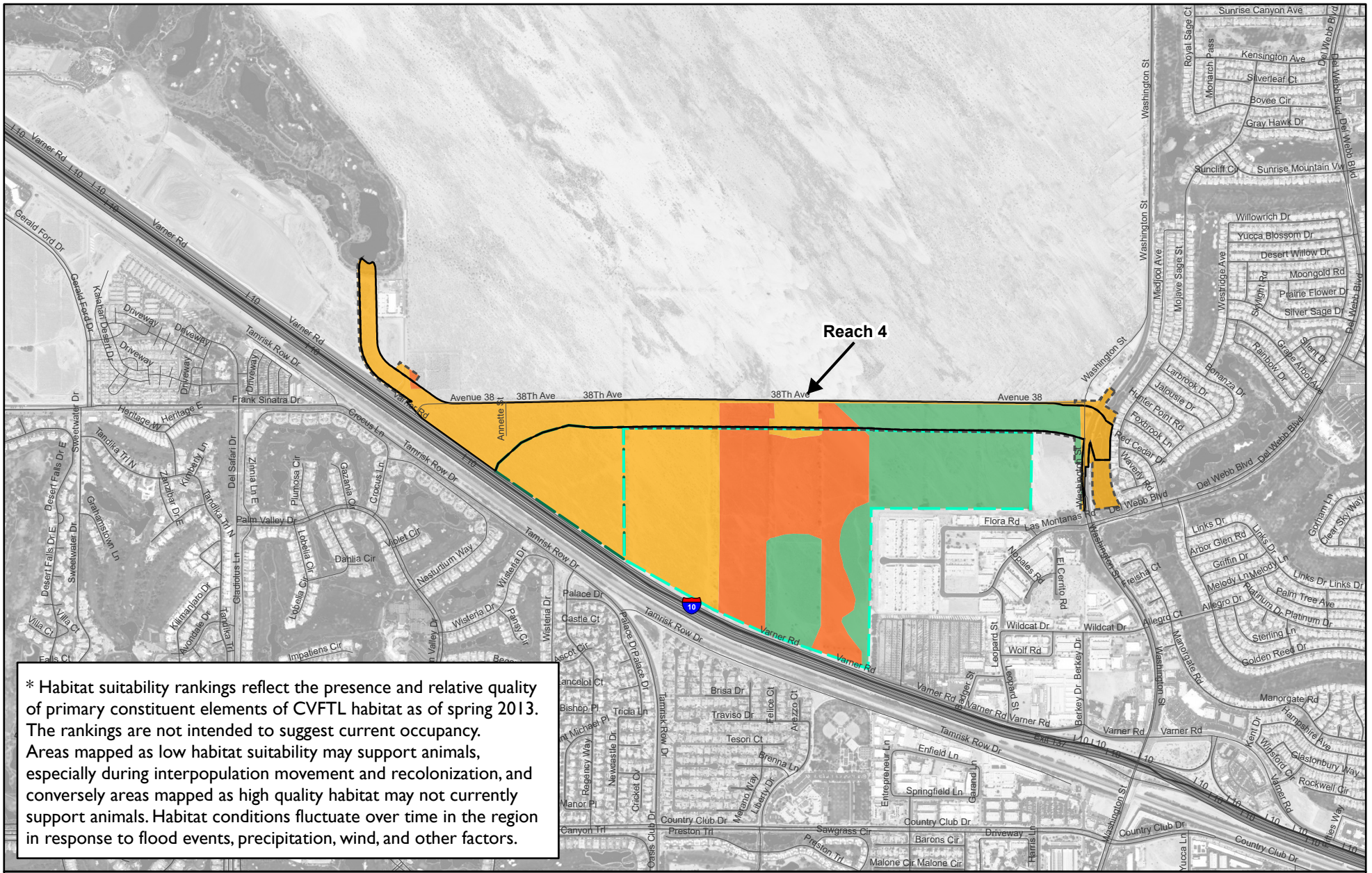


- Permanent Impact Area
- Temporary Impact Area

CVFTL Habitat Suitability *

- High
- Low
- Moderate
- Unlikely

Figure 7b
Coachella Valley
Fringe-Toed Lizard Habitat
Reach 3 Alignment



* Habitat suitability rankings reflect the presence and relative quality of primary constituent elements of CVFTL habitat as of spring 2013. The rankings are not intended to suggest current occupancy. Areas mapped as low habitat suitability may support animals, especially during interpopulation movement and recolonization, and conversely areas mapped as high quality habitat may not currently support animals. Habitat conditions fluctuate over time in the region in response to flood events, precipitation, wind, and other factors.



