United States Department of the Interior
U.S. FISH AND WILDLIFE SERVICE
Ecological Services
Carlsbad Fish and Wildlife Office
2177 Salk Avenue, Suite 250
Carlsbad, California 92008

In Reply Refer to:
FWS-ERIV-2022-0033479

September 27, 2022
Sent Electronically

Sallie Diebolt
Chief, Arizona Branch
Regulatory Division
U.S. Army Corps of Engineers
Los Angeles District
3636 N. Central Ave, Suite 900
Phoenix, Arizona 85012-1939

Attention: Michael Langley, Regulatory Project Manager

Subject: Biological Opinion for the Thousand Palms Flood Control Project, Thousand Palms, Riverside, California

Dear Sallie Diebolt:

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion on the proposed issuance of a Section 404 permit, pursuant to the Clean Water Act (CWA), by the U. S. Army Corps of Engineers (Corps) to Coachella Valley Water District (CVWD) authorizing the construction, operation, and maintenance of the Thousand Palms Flood Control Project (Project) in Thousand Palms, California, Riverside County. We received your request on December 10, 2021, to initiate formal consultation on the Project's effects to federally listed species. This biological opinion analyzes the Project's effects on the federally endangered Coachella Valley milk-vetch *(Astragalus lentiginosus* var. *coachellae),* the federally threatened Coachella Valley fringe-toed lizard (*Uma inornata)*, and designated critical habitat for each species, in accordance with section 7 of the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 *et seq*.).

In your request for consultation, your agency determined that the proposed Project may affect, but is not likely to adversely affect the federally threatened Mojave desert tortoise (*Gopherus agassizii*; desert tortoise). The Project is located within the range of desert tortoise; however, no designated critical habitat or modeled habitat occurs within the Project area. A Project habitat assessment (Aspen 2021) identified a potential area of suitable habitat near a portion of the Project, but that the quality of habitat is low due to fine sandy soil substrates that would not support burrows, the proximity to developments and roads, and active off-highway vehicle (OHV) use. Aspen (2021) conducted multiple surveys and did not observe live desert tortoises nor sign within the Project's study area. In addition, CVWD will implement conservation measures to avoid and minimize effects to desert tortoises during Project construction, operation, and maintenance activities. Due to the low potential for desert tortoise to occur within the action area and the proposed conservation measures, we concur with your determination that the proposed action is not likely to adversely affect desert tortoise. We will not address desert tortoise further in this biological opinion, with the exception of including conservation measures agreed upon by the Corps and CVWD in the event that a desert tortoise occurs within the action area.

The proposed Project would occur on Federal, public, and private lands of varying ownership and designations, including lands managed through the Coachella Valley Multiple Species Habitat Conservation Plan (CVMSHCP or Plan) administered by the Coachella Valley Conservation Commission (CVCC), a joint powers authority of elected representatives. The CVMSHCP (CVAG 2007a) is a regional habitat management plan which established 21 Conservation Areas (CA) throughout the Coachella Valley and identified target conservation objectives to protect 27 Covered Species, modeled habitat, natural communities, essential ecological processes, and biological corridors that may be found within each CA. The Plan provides Take of Covered Species or the loss of their habitat to Permittees or other approved entities of the Plan, as long as compliance with the Plan requirements is achieved. The Service issued our section 10(a)(1)(B) permit TE-104604-0 (Service 2008a; Service Permit) for the Plan on October 1, 2008. The Service also completed formal intra-agency consultation analyzing the effects of our issuance of the Service Permit and provided a non-jeopardy determination in the biological and conference opinion for the Plan on July 3, 2008 (Service 2008b).

Because CVWD is a CVMSHCP Permittee and the proposed Project is a Covered Activity, take of covered species including Coachella Valley fringe-toed lizard has been provided through the Plan and the Service Permit (Service 2008a), provided that CVWD ensures the proposed Project is compliant with the requirements of the Plan. Because take of plants is not prohibited under the Act, incidental take for Coachella Valley milk-vetch cannot be authorized under the Service Permit (Service 2008a). Requirements for CVWD Covered Activities are outlined in Section 7.3.1 of the CVMSHCP, and Table 7-6, item (t), which specifies that the required avoidance and minimization measures for the Project are "subject to the terms and conditions of Section 7 consultation" (CVAG 2007a). In 2021, CVCC determined that the proposed Project's design updated from the original 2000 description is consistent with the CVMSHCP (CVCC 2021). Therefore, our analysis in this biological opinion focuses on the effects of the Federal action proposed by the Corps (the issuance of a Section 404 CWA permit to CVWD), per the requirements of the CVMSHCP and the following term and condition of the Service Permit (Service 2008a):

"Where Covered Activities result in the incidental take of Covered Species within the U.S. Army Corps of Engineers' (Corps) jurisdictional wetlands or other waters of the United States, or where Covered Activities are federally funded or require a Federal permit or authorization, such incidental take is authorized by this Permit provided that appropriate authorization is first secured from the Corps or any other applicable Federal agency with jurisdiction. Pursuant to and consistent with Section 14.8 of the IA [Implementation Agreement], where Covered Activities require section 7 consultation under the Act, exemption for any associated incidental take by the applicable Federal agency shall be provided through future consultation, while authorization for any associated incidental take of Covered Species by the Permittees, Third Parties Granted Take Authorization, and/or Participating Species Entities shall be provided through this Permit."

This biological opinion is based on information provided in the following documents and communications: (1) Biological Assessment: Thousand Palms Flood Control Biological Assessment (Aspen 2021); (2) Consistency determination for Coachella Valley Conservation Commission 21-001: Thousand Palms Flood Control Project in the Thousand Palms Conservation Area (CVCC 2021); (3) Geomorphic Assessment of Sand Transport Impacts for the Thousand Palms Flood Control Project (Lancaster 2021); (4) Thousand Palms Flood Control Biological Resources Technical Report (Aspen 2016); (5) Biological opinion for the Intra-Service formal section 7 consultation for issuance of a section 10(a)(1)(B) (TE-104604-0) incidental take permit under the Act for the Coachella Valley Multiple Species Habitat Conservation Plan (MSHCP), Riverside County, California (Service 2008b); (6) section 10(a)(1)(B) (TE-104604-0) Fish and Wildlife Permit for the Coachella Valley Multiple Species Habitat Conservation Plan (MSHCP), Riverside County (Service 2008a); (7) Coachella Valley Multiple Species

Habitat Conservation Plan (CVAG 2007a); (8) written, telephone, and electronic mail correspondence received during the consultation time period; and (9) pertinent literature contained in our files. A record of this consultation is available at the Palm Springs Fish and Wildlife Office.

CONSULTATION HISTORY

The proposed Project was formerly the Whitewater Basin Flood Control Project. In 1993, the Corps conducted a feasibility study to develop seven preliminary project alternatives for reducing high intensity flooding within the community of Thousand Palms. The Service began informally consulting with the Corps in June 1997, to identify biological resources within the study area and the potential impacts of each alternative. In August 1999, the Service evaluated the potential impacts of a Corps Preliminary Preferred (CCP) alternative in a draft Coordination Act Report (CAR) with concerns that the CCP would result in significant adverse impacts to biological resources. The Corps and Service coordinated to develop a new CCP alternative, and the Service issued a non-jeopardy biological opinion (1-6-00-F-46) (Service 2000) for Coachella Valley milk-vetch, Coachella Valley fringe-toed lizard, desert tortoise, and designated critical habitat for fringe-toed lizard to the Corps on September 12, 2000. The Corps published a final Environment Assessment/Mitigation Negative Declaration analysis in 2000; however, the project described in the biological opinion was never implemented. Over time, land use change and development adjacent to the proposed project site precluded implementation of the initial project design. The Corps proposed an updated design of the project to the Service in October 2004.

On July 3, 2008, the Service issued the biological and conference opinion analyzing the effects of our issuance of a section 10(a)(1)(B) permit for the Coachella Valley Multiple Species Habitat Conservation Plan (Service 2008b). A finding of no jeopardy was made for all of the species included in the biological and conference opinion. The CVMSHCP anticipated CVWD's Whitewater Flood Control Project as a Covered Activity.

In 2011, the Corps began a Supplemental Environmental Assessment/Mitigation Negative Declaration analysis for the project to examine land use change and new development in the project area. Due to Federal restrictions, the analysis remained an internal document in its Preliminary Draft phase and was never finalized. The Corps anticipated preparing a draft Environmental Impact Statement (EIS) and Environmental Impact Report (EIR) to analyze an updated design for the project in 2014, now called the Thousand Palms Flood Control Project (Project). Proposed updates to the 2000 design included the incorporation of both channels and retention basins into some levee structures, additional permanent disturbance to Coachella Valley fringe-toed lizard and milk-vetch designated critical habitat, and increased disturbance to fluvial and aeolian sand source and transport processes beyond what was anticipated in the 2000 biological opinion. In 2014 and 2016, the Service responded to the Corps' Notices of Intent (NOI) regarding preparation of a draft EIS/EIR. The Service recommended the Corps reinitiate section 7 consultation to analyze the effects of new modifications to the Project not addressed in the initial 2000 biological opinion or associated incidental take statement, and that the Corps coordinate with the Service to prepare the EIS/EIR.

On November 16, 2020, the Corps contacted the Service to discuss early coordination for formal consultation, including technical assistance for the draft biological assessment (BA). The Corps, Service, and CVWD held a preliminary coordination call on December 16, 2020. The Corps submitted a draft BA to the Service for comments on February 16, 2021. Due to anticipated Project impacts occurring directly on the Coachella Valley National Wildlife Refuge (CVNWR), a unit of the Service's National Wildlife Refuge System (NWRS) managed by the Sonny Bono Salton Sea National Wildlife Refuge Complex (Refuge Complex), the Palm Springs Fish and Wildlife Office (PSFWO) contacted the Refuge Complex to determine whether the Refuge Complex or PSFWO would conduct the section 7 consultation, as the NWRS usually leads formal consultations regarding impacts to lands within its system. The Refuge

Complex requested PSFWO lead and complete the consultation. Both PSFWO and the Refuge Complex coordinated on initial Service comments for the draft BA and submitted our review to the Corps on March 24, 2021. The Corps, CVWD, and both Service field offices held a coordination call on April 6, 2021, to discuss and clarify the BA. In May 2021, the Refuge Complex also accepted a formal invitation from the Corps to join as a cooperating agency to coordinate regulatory requirements pertaining to the National Environmental Policy Act (NEPA).

The Corps, CVWD, and both Service offices continued coordination to review recommendations for conservation measures for the draft BA that would also be consistent with measures proposed in NEPA regulatory documents. During this time, the PSFWO also collaborated with California Department of Fish and Wildlife (CDFW), collectively the Wildlife Agencies under the CVMSHCP, to coordinate with CVCC, the Corps, and the CVWD on the CVMSHCP consistency determination process for the Project. Discussions held during monthly CVMSHCP coordination calls and stand-alone meetings focused on identifying and clarifying regulatory authorities and requirements for the Project under the CVMSHCP and section 7 consultation. CVCC issued their determination finding the proposed Project consistent with the CVMSHCP on July 13, 2021 (CVCC 2021). In their determination, CVCC clarified how the Project's construction would redefine the boundary of the Thousand Palms Conservation Area, so that the Project's footprint was no longer within the Conservation Area. The consistency determination also further detailed avoidance and minimization measures CVWD would be required to implement during construction, operation, and maintenance of the Project.

On August 4, 2021, the Corps, CVWD, PSWFO, and Refuge Complex held a section 7 coordination call where the Service's recommendations for the BA were confirmed, and CVWD determined their next action items would be incorporating Service recommendations into the final BA with an anticipated timeline of initiating formal consultation in December 2021. On December 10, 2021, the Corps requested initiation of formal section 7 consultation for the Project as a new project due to modifications to their regulatory role and changes in funding sources that had occurred since the 2000 biological opinion was issued. The Service acknowledged our receipt of the initiation request and requested additional information on specific components of the Project description.

The Corps and CVWD submitted the requested information to the Service in March 2022. On April 22, 2022, the Service requested a 30-day extension, which was accepted by the Corps on April 25, 2022. Then the Service requested another 30-day extension on May 26, 2022, to review and incorporate the information provided in March 2022, which was accepted by the Corps on May 27, 2022. On June 24, 2022, the Service provided portions of the draft biological opinion from the Corps, Refuge Complex, and CVWD to review. We received comments on July 25, 2022. We addressed those comments and provided a complete draft biological opinion on August 8, 2022. Then, the Corps provided comments on August 29, 2022, and we had a meeting to discuss on September 6, 2022. On September 9, 2022, the Corps provided final comments on the draft biological opinion.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

Project Description

The proposed action is the issuance of a Section 404 Clean Water Act permit by the Corps that would authorize CVWD to construct, operate, and maintain a flood control system within the community of Thousand Palms, California to provide flood protection and improve public safety. The Project would manage the conveyance of water flows from heavy storm events through a series of linear flood control structures and stormwater conveyance facilities. According to the biological assessment (Aspen 2021), the

Project would consist of four segments (reaches) composed of levees and/or channels, depending on the intended function of a reach, and other ancillary infrastructure. Reach 1 would convey stormwater containing sediment from the Indio Hills to Reach 2, where some sediments would be naturally deposited in the naturally-occurring primary alluvial deposition area as stormwater flows continue towards Reach 3. Then, Reach 3 would convey flows into the existing floodway at the Classic Club Golf Course. Finally, 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.

Project components during the construction and operations and maintenance (O&M) phases include:

- Construction of levees and channels for Reaches 1 through 4,
- Establishment of temporary work areas,
- Conveyance system development including improvements to existing systems at Classic Club Golf Course and the Sun City residential development, and construction of a proposed conveyance system to direct stormwater flows under Washington Street,
- Acquisition of a 550-acre floodway located within the primary alluvial deposition area near Reach 2,
- Re-alignment of Avenue 38,
- A Sand Migration Management Plan (SMMP) to replenish accumulated sediments within the aeolian habitat located within CVNWR, and
- Applicant-proposed conservation measures

The following description organizes these Project components according to the work phase during which they are anticipated to occur.

Construction

CVWD anticipates construction would begin on the downstream end of the Project with the construction of Reach 4, to ensure that stormwater flows that may occur during construction will flow into existing conveyance facilities (Aspen 2021). Additional components built during this period include the Washington Street Crossing and improvements to the existing stormwater collection basins at its terminus; connector facilities and culverts at the terminus of Reach 3 and upstream end of Reach 4 to direct flows through the existing Classic Club Gulf Course conveyance system; the realignment of utility and sewer infrastructure at Reach 4; and two road crossings for Desert Moon Drive and Via Las Palmas at Reach 1. CVWD anticipates these activities will occur over 12 months. The next construction period consists of constructing the remaining reaches, beginning with Reach 3, and ending with Reach 1 for a duration of 12 months. The entire construction phase is expected to last approximately 27 months.

At the completion of construction, CVWD would conduct site closeout activities including clean-up of all construction material and debris, recontouring the work area, and restoration of temporary disturbance areas including decompaction of temporary work areas to facilitate revegetation.

Flood Control Structures (Reaches)

CVWD would construct four flood control structures (reaches) to divert and manage the flow of stormwater originating at the base of the Indio Hills throughout the city of Thousand Palms. The reaches would have similar general structural features, such as levees and channels made of soil cement or other

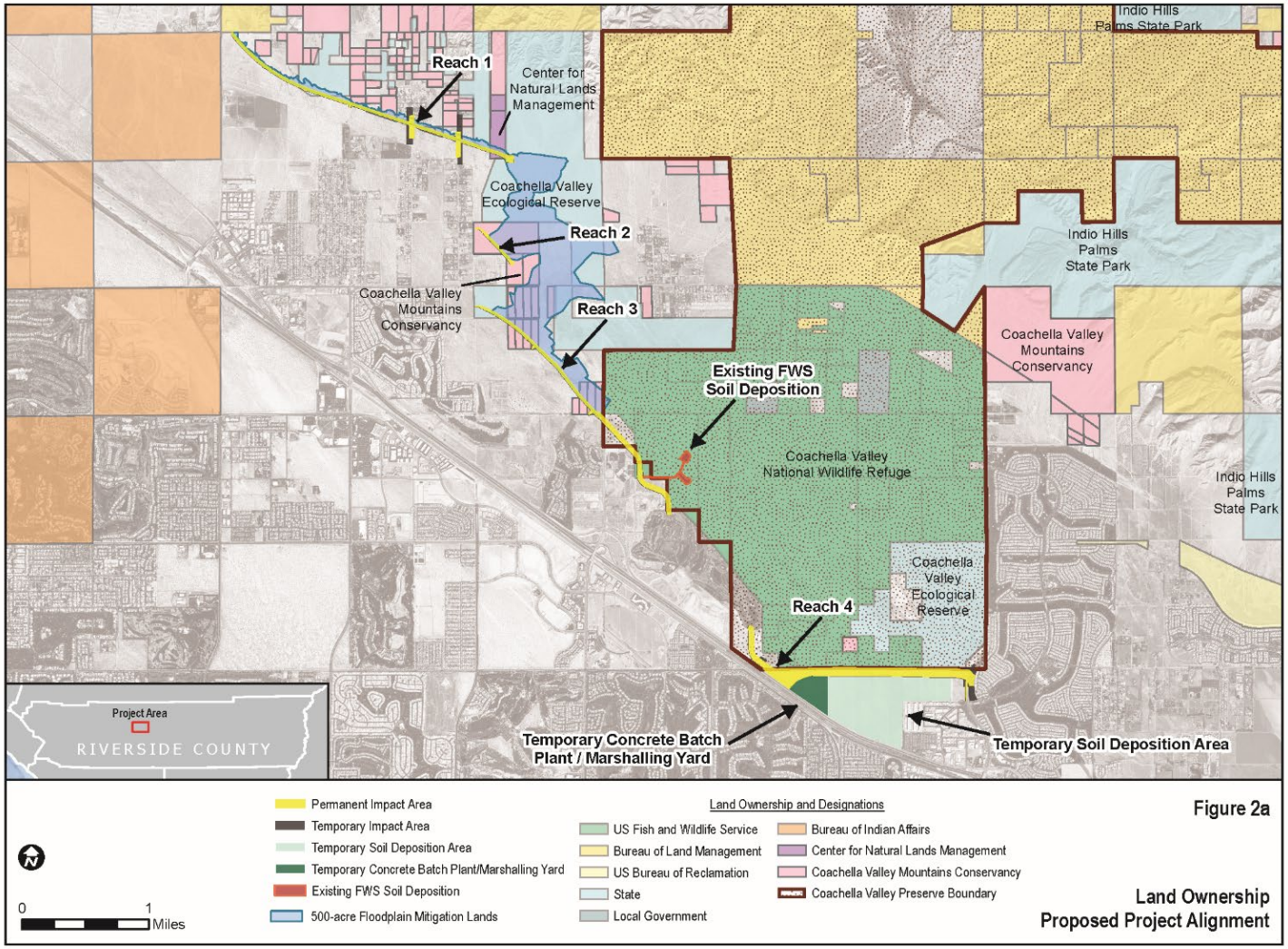

Figure 1: Thousand Palms Flood Control Proposed Project Alignment - Land Ownership (Aspen 2021)

materials, and each reach would have additional unique features depending upon their placement and purpose in the flood control system. Appropriate fencing to stabilize sand formations, sediment, and/or prevent erosion may be installed as needed in accordance with a Sand Migration Management Plan conservation measure (CM 3) approved by the Service and Corps.

