Enclosure 1

Description of Covered Maintenance Activities

The District conducts routine maintenance activities in streams, catch basins, seeps, springs, ponds, lakes, beaches, tidal marshes, and shoreline levees. The purpose of these activities is to maintain existing facilities, protect water quality, to reduce erosion, provide public and emergency access, and maintain natural resources that support a variety of listed, special status, and other native species. A variety of routine maintenance activities will occur in several watersheds, including: Alameda, Alhambra, Claremont, Garrity, Rheem, Kirker, Marsh, Mount Diablo, Pinole, San Pablo, San Leandro, San Lorenzo, Walnut and Wildcat Creeks, San Francisco Bay, San Pablo Bay, and Suisun Bay. Covered routine maintenance activities include replacement of culverts, replacement and upgrade of culverts with new head and tail walls, installation of new culverts with new head/tail walls, installation of culvert energy dissipaters, installation of articulated armored stream ford crossings, maintenance of existing articulated fords, installation of natural rock fords, vegetation and debris removal from streams and drainages, bank stabilization, removal of sediment- debris from existing culverts, maintenance of clear span bridges, installation of clear-span bridges, repair and maintenance of existing spring boxes, installation of new spring boxes, routine dredging of silt basins, ponds and lakes; maintenance of existing shoreline facilities, docks, fishing piers, boat launches, marsh board walks, pumps, and overlooks; removal of hazardous man-made structures and vessels from various waterbodies; re-construction of earthen pond dams and spillways; stream, pond, and tidal wetland restoration.

The overall area (acres) of disturbance or impact to aquatic resources for each activity type is included in Enclosure B and the following descriptions.

Culvert Repair, Replacement and Maintenance:

Existing degraded culverts will be replaced with same-size culverts, or if existing culverts are inadequate to convey peak flows, culverts of a larger size (diameter and/or length). Culverts will be installed at existing channel grade.

Mechanized equipment, including excavator, backhoe, ten-wheel dump truck, water truck, and soil compactors, will access the project sites and operate mostly on existing roads, trails, or

levees and avoid wetted channels or other waterbodies. These activities, including the potential effects riparian, or wetland vegetation, will have temporary disturbance impacts ranging from 0.0001 acres to 0.018 acres (mean per culvert = 0.007 acres) with no permanent impacts being anticipated. Removal of riparian vegetation will be minimized; the work typically only requires the removal of lateral limbs to provide access. The expected frequency of this activity type is four to five culverts per year. The total anticipated effect for five years ranges from 0.002 - 0.45 acres of temporary impact to aquatic resources.

Replacement Upgrade of Existing Culverts:

Existing degraded culverts will be replaced with same-size culverts, or if existing culverts are inadequate to convey peak flows, culverts of a larger size (diameter and/or length). This work-includes the installation of new rock head and/or tail walls to stabilize the streambank and prevent head cutting and/or down cutting of stream channels. Culverts will be installed at existing channel grade.

Mechanized equipment, including excavator, backhoe, ten-wheel dump truck, water truck, and soil compactors, will access the project sites and operate mostly on existing roads and levees avoiding wetted channels or waterbodies. These activities, including the potential effects to riparian, or wetland vegetation will have temporary disturbance impacts ranging from 0.0001 acres to 0.018 acres. Permanent impacts to aquatic resources are minimal and range from 0.0001 acres to 0.018 acres. Removal of riparian and upland vegetation will be minimized; the work typically only requires the removal of lateral limbs to provide access. The expected frequency of this activity type is eight to ten culverts per year. The total anticipated effect for five years ranges from 0.004 - 0.90 acres of temporary impact and 0.004 - 0.90 acres of permanent impact to aquatic resources.

Installation of New Culverts:

When no other alternative channel crossing is feasible new culverts will be installed in manmade or natural drainages, ephemeral, intermittent, and perennial streams, or utilized as outflow discharge structures in man-made ponds or wetlands. Mechanized equipment, including excavator, backhoe, ten-wheel dump truck, water truck, and soil compactors, will access the project sites and operate mostly on existing roads and levees avoiding wetted channels or waterbodies. These activities, including the potential effects to riparian, or wetland vegetation, will have temporary disturbance impacts ranging from 0.0006 acres to 0.018 acres. Permanent impacts to aquatic resources are minimal and range from 0.0039 acres to 0.0203 acres. Removal of riparian vegetation will be minimized; the work typically only requires the removal of lateral limbs to provide access. The expected frequency of this activity type is two to three culverts per year. The total anticipated effect for five years ranges from 0.006 - 0.27 acres of temporary impact and 0.039 - 0.30 acres of permanent impact to aquatic resources.

Maintenance of Sediment-Debris from Culverts:

During and/or prior to high winter flows, accumulated sediment and debris will be removed from culverts using equipment operated from the top of banks and levees, or by hand crews to maintain flow and prevent flooding. Some mechanized equipment may be required, and could include backhoe, ten-wheel dump truck, or four wheel drive truck. This equipment will access the project sites and operate mostly on existing roads, trails, or levees and completely avoid wetted channels or other waterbodies. Woody debris that does not block flow will be left in place to provide habitat for fish and wildlife. These activities will have minimal temporary impacts to aquatic resources ranging from 0.0001 acres to 0.043 acres with no permanent impacts being anticipated. The expected frequency of this activity type is four to five culverts per year. The total anticipated effect for five years ranges from 0.002 - 1.075 acres of temporary impact to aquatic resources.

Installation of New Culvert Head and Tailwalls:

At locations with existing culverts the installation of new rock head and/or tail walls will be used to stabilize the streambank and prevent head and/or down cutting. These rock structures will be installed in the channel bed and bank.