- Permanent Impact Area
- Temporary Impact Area
- Temporary Soil Deposition Area
- Temporary Concrete Batch Plant/Marshalling Yard

- CVFTL Habitat Suitability *
- High
 - Low
 - Moderate
 - Unlikely

Figure 7c
Coachella Valley
Fringe-Toed Lizard Habitat
Reach 3 Alignment

Appendix A

Coachella Valley Conservation Commission
Consistency Determination Letter

COACHELLA VALLEY CONSERVATION COMMISSION



Cathedral City • Coachella • Desert Hot Springs • Indian Wells • Indio • La Quinta • Palm Desert • Palm Springs • Rancho Mirage •
County of Riverside • Coachella Valley Water District • Imperial Irrigation District • Mission Springs Water District

August 3, 2021

David Wilson
Engineering Project Manager
Coachella Valley Water District
75-519 Hovley Lane East
Palm Desert, CA 92211

RE: Consistency determination for CVCC 21-001 Thousand Palms Flood Control Project in the Thousand Palms Conservation Area¹

Dear Mr. Wilson:

The Coachella Valley Conservation Commission (CVCC) has received your request for a consistency determination regarding the final alignment of the Coachella Valley Water District's (CVWD) Thousand Palms Flood Control Project (Project)² in the Thousand Palms Conservation Area (TPCA). The Project constitutes a Covered Project under Section 7.3.1 of the Coachella Valley Multiple Species Habitat Conservation Plan (CVMSHCP or Plan); the take of any covered species has already been authorized through the issuance of the CVMSHCP permits and will not count against the conservation and take authorization tables for the Conservation Area as listed in section 4.3.11. The Project nonetheless warrants special consideration given the required measures pertaining to its construction and its effect on the Conservation Area. This consistency determination serves to document that those required measures are being met and to further ensure the Project complies with all relevant Avoidance, Minimization, and Mitigation measures and Land Use Adjacency Guidelines, as described in Plan sections 4.4 and 4.5, respectively.

The TPCA constitutes the largest unfragmented habitat area on the valley floor. It encompasses the former Coachella Valley Fringe Toed Lizard Preserve, the sand source in the Indio Hills, and key desert riparian and sand-dependent habitat. In addition, it serves as a key sand source within the Valley, and a sand transport corridor for sand generated in the Little San Bernardino Mountains. The TPCA, along with the West Deception Canyon Conservation Area and Indio Hills/Joshua Tree National Park Linkage Conservation Area, provides an almost uninterrupted corridor into the protected habitat in Joshua Tree National Park and beyond. It contains core habitat for Coachella Valley fringe-toed lizard, flat-tailed horn lizard, Coachella Valley round-tailed ground squirrel, and Palm Springs pocket mouse. Alongside neighboring Conservation Areas, it contains enough core habitat for Mecca aster to support a self-sustaining population. The desert fan palm oasis woodlands provide the largest concentration of habitat for the southern yellow bat in the CVMSHCP area.

¹ This revised version updates and replaces the original analysis submitted on July 13, 2021.

² The Project was formerly referred to as the Whitewater River Flood Control Project throughout the CVMSHCP.