Reach 1

Reach 1 would divert heavy stormflows originating from Indio Hills toward a 550-acre floodway at the terminal end of the reach. Reach 1 would be located on the south side of 28th Avenue, near the 28th Avenue and Rio del Sol Road intersection, and cross three existing roadways: Sierra del Sol, Desert Moon Drive, and Via Las Palmas. The reach would parallel and be adjacent to the west side of an existing Southern California Edison (SCE) utility corridor and cross residential and commercial private lands. CVWD would acquire these private properties to construct Reach 1. Reach 1 would be approximately 12,700 feet in length with a surface area of 63.28 acres. The structural build would consist of an underground levee toe and an elevated levee embankment.

In addition, CVWD would construct a 1.20-acre excavated sediment basin with riprap protection on its upstream (east) side at the end of the reach to accumulate sediments from stormwater. The sediment basin would trap sediment, slow the velocity of stormwater flow across the Coachella Valley Preserve (Preserve), and avoid effects associated with erosion or channel migration. The sediment basin would also induce deposition of fluvially-transported sediment within the sand corridor for natural transport onto the Preserve.

An existing reservoir (Reservoir 4602), located west of Via Las Palmas and north of the proposed Reach 1, contains existing onsite flood control facilities that would be used to manage stormflows emanating from the Project and would require additional flood protection improvements.

Road crossings would be constructed over Reach 1 to maintain existing travel routes (Figure 1). CVWD would design culverts for these road crossings to minimize disruptions to fluvial sediment transport. Stormwater diverted by these road crossings would flow into the sediment basin in a southeast direction toward Reach 2.

Reach 2

Reach 2 would divert stormwater flows from Reach 1 in a southeasterly direction to protect the SCE Mirage Substation from flooding. Reach 2 would be a 1,700-feet-long levee comprised of a levee toe and embankment. An access road of the same length would be constructed along the top of the embankment and on the west (downstream) side of the reach to support operation and maintenance activities. The total area of Reach 2 would be 5.63 acres. Reach 2 would have a low profile of 5 feet sited within the wind corridor and aligned with the direction of prevailing winds to minimize interference with aeolian sand transport processes. Reach 2 would capture large storm events from Reach 1 and direct flow toward Reach 3.

Reach 3

Reach 3 would direct stormwater flows from Reach 2 into an existing conveyance system located on the Classic Club Golf Course adjacent to the western boundary of CVNWR and ultimately into Reach 4. Reach 3 would be comprised of an approximately 6,500-foot levee and a 5,300-foot-long incised trapezoidal channel lined with soil cement. Reach 3 would have a surface area of 46.7 acres. The reach would cross conservation lands administered by CDFW, private lands parcels owned by Xavier College

Preparatory High School and other entities, and portions of CVNWR. Construction of Reach 3 would include an underground levee toe and levee embankment. The levee would transition into an incised trapezoidal conveyance channel to direct storm flows. Sediments deposited from heavy storm events will be periodically removed and returned to the active sand corridor. The levee design would be consistent with CVNWR's updated sand management plan (CM 3) to replenish and sustain the natural aeolian processes and habitat within CVNWR.

Reach 4

Reach 4 would be designed to receive stormwater flows from the existing conveyance system described above in the Reach 3 section and direct flows easterly to the existing terminal conveyance facilities near the Sun City residential development. The reach would be a 98.03-acre, 10,300-foot-long incised trapezoidal channel and constructed within the existing Avenue 38 alignment directly adjacent to the southern boundary of the CVNWR. The channel would be constructed perpendicular to the wind corridor and direct stormwater to a proposed conveyance system at Washington Street, then end at the existing Sun City conveyance system. Construction of Reach 4 would require realigning Avenue 38 to be directly adjacent to the southern (downstream) side of the Reach.4

Construction of Reach 4 would begin with the realignment of Avenue 38. The avenue would be closed to prevent public access into the work area. Construction access to the Project site would occur on existing roads that would be widened to a minimum of 20 feet to accommodate heavy equipment. Additional temporary access roads would be constructed to transport excavated and backfill material between the construction areas for each reach and temporary work site located at the western end of Avenue 38 near Interstate 10.

Blow sand from an active sand dune along CVNWR's southern boundary periodically accumulates within the current alignment of Avenue 38 and may need to be removed prior to construction activities for Reach 4. The CVNWR has an existing arrangement with the County of Riverside to collect blow sand from the road and return the material to a sand dispersal site within the wind corridor on the CVNWR (Service 2013a). The Applicant will follow CVNWR management's guidance to clear accumulated blow sand from Avenue 38 to prepare the worksite.

Additional site preparation activities for the construction of Reach 4 include the removal and relocation of utility infrastructure (e.g., distribution poles and sewer facilities) within an existing utility right-of-way directly located at the southern Refuge boundary. Asphalt and other non-usable material removed from Avenue 38 would be delivered to appropriate landfill or recycling facilities. Following site preparation within the right-of-way and original Avenue 38 footprint, excavation and construction activities for Reach 4 would occur.

Floodway

CVWD would acquire a 550-acre floodway located on the western (downstream) side of Reach 1 as part of a habitat compensation package further described below in the Conservation Measures section of this biological opinion. The floodway is within a primary alluvial depositional area that spans the area between Reaches 1 and 3 (Figure 1). The floodway is within the active sand corridor and aids in directing fluvial sediments deposited from stormwater to the aeolian habitat areas downwind. The floodway would be conserved to prevent development within the alluvial fan and limit further disruptions to sand transport within the aeolian system. This land would also serve to provide compensatory mitigation under the Section 404 permit to be issued by the Corps. Compensatory mitigation activities within this area

(preservation and enhancement of aquatic resources) would be consistent with future anticipated management activities by the CVCC under the CVMSHCP.

Realignment of Avenue 38

Avenue 38 currently lies directly adjacent to the southern boundary of CVNWR. Additionally, an existing utility right-of-way for electrical transmission and underground sewer pipelines is also located along the southern boundary. CVWD would construct Reach 4 within the current footprint of Avenue 38, such that the northern (upstream) side of Reach 4 would be directly adjacent to the southern boundary of the CVNWR. The new footprint of Avenue 38 would be realigned and constructed directly adjacent to the southern (downstream) boundary of Reach 4. The realigned Avenue 38 would be a four-lane route, 76 feet wide, 7600 feet long, and with a surface area of approximately13 acres. 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 Reach 4. 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.

Washington Street Conveyance System

CVWD would construct a conveyance system to direct stormwater flows from Reach 4 under Washington Street to the flood system terminus at the Sun City residential development. The conveyance system would be approximately 5 acres or less and include the following components:

1. An excavated basin and culverts under the Washington Street crossing;
2. A road crossing placed over the basin to maintain Washington Street's original traffic route;
3. Widening activities on the southbound side of Washington Street near the intersection with the realigned Avenue 38, to provide public access to Avenue 38; and
4. Improvements to the existing Sun City collection basin to accommodate stormwater flows from the flood control system.

Temporary Work Areas

CVWD would establish temporary work areas immediately south of the existing Avenue 38 alignment near Interstate 10. The temporary work areas will include a 213.40-acre temporary soil depositional area and a 37.04-acre area to establish a batch cement plant for creating soil cement for the construction of the reaches.

These temporary work areas would avoid effects to sand transport and habitat to the maximum extent possible. In these temporary work areas, vegetation would be cleared using a drive and crush method to preserve vegetative root structures so that native plants may reestablish. All temporary work areas would be restored upon completion of construction activities. These activities may include removing all construction related material and debris, recontouring the work area, and de-compacting compressed soils in temporary work areas to facilitate revegetation.

Existing Access and Road Improvements

During construction, existing roadways would be used for access by personnel, vehicles, and construction 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. CVWD will coordinate with regional NWRS and CVNWR management on any

improvements to existing recreational roads that may be needed to access portions of the CVNWR, such as segments of the equestrian trail that currently also serve as a utility right-of-way along the northern boundary of the CVNWR.

Removal of Blow Sand

Blow sand is transported by natural aeolian processes past the extent of sand dune habitat within CVNWR, accumulating on roadways and other infrastructure areas. CVNWR has an ongoing agreement with Riverside County to remove and deposit accumulated sand existing sites within the CVNWR to replenish the blow sand ecosystem. During site preparation and construction, the Applicant will clear blow sand that accumulates in Project construction areas and deposit acceptable material in existing approved sand dispersal areas on the CVNWR. These sand dispersal sites were evaluated and selected for their location (Figure 1) and capacity within the natural wind corridor to effectively redistribute sand back into the aeolian habitat system processes (Service 2013a). Management of sand and sediments will be conducted in accordance with CVNWR guidance.

Operations and Maintenance (O&M)

CVWD anticipates operations and maintenance activities would include routine and emergency repair of flood control structures; sand management to remove accumulated sediment from flood infrastructure and place in dispersal areas; and vegetation removal to maintain integrity of flood infrastructure.

Structural Repair

Structural repair would occur as needed, e.g., after significant high volume flash floods. Occasional excavation would be conducted to rebuild or reinforce underground levee toes, as needed. New fill material or soil cement would be added to components of the reaches to repair damage, particularly after large storm events.

Sand Management

Aeolian processes currently transport blow sand beyond CVNWR and onto surrounding development and infrastructure. CVWD anticipates approximately 0.50 feet of sand would accumulate per year in Reach 3 and one foot per year in Reach 4. Sand is expected to accumulate within the channel components of the entire flood control system more quickly than along the levee components, where most of the sand would continue to be blown downwind. CVWD will clear levees of accumulated sand approximately once per year and after major flood events as needed. Sand removal and frequency will be based on the rate of sand accumulation in the flood system. Sand removal and frequency will be directed by CVNWR.

Vegetation Removal

Maintenance activities would also include the chemical or mechanical removal of vegetation to maintain structural integrity, access, and compliance with Corps levee requirements. Root systems from vegetation can degrade the integrity of the flood control structures. The earthen segments of the levees 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. An Integrated Weed Management Plan would specify weed inventory and monitoring, pre-construction and ongoing weed treatments, preventative measures, and control methods.

Table 1. Project Disturbance Area (Acres) (Aspen 2021)

	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**
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	8.34	**9.05**
Reach 4	0.00	0.00	**0.00**
New Soil Deposition Site	0.00	0.00	**0.00**
Subtotal	**0.67**	**8.38**	**9.05**
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 Preserve[1]			
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. Impacts to Preserve lands in Reach 3 and Reach 4 are likely smaller as the most updated shapefiles for this area do not reflect land use changes that have occurred including the development of the Classic Club Golf Course.

Conservation Measures

The Corps and CVWD proposes to implement the following conservation measures (CM) as part of the proposed action to avoid, minimize, and offset effects to federally listed species, designated critical habitat, and biological resources. In addition, the Corps and CVWD will ensure the implementation of required Avoidance and Minimization Measures and Land Use Adjacency Guidelines as required by Section 4 of the CVMSHCP.

CM 1. Minimize Impacts to Sand

This measure shall apply to the construction and O&M phases of the Project. CVWD shall develop and implement best management practices (BMPs) in accordance with the Sand Migration Management Plan (CM 3) to avoid and minimize impacts to sand and sand transport. BMPs shall include, but not be limited to, the following:

1. Fencing or other temporary or permanent barriers shall be designed, oriented, and installed to minimize impacts to sand and sand transport.

2. Construction activities that would create temporary or permanent barriers shall be avoided and minimized to the extent feasible.

3. 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).

4. Areas of active dunes shall be avoided. If active dunes cannot be avoided, disturbance to the dune sand shall be minimized through implementation of additional appropriate conservation measures (CM 2 and 3).

CM 2. Sand Removal, Distribution, and Disposal

The Corps and CVWD will ensure that all Project components shall be regularly inspected for the accumulation of blow sand material. Material shall be removed as necessary to maintain capacity of Project components and avoid the use of accumulated sand as habitat for sensitive species in the Project area. CVWD will coordinate with CVNWR to create a SMMP (CM 3) to determine responsibilities, roles, schedules, and protocol. Sand substrate shall be evaluated for suitability to replenish sand dune habitat throughout the CVNWR. If suitable, the material shall be deposited on predetermined locations within the natural wind corridor, specifically in areas where winds are the strongest and as far upwind as possible. Immediate upwind or downwind obstructions shall be avoided when distributing sand in the wind corridor. Sand shall be placed in low-level, non-compacted mounds across the entire width of the wind corridor, generally in a line roughly perpendicular to the wind direction maximizing aeolian transport onto the Preserve and CVNWR. Material that is determined to be unsuitable to replenish habitat on the Preserve shall be disposed appropriately.

CM 3. Prepare and Implement a Sand Migration Management Plan (SMMP)

CVWD will prepare and implement a SMMP to guide the management of the sand resources during construction, operations, and maintenance of the Project. An Adaptive Management Plan will be included as a component of the SMMP.

The SMMP shall be prepared and submitted to the Corps, Service, and other appropriate agencies for review and approval at least 60 days prior to construction of the Project. CVWD shall ensure that personnel involved in sand removal and other activities that affect sand and sand transport are familiar with the requirements and guidelines in the SMMP. The SMMP shall include specific guidance on the implementation of sand removal, distribution, and disposal (CM 2), including but not limited to:

1. Inspection schedules for accumulation of sand in all Project levees and channels, including inspections after precipitation events.

2. Requirements for pre-activity biological surveys to remove sand including surveys of sand removal areas and areas of associated disturbance, sand distribution sites and access roads, and biological monitoring for sand removal and distribution activities. Based on the results of pre-activity surveys, CVWD or its contractor shall monitor no-disturbance buffer areas, other access areas, and activity restrictions to minimize potential impacts to any sensitive resources or special-status species.

3. 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.

4. Cleanup requirements for trash abatement and accidental spills.

5. Procedures and guidelines for the distribution of sand, including parameters for selection of sand distribution sites, appropriate placement of sand (as described in CM 2), and procedures for disposal of unsuitable material.

6. 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 distributionevent. The SMMP shall also include the requirement for all Project-related activities to occur within marked boundaries, on approved access routes, and turn-around areas.

7. The SMMP shall include the BMPs identified or developed under CM 1.

CM 4. Biologists Roles and Responsibilities

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 surroundingeach work site where legal access is possible. See CM 11 through 14 for additional required species-specific authorizations.

This measure shall apply to the pre-construction and construction phases of the Project.

Lead Biologist/Field Contact Representative. CVWD shall appoint a Lead Biologist in coordination with the Corps, 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.). The Lead Biologist will be the Field Contact Representative (FCR) and responsible for overseeing compliance with all conservation measures. The FCR will have demonstrated expertise with the biological resources within the action area. CVWD will provide the qualifications of the proposed FCR to the Corps and Service for approval at least 30 days prior to pre-construction activities. The Lead Biologist/FCR will be CVWD's primary point of contact to the Corps, Service, and other agencies regarding any biological resource issues, implementation of related mitigation measures, and permit conditions during Project construction and post-construction activities. The Lead Biologist shall also be qualified as an Authorized/Acceptable Biologist as described below. In addition, the Lead Biologist will be responsible for supervising and training biological monitors and preparing monitoring reports and documentation.

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 of an Authorized/Acceptable Biologist as described below.

Designated Desert Tortoise Biologist. CVWD shall appoint a Designated Desert Tortoise Biologist qualified and approved as a Desert Tortoise Authorized/Acceptable Biologist as described below to oversee specific activities for desert tortoise described in CM 14.

Desert Tortoise Authorized Biologist/Acceptable Biologist. CVWD shall appoint at least one Authorized Biologist approved by the Service, who is also considered an Acceptable Biologist under the CVMSHCP, to conduct pre-construction surveys (CM 6), monitor construction and O&M activities (CM 5), implement desert tortoise conservations (CM 14), and potentially oversee desert tortoise conservation measures in the role of a Designated Desert Tortoise Biologist.

For each proposed Desert Tortoise Authorized/Acceptable Biologist, CVWD will submit documentation of a proposed biologist's qualifications to the Corps and Service for evaluation and approval that the applicant meets the minimum qualifications at least 60

days prior to planned work. Documentation shall include a resume, contact information for at least three references, and detailed descriptions of work experience and training performing each duty of an Authorized/Acceptable Biologist relevant to Project activities described in this biological opinion in accordance with the Service's *Desert Tortoise Field Manual* (Service 2009b). An Authorized/Acceptable Biologist must meet the following minimum qualifications:

1. Possess a bachelor's degree or higher in biological sciences, zoology, botany, ecology, or a closely related field.

2. Have three years of experience in field biology, with at least 1 year of field experience with biological resources found in or near the Project area.

3. Possess a thorough and current knowledge of desert tortoise behavior, natural history, ecology, and physiology

4. Demonstrate substantial field experience and training to safely and successfully conduct their required duties for desert tortoise conservation measures described in CM 14.

Qualified Biologist(s). CVWD shall appoint at least one Qualified Biologist approved by the Service and Corps to conduct pre-construction surveys (CM 6) and monitor construction and O&M activities (CM 5) for the federally listed or CVMSHCP Covered species they are assigned. A Qualified Biologist will be present to conduct Project activities and conservation measures described in this biological opinion including surveying, biological monitoring, relocating Coachella Valley fringe-toed lizard (CM 13), salvaging Coachella Valley milk-vetch (CM11), and/or monitoring common ravens (*Corvus corax*) (CM 15). The Qualified Biologist is responsible for being aware of the latest information on Service protocols and guidelines for each assigned species. The Qualified Biologist is also required to have the appropriate qualifications and authorizations for each assigned species to complete Project activities as further described in CM 11 through 15.

CVWD will submit a resume for each proposed Qualified Biologist, with at least three references and contact information, to the Corps and Service for confirmation that the applicant meets the minimum qualifications at least 60 days prior to planned work. The Qualified Biologist(s) must meet the following minimum qualifications:

1. Possess a bachelor's degree or higher in biological sciences, zoology, botany, ecology, or a closely related field.

2. Have three years of experience in field biology, with at least 1 year of field experience with biological resources found in or near the Project area.

3. Possess a thorough and current knowledge of special-status wildlife species behavior, natural history, ecology, and physiology.

4. Demonstrate substantial field experience and training to safely and successfully conduct their required duties, especially surveying, and successfully relocating or salvaging species.

CM 5. Conduct Biological Monitoring and Reporting

This measure applies to the construction phase of the Project. Refer to CM 17 for additional information on biological monitoring during the O&M phase of the Project. Roles of biologists as described in CM 4 will include a Lead Biologist/FCR (that is also an Authorized Biologist/Acceptable Biologists Designated Desert Tortoise Biologist, at least one or more Desert Tortoise Authorized/Acceptable Biologist(s), and a Qualified Biologist(s) approved to oversee other federally listed species.

CVWD shall assign approved Authorized/Acceptable Biologist for desert tortoises and Qualified Biologists for Coachella Valley fringe-toed, milk-vetch, or other appropriate species to the Project as biological monitors to monitor all work activities during the construction phase. A Designated Desert Tortoise Biologist who is an approved Desert Tortoise Authorized/Acceptable Biologist will also be present to oversee and conduct desert tortoise specific measures (CM 14).

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 conservation measures and other Project requirements.

CVWD shall provide training to biologists conducting monitoring, in addition to WEAP (CM 7) and prior to the monitor commencing field duties, on biological resources present or potentially present on the Project, as well mitigation measures, permit requirements, Project protocols, and the duties and responsibilities of biological monitoring.

Biologists 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 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 conservation measures. 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 CM 17 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 conservation measures. 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 conservation measures or other Project requirements, or that will have an unauthorized adverse effect on biological resources.

Handling, translocation, release from entrapment, or other interaction with wildlife shall be performed consistent with conservation measures and required authorizations (including CDFW and Service permits), and other Project requirements (and only done by biologists approved to handle a species, as described in CM 4).

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 (CNDDB).

Bird nesting activities and buffers will be established according to the buffers identified in the nesting bird management plan in coordination with the appropriate regulatory agencies and the Service. All non-compliance incidents, including nest buffer incursions, with resolution or remedial actions taken.