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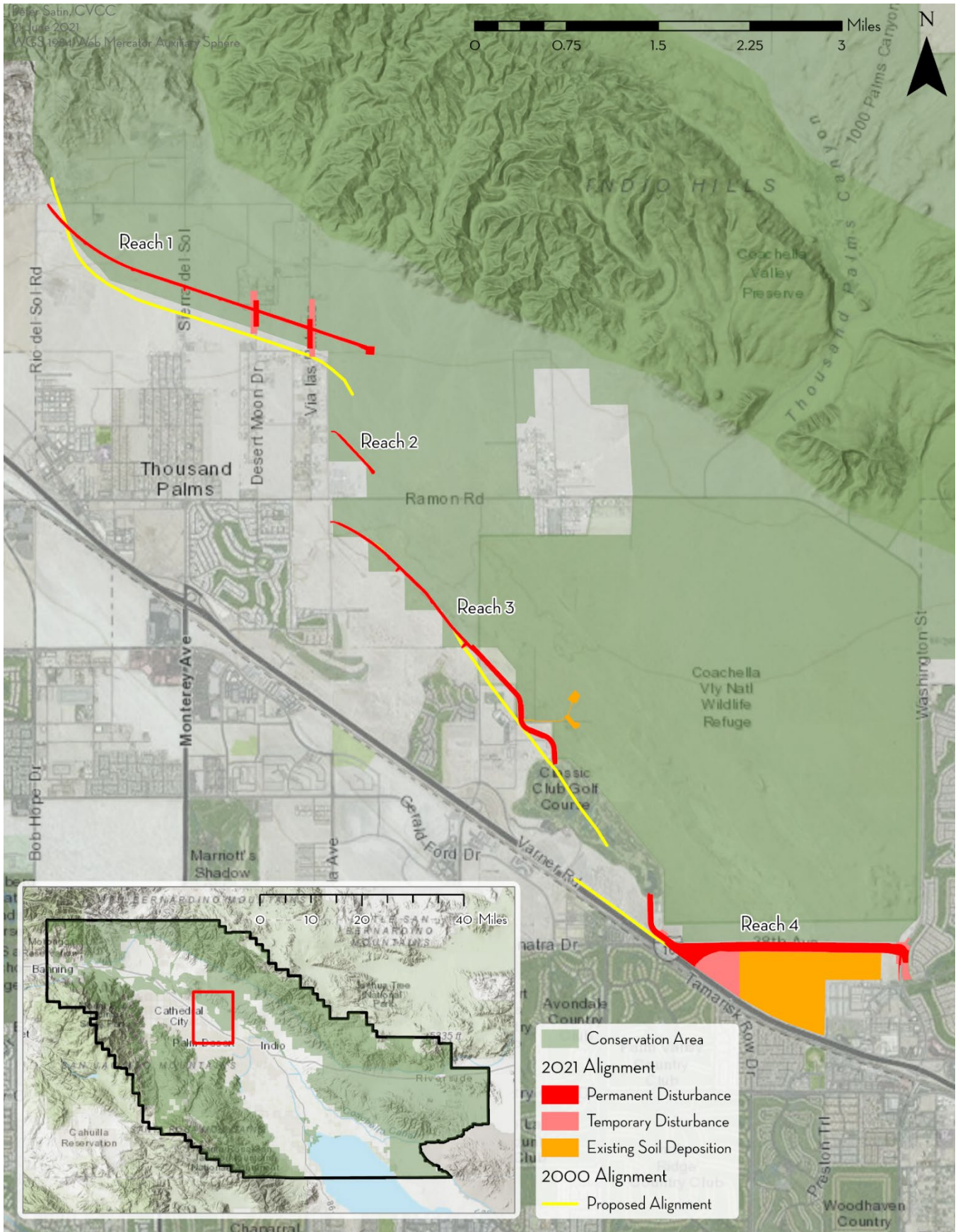


Figure 1: Thousand Palms Flood Control Project alignments in the Thousand Palms Conservation Area.

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The CVMSHCP has contemplated the construction of the Project since its inception, noting that it would help direct fluvial-borne sand within the TPCA such that aeolian sand transport processes could transport it downwind. At the time of the Plan’s implementation, the final Project design had not been determined, but it was acknowledged that the final alignment “may cause a minor adjustment of the Conservation Area boundary such that the levees will not be in the Conservation Area, but will define the edge of the area.” CVWD has since finalized the levee’s alignment (Figure 1), which has, in fact, shifted since the original TPCA boundary was drawn. It is therefore necessary to adjust the Conservation Area’s boundaries accordingly and to adjust the Conservation Objectives, acres of authorized disturbance, and remaining acres to be conserved so as to reflect the reduced total area of the Conservation Area.

The Project alignment as approved in the 2000 Environmental Initial Study/Environmental Impact Report considered each of the four reaches, but was developed prior to the expansion of both regional electrical utility corridors and urban development³. As originally considered, Reach 1 would be located in what is now the right-of-way for the Southern California Edison Devers-Palo Verde 500-kV No. 2 Transmission Line project, and Reach 3 would be situated on lands now occupied by Xavier High School. For these reasons, CVWD has proposed relocating Reach 1 into the existing TPCA boundary, as well as shifting Reach 3 further east, away from established development. CVCC utilized the revised 2021 alignment to draw a new boundary and calculate new acreage totals.

To determine the new TPCA boundary, CVCC first assessed how the Conservation Area’s existing boundary would shift under both the 2000 alignment and the 2021 alignment. A 50-foot buffer was drawn around each alignment, and the boundary was re-drawn such that the TPCA was immediately adjacent to the buffered northeastern face of the levee. Any portion south and west of either alignment was excised from the total area. In cases where the alignments did not completely bisect the existing boundary, a shortest-distance straight line to that boundary was used to demarcate the new boundary. Under both alignments, portions of the original TPCA boundary beneath Reaches 2 and 3 are removed, while the 2021 alignment further removes an additional portion under Reach 1 (Figure 2). Reach 4 did not impact the boundary alignment under either scenario. The total acreage for both was then summed and compared to confirm that the 2021 alignment constituted only a minor adjustment from the 2000 alignment, in accordance with the CVMSHCP (Table 1). The 2021 alignment results in an additional 183 acres (0.70%) removed from the TPCA as compared to the 2000 alignment. The boundary areas not impacted by the levees remain unchanged (Figure 3).

Table 1: Gross acreage comparison among the original Thousand Palms Conservation Area boundary, the 2000 levee alignment boundary, and the 2021 levee alignment boundary.

	<i>Total Acreage</i>	<i>Difference from original (ac)</i>	<i>Difference from original (%)</i>
<i>Original boundary</i>	25,900	-	-
<i>2000 alignment boundary</i>	25,782	-118	-0.46
<i>2021 alignment boundary</i>	25,599	-301	-1.16

³ This paragraph has been revised at the request of CVWD to clarify the need for deviation from the 2000 alignment.