All reporting requirements for Project activities will be fulfilled as described throughout the biological opinion.

CM 6. Conduct Pre-construction Surveys

CVWD will plan and conduct pre-construction surveys to identify locations of special-status plants, wildlife, and nesting birds occurring within the Project 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 ensure the completion of 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 4 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 construction or ground disturbance work ensuring 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 monitor no-disturbance buffer areas or other access or activity restrictions to minimize potential impacts to the resources.

CM 7. Worker Environmental Awareness Program (WEAP)

CVWD shall prepare and implement a Project WEAP to educate on-site workers about the Project's sensitive environmentalissues. Contents of the WEAP will be coordinated with the Service prior to finalizing it. The WEAP shall be administered by the Lead Biologist or Qualified Biologist to all personnel on-site during and throughout Project construction. If the WEAP presentation is recorded on video, it may be administered by any competent Project personnel. A construction worker may work in the field along with a WEAP-trained crew for up to 5 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 EIS/EIRand the biological opinion.

The WEAP shall consist of a training presentation with supporting written materials provided to all participants. The WEAP training shall include at a minimum:

1. Overview of the Project, the jurisdictions the Project route passes through or adjacent to (e.g., CVMSHCP/Natural Community Conservation Plan [NCCP] and Preserve), and any special requirements of those jurisdictions.

2. 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 species. Review of the take statement authorized for the Project and applicable locations.

3. 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 conditions (when delivered).

4. Sensitive biological resources and potential impacts on the Project site and adjacent areas, including nesting birds, federally listed species, 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.

5. Sand habitats and sand transport, Project requirements for protecting these resources,and the consequences of non-compliance.

6. Construction restrictions such as limited operating periods, ESAs, and buffers.

7. Avoidance of invasive plant introductions to the Project site and surrounding areas, and description of the Project's Integrated Weed Management Plan (CM 10) and associated compliance requirements for workers on the site.

8. Function, responsibilities, and authority of biological and environmental monitors and how they interact with construction crews.

9. Requirements to remain within authorized work areas and approved roads with examples of the flagging and signage used to designate these areas and roads, and the consequences of non-compliance.

10. Procedures 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.

11. One-hour hold (or other method CVWD will use to halt work when necessary to maintain compliance) and the requirement for compliance.

12. ESAs and associated restrictions, and other restrictions such as no grading areas, flagging or signage designations, and consequences of non-compliance.

13. Nest buffers and associated restrictions and the consequences of non-compliance. Procedures and timeframes for halting work and removing equipment when a new buffer is established. Discussion of nest deterrents when no active nests are found during surveys.

14. Explanation that wildlife must not be harmed or harassed. Procedures for covering pipes, securing excavations, and installing ramps to prevent wildlife entrapment. Contact procedures if dead, injured, or entrapped animals are encountered.

15. 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.

16. 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.

17. Contact information for CVWD, construction management, and contractor environmental personnel, and who to contact with questions.

18. 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 Biologist, biological monitor, or environmental field staff prior to those individuals entering or working on the Project. Short-term visitors (total of 5 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 are not required to attend WEAP or focused WEAP training.

WEAP Refreshers. Lead Biologists or Qualified Biologists will periodically present brief WEAP refresher presentations to educate 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. The biologist will note the date, contractor or subcontractor, tailboard location and time, and topics discussed during the WEAP refresher and include this information in their daily monitoring log.

CM 8. Minimize Native Vegetation and Habitat Loss

The final design of the Project shall minimize disturbance and removal of native vegetation and habitat including sand habitat to the extent safe and feasible.

Vegetation removal within work areas will be minimized. Construction activities will implement mowing or drive and crush method during site preparation rather than grading. Stockpiling of soils and salvaged topsoil will be located in previously disturbed areas and will avoid native vegetation and 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. All work activities, vehicles, and equipment will be confined to approved roads and staked and flagged or marked work areas.

CM 9. Use Native Species for Revegetation of Temporary Disturbance Areas

During construction, CVWD will revegetate temporarily disturbed areas where necessary for erosion control, prevention of the spread of weeds, or mitigation of visual impacts. Only native species appropriate for the area and habitat type shall be used. Non-native species will not be planted. Within appropriate habitat, native plants that provide foraging opportunities for CoachellaValley fringe-toed lizard and desert tortoise shall be included in seed mixes, as determined by a Qualified Biologist.

CVWD will coordinate with CVNWR on all restoration activities within CVNWR lands to ensure that the restoration activities align with NWRS guidelines and management objectives.

CM 10. Prepare and Implement an Integrated Weed Management Plan

CVWD and the Corps shall prepare and implement an Integrated Weed Management Plan (IWMP) describing the proposed methods of preventing or controlling the spread of non-native plants or new weed infestations. Pre-construction activities (e.g., for geotechnical borings, etc.), construction, equipment or crew mobilization, or ground disturbing activities shall not proceed until the IWMP is completed and implemented. The IWMP will be incorporated into the O&M Plan (CM 17).

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 construction and O&M. The IWMP shall includethe information in the following paragraphs:

Background. The background section shall provide an assessment of the Project's potential to spread non-native weeds into new areas or introduce new non-native weeds into the Project site. This section must list non-native and invasive weeds anticipated to occur within the action area, identify threat rankings, and potential consequences of the spread non-native plants. 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; (2) aid and promote the spread of wildfires such as cheatgrass (Bromus tectorum L.), Sahara mustard (*Brassica tournefortii*), and medusa head (*Euphorbia caput-medusae*); 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 activities. 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 for Project-related spread. The IWMP shall identify

any infestations to be controlled or eradicated prior to Project construction or weed management requirements (e.g., avoidance of soil transport and site-specific vehicle washing where threat or spread potential is high). Control and 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 on the Project site. The IWMP will specify inspection procedures for construction materials and equipment entering the Project area. All vehicles and construction equipment will be inspected and cleaned at entry points to the Project site, and beforeleaving work sites where weed occurrences must be contained locally. All vehicles and construction equipment shall be cleaned of dirt and mud that could contain weed seeds, roots, or rhizomes.

All vehicles shall be washed off-site when possible. If off-site washing is infeasible, on-sitecleaning 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 thecleaning 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 seeds 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. The plan 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 staff. 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 methods for scheduling and implementing control activities 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 ESAs 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 6 miles per hour. All herbicide applications will follow U.S. Environmental Protection Agency label instructions and 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.

CM 11. Minimize and Mitigate Impacts to Special-status Plants

At least one Qualified Biologist approved by the Corps and Service (CM 4) shall be present to oversee and conduct the following activities for Coachella Valley milk-vetch**.**

Pre-construction surveys. 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, CVMSHCP covered species, and species of concern) 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 areas 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 or more recent updates, if available. The results will be submitted to the Service 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 California Rare Plant Ranks 1 or 2 ranked plants on federal lands or species that are not covered by the CVMSHCP that may be located on the Project disturbance areas where effects to soils, vegetation, or sand transport could affect special-status plants through one or a combination of the following strategies:

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 Project activities will not occur. The buffer area shall be clearly staked, flagged, and signed for avoidance prior to ground disturbance and maintained throughout the construction phase. The buffer zone shall be of sufficient size to prevent disturbance to 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 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 and the Corps shall develop and implement site-specific monitoring and implement other measures to avoid the take of the species if possible, in coordination with the Service and CDFW.

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, by either number of plants or extent of occupied habitat, CVWD shall prepare and implement a mitigation plan to consist of off-site compensation, salvage or horticultural propagation, and off-site introduction.

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 special-status 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 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 (CM 16). Compensation acreage for special-status plants may be included as "nested" or "layered" within the 550-acre floodway and designated to offset other impacts such as habitat loss for special-status wildlife if the floodway provides similar ecological value and function as the impacted habitat.

Monitoring. 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 translocation 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 translocation strategy based on the life history of the species affected. The Habitat Compensation 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 Habitat Compensation Plan's goals.

CM 12. Ensure Wildlife Impact Avoidance and Minimization and Prepare a Wildlife Protection and Translocation Plan.

CVWD shall implement the following measures during the construction and O&M phases of the Project to avoid or minimize impacts to wildlife resources. A Wildlife Protection and Translocation Plan (WPTP) 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 WPTP. The WPTP will be prepared in coordination with representatives from the different Conservation Areas.

Minimize traffic impacts. CVWD shall specify and enforce a maximum 15-mile per hour vehicle speed limit on access roads within the Project area and vicinity, not including publicroadways. 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 CM 8.

Minimize impacts to nocturnal wildlife. CVWD shall restrict work to daylight hours, as feasible, 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 maintainedto 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 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. Waterapplied 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, workers or visitors shall not bring firearms or weapons to the site.

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, in so far as possible, prevents wildlife from becoming trapped inside the netted area or within the excess netting. The biological monitor shall inspect netting daily. The biological monitor shall inspect exclusion fences 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 ramps 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 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 1 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 the Project area, whether or not the injuries are Project-related, and provide these guidelines to all biological monitors. CVWD shall ensure that one or more Qualified Biologists 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 Biologist 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 areas and any wildlife injured by Project activities. Additionally, any entrapped or injured special-status species found in Project areas shall be reported to the appropriate agency within 1 workday.

Sidewinders, rattlesnakes, and other snake guidelines: Prior to the start of construction, CVWD shall prepare and implement guidelines within the WPTP for handling sidewinders, rattlesnakes, or other snakes found in or near Project areas 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 WPTP, CVWD will coordinate with CVNWR to develop protocol aligned with any NWRS guidelines for handling or translocation wildlife while working within CVNWR lands.

CM 13. Conduct Coachella Valley Fringe-toed Lizard Surveys, Monitoring, and Avoidance

This measure will be applied to pre-construction, construction, and O&M phases of the proposed Project. Surveys for Coachella Valley fringe-toed lizard shall be conducted during the appropriate seasons (May 1 through the end of summer) and conditions. The duration of the surveys shall coincide with the duration of construction activities in potential habitat for the 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 CM 6. Results of the surveys shall be submitted to the Service within 30 days of completion.

Biological monitoring will occur as specified in CM 5. The monitor shall be a Qualified Biologist with the appropriate experience, permits, and approval to handle Coachella Valley fringe-toed lizard (CM 4).

In areas of high habitat suitability, CVWD will install appropriate exclusionary fencing that effectively does not allow fringe-toed lizards to enter work areas if required by the Service. The fence or barrier will be maintained as needed to ensure its effectiveness. Any lizards found within the barrier will be relocated short distances to suitable habitat outside of the work areas by the Qualified Biologist according to the approved Relocation Plan. The Relocation Plan will include detailed protocol for clearance surveys, appropriate exclusion barrier options and installation, handling criteria, and release site selection, monitoring and reporting requirements, and other pertinent information.

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 coordination with the Service.

CM 14. Conduct Desert Tortoise Monitoring and Avoidance

CVWD will assign a Designated Desert Tortoise Biologist also approved as an Authorized Biologist/Acceptable Biologist for desert tortoise (CM 4) to oversee Project activities and ensure that no take of desert tortoises will occur.

Within suitable habitat for desert tortoise, a Designated Desert Tortoise Biologist shall survey the Project area for desert tortoise burrows and sign within 5 days preceding construction activities for the Project. Follow-up surveys shall also be conducted within 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 and a surrounding buffer of 200 feet.

The Designated Desert Tortoise Biologist will be available to accompany each work crew to ensure that any desert tortoises, burrows, and habitat potentially encountered are not disturbed during these activities to the greatest extent possible. The Designated Desert Tortoise Biologist will have the authority to halt work activities. If a desert tortoise is found in a work area, the desert tortoise shall be allowed to passively traverse the site while construction in the immediate area is halted. If a live desert tortoise is in imminent danger of harm, and a Designated Desert Tortoise Biologist is not readily available, a crew member will notify the Designated Desert Tortoise Biologist.

Project personnel shall inspect for desert tortoises under parked vehicles or equipment prior to moving same (CM 7 and CM 12). If a desert tortoise is found beneath a vehicle or equipment, the vehicle or equipment shall not be moved or started until the desert tortoise has moved on its own accord to a safe distance away.

CM 15. Raven Monitoring, Management, and Reporting Plan

In coordination with the Corps, Service, and CDFW, CVWD shall prepare and implement a Raven Monitoring, Management, and Reporting Plan (Raven Plan). The purpose of the Raven Plan shall be to minimize Project-related predator subsidies and prevent 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 desert tortoises, based on occurrence of desert tortoise remains beneath active raven nests in or adjacent to the Project site, CVWD will report that information to the Service immediately. 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, CVWD shall contribute to the Service Regional Raven Management Program to offset the cumulative contributions of the Project to desert tortoise impacts from increased raven numbers. 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 the Service 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 wastewater, 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 desert tortoises.

2. **Contribute to the Service Regional Raven Management Program.** No later than 30 days prior to the start of construction, CVWD shall contribute to the Service 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.

CM 16. 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 theThousand 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. Additionally, CVWD will acquire 24.9 acres of land within CVNWR's approved acquisition boundary to offset the impacts to NWRS lands (see Figure 5). Acquired 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 totaling 24.9 acres have been preliminarily identified as appropriate acquisition parcels. CVWD will coordinate with NWRS staff to finalize timelines, approval, acquisition, ownership transfers, and any other realty needs to fulfill all relevant NWRS-specific land acquisition requirements. Habitat compensationwill 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 Coachella Valley Association of Governments (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 5 years from the completion of Project construction or as otherwise agreed upon by the Service, CVWD, Corps, and CVAG.

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:

1. 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;

2. 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;

3. 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;

4. 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;

5. 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;

6. Not contain hazardous wastes that cannot be removed to the extent that the site could not provide suitable habitat;

7. 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 inrelationship to other habitat areas, management feasibility, and other habitat values; and

8. Have water and mineral rights included as part of the acquisition, unless CDFW and the Service agree in writing to the acceptability of land without these rights.

CM 17. Prepare and Implement an Operations and Maintenance Plan

This conservation measure shall apply to the O&M phase of the Project for private and federal lands. CVWD, in coordination with the Corps, shall implement the existing Operations and Maintenance Plan (O&M Plan) or create a new O&M Plan and submit to the Service and CDFW for review prior to construction activities. As described in the CVMSHCP/NCCP (page 7-29), the O&M 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:

1. **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 habitat.

2. **Minimize impacts.** The O&M Plan shall incorporate CM 8 through CM 11.

3. **Weed control.** The O&M Plan shall incorporate the Integrated Weed Management Plan (CM 10).

4. **Nesting birds.** The O&M Plan shall incorporate a Nesting Bird Management Plan

5. **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 minimizeimpacts to special-status species and sensitive habitats, including sand habitats. Any OHV restrictions (e.g., fencing) will be

designed to minimize OHV access while maintaining biological connectivity and wildlife movement and sand transport.

CM 18. Adaptive Management Plan

The Applicant will coordinate with CVNWR and other resource agencies to develop an Adaptive Management Plan that maximizes the Project's contribution to aeolian sand transport into the Preserve. The plan will address roles and responsibilities, protocols for continued monitoring of habitat, and other relevant parameters during the life of the Project. CVWD will meet with the Corps and Service to assess habitat quality and ecological processes within the Preserve to determine if any changes to operation and maintenance activities are needed.

Action Area

Regulations implementing the Act (50 CFR § 402.02) describe the action area as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action. For the purposes of this consultation, we consider the action area to be an approximately 11,966-acre area that includes portions of Thousand Palms community and the following Project components (Figure 2):

1. The Project footprint defined as all Project components associated with construction and O&M of the flood control system, including:

    a. Four proposed flood control structures;

    b. A 551-acre floodway acquisition;

    c. The Avenue 38 realignment;

    d. Two existing conveyance systems at the Classic Club Golf Course and Del Webb/Sun City residential development, and an additional conveyance system constructed at Washington Street;

    e. An existing sand deposition site within Coachella Valley National Wildlife Refuge (CVNWR); and

    f. Temporary work areas including a staging area, cement plant site, and temporary sand deposition site.

2. The Study Area defined as the Project footprint and a surrounding 500-foot buffer for Coachella Valley fringe-toed lizard surveys and 200-foot buffer for other species surveys;

3. Unit 4 of designated critical habitat for Coachella Valley milk-vetch;

4. The Indio Hills/Whitewater River sand source area north of Ramon Road and the occupied habitat south of Ramon Road within designated critical habitat for Coachella Valley fringe-toed lizard Figure 3); and

5. Habitats associated with the Thousand Palms sand transport system, including species-occupied aeolian habitats, the Thousand Palms wind corridor, and sand transport areas supporting fluvial and aeolian processes located within the Coachella Valley Preserve (Figure 4).

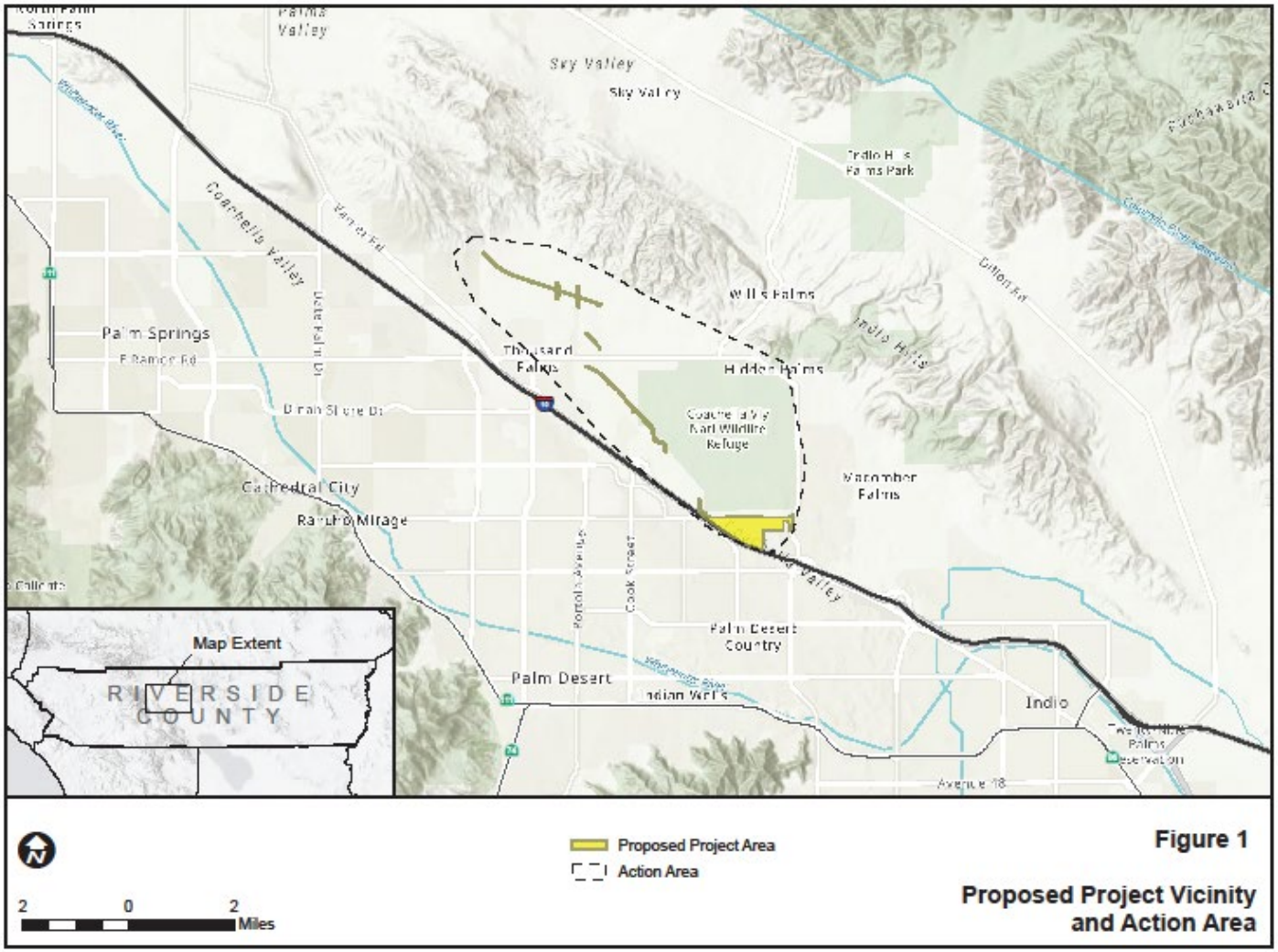

Figure 2: Thousand Palms Flood Control - Action Area (Aspen 2021).

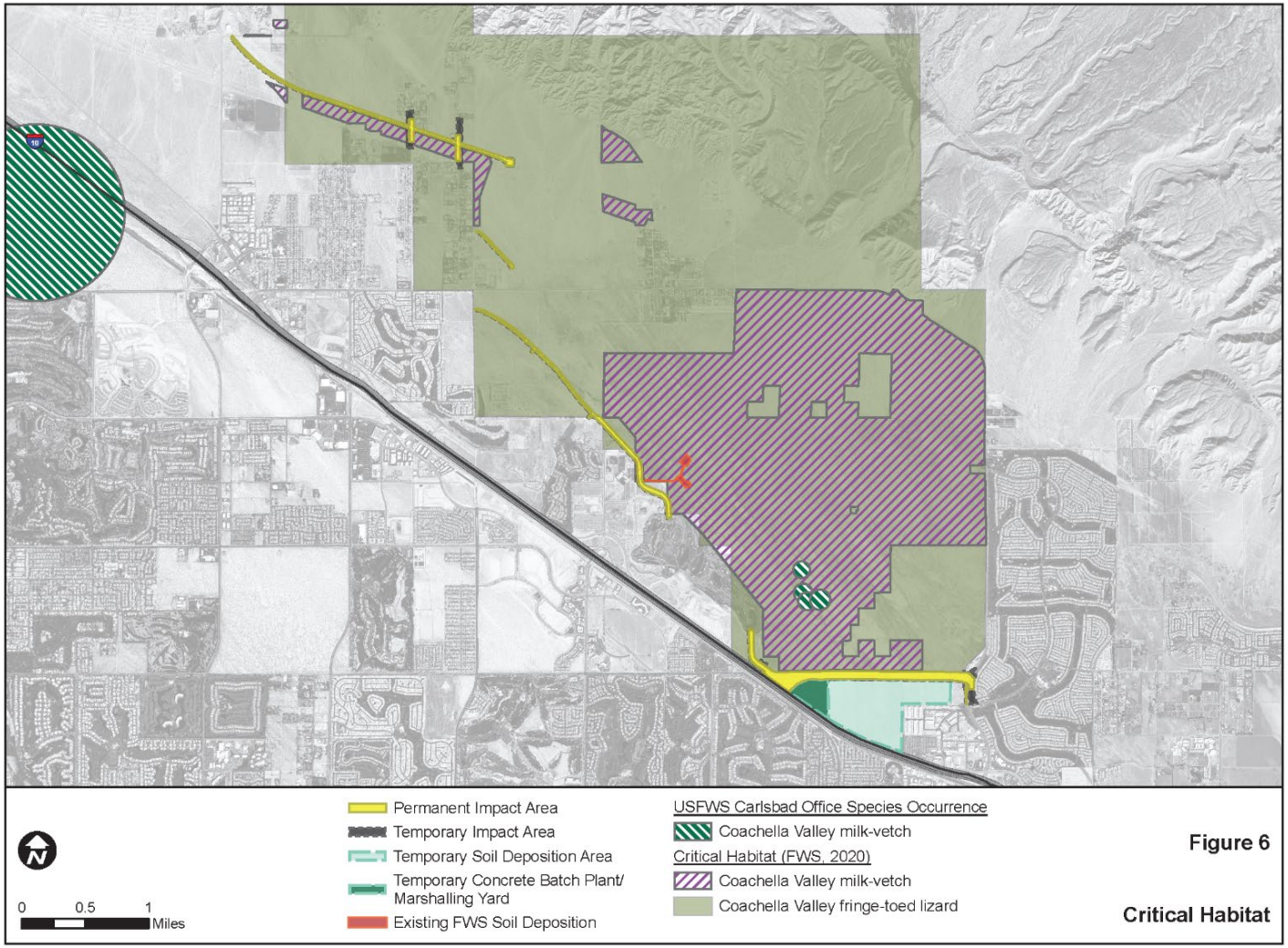

Figure 3: Designated Critical Habitat within Project Area (Aspen 2021).

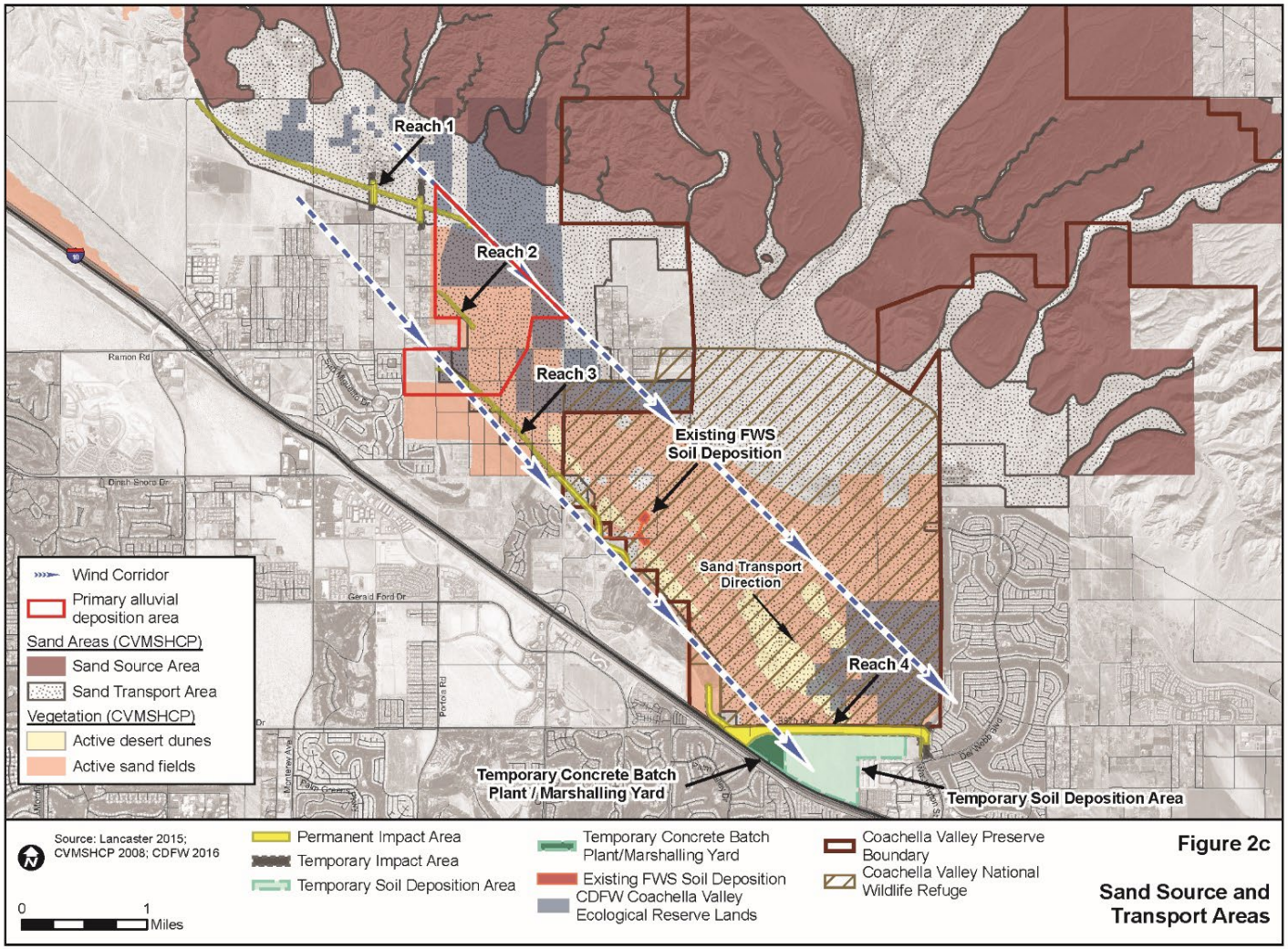

Figure 4: Thousand Palms Sand Transport System (Aspen 2021).

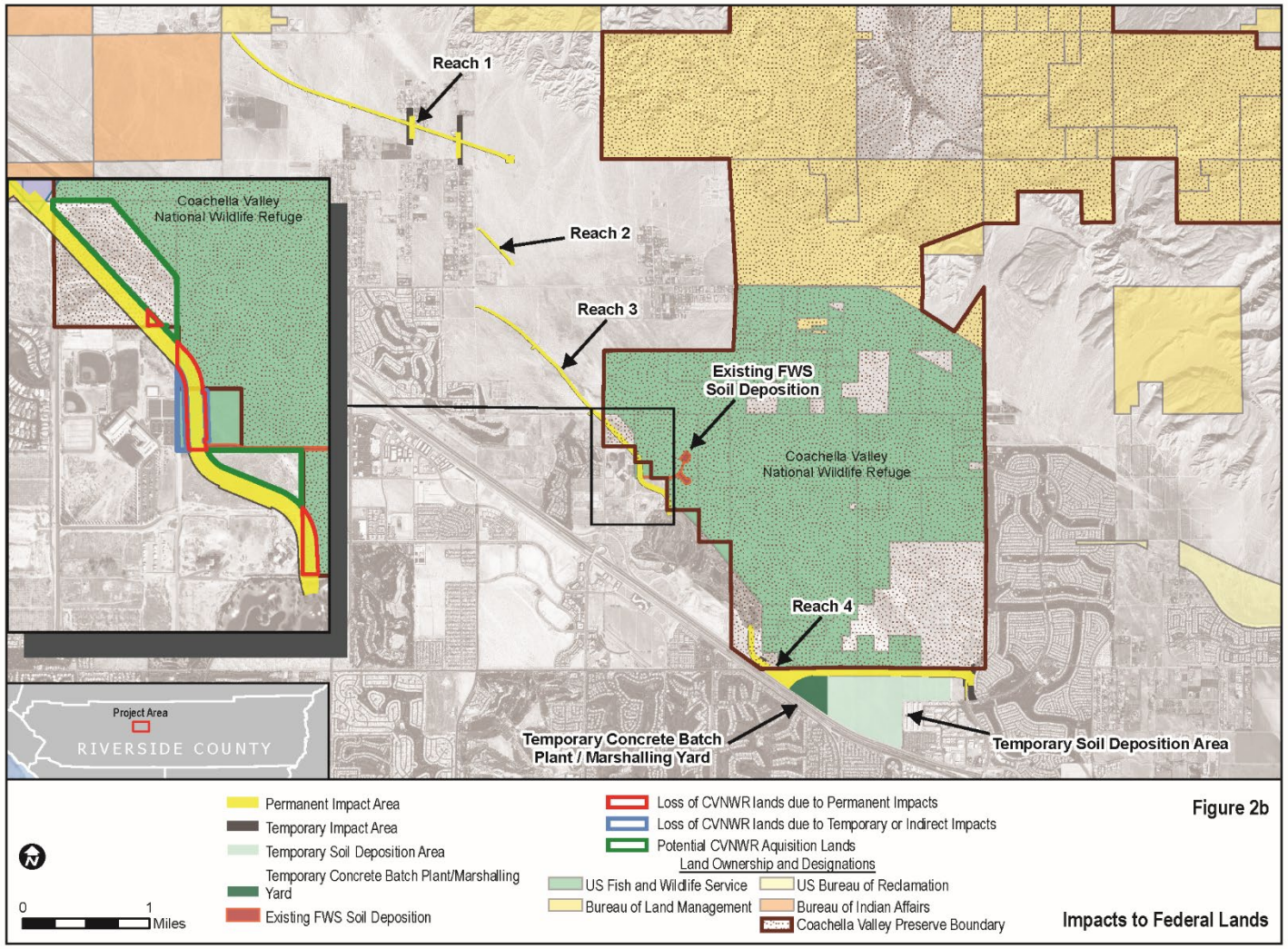

Figure 5: Impacts to Federal Lands (Aspen 2021).

ANALYTICAL FRAMEWORK FOR THE SECTION 7(A)(2) DETERMINATIONS

Jeopardy Determination

Section 7(a)(2) of the Act requires that Federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species. "Jeopardize the continued existence of" means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFR § 402.02).

The jeopardy analysis in this biological opinion relies on four components: (1) the Status of the Species, which describes the range-wide condition of the species, the factors responsible for that condition, and its survival and recovery needs; (2) the Environmental Baseline, which analyzes the condition of the species in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the species; (3) the Effects of the Action, which are all consequences to listed species caused by the proposed action that are reasonably certain to occur; and (4) the Cumulative Effects, which evaluate the effects of future, non-Federal activities in the action area on the species.

For the section 7(a)(2) determination regarding jeopardizing the continued existence of the species, the Service begins by evaluating the effects of the proposed Federal action and the cumulative effects. The Service then examines those effects against the current status of the species to determine if implementation of the proposed action is likely to reduce appreciably the likelihood of both the survival and recovery of the species in the wild.

Adverse Modification Determination

Section 7(a)(2) of the Act requires that Federal agencies ensure that any action they authorize, fund, or carry out is not likely to destroy or to adversely modify designated critical habitat. "Destruction or adverse modification" of critical habitat means a direct or indirect alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species (50 CFR § 402.02).

In accordance with policy and regulation, the adverse modification analysis in this biological opinion relies on four components: (1) the status of critical habitat, which describes the condition of all designated critical habitat in terms of its physical and biological features, the factors responsible for that condition, and the intended recovery function of the critical habitat overall; (2) the environmental baseline, which analyzes the condition of the designated critical habitat in the action area, the factors responsible for that condition, and the recovery role of the critical habitat in the action area; (3) the effects of the action, which analyze all consequences to critical habitat caused by the proposed action that are reasonably certain to occur and their influence on the recovery role of the affected designated critical habitat units; and (4) cumulative effects, which evaluate the effects of future non-Federal activities in the action area on the physical and biological features of critical habitat and how that will influence the recovery role of affected critical habitat units.

For purposes of the adverse modification determination, the effects of the proposed Federal action on the designated critical habitat are evaluated in the context of the condition of all designated critical habitat, taking into account any cumulative effects, to determine if the consequences of the proposed action are likely to appreciably reduce the value of critical habitat as a whole for the conservation of the species.

STATUS OF THE SPECIES AND ITS CRITICAL HABITAT

Coachella Valley Milk-vetch

The Coachella Valley milk-vetch was listed as endangered on October 6, 1998, and critical habitat was designated on February 13, 2013. Please refer to our 5-year review for Coachella Valley milk-vetch (Service 2009a) and the final listing rule (Service 1998; 63 FR 53596) for a detailed discussion on the taxonomic history and description of this taxon. Coachella Valley milk-vetch and its critical habitat were afforded protection under the Act in recognition of the plant's imperiled status from habitat losses caused by urban development and human modifications to the sand transport system that maintains the unique ecosystem the species relies upon. Please refer to the final critical habitat rule (Service 2013a; 78 FR 10450) for a description of the species' sand-dependent habitat. No recovery plan has been completed for Coachella Valley milk-vetch.

Reproduction

The date of first flowering for milk-vetch may be as early as December and continues into May, though most flowering occurs in March and April (Service 2009a). The first date of fruit may be as early as February. At maturity, seed pods dry and fall to the ground, where they are dispersed by wind. As such, wind transport corridors between populations facilitate gene flow and population growth. While Coachella Valley milk-vetch is capable of self-pollination through offshoots, seed production is highly dependent on pollinators (Service 2009a). Pollinators may include bees in the family Megachilidae and the western honeybee (*Apis mellifera*) (Service 2009a). Annual variations in precipitation substantially affect the number of Coachella Valley milk-vetch seeds that may germinate and mature into standing plants that successfully reproduce (Service 2008a). Likewise, in perennial individuals that may reproduce via self-pollination, the capacity for dormant root crowns to sprout new shoots is substantially dependent on levels of annual winter rains.

Numbers

Overall, the number of above-ground Coachella Valley milk-vetch plants varies widely from year to year, depending on the environmental conditions, making assessments of total individual numbers difficult. Additionally, detecting changes in population trends over time is difficult because the number of seeds in a given area that germinate and produce standing plants can vary widely depending on environmental conditions. Therefore, the number of standing plants at any given time is only a partial indication of population size because the other portion of the population is the seed bank in the substrate that can persist dormant for a number of years (Service 2009a). Abundance may be correlated with sufficient rainfall to germinate seeds and active sand movement to scarify seeds. These conditions are characteristic of active sand dunes

and ephemeral sand fields, which support the highest densities of Coachella Valley milk-vetch (UCR 2020a).

Numbers also vary by location, with higher numbers found on the ephemeral sand fields within the Whitewater Floodplain Conservation Area south of the Union Pacific railroad and between Indian Canyon Road and Gene Autry Trail, and just west of Windy Point (UCR 2020b). Fewer numbers of plants occur farther east on the CVMSHCP Thousand Palms Conservation Area, possibly due to finer sand particles and/or reduced average rainfall (UCR 2020b). At habitats with reduced sand movement, including stabilized sand fields and mesquite dunes, this species is much rarer and less predictable in its occurrence (UCR 2022).

Distribution

The Coachella Valley milk-vetch is restricted to active sand dunes, ephemeral sand fields, stabilized sand fields, and mesquite dunes in the Coachella Valley between Cabazon and Indio. At the time of listing, the distribution was effectively the same as the known historical distribution. However, a large percentage of the sand dune system that was once contiguous through the Coachella Valley has been converted to urban land uses, which has fragmented the sand habitats and compromised the ecosystem processes of sand transport that sustain these habitats (UCR 2022).

Recovery

No approved final or draft recovery plan exists for the Coachella Valley milk-vetch. However, the conservation goals for the species outlined in the CVMSHCP (CVAG 2007a), which encompasses most of the species' range, are relevant for identifying recovery goals, including permanent protection and management of known populations that will continue to contribute to the recovery and conservation of Coachella Valley milk-vetch.

Synopsis

The Coachella Valley milk-vetch is currently persisting in the Coachella Valley, but population estimates or trends are difficult to quantify because of the year-to-year variation in numbers of above-ground plants. Increased urbanization has reduced available habitat and compromised the sand transport system resulting in a reduction of available habitat. Conservation goals in the CVMSHCP include conservation of about 53 percent of modeled habitat for this taxon in the Conservation Areas and protection of essential ecological processes (sand source/transport and hydrological systems), which will increase the amount of conserved habitat and reduce threats from urbanization and alteration of sand transport systems range wide. Additionally, the CVMSHCP includes implementation of avoidance, minimization, and mitigation measures, and management and monitoring programs on non-Federal lands, which will help ensure the persistence of Coachella Valley milk-vetch within suitable habitat areas.

Designated Critical Habitat for Coachella Valley Milk-vetch

The Service designated approximately 9,603 acres as critical habitat for the Coachella Valley milk-vetch on August 13, 2013. In the final rule, we described the principal biological or

physical features that are essential to the conservation of the species; these include sand formations associated with the sand transport system in Coachella Valley (Service 2013b). These sand formations have the following features:

1. Unconsolidated sands stored within rivers and tributaries in the San Bernardino, Little San Bernardino, and San Jacinto Mountains and Indio Hills. The unconsolidated sands stored in these rivers and tributaries are not occupied by Coachella Valley milk-vetch but represent the original source of the loose sand that forms the sand dunes and flats that are occupied by this plant.