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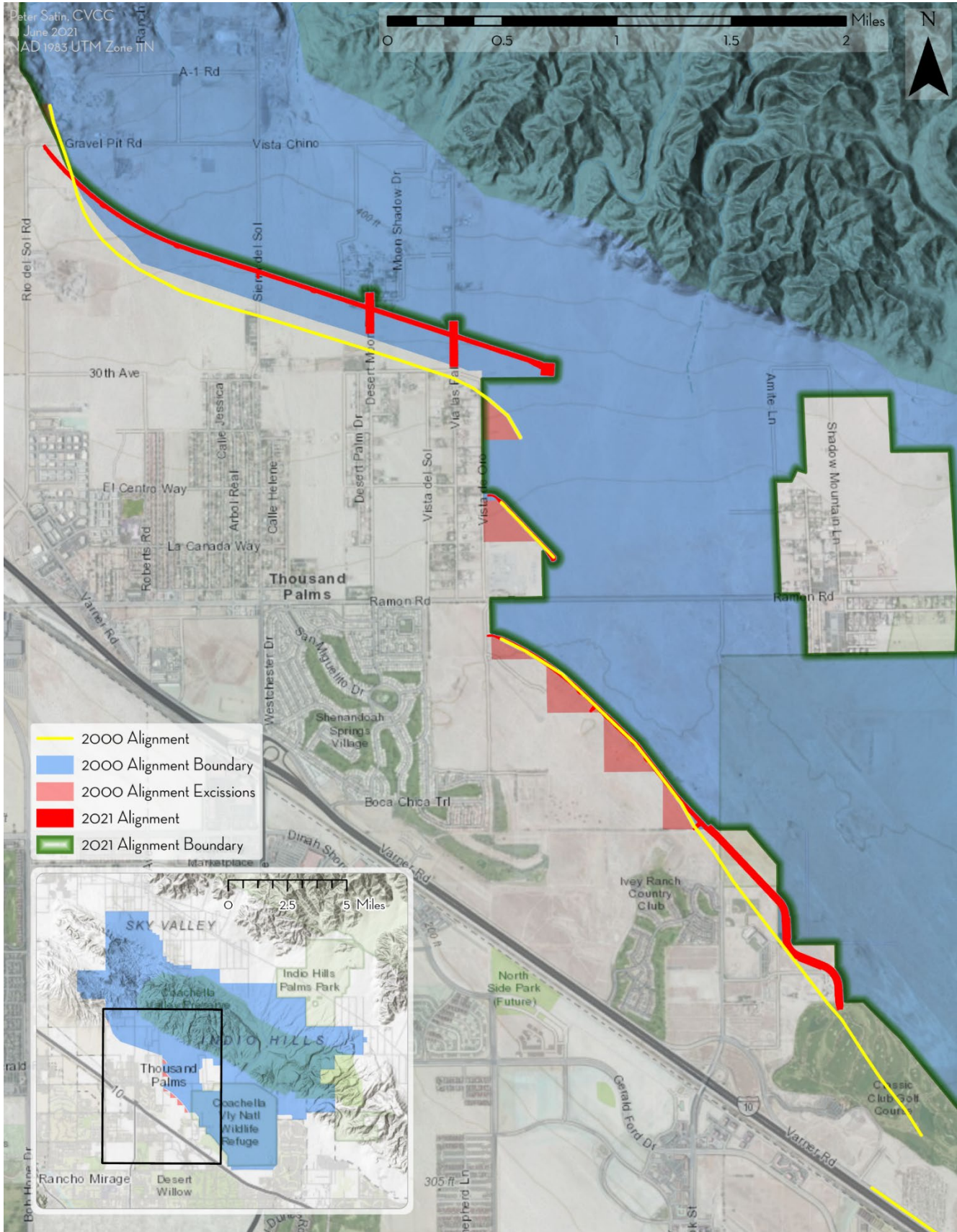


Figure 2: Comparing the boundary adjustments under each alignment. The area under Reaches 2 and 3 is removed in both cases, while the area removed in Reach 1 expands under the 2021 alignment.

COACHELLA VALLEY CONSERVATION COMMISSION

In revising Conservation Objectives, acres of authorized disturbance, and acres of remaining habitat, CVCC used 1996 property ownership as a baseline to determine available land under the new TPCA alignment. From that remaining acreage, CVCC applied a 9:1 ratio of conservation of available habitat to authorized disturbance for each of the Covered Species. Finally, the proportion of Conservation Objective minimums to available habitat under the original boundary was calculated to determine revised minimum Conservation Objectives (Table 2). This process corrected certain instances where the original conservation to disturbance ratio was less than 9:1, and where some Conservation Objectives required more conservation than was actually available.

Even after adjusting the Conservation Area boundary, portions of Reach 1 located in Sections 7 and 8, Township 4 South, Range 6 East, and running through parcels designated as Rural Residential by the County of Riverside, may be subject to specific Site Planning Standards as described in section 4.3.11. CVWD has indicated that, in acquiring the necessary property to construct the Project, parcels will be subdivided so as to utilize only the minimum portion of the original parcel required for the Project footprint, located outside the TPCA. The remaining portion within the adjusted TPCA boundary will be available for other uses and shall continue to be subject to the Site Planning Standards.

Section 5.2.1.4 of the CVSHCP requires CVWD to acquire 550 acres of conservation land within the TPCA floodway to mitigate for the Project, and further that CVWD make a contribution to the CVMSHCP endowment fund sufficient to cover the long-term cost of management and monitoring of these lands⁴. It is CVCC's understanding that CVWD has identified these acres, and their acquisition and protection will take place concurrent with the acquisition of land for the Project footprint. Should any portion of the 550 acres remain unprotected at the initiation of Project ground disturbance, CVCC recommends CVWD prepare an acquisition plan outlining the remaining parcels to be acquired and the timeline projected for their acquisition. CVCC encourages early consultation and coordination to ensure this requirement is met. CVCC acknowledges that CVWD has already met its financial obligation under the CVMSHCP.