2. Unconsolidated sands deposited on the alluvial fans of the San Bernardino, Little San Bernardino, and San Jacinto Mountains and Indio Hills. The unconsolidated sands deposited on these alluvial fans are not occupied by Coachella Valley milk-vetch; instead, these sands are transported by wind and water to form the fluvial and aeolian sand dunes and flats that are occupied by this plant.

3. Suitable flooding regimes to transport unconsolidated sands from rivers and tributaries to the alluvial fans of the San Bernardino, Little San Bernardino, and San Jacinto Mountains and Indio Hills.

4. Suitable wind and flooding regimes to transport unconsolidated sands deposited on the alluvial fans of the San Bernardino, Little San Bernardino, and San Jacinto Mountains and Indio Hills to the fluvial and aeolian depositional areas, including areas west of Edom Hill/Willow Hole reserve, areas west of Coachella Valley Preserve, and the Whitewater Floodplain area that are occupied by Coachella Valley milk-vetch.

5. Aeolian sands on active, stabilized, and shielded sand dunes or fields, and sandy alluvial sites in washes within the San Gorgonio/Whitewater River aeolian sand transport system, Mission Creek/Morongo Wash aeolian sand transport system, and the Thousand Palms aeolian sand transport system that are occupied by Coachella Valley milk-vetch.

Critical habitat was designated in the following four units: Unit 1 – San Gorgonio River/Snow Creek System (1,335 acres), Unit 2 – Whitewater River System (2,150 acres), Unit 3 – Upper Mission Creek/Morongo Wash System (2,266 acres), and Unit 4 – Thousand Palms System (3,851 acres). For detailed information on the designated critical habitat for Coachella Valley milk-vetch, refer to the final rule (Service 2013b).

Coachella Valley Fringe-toed Lizard

The Coachella Valley fringe-toed lizard was listed as endangered on September 25, 1980, due to loss and degradation of suitable sand habitats from urban development and agricultural activities (Service 1980; 45 FR 63812). Critical habitat was designated concurrently with the listing. The State of California also listed the Coachella Valley fringe-toed lizard as threatened in 1980. For more information on the species' listing and critical habitat status, species description, habitat affinities, and life history, please refer to our 5-year review (Service 2010a).

Additionally, the 5-year review (Service 2010a) identified threats throughout the species range, including urban development, nonnative invasive plant species, obstructions to sand transport

systems, and OHVs. New threats were also identified, including small population size, alteration of hydrology, and climate change (Service 2010a). A recent study that synthesized long-term monitoring data to assess the status of fringe-toed lizards concluded Sahara mustard to be a primary threat to lizard populations within the action area, particularly Thousand Palms aeolian habitat (Barrows and Heacox 2021).

Reproduction

Reproduction occurs in the spring (typically beginning in March), shortly after adults emerge from winter dormancy, and extends through mid-August. Courtship lasts until the end of May (Service 2008b). A few weeks after mating, females dig burrows and deposit two to four eggs that hatch between June and early October (Thelander 1994). Sexual maturity is reached after 2 trends years and life expectancy is about 5 years (TNC 1985).

Numbers

Despite almost 20 years of monitoring by various parties, range wide population abundance for the species within established CVMSHCP Conservation Areas remain largely unknown. However, reliable estimates and trends of population abundance within survey plots are known, and those numbers fluctuate widely based on annual precipitation. For example, during droughts, individual lizard numbers within the Thousand Palms Conservation Area dropped to levels near zero but rebounded during periods of average rainfall (Barrows 2006, UCR 2020b). The methodology used for surveys did not have the sensitivity to determine densities or census population sizes. More recent surveys indicate a "decoupling" of this precipitation/population dynamic and there is speculation that Sahara mustard (*Brassica tournefortii*) cover, an invasive nonnative annual plant, is emerging as an environmental variable that may inhibit population growth (UCR 2020b). Sahara mustard promotes compaction of active sand dunes, leading to conversion of dunes to more compacted forms of sand habitat (e.g., stabilized sand fields) over time. Mean density of lizards has also been found to vary among types of sand formations within aeolian habitat, and the conversion of sand formations may affect numbers and distribution of lizards (Barrows and Heacox 2021). Data collected within a long-term plot in the Whitewater Floodplain Conservation Area for the past 29 years suggest a downward population trend (Fisher *et al*. 2020). While there are yearly fluctuations of individuals within the plot, the number of lizards detected in the plot have steadily declined from a high of 333 lizards in 1985 to a low of 24 lizards in 2014, with 88 lizards found in 2020 (Fisher *et al*. 2020). Reasons for this decline may be the result of reduced reproductive output due to lower-than-normal precipitation over the last several years (Fisher *et al*. 2020). A decline in lizard numbers can also be attributed to habitat fragmentation (Barrows and Allen 2010) and altered sand transport and fluvial processes (Griffiths *et al*. 2002). Declining numbers of lizards in fragmented populations has resulted in a loss of genetic diversity and connectivity across the range (Vandergast *et al*. 2019).

Distribution

The Coachella Valley fringe-toed lizard is restricted to the Coachella Valley and was found historically from near Cabazon at the northwestern extreme of the Coachella Valley to near Thermal at the southeastern extreme. These lizards are restricted to aeolian sand habitats (e.g.,

sand dunes, ephemeral sand fields, and stabilized shielded sand fields) and have developed morphological and behavioral adaptations to these unique habitats (Service 2010a). About 10 percent of these sand habitats remain in the Coachella Valley (Barrows *et al*. 2008). In our 5-year review, we identified 59 known occurrences of the lizard that were presumed extant (Service 2010a). Of these, 41 occurrences were within Conservation Areas designated under the CVMSHCP. Since publication of our 5-year review, occurrences within the East Indio Hills Conservation Area are no longer detected. This Conservation Area is located on the eastern extent of the current range of the species. If lizards were indeed extirpated from this Conservation Area, it would indicate a reduction in the distribution of the lizard has occurred since the time of listing (Service 1980) and our 5-year review (Service 2010a). The species is currently distributed in seven fragmented populations, which has resulted in a restricted gene flow among these populations (Vandergast *et al*. 2019).

Recovery

The approved recovery plan for the Coachella Valley fringe-toed lizard (Service 1985) does not describe recovery (delisting) criteria but does contain recovery objectives that provide an equivalent function. The primary objective of the recovery plan is to secure two or more protected areas with self-sustaining lizard populations. The best data currently available indicate that long-term survival of at least three or four viable populations with self-sustaining ecosystem processes is necessary for long-term maintenance of many species (Murray *et al*. 1999, Noss *et al*. 2002, Frankham *et al*. 2005). The reserve design of the CVMSHCP is based on this model and there are currently five conservation areas designated that support persistent, but fragmented, populations of this species totaling about 12,998 acres of modeled habitat on non-Federal lands and protection of sand source/transport and hydrological systems (UCR 2020a). Population fragmentation has led to a decline in overall genetic diversity and increasing genetic differentiation among populations over the past 20 years (Vandergast *et al*. 2019). Based on the most recent genetic research, diversity appears to be maintained in some sites, while it has decreased in others, which may be an indication of bottlenecks or sustained small local population sizes and reduced or absent gene flow (Vandergast *et al*. 2019). A key recovery objective for this species is to maintain genetic diversity. However, evidence suggests that fragmentation and increasing drought frequency have altered the genetic cohesiveness of the species, and the genetic diversity maintained in individual fragments is lower than in the total metapopulation (Vandergast *et al*. 2019). This general trend is at odds with the recovery objective intended to maintain genetic diversity.

Synopsis

Coachella Valley fringe-toed lizard continues to be widespread on most of the remaining protected habitat identified on non-Federal lands in the CVMSHCP. However, there have been local extirpations due to drought, habitat fragmentation, and altered sand transport and fluvial processes. The distribution of the species is now likely restricted to seven fragmented populations within a much-reduced area of suitable habitat. Drought and fragmentation of habitat have most likely led to a reduction in effective population sizes in all protected areas.

Conservation goals in the CVMSHCP include conservation of modeled habitat, which includes protection of essential ecological processes (sand source/transport and hydrological systems), on non-Federal lands that supports seven persistent, but fragmented, populations, which will reduce threats due to habitat loss in the Coachella Valley. The CVMSHCP also includes avoidance, minimization and mitigation measures, and management and monitoring programs for this species on non-Federal lands, which will help ensure the persistence of the lizard within suitable habitat.

Designated Critical Habitat for Coachella Valley Fringe-toed Lizard

Critical habitat for the Coachella Valley fringe-toed lizard was designated in 1980 at a total of approximately 11,789 acres within the Thousand Palms Canyon watershed, including canyons and alluvial fans along the southern edge of the western Indio Hills (Service 1980).

Approximately 7,509 acres of designated critical habitat do not contain suitable occupied habitat for the species but are important to continuing the geological processes necessary for aeolian ecosystem functioning, including the generation and maintenance of sand dunes and related aeolian sand habitats required to support fringe-toed lizards. These two areas of designated critical habitat, the Indio Hills/Whitewater River, and Thousand Palms Canyon sand sources, are located north and northeast Ramon Road, respectively. Our final rule noted that each area supplied 50 percent of sand to occupied designated critical habitat south of Ramon Road (Service 1980). Critical habitat south of Ramon Road is generally considered occupied. Approximately 10,380 acres of designated critical habitat occur within the Thousand Palms Conservation Area. Based on a GIS analysis using assessor parcel data, about 77 percent of those acres are under federal, state, or non-profit ownership and are being conserved and/or managed consistent with the CVMSHCP (CVAG 2007a).

ENVIRONMENTAL BASELINE

The regulations implementing the Act (50 CFR § 402.02) define the environmental baseline as the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or designated critical habitat caused by the proposed action. The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process. The consequences to listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency’s discretion to modify are part of the environmental baseline (50 CFR § 402.02).

Previous Consultations in the Action Area

The Service completed a programmatic biological opinion (Service 1995) in May 12, 1995, analyzing the effects of ongoing maintenance and repair activities for Southern California Gas (SoCal Gas) natural gas pipeline system on lands throughout the California deserts managed by Bureau of Land Management (BLM), the Corps, National Park Service (NPS), and private lands that may have Coachella Valley fringe-toed lizard, desert tortoise, least Bell's vireo (*Vireo bellii*

pusillus), southwestern willow flycatcher (*Empidonax traillii extimus*), and the Yuma clapper rail (*Rallus longirostris yumanensis*). Pursuant to 50 CFR 402.10(d), a conference opinion for the project's effects upon flat-tailed horned lizard (*Phrynosoma mcallii*), Coachella Valley milk-vetch, and triple-ribbed milk-vetch *(Astragalus tricarinatus*) was also incorporated into the biological opinion. The Service provided a non-jeopardy determination for all listed and proposed species analyzed in the consultation. The proposed action did not affect designated critical habitat for least Bell's vireo and southwestern willow flycatcher. The Service also determined that the proposed action was not likely to adversely modify or destroy designated critical habitat for desert tortoise or Coachella Valley fringe-toed lizard. Critical habitat for Yuma clapper rail, flat-tailed horned lizard, Coachella Valley milk-vetch, and triple-ribbed milk-vetch had not been listed or proposed at the time of consultation.

The Corps consulted with the Service on a previously proposed description of the Project, at the time known as the Whitewater Flood Control Project. A non-jeopardy biological opinion, issued September 12, 2000, analyzed impacts to Coachella Valley fringe-toed lizard and its designated critical habitat, Coachella Valley milk-vetch, and desert tortoise.

The Service issued a biological and conference opinion on July 3, 2008, analyzing the effects of the Service's issuance of a section 10(a)(1)(B) incidental take permit for 27 species under the CVMSHCP. We concluded the level of anticipated take within the CVMSHCP planning area was not likely to result in jeopardy for all species under the consultation, including Coachella Valley fringe-toed lizard and Coachella Valley milk-vetch.

In 2010, we issued the BLM a biological opinion that analyzed effects on the Coachella Valley fringe-toed lizard and Coachella Valley milk-vetch from implementing the Desert Conservation Area Plan Amendment for the Coachella Valley (Service 2010b). We concluded that this program-level plan would not result in an appreciable reduction in the numbers, reproduction, or distribution of Coachella Valley milk-vetch or Coachella Valley fringe-toed lizard throughout their ranges (Service 2010b).

On January 11, 2011, the Service issued a non-jeopardy determination for a biological and conference opinion analyzing the effects of the Devers Palo Verde No. 2 Transmission Line Project on Stephens' kangaroo rat (*Dipodomys stephensi*), Coachella Valley milk-vetch, Coachella Valley fringe-toed and its designated critical habitat, desert tortoise and its designated critical habitat, and proposed threatened flat-tailed horned lizard.

Land Use and Designation

The Project is within the Thousand Palms Conservation Area of the CVMSHCP. The Thousand Palms Conservation Area is approximately 25,900 acres and represents the largest remaining area of unfragmented aeolian habitat within the Coachella Valley.

The action area contains approximately 6,131 acres of modeled habitat identified by the CVMSHCP for Coachella Valley milk-vetch, consisting of approximately 6,105 acres of core habitat and approximately 26 acres of additional conserved habitat for Coachella Valley milk-vetch (CVAG 2007b). The conservation objectives for Coachella Valley milk-vetch habitat within the Thousand Palms Conservation Area is to conserve at least 985 total acres of core habitat. Approximately 5,747.92 acres of modeled core habitat for Coachella Valley fringe-toed

lizard are found within the action area (CVAG 2007c). The conservation objective for Coachella Valley fringe-toed lizard habitat within the Thousand Palms Conservation Area is to conserve a minimum of 818 acres of core habitat.

The Thousand Palms Conservation Area also protects occupied habitat for both species, unoccupied areas supporting ecological processes that sustain the Indio Hills/Thousand Palms sand transport system, and natural communities of active desert dunes, active desert sand fields, mesquite hummocks, Sonoran creosote bush scrub, Sonoran mixed woody and succulent scrub, Sonoran cottonwood-willow riparian forest, desert dry wash woodland, and desert fan palm oasis woodland (CVAG 2007a). Within the Conservation Area is the Thousand Palms Reserve, one of three reserves for Coachella Valley fringe-toed lizards identified by the CVMSHCP. The reserve contained approximately 5,200 acres (66 percent) of occupiable habitat.

The Project action area also includes a mosaic of conserved lands administered by multiple agencies. The Coachella Valley Ecological Reserve is a 1900-acre property at the base of the Indio Hills managed by CDFW and located within designated critical habitat for Coachella Valley fringe-toed lizards and Coachella Valley milk-vetch. CDFW acquired the property in 1983 to protect fluvial and blow sand habitat for Coachella Valley fringe-toed lizards and other aeolian species.

Coachella Valley National Wildlife Refuge is a unit of the Service's National Wildlife Refuge System (NWRS), administered by the Sonny Bono Salton Sea National Wildlife Refuge. CVNWR was established in 1985 to conserve 3,709 acres of unfragmented dune habitat in Coachella Valley for the purpose of protecting the Coachella Valley milk-vetch and Coachella Valley fringe-toed lizard (Service 2014).

CVNWR and portions of the aforementioned areas are included within the greater Coachella Valley Preserve System established by the Service's Coachella Valley Fringe-toed Lizard Habitat Conservation Plan in 1985 (preceding the CVMSHCP). The Coachella Valley Preserve is an administrative unit of BLM and jointly managed by the Center for Natural Lands Management (CNLM), CDFW, Service, and BLM (Service 2014). The Preserve is divided into the Willow Hole/Edom Hill Reserve, Whitewater Floodplain Reserve, and the Thousand Palms Reserve, together totally approximately 17,000 acres of Coachella Valley fringe-toed lizard habitat. Thousand Palms Reserve, located within the action area, has approximately 5,200 acres (66 percent) of occupiable habitat and is considered the largest contiguous acreage of blow sand habitat for Coachella Valley fringe-toed lizard within the Coachella Valley Preserve System (Service 2008b).

Habitat Characteristics

The action area is within the largest unfragmented area of Coachella Valley aeolian habitat (CVAG 2007a), which is sustained by fluvial and aeolian sediment transport within the Thousand Palms sand transport system. This sand transport system is driven by large storm or flash flood events that fluvially transport sediment originating from Indio Hills and within natural channel sand deposits to depositional floodplain areas where aeolian forces may then transport sand particles downwind where it accumulates into aeolian sand formations.

Vegetation and habitat communities within the action area include creosote bush scrub, burro-weed scrub, aeolian dune habitats (sand fields, active desert dunes, ephemeral sand dunes, stabilized sand fields, sand dunes, sand hummocks, and sandy plains), fluvial sand plains, and ruderal areas. The southwestern portion of the Project area outside the Coachella Valley Preserve boundary is dominated by ruderal disturbance and windrows of *Taramix* spp. (Service 2014, Aspen 2021). The majority of aeolian habitat within the action area is within the approved boundary of Coachella Valley National Wildlife Refuge. The CVNWR is immediately surrounded by intensive development, including a large residential resort community, a hotel entertainment venue, a high school campus, and Interstate 10.

Recent urbanization and agricultural development in the Coachella Valley have significantly impacted the blow sand ecosystem. Development has occurred directly on sand fields, effectively disturbing occupied habitat and in the corridor, thereby partially blocking the aeolian transport of sand within the Thousand Palms Conservation Area. Development has also led to a reduction in groundwater, which in turn has reduced the abundance of mesquite (*Prosopis* spp.) hummocks that naturally aided in aeolian habitat development by capturing blow sand and establishing new dune development (Service 2009a).

Status of the Species in the Action Area

Coachella Valley Milk-vetch

The action area contains both occupied and unoccupied aeolian habitat for Coachella Valley milk-vetch.

Reaches 1 and 2 are located near habitat that facilitates the fluvial and aeolian processes necessary to sustain occupied sand habitat for Coachella Valley milk-vetch (Service 2013b). Reaches 3 and 4 of the Project are immediately adjacent to occupied habitat where individuals are frequently found during annual plant species monitoring (UCR 2021a). The number and distribution of plants that may germinate during an annual growth season responds to yearly rainfall levels (UCR 2021b). Across the portion of species range, the number of plants found during a given year may vary substantially among CVMSHCP Conservation Areas and among types of sand formation (e.g., active dunes, ephemeral sand fields) within a single Conservation Area. Therefore, the population density of milk-vetch throughout the action area cannot be precisely quantified. Additionally, the number of plants that may germinate in a given year are only a partial indication of the overall population size, as the seed bank may contain viable seed that remain dormant for up to 8 years until conditions allow germination (Service 2009a). Long-term monitoring surveys determine Coachella Valley milk-vetch density estimates from counts of plants along transects throughout the Plan area (UCR 2012). In 2019, the density of plants found within the CVMSHCP area ranged from 0 to 90 plants per 0.1 hectare across all plots. In 2020, the highest density found at a site was estimated to be approximately 30 plants per 0.1 hectare (UCR 2021b). Within these annual ranges, number of plants found at each plot varied substantially. No plants were found throughout the CVMSHCP monitoring area in 2021 (UCR 2022). These survey data corresponded with levels of precipitation that occurred each year.

CVWD conducted multiple special-status plant surveys from 2000 to 2016. Habitat assessments for milk-vetch were conducted in 2003. Project surveys and additional observation sources

confirmed milk-vetch does not occupy the sand source areas near Reaches 1 and 2. During surveys in 2010, an individual was observed within the dune habitat adjacent to Reach 4. No milk-vetch plants were found adjacent to Reach 4 during surveys in 2013, which aligns with the long-term monitoring data for the same year which found no plants within the Coachella Valley National Wildlife Refuge (UCR 2020b). In 2016, Project surveys found no occurrences of milk-vetch in the same section of the Reach 4 (Aspen 2021). The 2016 long-term monitoring data estimated a density of approximately 2.4 plants per 0.1 hectare on plots further west of the 2010 observation within the active dune near Reach 4.

Coachella Valley Milk-vetch Critical Habitat

The action area is within Unit 4 of designated critical habitat for Coachella Valley milk-vetch. Unit 4 contains a total area of 3,851 acres providing the physical and biological features needed to sustain milk-vetch. The northern portion of the habitat, generally considered to be the area above Ramon Road, approximately 206 acres of unoccupied habitat were designated to protect the fluvial sand transport system within the Thousand Palms Conservation Area. Ephemeral washes carry substrates from alluvial sand source areas in Unit 4 to alluvial fan areas where they can be dispersed to occupied habitat areas further south via the wind corridor (Service 2013b). The remaining habitat is considered occupied and provides the physical and biological features necessary to support milk-vetch including stabilized sand dunes, active and stabilized sand fields, ephemeral sand fields, and fluvial and deposits on floodplain terraces of active washes.

Unit 4 comprises approximately 48 percent of total occupied designated critical habitat for Coachella Valley milk-vetch. This unit is essential because it supports large numbers of the Coachella Valley milk-vetch that contribute to the overall genetic diversity of the species (Meinke *et al*. 2007). Unit 4 also serves as an important buffer to excessive losses in other parts of the range due to its location in the southeastern portion of the species range which is hydrologically independent and physically isolated from the other units (Service 2013b). The primary threats impacting this area of designated critical habitat are loss of occupied habitat; the increasing establishment of Sahara mustard; degradation of fluvial and aeolian ecosystem process area; the loss of mesquite hummocks that help establish sand dunes; groundwater level declines; and OHV activity (Service 2009a).

Coachella Valley Fringe-toed Lizard

Coachella Valley fringed-toed lizards are known to occupy several aeolian habitat types including active dunes, stabilized sand fields, and ephemeral sand fields. The Thousand Palms Coachella Valley fringe-toed lizard population is the largest and most robust population in the species range (Service 2010a). Each of the Project's reaches are located within habitat with potential to support Coachella Valley fringe-toed lizards, including sand transport areas initially considered unoccupied at the time of listing for designated critical habitat (Aspen 2016). Suitable habitat near Reaches 1 and 2 are considered marginal by a Project habitat assessment in (Aspen 2021). Previous Project studies have also found few if any lizards; however, multiple occurrences of fringe-toed lizards in these areas have been documented and reported. Reaches 3 and 4 are located within habitat of moderate-to-high suitability, and occurrences of lizards have been consistently observed in the active dunes and stabilized sand fields adjacent to the reaches.

Additional observations reported numerous occurrences in the vicinity of each Project reach (Aspen 2021). Habitat assessments and focused surveys within the Project study area yielded observations of fringe-toed lizards near Reach 3 in 2010 and Reach 4 in 1997, 2003, and 2015 (Aspen 2021).

Reaches 1 and 2 are not anticipated to be occupied by Coachella Valley fringe-toed lizards, despite being located in sand source and transport habitat. Project field surveys, habitat assessments, and monitoring for an adjacent transmission line also did not report occurrences of the species within these reaches (Aspen 2021). Suitable habitat for the species exists near Reach 4 and portions of Reach 3. Project surveys over the course of several years consistently detected occurrences of fringe-toed lizards within these reaches (Aspen 2021).

Coachella Valley fringe-toed lizard populations are known to fluctuate widely per year. While no fringe-toed lizard density estimates are available for the action area, a recent analysis estimated density throughout the CVMSHCP area based on long-term monitoring data from 68 plots placed in clusters. The estimated mean density of fringe-toed lizards throughout active sand dune habitat within one plot cluster declined from 6.15 to 3.75 lizards per 0.1 hectare from 2019 to 2021 (Barrows and Heacox 2021). University of California Riverside (UCR; 2021) reported an increase in fringe-toed lizard density from 2.56 to 4.98 lizards per 0.1 hectare during that same period in ephemeral sand fields. These sand formation types changed within this time period, specifically formations once considered active dunes had converted to stabilized sand fields through environmental and anthropogenic factors. These findings illustrate how fringe-toed lizard populations fluctuate naturally in numbers and distribution throughout the species range, among sand formation types within an area of habitat. The density of fringe-toed lizards estimated in the CVMSHCP area may not align with density estimates in the action area or at any given year during the duration of the Project. For this reason, the exact number of Coachella Valley fringe-toed lizards that will occupy the action area during the life of the Project is not known or practicably determinable.

Coachella Valley Fringe-toed Lizard Critical Habitat

The action area occurs within the Thousand Palms Conservation Area, which contains approximately 11,789 acres of designated critical habitat for Coachella Valley fringe-toed lizard. Designated critical habitat within the action area supports occupied and unoccupied habitat that provide ecological processes necessary for sustaining aeolian habitat for fringe-toed lizards. This habitat is also characterized by existing residential development and transportation corridors. Reaches 1 and 2 are within designated critical habitat that serve as sand source and transport areas but are not expected to support fringe-toed lizards (Service 1985, Service 2010a). Reaches 3 and 4 are located near occupied designated critical habitat on conserved lands.

The primary threats affecting designated critical habitat within the action area are similar to those identified for milk-vetch, including occupied habitat loss, degradation of the sand transport system, OHV use, and loss of mesquite hummocks that once aided dune formation (Service 2010a).

The Service designated critical habitat for Coachella Valley fringe-toed lizard in 1980 and identified sand transport areas north of Ramon Road as unoccupied habitat, not suitable to

support the species but provided critical ecological processes to the occupied habitat south of Ramon Road. Since then, occurrences of fringe-toed lizards have been documented in the fluvial transport areas near Reach 1 and 2 near the Indio Hills sand transport route and to the northeast near the Thousand Palms Canyon sand source area (Aspen 2016). Fringe-toed lizard habitat relies on the same sand transport processes described in the Effects on Designated Critical Habitat for Coachella Valley milk-vetch. Lancaster (2021) estimated that water and sediment from Indio Hills channels are directed south or southwest towards the upwind part of the sand transport corridor in the area of Ramon Road. A distributary channel of the Thousand Palms fan also routes water and sediment southwest to this area, although the study's model suggests that the majority of the flow is directed to the south and southeast, where it enters the dune area (Lancaster 2021).

EFFECTS OF THE ACTION

Regulations implementing the Act (50 CFR § 402.02) define the effects of the action as all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (50 CFR § 402.17).

The regulations for section 7(a)(2) note that "a conclusion of reasonably certain to occur must be based on clear and substantial information, using the best scientific and commercial data available" [50 CFR § 402.17(a)]. When considering whether activities caused by the proposed action (but not part of the proposed action) or activities reviewed under cumulative effects are reasonably certain to occur, we consider factors such as (1) past experiences with activities that have resulted from actions that are similar in scope, nature, and magnitude to the proposed action; (2) existing plans for the activity; and (3) any remaining economic, administrative, and legal requirements necessary for the activity to go forward.

Effects from Construction Activities

Coachella Valley Milk-vetch

Coachella Valley milk-vetch occupies aeolian habitat throughout CVNWR and is known to occur near Reaches 3 and 4 (Aspen 2016, UCR 2020b). Activities associated with construction of the flood control system include site clearing, grading, trenching, backfilling, and other ground-disturbance through the use of trucks, backhoes, loaders, dozers, scrapers, compactors, graders, excavators, compactors, and other heavy equipment (Aspen 2020). These Project activities may injure or kill individual milk-vetch plants by uprooting, crushing, or burying them. The increased presence of vehicular and pedestrian traffic from worksite personnel could result in trampling and crushing of plants. Seeds of milk-vetch may also be destroyed, crushed, removed, or buried. Because the density and distribution of milk-vetch plants within the action area is highly variable each year, the exact number of individuals that will be directly impacted by these Project activities cannot be quantified. Because no estimates of the Coachella Valley milk-vetch seed bank within the action area are available, the number of viable seed that may be impacted is unknown. However, CVNWR is expected to support a robust seed bank, and

standing plants have been repeatedly observed near Reaches 3 and 4 throughout long-term monitoring efforts (UCR 2021a).

CVWD proposes a number of conservation measures to avoid and minimize impacts to Coachella Valley milk-vetch and its habitat. The siting and extent of the Project components have been designed to have the most minimal footprint needed to feasibly complete Project objectives (CM 8). In areas where removal of vegetation may be required for site preparation, mowing or drive and crush methods will be preferred over grading to preserve belowground root structures of plants. Prior to commencing Project activities, pre-construction surveys will be conducted at each work site to identify and mark or flag areas of sensitive plants for avoidance. CVWD will select qualified biologists to conduct pre-construction surveys in all suitable milk-vetch habitat within a 200-foot buffer of Project disturbance areas and roads, in accordance with CDFW botanical survey protocols (CM 4 and CM 5). Areas with milk-vetch plants will be flagged and staked to an appropriate buffer to prevent impacts to plants (CM 11), and ongoing biological monitoring will occur during construction (CM 7). In areas where milk-vetch plants cannot be reasonably avoided, conservation strategies including salvage, horticultural propagation, or habitat compensation of lands of equal or greater ecological value may be used where appropriate, in accordance with an approved mitigation plan for sensitive plant species submitted to the Corps, Service, and appropriate agencies for approval prior to ground disturbance (CM 11).

Coachella Valley Fringe-toed Lizard

Ground-disturbing activities associated with construction have potential to harass, injure, or kill lizards. Site clearing, grading, excavation, and similar activities may injure or kill lizards by direct strikes, burying, or crushing. Increased pedestrian and vehicular traffic may result in injury or death to lizards by trampling or crushing. Direct injury or death may also result from potential entrapment hazards such as open trenches or piled construction supplies. Increased personnel, activity, and equipment during construction may create hazardous attractants or subsidies for fringe-toed lizards and/or their predators including common ravens, that may increase lizards' risks of injury or death.

CVWD will implement conservation measures to reduce risks of injury and death to fringe-toed lizards, including educating work personnel about species, habitat, and Project requirements (CM 7); enforcing low speed limits of 15 miles per hour to avoid additional impacts to species and habitat (CM 12); and covering or removing potential entrapment hazards (CM 12). CVWD will also implement management of ravens (CM 15) and reduce subsidies by other potential predators including food sources and perching opportunities for loggerhead shrikes (*Lanius ludovicianus*).

CVWD will assign Service-approved Authorized Biologists to oversee Project activities for Coachella Valley fringe-toed lizards (CM 4 and CM 13). The Authorized Biologists will conduct pre-construction surveys in each work area prior to the start of work activities (CM 6 and CM 13). Appropriate exclusion fencing may be installed in work areas to reduce injuries or deaths of fringe-toed lizards from Project activities (CM 13). CVWD will develop an agency-approved Wildlife Relocation Plan describing that Coachella Valley fringe-toed lizards would be moved out of harm's way from within fenced areas and as needed (CM 13).

CVWD anticipates that the Project will result in disturbance of 461.82 acres of suitable Coachella Valley fringe-toed lizard habitat (Table 1). Of this total, 452.77 acres are on private lands within and outside of the Thousand Palms Conservation. Because the Project is a Covered Activity deemed consistent with the CVMSHCP, CVWD has take authorization for disturbances to private lands under the Plan, provided that Project activities remain consistent with the Plan. Within the anticipated 452.77 acres of disturbance to private lands, CVWD anticipates that 93.97 acres will occur on lands within the current Thousand Palms Conservation Area boundary. The 2008 biological opinion issued for the CVMSHCP anticipated and analyzed approximately 93 acres of fringe-toed habitat within the Conservation Area to be loss to development, without jeopardizing the continued existence of the species. CVWD will implement Plan requirements including Avoidance and Minimization Measures and Land Use Adjacency Guidelines outlined in the Consistency Determination (CVCC 2021) and Section 4 and Section 7.3.1 of the CVMSHCP. Of the 9.05 remaining acres that occur on Federal lands, CVWD will implement the same applicable aforementioned conservation measures. We anticipate that these measures will minimize the potential impacts of habitat disturbance or loss to Coachella Valley fringe-toed lizard.

In addition, CVWD shall provide compensation lands for impacts to Coachella Valley fringe-toed lizard (CM 16).

Relocation of Coachella Valley Fringe-toed Lizard

The Applicant will implement conservation measures during construction and O&M activities to avoid and minimize risks of injury or death to Coachella Valley fringe-toed lizards. Pre-construction surveys will be conducted to determine absence or presence of fringe-toed lizards in the Project area (CM 6). Qualified Biologists approved to oversee and handle lizards will conduct biological monitoring during construction. For areas within suitable occupied habitat, exclusion fencing for lizards may be installed around active work areas to conduct clearance surveys to move lizards out of harm's way. Protocol and guidance for these activities will be included in an agency-approved Relocation Plan (CM 13) for Coachella Valley fringe-toed lizards. Capture and handling also has the potential to result in injury or death. Clearance survey and relocation activities will be conducted only by approved Qualified Biologists familiar with tracking and handling Coachella Valley fringe-toed lizards. The Relocation Plan will include detailed protocol for clearance surveys, appropriate exclusion barrier options installation, handling, and release site selection for construction and O&M activities (CM 13 and CM 18).

Currently, there is limited research available regarding the long-term outcome of Coachella Valley fringe-toed lizards relocated short-distances from capture sites. No standardized protocol for clearing and relocating fringe-toed lizards exists (Vandergast *et al*. 2019); however, some common methods have been demonstrably successful (Hollenbeck *et al*. 2010, Fisher *et al*. 2020). Methods for locating lizards have included walking transects for visual point count surveys of individual lizards, walking transects to track individual fringe-toed lizard tracks imprinted on blow sand, or by the use of pitfall traps. Pitfall traps or specialized lassos have been used to physically capture lizards. We anticipate that the potential for death or injury of fringe-toed lizards due to capture and handling would be minimized or avoided by the proposed conservation measures provisioning that these activities will be conducted only by approved Qualified Biologists in accordance with guidance provided in the approved Relocation Plan.

Past studies have shown that reptiles translocated greater distances beyond their capture sites often do not survive in recipient areas long-term (McCoy *et al*. 2014). In a study on genetic diversity and connectivity of the species after long-distance translocation, Vandergast *et al*. (2019) translocated fringe-toed lizards to Stebbins Dune from a location approximately 4.97 miles to the north. The team located and captured 42 lizards at the original site, with no mortalities due to capturing and handling reported, though their methods were not specified. Captured individuals were released in suitable habitat at Stebbins Dune. A year later the team recaptured four lizards during surveys at the recipient site. The only translocated individual recaptured was an adult female translocated as a juvenile. Genetic testing revealed some of the captures were likely offspring of some of the translocated individuals, suggesting that recruitment after translocation may be successful. The low number of translocated lizards captured within a year of translocation could not be fully explained, though one suggestion is that the strong homing instincts of male fringe-toed lizards may cause them to roam after translocation, thus increasing their exposure and susceptibility to risks (McCoy *et al*. 2014). Gravid females and juveniles may have a higher survival rate than mature males.

We anticipate that the proposed conservation measure to clear, exclude, and relocate lizards out of harm's way will minimize immediate risks of take to individual lizards during Project activities. The installation of exclusion fencing along the linear components of the work area may involve the use of heavy equipment for digging trench lines and other disturbances. The effects of using heavying equipment are similar to those discussed previously Additionally, certain fencing material and components may encourage subsidies that attract predators, such as perching opportunities for birds, or subsidies such as accumulated loose sand that attract lizards to the area. To avoid and minimize these potential risks, CVWD will coordinate with the CVNWR to develop an approved Relocation Plan prior to construction that describes appropriate exclusion fencing methods, locations, material, and length of time to remain installed.

CVWD anticipates moving Coachella Valley fringe-toed lizards out of harm's way relatively short distances to suitable habitat. In short-term studies, Coachella Valley fringe-toed lizards were estimated to have average home ranges of approximately 7125.71 square feet for adult males and 5435.77 square feet for adult females (Fisher *et al*. 2020). We anticipate short-distance relocation of lizards to suitable habitat will reduce the potential risks of injury or death from work activities; increase the probability that a relocated individual will have previously been in contact with other individuals occupying areas near the release site, thereby reducing territorial conflicts; and increase probability of relocated individuals to find unoccupied habitat patches still within their home range to reduce chances of prolonged roaming. Due to these conservation measures, we anticipate that the impacts to relocated and resident individuals from relocation activities would be minimized.

Non-Native Species

Heavy equipment, vehicles, and fill materials can be potential vectors for the introduction and/or further spread of non–native plant species within the Project site. Certain ground disturbing activities may also create conditions that favor establishment of non–native plants. Sahara mustard is an invasive plant well-established within the Thousand Palms aeolian habitat. In addition to competing with native species for resources, Sahara mustard can change habitat qualities by converting the loose active sand dunes milk-vetch and fringe-toed lizards both

require for their life histories into compacted, stabilized sand fields. CVNWR has ongoing efforts to eradicate or manage the spread of Sahara mustard throughout the dune system, yet the prolific growth and reproductive capabilities of the plant make eradication difficult (Service 2014). Sahara mustard plants dispersed an estimated 2.43 million seeds per acre into milk-vetch habitat at the CVNWR in 2005 (Meinke *et al*. 2007). Plants often die after seeding, become uprooted by wind, and tumble for distances throughout the aeolian habitat, further spreading seeds.

CVWD will develop an approved Integrated Weed Management Plan (IWMP) (CM 10) prior to any ground disturbing activities to minimize the potential to introduce or further spread of Sahara mustard and other invasive plant species throughout the area. Strategies employed during Project construction and O&M include assessing current conditions and identifying susceptible areas and risk facts; pre-construction weed treatment of existing weeds; preventative actions such as washing undercarriages of vehicles and heavy equipment; and annual monitoring and adaptive management.

Coachella Valley Milk-vetch

The introduction of invasive species, particularly Sahara mustard, would contribute to further compaction and stabilization of active sand dunes. Coachella Valley milk-vetch seeds require scarification from blow sand within dunes and other aeolian processes to germinate (Meinke *et al*. 2007). The stabilization of active dunes would reduce available blow sand, reducing the potential for proper scarification and dispersal of seeds. Germination of new plants may then decline, affecting the recruitment, distribution, and reproduction of the species in the action area.

Coachella Valley Fringe-toed Lizard

As the density of Sahara mustard increases, mean densities of Coachella Valley fringe-toed lizards decrease (Barrows and Heacox 2021). Several mechanisms may contribute to this effect. Sahara mustard can decrease the abundance of native plants that fringe-toed lizards may utilize. The loss of native plants will also reduce the abundance of arthropods, particularly ants, that fringe-toed lizards consume as food. Active dunes with increasing densities of Sahara mustard can experience increased compaction, eventually transitioning dune habitat into stabilized sand fields. Stabilized sand fields are known to support the lowest fringe-toed lizard densities among other aeolian habitats (Barrows and Heacox 2021).

O&M Effects

CVWD anticipates operation and maintenance activities for the Project would include structural repair to the flood control structures, scheduled vegetation removal to maintain integrity of the flood control structures, and sand management activities as outlined in the Sand Migration Management Plan (CM 3). To reduce impacts of O&M activities to listed species, CVWD will implement conservation measures including avoiding loss or disturbance to aeolian sediment (CM 1, 2, and 3), avoiding disturbances to vegetation (CM 8, 9, and 10), conducting biological monitoring during work activities (CM 7), and assigning Authorized/Acceptable and Qualified Biologists to monitor work (CM 4), exclusion, and relocation activities conducted in accordance

with an approved Relocation Plan (CM 13). In addition, CVWD will develop an Operations and Management Plan (CM 17) in coordination with CVNWR.