While the TPCA's boundary has been adjusted to exclude entirely the permanent disturbance caused by the levees, portions of the Project, especially along Reach 1, will involve temporary impacts to the Conservation Area, and are therefore subject to the CVMSHCP's Avoidance, Minimization, and Mitigation requirements as described in section 4.4. Specific attention shall be paid to those measures pertaining to biological corridors, burrowing owl, sand transport, Le Conte's thrasher, Palm Springs pocket mouse, and Coachella Valley round-tailed ground squirrel. Furthermore, the Project's immediate proximity to the TPCA necessitates the implementation of any and all relevant Land Use Adjacency Guidelines detailed in section 4.5.

CVCC has determined that the Project as proposed by CVWD is consistent with the CVMSHCP Conservation Objectives for the Thousand Palms Conservation Area. The 2021 alignment constitutes only a minor adjustment from the originally contemplated 2000 alignment. Parcels subject to Site Planning Standards will be subdivided such that portions remaining within the TPCA will still be available for conservation and/or development consistent with CVMSHCP requirements. The 550 acres of mitigation have been identified and will be protected during the

⁴ This contribution is included as part of CVWD's total endowment contribution of \$3,583,400.

COACHELLA VALLEY CONSERVATION COMMISSION

land acquisition phase of the Project, while the funding of the long-term management of these acres has already been fulfilled. The Project represents a net benefit to conservation in the TPCA. The levees will serve to retain sand within the system which would otherwise be transported outside the conservation area. Loss of this sand would put the long-term sustainability of the sand dune ecosystem in the TPCA at risk. Acquisition of 550 acres will ensure that sand source and habitat areas are permanently conserved. The Project's overall consistency with the CVMSHCP is predicated on its meeting the above requirements; should CVCC determine at any point that the Project has failed to implement any of the required measures discussed above, it reserves the right to revoke this consistency determination.

Please do not hesitate to reach out to me if you have any questions regarding this analysis, either by phone at 760.346.1127 or by email at psatin@cvag.org.