Coachella Valley Milk-vetch

Structural repairs to the levee and channel components may involve occasional excavation to repair underground features, such as levee toes. Additional fill material may be required to reinforce the flood control structures. Excavation and similar ground disturbing activities can cause direct injury or death to plants or disturb the seed bank, as previously described. Once the flood control system is constructed, CVWD anticipates that disturbance would be confined to the final footprint of the Project and that there will be no additional ground disturbance impacting adjacent habitat for milk-vetch.

CVWD must comply with federal requirements for maintaining levees and dams, including preventing establishment of vegetation that may compromise integrity of the structures.

The levees are designed to capture accumulated sediment that will be collected on a regular schedule and deposited in a selected location within CVNWR to be redistributed naturally within the aeolian system. The accumulated sediment could potentially contain milk-vetch seeds from stormwater flowing through natural fluvial routes. Milk-vetch plants could potentially germinate in these areas of accumulated sediment along the levee reaches.

Sand management measures (CM 1 and CM 2) and the SMMP (CM 3) are expected to minimize potential risks to milk-vetch by preventing opportunities for plants to establish within the flood control infrastructure and enhancing habitat conditions to encourage the species to continue establishing throughout appropriate areas of occupied habitat. A sand collection schedule that reduces opportunities for milk-vetch to inhabit sediment depositions will be determined in coordination with CVNWR. Other plant and habitat conservation employed during construction will continue for O&M activities to reduce impacts to milk-vetch habitat measures (CM 8 through CM 11).

Coachella Valley Fringe-toed Lizard

Excavations conducted during structural repairs can result in injury or death to fringe-toed lizards as discussed previously. The accumulated sediment captured along flood control structures may attract fringe-toed lizards to the area. Heavy equipment and vehicles used for sand removal activities can also result in injury or death of lizards, if they are present within the flood control infrastructure. CVWD will implement conservation measures for minimizing or avoiding effects to fringe-toed lizards including having Qualified Biologists present during activities (CM 4). Qualified Biologists will conduct pre-construction surveys (CM 6) in each work area prior to the start of O&M activities that may affect fringe-toed lizards or habitat. Exclusion fencing installed during construction may be retained in some work areas to prevent lizards from accessing the flood structures, in accordance with fencing strategy detailed in the Relocation Plan (CM 13). For some O&M activities, fringe-toed lizards could potentially be moved out of harm's way only by Qualified Biologists as described in the Relocation Plan (CM 13).

Protocols and schedules for removing sand from the levees will reduce the likelihood that fringe-toed lizards colonize those portions of accumulated sand within the channels and levees. The SMMP will establish and implement conservation measures discussed in this biological opinion to minimize effects to fringe-toed lizards that may occur during sand removal activity.

Effect on Designated Critical Habitat

Coachella Valley Milk-vetch Critical Habitat

The Project would disturb 14.32 acres of designated critical habitat for Coachella Valley milk-vetch as a result of the construction of Reaches 1 and 3 as described in Table 2. Construction of Reach 1 would temporarily disturb 2.65 acres and permanently remove 4.47 acres for a total of 7.12 acres of the unoccupied alluvial sand deposits. A portion of Reach 1 is within an unoccupied sand source area of designated critical habitat. However, the majority of the Reach 1 is outside of designated critical habitat, but adjacent to a fluvial sand transport pathway within critical habitat. The disturbance would be caused by the construction of road crossings over Reach 1 that would be sited within two existing roads to maintain current traffic routes. The design of the road crossing and culverts is expected to allow stormwater and sediment flow to continue in this area without disruption. Construction of Reach 3 crosses would temporarily disturb 0.66 acres and permanently remove 6.54 acres for a total of 7.20 acres of occupied designated critical habitat.

Table 2. Project Effects to Coachella Valley Milk-vetch Designated Critical Habitat

Disturbance in Critical Habitat			Federal Land (acres)		All Land[1] (acres)	
	Temporary	Permanent	**Total**	Temporary	Permanent	**Total**
Reach 1 (Unoccupied)	0.0	0.0	0.0	2.65	4.47	7.12
Reach 2 (Unoccupied)	0.0	0.0	0.0	0.00	0.00	0.00
Reach 3 (Occupied)	0.0	0.0	0.0	0.66	6.54	7.20
Reach 4 (Occupied)	0.0	0.0	0.0	0.00	0.00	0.00
Grand Total	0.0	0.0	**0.0**	3.31	11.01	**14.32**

[1]All Land (acres) column is a total of Project disturbance occurring within Coachella Valley milk-vetch designated critical habitat and includes values within the Federal Land (acres) column.

Coachella Valley Fringe-toed Lizard Critical Habitat

The Project would disturb 93.97 acres of designated critical habitat as described in Table 3. The construction of Reaches 1 and 2 would temporarily disturb 0.97 acres and permanently remove 51.01 acres for a total of 51.98 acres of unoccupied designated critical habitat. CVWD proposes to acquire and conserve a 550-acre floodway within the primary alluvial area located between Reaches 1 and 3 to offset loss of unoccupied habitat and increase the acreage of the fluvial habitat contained within the sand transport system. The construction of Reaches 3 and 4 would temporarily disturb 0.64 acres and permanently remove 41.35 acres for a total of 41.99 acres of occupied critical habitat. CVWD will implement conservation measures to minimize disturbance or effects to designated critical habitat. The Project's components were designed to leave the smallest footprint as needed to feasibly perform Project's goals (CM 8). CVWD will coordinate

with CVNWR to restore temporarily disturbed areas as needed (CM 9). Impacts to sand within the aeolian system will be minimized through the development and implementation of best management practices (CM 1) and sand distribution activities (CM 2) detailed in an approved SMMP (CM 3).

Table 3. Project Disturbance to Coachella Valley Fringe-toed Lizard Designated Critical Habitat

Project Components in Critical Habitat	Federal Land (acres)			All Land[1] (acres)		
	Temporary	Permanent	**Federal Total**	Temporary	Permanent	**All Lands Total[2]**
Reach 1 (Unoccupied)	0.0	0.0	0.0	NA	46.35	46.35
Reach 2 (Unoccupied)	0.0	0.0	0.0	0.97	4.66	5.63
Reach 3 (Occupied)	0.64	6.70	7.34	NA	41.25	41.25
Reach 4 (Occupied)	0.0	0.74	0.74	0.0	0.74	0.74
Total	0.64	7.44	**8.08**	0.97	93.00	**93.97**

[1]All Land (acres) column is a total of Project disturbance occurring within Coachella Valley fringe-toed designated critical habitat and includes values within the Federal Land (acres) column
[2]Calculated from Biological Assessment (Aspen 2021) Tables 2 and 10 and Project GIS data

Sand Dispersal

Reaches 1 and 2 would route sand through fluvial and aeolian transport areas, with Reach 1 beginning near the Indio Hills sand source. The placement of anthropogenic structures within this area could disrupt the natural ecological processes that move sand throughout aeolian desert habitat downstream. The current Project design would aid and improve these natural processes (CM 7).

Unit 4 of Coachella Valley milk-vetch designated critical habitat is important because its sand source is generated in the same place where sand transport occurs (Service 2013a). Substrate from the Indio Hills is an important sand source. A secondary sand source are alluvial deposits on the floor of natural channels and washes originating at the Indio Hills. Flash flood events from the hills can erode sand from the alluvial deposits on channel floors and introduce them as substrate into the aeolian system.

Reach 1 would be within a network of Indio Hills channel routes identified by Lancaster (2021) that naturally flow downstream through the community of Thousand Palms towards the Morongo Wash. CWVD anticipates that Reach 1 would enhance the delivery of both sand sources to aeolian habitat downstream (Aspen 2021 and Lancaster 2021). The reach has been designed as a levee wall sited along the eastern edge of the natural fluvial pathway to intercept stormwater and prevent it from flowing east towards a nearby neighborhood. This feature also helps capture sediment that may otherwise be lost outside of the natural transport pathways. The stormflow moves sediment downstream through a natural fluvial corridor flanked on either side by roadways and development. Lancaster (2021) estimated that Reach 1 receives 15.2 acre-feet of sediment from the tributary channel. As much as 9.2 acre-feet of sediment would become trapped along Reach 1 as stormwater flows along the levee, and 6.0 acre-feet of sediment would

likely continue to be transported downstream to the primary depositional zone located near Reach 2 to contribute to aeolian processes.

Reach 2 would be relatively small in length and height, intended to protect flows from Reach 1 from flowing west without disrupting the natural wind corridor (Figure 4). The reach would also allow unobstructed access for stormwater flow to reach the primary depositional floodplain area where deposited sediment would be swept into circulation by aeolian forces. Lancaster (2021) estimated that the placement of Reach 1 would provide an additional 2.2 acre-feet of sediment to the alluvial floodplain near Reach 2.

Reaches 3 and 4 would be designed to divert stormwater and capture sediment that may otherwise be lost from the system. This sediment would be collected from the reaches for redistribution into the aeolian habitat as part of the SMMP (CM 3). The SMMP will describe preferred methodology for sorting and identifying sand particles from the accumulated sand. Material deemed unsuitable for redistribution would be deposited in an approved area or facility.

The flood control system would be designed to retain, redistribute, and replenish sand and sediment within the Thousand Palms sand transport system. CVWD will coordinate with the Corps, Service, and other appropriate agencies to develop and implement the SMMP for collecting accumulated sand and depositing sand at predetermined locations within the wind corridor for redistribution into the aeolian sand system. CVNWR has an existing sand redistribution program where blow sand from a large active dune along the CVNWR's boundary adjacent to Avenue 38 are removed from the roadway by the County of Riverside for public safety and to replenish sand within CVNWR (Service 2013a). The SMMP will adapt and enhance this existing management action to capture sand blown beyond the extent of the remaining aeolian habitat and recirculate it within the sand transport system.

Effects on Recovery

Coachella Valley Milk-vetch

A recovery plan has not been established for Coachella Valley milk-vetch. Conservation and recovery of the species and its habitat is largely accomplished through the implementation of the CVMSHCP. In the Thousand Palms Conservation Area, Conservation Objectives identified for Coachella Valley milk-vetch include conserving at least 985 acres of core habitat (CVAG 2007a). The Service's 5-year review (2009a) identified the recovery priority for milk-vetch as "12C," indicating the subspecies is facing a moderate degree of threats, low recovery potential, and conflicts with construction and development.

The number of plants that germinate in a year is highly variable and dependent upon rainfall. Additional factors affecting recruitment of new plants include abundance of pollinators, wind transport to disperse seeds throughout appropriate habitat, and blow sand movement to scarify seeds for germination. Seed production is highly dependent upon bees as pollinators, particularly non-native honeybees (*Apis mellifera*) (Meinke *et al*. 2007). The current spatial distribution of milk-vetch has remained the same since the species was listed as endangered (Service 2009a). Threats to recovery of milk-vetch include habitat fragmentation, competition with nonnative plants, and off-highway vehicle trespass.

Based on the Project description, including the conservation measures proposed to avoid and minimize adverse impacts, the Project is consistent with the CVMSHCP rough step acreage required to conserve Coachella Valley milk-vetch habitat within the Thousand Palms Conservation Area (CVCC 2021). The conservation measures proposed are adequate for offsetting anticipated impacts to the seed bank, plants, pollinators, and sand transport processes. The Project overall is expected to provide a positive net benefit to the sand transport processes that sustain habitat conditions required by milk-vetch. Therefore, we conclude that the Project is not likely to lead to an appreciable decline in reproduction, numbers, or distribution of Coachella Valley milk-vetch. We also do not anticipate the Project will appreciably increase or contribute to the current identified threats to milk-vetch recovery.

Coachella Valley Fringe-toed Lizard

The recovery plan for the Coachella Valley fringe-toed lizard (Service 1985) identifies recovery objectives for the taxon that function as formal recovery criteria. The single primary objective of the recovery plan is to secure two or more protected areas that support self-sustaining populations of fringe-toed lizards. The CVMSHCP includes the Thousand Palms Reserve as one of three reserve areas intended to conserve fringe-toed lizards within the Preserve (Service 2008b). The Thousand Palms Reserve is considered the largest remaining contiguous extant habitat for fringe-toed lizards and is also expected to likely support the most robust population of the species (Service 2008c, Service 2010a). CVWD will implement conservation measures to avoid and minimize loss of fringe-toed lizards and habitat. Based on these measures and the Project's overall anticipated positive net benefit to aeolian habitat supporting the fringe-toed population in the Thousand Palms Conservation Area, we anticipate that the Project aligns with the recovery objective by sustaining the fringe-toed lizard population in this protected area and enhancing habitat conditions. Therefore, we conclude that the proposed action is not likely to result in an appreciable loss of numbers, disruption to reproduction, or changes in distribution of the Coachella Valley fringe-toed lizard.

CUMULATIVE EFFECTS

Cumulative effects are 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). Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. The Service has no information regarding any future State, local, private, or certain tribal actions that are reasonably certain to occur in the action area that would have an adverse effect on either Coachella Valley milk-vetch or Coachella Valley fringe-toed lizard that would result in a loss to reproduction, numbers, and distribution in the action area.

CONCLUSION

After reviewing the current status of the Coachella Valley milk-vetch, Coachella Valley fringe-toed lizard, and designated critical habitats for each species; the environmental baseline for the action area; the effects of the proposed activities; and the cumulative effects, we have determined that the proposed action considered in this biological opinion is not likely to jeopardize the continued existence of the Coachella Valley milk-vetch or Coachella Valley fringe-toed lizard.

We have also determined the action is not likely to destroy or adversely modify designated critical habitat for either species. We have reached this conclusion for the following reasons described in the sections below.

Coachella Valley Milk-vetch

Based on the status and distribution of the Coachella Valley milk-vetch and our analysis of the effects of the Project, we conclude that the proposed action is not likely to appreciably reduce the numbers, reproduction, or distribution of the species.

Numbers

Some Project activities have potential to injure or kill Coachella Valley milk-vetch plants. Due to the variability in the number of milk-vetch plants that may germinate in any given year, the exact number of plants that may be affected throughout the life of the Project cannot be quantified. However, the Project area is expected to support a robust seed bank, particularly in active dune areas near Reach 3 and Reach 4. These reaches have been sited to avoid direct encroachment upon occupied dune habitat. The Project design and proposed conservation measures, including avoidance and/or salvage of plants, would likely minimize risks to milk-vetch plants and the seed bank. The Project would increase overall sediment circulating within the Thousand Palms sand transport system, improve the conditions and capacity of the aeolian sand habitat to continue supporting plants and a viable seed bank for the Thousand Palms population, and contribute to the overall numbers of milk-vetch range wide.

Reproduction

Seed production for Coachella Valley milk-vetch is largely dependent upon non-native bee pollinators (Meinke *et al*. 2007). The Applicant has proposed conservation measures that will avoid impacts to habitat that could potentially affect abundance of pollinators. Reproductively mature milk-vetch plants located in impact areas will be avoided or salvaged during all phases of the Project (CM 11) to allow continued production of seed. Increased compaction of aeolian habitat can prevent the movement of loose blow sand needed for milk-vetch seeds to be scarified for successful germination. Disturbances to aeolian sand habitats will be minimized and avoided to prevent compaction of active dunes (CM 1, 2, and 3) and to prevent spread of invasive plants that may contribute to compaction (CM 8, 9, 10, and 11). Implementation of the SMMP (CM 3) will help return sand into the sand transport system to maintain ecological processes and suitable habitat necessary for flowering mature plants and recruitment of new plants. We anticipate the Project will not disrupt or alter the reproductive capacity of milk-vetch within the action area or range wide.

Distribution

The Project is not likely to appreciably reduce the current distribution and extent of Coachella Valley milk-vetch within the action area or range wide. The Project is expected to provide an overall positive net benefit to improving the Thousand Palms sand transport system. The enhancement of ecological processes in this system will likely improve conditions within the current distribution of milk-vetch by creating and increasing sand formations conducive to

growth of plants; and by maintaining the natural aeolian processes needed to disperse seed, replenish the seed bank, and establish milk-vetch in new areas of suitable habitat.

Coachella Valley Milk-vetch Designated Critical Habitat

The area within Unit 4 of designated critical habitat is considered essential habitat because it supports large numbers of Coachella Valley milk-vetch that contribute to the overall genetic diversity of the species (Meinke *et al*. 2007). This unit also serves as an important buffer to excessive losses in other parts of the range due to its location in the southeasternmost portion of the species range which is hydrologically independent and physically isolated from the other units (Service 2013b). The total direct disturbance to designated critical habitat is 14.32 acres (see Table 2). We conclude that the proposed action is not likely to cause adverse modification or destruction that appreciably diminishes the value of critical habitat for both the survival and recovery of Coachella Valley milk-vetch based on the following:

1. Reach 1 would disturb 7.12 acres of unoccupied designated critical habitat providing fluvial and aeolian processes. These processes are needed to sustain the physical and biological features that would be disturbed by the construction of some Project components. The disturbance would be a relatively small percentage, approximately 3.45 percent (7.12 disturbed acres of 206 total unoccupied acres), of total unoccupied habitat, and would occur mostly within existing disturbance currently containing two active roadways. Some Project components would be built along portions of the boundaries of unoccupied habitat. We anticipate that the conservation measures will adequately minimize edge effects that may adversely modify this area of critical habitat. Overall, the Project features in Reach 1 are expected to improve the function of this area of habitat by aiding and restoring natural fluvial transport. We do not anticipate that the proposed action will appreciably diminish the acreage of unoccupied critical habitat.

2. Reach 3 would disturb 7.20 acres of occupied designated critical habitat featuring the physical and biological features of specific sand formation features required to support milk-vetch. The disturbance would be a relatively small percentage (7.28 percent) of unoccupied habitat and would occur mostly within existing disturbance currently containing two active roadways. The Applicant anticipates that acreage of occupied designated critical habitat would not be disturbed or reduced due to the siting and design of the Project. Some Project components would be located adjacent to the boundary of occupied critical habitat. Effects to these adjacent boundary edges of designated critical habitat will be adequately minimized by conservation measures.

3. CVWD will acquire a 550-acre floodway within unoccupied critical habitat to offset the loss of ecological functions that may occur from the Project components (Reach 1 and Reach 2) built within unoccupied critical habitat. The acquisition will prevent future development on the floodway, conserve, and protect designated critical habitat and the ecological processes provided to the Thousand Palms sand transport system. Therefore, we do not expect the proposed action to appreciably reduce or disrupt the ecological functions provided by unoccupied critical habitat.

Coachella Valley Fringe-toed Lizard

Based on the status and distribution of the Coachella Valley fringe-toed lizard and the likely effects of the Project, we conclude that the proposed action is not likely to appreciably reduce the likelihood of survival and recovery of the fringe-toed lizard by reducing the reproduction, numbers, or distribution of the species.

Numbers

The Applicant will conduct clearance surveys and install appropriate fencing or barriers to exclude fringe-toed lizards from work areas to avoid the injury or death of individuals. The Project would be designed to minimize encroachment in occupied habitat. The Applicant has proposed adequate conservation measures, commiserate to levels of anticipated disturbance, to avoid or minimize adverse effects to habitat affected and adjacent habitat that support fringe-toed lizards. We do not anticipate that the proposed action will appreciably diminish the numbers of Coachella Valley fringe-toed lizard.

Reproduction

We anticipate that most reproductively mature fringe-toed lizards will be captured and relocated out of harm's way during clearance surveys conducted by approved Authorized/Acceptable Biologists. We expect disruptions to reproduction would be minimized and avoided by allowing relocated lizards to remain in suitable habitat within their home ranges and implementation of conservation measures that minimize disturbances to lizards and habitats.

Distribution

The Thousand Palms Conservation Area within the action area is considered the most intact contiguous area of suitable habitat for Coachella Valley fringe-toed lizards. CVWD will minimize effects to occupied aeolian habitat through implementation of the conservation measures. Project components constructed outside the boundary of the Conservation Area minimizes encroachment and avoids fragmentation of protected habitat within Thousand Palms, including designated critical habitat and modeled habitat. Operations of the proposed flood control system is expected to replenish sediment and sand that would otherwise be lost to designated critical habitat and modeled habitat for fringe-toed lizards found within the boundary of the Conservation Area. The Project is not likely to reduce suitable habitat, degrade quality of habitat, or contribute to habitat fragmentation. We conclude that the proposed action is not likely to appreciably diminish distribution of fringe-toed lizards within the action area or range wide.

Coachella Valley Fringe-toed Lizard Designated Critical Habitat

We conclude that the proposed action is not likely to destroy or adversely modify critical habitat for both the survival and recovery of Coachella Valley fringe-toed lizards. The Final Rule for the listing of designated critical habitat identified the area south of Ramon Road and north of Interstate 10 as occupied habitat having the physical and biological components of habitat essential for the survival and recovery of the species.

1. The Project would disturb approximately 93.97 acres of designated critical habitat for fringe-toed lizards. The boundary of designated critical habitat aligns with modeled core habitat for fringe-toed lizard identified by the CVMSHCP. In our biological opinion for the CVMSHCP, we anticipated that approximately 93 acres of fringe-toed lizard modeled habitat within the Thousand Palms Conservation Area (based on the original boundary of the Conservation Area prior to its anticipated realignment resulting from the Project) would be loss due to development. The Project's anticipated disturbance within Coachella Valley fringe-toed lizard critical habitat is closely in step with the disturbance analyzed in our non-jeopardy biological opinion (Service 2008b).

2. The Project has been designed to minimize encroachment of occupied designated critical habitat for fringe-toed lizards. Reaches 3 and 4 would disturb 41.99 acres of critical habitat. These reaches are adjacent to the boundaries of critical habitat within previously disturbed areas. The Applicant will implement conservation measures to reduce effects to critical habitat at these boundary areas and beyond.

3. Portions of the Project footprint are sited within unoccupied designated critical habitat areas identified as providing ecological processes to sustain occupied habitat for fringe-toed lizard. Two flood control structures would disturb 51.98 acres of unoccupied critical habitat. The Applicant will also implement conservation measures during the construction and O&M of these Project components to avoid and minimize effects. Due to the relatively small disturbance of habitat and the adherence to conservation measures, we anticipate that the Project will not appreciably reduce the acreage of unoccupied habitat.

4. The loss of unoccupied designated critical habitat acreage will be offset by the acquisition and conservation of a 550-acre floodplain parcel area that naturally contributes to fluvial and aeolian processes within the aeolian habitat. We conclude that the action is not likely to appreciably diminish the ecological value of the unoccupied habitat.

5. The Project is expected to provide a net benefit to designated critical habitat by enhancing the overall conditions and functions of the aeolian habitat by increasing sediment circulating within the Thousand Palms sand transport system. We anticipate the proposed action will not likely result in adverse modification or destruction of designated critical habitat for Coachella Valley fringe-toed lizard.

INCIDENTAL TAKE STATEMENT

INTRODUCTION

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act **prohibit the take of endangered and threatened animal species**, respectively, without special exemption. 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. Harm in the definition of "take" in the Act means an act which actually kills or injures wildlife. Such [an] act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential

behavioral patterns, including breeding, feeding, or sheltering (50 CFR 17.3). Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not the purpose of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the proposed protective measures and the terms and conditions of an incidental take statement and occurs as a result of the action as proposed.

The measures described below are non-discretionary, and must be undertaken by the Corps so that they become binding conditions of any grant or permit issued to the CVWD for the exemption in section 7(o)(2) to apply. The Corps has a continuing duty to regulate the activity covered by this incidental take statement. If the Corps: (1) fails to assume and implement the terms and conditions, or (2) fails to require the CVWD to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the Corps or CVWD must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR § 402.14(i)(3)].

AMOUNT OR EXTENT OF TAKE

Coachella Valley Milk-vetch

The Act does not prohibit the take of listed plant species, consequently, section 7(b)(4) and 7(o)(2) of the Act do not apply to listed plant species. However, limited protection of listed plants from take is provided to the extent that the Act prohibits the removal of federally listed endangered plants or the malicious damage of such plants on areas under Federal jurisdiction, or the destruction of listed plants on non-Federal areas in violation of State law or regulation. The Native Plant Protection Act (chapter 10, section 1908) and California Endangered Species Act (chapter 1.5, section 2080) prohibit the take of State-listed plants.

Coachella Valley Fringe-toed Lizard

The Service has a reasonable basis to conclude that take would occur incidentally as a result of the anticipated lawful activity. Coachella Valley fringe-toed lizards are known to occupy areas that will be affected by Project activities. We anticipate individuals within and near the Project footprint would be subject to take in forms and extents described below.

Relocation

CVWD will conduct clearance surveys on both Federal and CVMSHCP-administered lands for Coachella Valley fringe-toed lizards for active work zones within areas identified as highly suitable habitat (CM 13). The CVMSHCP does not provide specific avoidance and minimization measures for Coachella Valley fringe-toed lizards, including relocation and clearance activities. Because these activities were not analyzed in the biological opinion (Service 2008b) and Incidental Take Permit (Service 2008a) for the Plan, this Project biological opinion evaluates the effects of the activity and its anticipated take.

We anticipate clearance surveys will result in take of Coachella Valley fringe-toed lizards in the form of capture. The number of Coachella Valley fringe-toed lizards that will occupy the Project

area during the construction and the initial 30-year O&M period is not known or practicably determinable due to reasons described previously in the biological opinion. Annual numbers of fringe-toed lizards are expected to vary throughout the Project work areas based on shifting environmental factors including rainfall, sand deposition patterns, and aeolian formation structure. Therefore, we cannot quantify the number of individuals that will be captured, handled, and relocated. We do not want to limit the ability of the Applicant to avoid and minimize the direct injury or death of fringe-toed lizard during Project activities. Thus, all take in the form of capture for the purpose of relocation is exempted for Coachella Valley fringe-toed lizard juveniles, adults, and eggs found during clearance surveys.

Clearance surveys and relocation activities will be conducted by Qualified Biologists (CM 4) familiar with most recent recommended protocols for capturing, handling, and translocating Coachella Valley fringe-toed lizards, in accordance with a Relocation Plan (CM 13). The Applicant will develop the Relocation Plan in coordination with the Corps, Service, and other appropriate agencies. The agencies will also review and approve the final Relocation Plan. Because of these conservation measures, we do not expect these activities to result in direct injury or death of any relocated fringe-toed lizards when conservation measures are properly implemented. Therefore, the threshold for take in the form of injury or death due to activities associated with clearance surveys and relocation will be exceeded if any fringe-toed lizards are injured or killed during handling and relocation activities.

Construction and O&M

As previously discussed, this Project is a revised Covered Activity under the CVMSHCP that CVCC has determined to be consistent with the requirements of the Plan. We addressed the status of the Coachella Valley milk-vetch and Coachella Valley fringe-toed lizard along with the effects of implementing the CVMSHCP, including its Covered Projects, in our biological opinion (Service 2008b) in which we concluded that the level of anticipated take in the CVMSHCP area was not likely to result in jeopardy to those species. We do not anticipate additional activities potentially resulting in take to Coachella Valley fringe-toed lizard during construction and O&M activities occurring on private lands that were not previously evaluated in the biological opinion (Service 2008b) for the CVMSHCP. Therefore, CVWD has incidental take authorization for activities associated with construction and O&M effects on private lands through the 10(a)(1)(B) (TE-104604-0) Incidental Take Permit (Service 2008b) issued for the Plan, subject to the Project's continued consistency and the terms and conditions of this biological opinion per Section 7 of the CVMSHCP. Therefore, we extend CVWD's take authorization of Coachella Valley fringe-toed lizard to the Corps for the effects to Plan-administered lands associated with their proposed action.

The proposed action's effects to Federal lands were not analyzed within the Plan biological opinion (Service 2008b) and are evaluated within this biological opinion. Construction and O&M activities involving earth-moving, ground disturbance, heavy equipment, and increased vehicular traffic may result in take of fringe-toed lizards in the form of injuring or killing. CVWD has proposed to implement conservation measures on private and federal lands to avoid and minimize risks of incidental take. CVWD will implement biological monitoring to avoid lizards that may be encountered during work activities. CVWD has also proposed measures to exclude, monitor, and move fringe-toed lizards within the work area out of harm's way. As described earlier, we anticipate that some fringe-toed lizards of any age and their eggs within the

461.82 acres of suitable habitat affected by the Project may not be found during clearance surveys and may potentially remain in the work areas exposed to some Project-related effects, including injury or death. However, we anticipate that the risks to Coachella Valley fringe-toed lizards will be sufficiently minimized or avoided because Qualified Biologists approved to handle fringe-toed lizards will oversee relocation and ensure implementation of conservation measures. As described previously, the number of Coachella Valley fringe-toed lizards within work areas that may be exposed to take during the life of the Project is not practicably determinable. Fringe-toed lizard densities can vary annually in numbers and distribution within any area of suitable occupied habitat. Therefore, we will use an appropriate surrogate to quantify anticipated incidental take of Coachella Valley fringe-toed lizards, as described below.

The regulations for section 7(a)(2) clarify that the Service may use surrogates to express the amount or extent of anticipated take when "exact numerical limits on the amount of anticipated incidental take may be difficult" (80 FR 26832). The implementing regulations [50 CFR § 402.14(i)(1)(i)] require that the Service meet three conditions for the use of a surrogate. To use a surrogate, the Service must:

1. Describe the causal link between the surrogate and take of the listed species.

2. Describe why it is not practical to express the amount of anticipated take or to monitor take-related impacts in terms of individuals of the listed species.

3. Set a clear standard to determine when the proposed action has exceeded the anticipated amount or extent of the take:

The numbers and distribution of Coachella Valley fringe-toed lizards within the action area vary widely each year depending on annual rainfall. These factors can also vary at finer scales within the Project footprint, based on the structure of sand formations within aeolian habitat. Additionally, due to the species' small size, cryptic burrowing behavior under the surface of sand dunes and the physical features of aeolian habitats, detecting all individual lizards and eggs injured or killed due to Project activities would be difficult. For these reasons, the exact number of individual Coachella Valley fringe-toed lizards that may occupy the action area and potentially be subject to take during the life of the Project (including construction and O&M) is not practicably determinable.

Additionally, the distribution of fringe-toed lizards within occupied habitat may also vary yearly by type of aeolian habitat formation (e.g., stabilized sand fields vs. active dunes), and these habitat types can occur in shifting mosaics over time within the action area due to the nature of aeolian processes. Therefore, we will use acres of suitable Coachella Valley fringe-toed lizard habitat, referenced in the biological assessment (Aspen 2021), as a surrogate for individual Coachella Valley fringe-toed lizards. For the purposes of this biological opinion, suitable habitat includes designated critical habitat, modeled habitat identified by the CVMSHCP, and all areas determined to be suitable habitat by the Applicant's habitat assessments (see Table 4). Of this suitable habitat, we will also distinguish between Federal and private, unoccupied and occupied habitat, and areas of designated critical habitat. We will not distinguish between the Applicant's ranking of habitat quality (i.e., low-high), as all rankings of suitable habitat may potentially be occupied or used by fringe-toed lizards in some manner at a given point during the life of the

Project, based on life-stage of lizards, environmental conditions, population dynamics, or other factors that may vary over time.

Because recovery of disturbed vegetation in arid environments can take several decades to recover, often beyond the anticipated operational life of the Project, we consider all ground-disturbing effects associated with the Project to be permanent. A review of post-disturbance restoration efforts in the Sonoran and Mojave desert found that the re-establishment of vegetation cover back to equivalent conditions prior to disturbance typically occurred within 100 years in most cases (Abella 2010), though restoration to some desert disturbances were shown to significantly recover within 33 to 40 years (Vasek *et al*. 1975, Abella 2010). Therefore, permanent, and temporary disturbance associated with Project components and activities will be combined in our disturbance calculations for the purposes of this incidental take statement.

Construction

Based on the Project description, we anticipate that the Project activities associated with the construction phase would disturb 461.82 acres of suitable Coachella Valley fringe-toed lizard habitat (Table 1). Of that total, CVWD has incidental take authorization for the Project granted through the CVMSHCP for effects on 452.77 acres of private land, provided that the Project activities remain consistent with the CVMSHCP. Because CVCC has determined that the Project as currently described is consistent with the Plan, we extend CVWD's take authorization to the Corps for effects on their associated action to private lands. If Project activities result in disturbance on private lands beyond 452.77 acres, the threshold for incidental take on private lands will be exceeded. We also anticipate the proposed action would disturb 9.05 acres of Federal lands, consisting of 7.63 acres within the CVNWR and an additional 1.42 acres of NWRS lands. If Project activities result in disturbance to additional acres of suitable fringe-toed lizard habitat beyond these aforementioned amounts and extent per Federal or CVMSHCP lands respectively, the threshold for incidental take of Coachella Valley fringe-toed lizard during the Project construction phase will be exceeded.

O&M

Based on the Project description, we anticipate that all O&M activities associated with the Project would occur within the extent of the Project's 461.82-acre anticipated footprint. Therefore, if O&M activities result in additional disturbance to suitable habitat for Coachella Valley fringe-toed lizard beyond the aforementioned amounts and extents of either Federal or private lands, the threshold of incidental take of Coachella Valley fringe-toed lizard attributed to the Project's operations and maintenance activities will be exceeded.

EFFECT OF THE TAKE

In the accompanying biological opinion, the Service determined the effect of the anticipated incidental take is not likely to result in jeopardy to the Coachella Valley fringe-toed lizard.

The Project is expected to provide net benefits to the Thousand Palms aeolian habitat system by retaining sediment that would otherwise be lost during heavy flood events, thereby increasing the volume of sediment circulating within the habitat system by 9 to 14 percent (Lancaster 2021). This increase in sediment volume is anticipated to sustain and improve aeolian habitat

conditions. Due to these proposed conservation measures and the anticipated net benefit of the project, we conclude that the Project would also not likely result in adverse modification or destruction of designated critical habitat for either species.

REASONABLE AND PRUDENT MEASURES

We have determined that the following reasonable and prudent measures are necessary and appropriate to minimize the effect of incidental take on the Coachella Valley fringe-toed lizard.

RPM 1. For Project activities impacting private lands, the Corps and CVWD shall fully implement the requirements of the CVMSHCP, and the Project's conservation measures throughout the life of the Project.

RPM 2. For Project activities impacting Federal lands, the Corps shall fully implement the requirements of the Project' biological opinion throughout the life of the Project.

RPM 3. The Corps and CVWD shall monitor and report the level of incidental take of Coachella Valley fringe-toed lizard to the Service throughout the life of the Project and report on the effectiveness of the Project's conservation measures to reduce the impact of incidental take.

TERMS AND CONDITIONS

To be exempt from the prohibitions of section 9 of the Act, the Corps and Coachella Valley Water District must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

TC 1.1 To implement reasonable and prudent measure number 1, the Corps, CVWD, and all of their agents and contractors, will ensure implementation of all avoidance and minimization requirements of Section 7.3.1 of the CVMSHCP and the updated Consistency Determination (CVCC 2021), and the non-discretionary conservation measures. The Corps and CVWD will monitor and report to the Service the levels of incidental take, effectiveness of Project conservation measures, and other monitoring and reporting requirements described within the CVMSHCP and the biological opinion to the Service throughout the life of the Project.

TC 1.2 To implement reasonable and prudent measure number 2, the Corps and CVWD will ensure the implementation of all non-discretionary conservation measures described within the biological opinion. Additionally, the Corps will coordinate with CVNWR to ensure that all NWRS-specific requirements are met for activities impacting NWRS lands.

REPORTING REQUIREMENTS

Pursuant to 50 CFR § 402.14(i)(3), the Corps must report the progress of the action and its impact on the species to the Service as specified in this incidental take statement. We have determined that the following measures are necessary to monitor and report on project impacts:

During the pre-construction and construction phases, CVWD and the Corps will provide monthly compliance reports that detail information on any of the following instances:

1. When the federally listed species under consultation of this biological opinion are killed, injured, or handled;

2. When individuals of other listed species or CVMSHCP Covered Species were killed, injured, or handled;

3. When any areas, ecological processes, or physical and biological features of designated critical habitat for a listed species are disturbed, modified, or destroyed;

4. The circumstances of such incidents; and

5. All actions undertaken to prevent similar instances from re-occurring.

Within 90 days of the completion of construction activities, the Corps in coordination with CVWD, must provide a report to the Service that provides details on the effects of Project construction on Coachella Valley milk-vetch, Coachella Valley fringe-toed lizard, and designated critical habitat for each species. Throughout the Project's O&M phase, the Corps and CVWD shall prepare and provide to the Service an annual report by January 31 of each year of the Project. As part of these reports, the Corps and CVWD must describe the monitoring efforts that occurred during the reporting period. We request that the Corps and CVWD provide us with any recommendations that would facilitate the implementation of the protective measures while maintaining protection of the Coachella Valley fringe-toed lizard or Coachella Valley milk-vetch. The annual report shall document but not be limited to the following:

1. Any activities determined by the Qualified Biologist to be out of compliance with Project specifications and conservation measures outlined in this biological opinion, and with the corrective measures implemented to bring the Project back into compliance.

2. The total amount and location of Coachella Valley fringe-toed lizard modeled habitat disturbed by O&M activities.

3. The total amount of lizards relocated from Project activities.

DISPOSITION OF SICK, INJURED, OR DEAD SPECIMENS

The Palm Springs Fish and Wildlife Office (PSFWO) is to be notified immediately at 760-322-2070 if any Coachella Valley fringe-toed lizards are found sick, injured, or dead in the Project area. Immediate notification means verbal and written notice within 1 workday, and must include the date, time, and location of the carcass, and any other pertinent information. Care must be taken in handling sick or injured individuals to ensure effective treatment and care, and in handling dead specimens to preserve biological material in the best possible state.

The PSFWO should also be notified immediately at 760-322-2070 if any endangered or threatened species not addressed in this biological opinion is found dead or injured within the action area during

the life of the project. The same reporting requirements also shall pertain to any healthy individual(s) of any threatened or endangered species found in the action area and handled to remove the animal to a more secure location.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations (CR) are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

CR 1. We recommend that the Corps and CVWD coordinate with us, CVCC, UCR Center for Conservation Biology (CCB), and/or other partners to contribute to ongoing long-term monitoring efforts of Coachella Valley milk-vetch, Coachella Valley fringe-toed lizard, and habitat under the CVMSHCP. We recommend monitoring efforts evaluate the Project's long-term impacts to the following:

a. Fluvial and aeolian processes within the Thousand Palms Conservation Area

b. Aeolian Habitat Condition

c. Coachella Valley fringe-toed lizard population response to relocation

d. Protocol and success of salvaging and/or propagating Coachella Valley milk-vetch

REINITIATION NOTICE

Reinitiation of consultation is required and will be requested by the Federal agency or by the Service, where discretionary Federal involvement or control over the action has been retained or is authorized by law and:

1. If the amount or extent of taking specified in the incidental take statement is exceeded;

2. If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered;

3. If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this biological opinion; or

4. If a new species is listed or critical habitat designated that may be affected by the identified action.

Sincerely,

SCOTT SOBIECH

Digitally signed by SCOTT SOBIECH
Date: 2022.09.30 14:14:28 -07'00'

Scott A. Sobiech
Field Supervisor

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