Sincerely,



Peter Satin
Regional Planner

CC: William Patterson, CVWD
Steve Bigley, CVWD
Carrie Oliphant, CVWD
Heather Pert, CDFW
Carly Beck, CDFW
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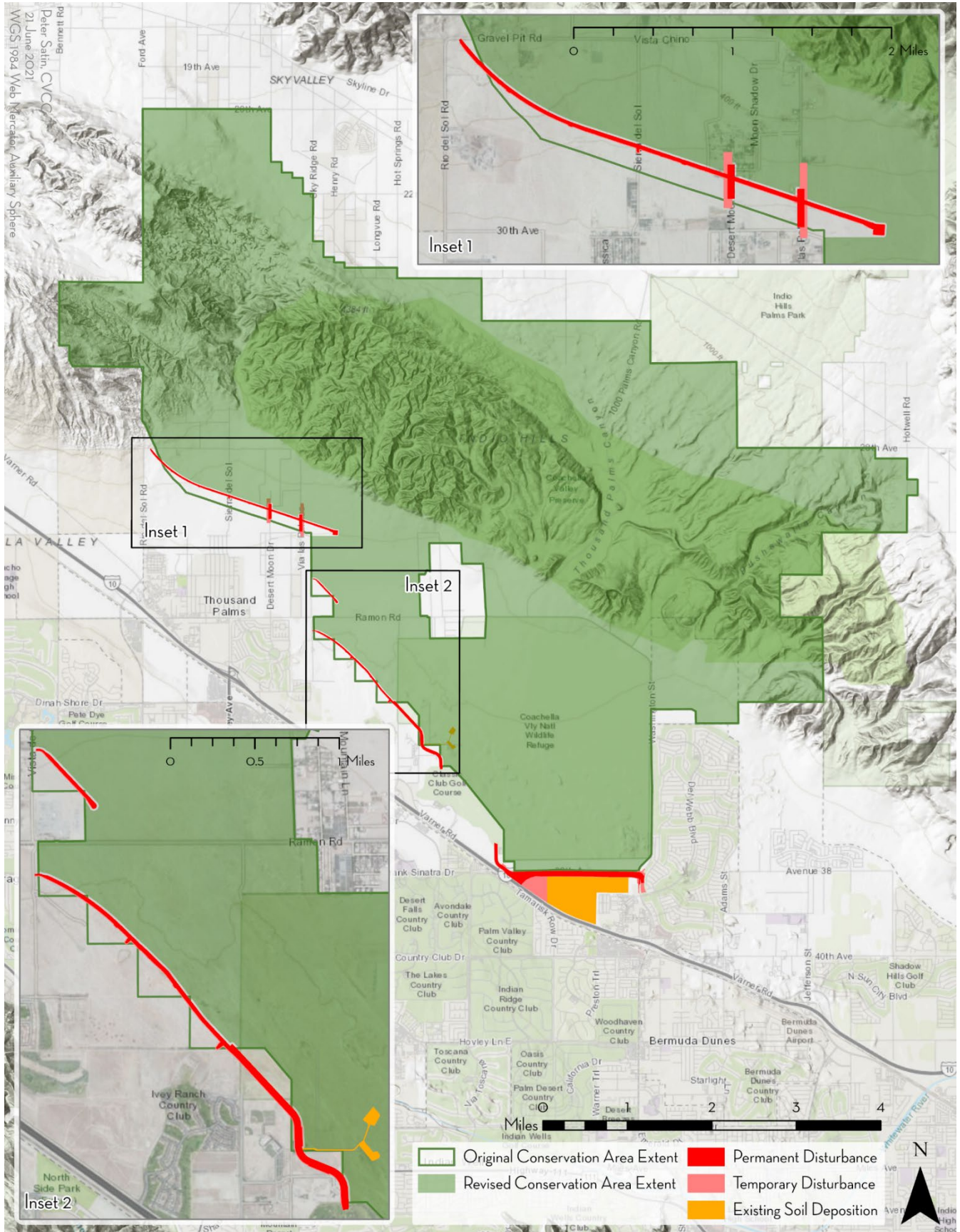


Figure 3: Revised Thousand Palms Conservation Area boundary under the 2021 alignment of the Thousand Palms Flood Control project.

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Table 2: Revised acreage totals for authorized disturbance, remaining conservation to be acquired, and Conservation Objectives for the Thousand Palms Conservation Area.

Conservation Objective	Total Acres in Conservation Area	Acres of Existing Conservation Lands	Acres of Disturbance Authorized	Remaining Acres to be Conserved	Conservation Objective Minimum
Conserve Core Habitat for CV Milkvetch	4,322	3,285	104	933	919
Conserve Core Habitat for Mecca aster	11,763	8,776	299	2,688	2,688
Conserve Core Habitat for CV giant sand-treader cricket	3,860	3,029	83	748	733
Conserve refugium locations for desert pupfish	(15m ²)	(15m ²)	N/A	0	N/A
Conserve Core Habitat for CV fringe-toed lizard	3,860	3,029	83	748	733
Conserve Core Habitat for flat-tailed horned lizard (predicted)	4,046	3,167	88	791	776
Conserve Other Cons. Habitat for Le Conte's thrasher	10,848	6,626	422	3,800	3,785
Conserve Core Habitat for CV round-tailed ground squirrel	8,391	5,065	333	2,993	2,977
Conserve Core Habitat for Palm Springs pocket mouse	11,530	7,598	393	3,539	3,523
Conserve active desert dunes	420	403	2	15	15
Conserve active desert sand fields	3,443	2,627	82	734	720
Conserve mesquite hummocks	57	57	0	0	N/A
Conserve Sonoran cottonwood-willow riparian forest	4	4	0	0	N/A
Conserve desert dry wash woodland	748	710	4	34	34
Conserve desert fan palm oasis woodland	136	136	0	0	N/A
Conserve sand source areas	13,137	8,937	420	3,780	3,780
Conserve fluvial & aeolian sand transport areas	12,429	7,847	458	4,124	4,124
Conserve Linkages	25,554	16,784	877	7,893	0