Mechanized equipment, including excavator, backhoe, ten-wheel dump truck, water truck, and soil compactors, will access the project sites and operate mostly on existing roads and levees avoiding wetted channels or waterbodies. These activities, including the potential effects to riparian, or wetland vegetation, will have temporary disturbance impacts ranging from 0.002 acres to 0.005 acres. Permanent impacts to waterbodies are minimal and range from 0.002 acres to 0.005 acres. Removal of riparian vegetation will be minimized; the work typically only requires the removal of lateral limbs to provide access. The expected frequency of this activity type is two to three head and/or tailwalls per year. The total anticipated effect for five years ranges from 0.02 - 0.075 acres of temporary impact and 0.02 - 0.075 acres of permanent impact to aquatic resources.

Installation of Energy Dissipaters:

Energy dissipaters will be installed to prevent erosion associated with flow discharge from existing culverts. These structures consist of drain to rip-rap size rock and are similar to or an extension of a culvert tail-wall structure. Energy dissipaters are very effective in reducing channel erosion and down cutting.

Mechanized equipment, including excavator, backhoe and ten-wheel dump truck, will access the project sites and operate mostly on existing roads and levees, avoiding wetted channels or waterbodies. These activities, including the potential effects to riparian, or wetland vegetation, will have temporary disturbance impacts ranging from 0.001 acres to 0.01 acres (mean per culvert = 0.0046 acres). Permanent impacts to aquatic resources are minimal and range from 0.001 acres to 0.01 acres. Removal of riparian vegetation will be minimized; the work typically includes the loss of bank or shoreline vegetation. The expected frequency of this activity type is one to two energy dissipaters per year. The total anticipated effect for five years ranges from 0.005 - 0.10 acres of temporary impact and 0.005 - 0.10 acres of permanent impact to aquatic resources.

Installation of Armored or Natural Rock Ford-Stream Crossings:

Armored concrete pre-cast, open-cell, interlocking blocks will be laid within road crossings and/or trails and on top of the streambed and drainages. Where geomorphically appropriate (e.g. smaller, lower flow streams), rock fords may be installed. These fords will be installed in select locations to replace existing culverts and at natural drainage crossings to provide stability and minimize channel bed erosion. Ford crossings will be installed at the ground surface of the channel banks and bed. The armored crossings are designed and installed to maintain or improve flow and reduce erosion. Hand tools are used for most of these construction activities. Some mechanized equipment may be required and could include the use of an excavator, backhoe, ten-wheel dump truck, water truck, and soil compactors. This equipment will access the project sites and operate mostly on existing roads, trails, or levees and completely avoid wetted channels or other waterbodies. Ford crossings are approximately 10 to 12 feet wide and equivalent to the width of the corresponding road or trail crossing. The length of the crossing from bank to bank and the total area of the crossing vary based on the width of the channel. These activities, including the potential impacts to riparian, or wetland vegetation, will have a temporary disturbance ranging from 0.004 acres to 0.009 acres per project. Permanent impacts to aquatic resources range from 0.004 acres to 0.009 acres per project. The expected frequency of this activity type is two to three crossings per year. The total anticipated effect for five years ranges from 0.04 - 0.135 acres of temporary impact and 0.04 - 0.135 acres of permanent impact to aquatic resources.

Maintenance of Existing Ford Crossings:

The repairs made to existing armored or natural rock fords will help maintain road and/or trail crossings within streambed and drainages. These fords have been installed in select locations to replace existing culverts and at drainage crossings to provide stability and minimize channel bed erosion. Armored and rock ford crossings are installed at surface level and are designed to-maintain flow in the channel bed and reduce erosion.

Hand tools are used for most of the construction activities. Some mechanized equipment may be required and could include the use of an excavator, backhoe, ten-wheel dump truck, water truck, and soil compactors. This equipment will access the project sites and operate mostly on existing roads, trails, or levees and completely avoid wetted channels or other waterbodies. Ford crossing dimensions are equivalent to the width of corresponding road or trail crossings. The length of the crossing from bank to bank and the total area of the crossing vary based on the width of the channel. These activities, including the potential effects to riparian, or wetland vegetation, will have a temporary disturbance impact ranging from 0.005 acres to 0.01 acres per project. Permanent impacts to aquatic resources should be minimal and have an un-measurable effect. The expected frequency of this activity type is one crossing per year. The total anticipated effect for five years ranges from 0.025 - 0.05 acres of temporary impact to aquatic resources.

Maintenance and Installation of Clear Span Bridges:

Clear-span bridges will be installed to replace existing culverts, natural (unarmored) stream crossings, concrete fords, and failing non-clear span bridges. Bridge concrete footings and abutments will be poured in place from above the top of the bank and will not have contact with channel flow. Each bridge span will be lowered into place by a crane operated from above the bank or tidal channel or other appropriate methods. While only clear span bridges will be installed, existing bridges (clear span and non-clear span) can be repaired/maintained.

Other mechanized equipment, including excavator, backhoe, and ten-wheel dump truck, will access the project sites and operate mostly on existing roads and levees avoiding wetted channels or waterbodies. These activities, including the potential effects to riparian, or wetland vegetation, will have temporary disturbance impacts ranging from 0.0001 acres to 0.01 acres per project with no permanent impacts to aquatic resources being anticipated. The expected frequency of this activity type is one bridge per year. The total anticipated effect for five years ranges from 0.0005 - 0.05 acres of temporary impact to aquatic resources.

Streambank, Shoreline, and Levee Stabilization:

Bank and levee stabilization methods will be used in locations where bank or shoreline erosion has resulted in: (1) the release of sediment exceeding that generated by natural processes; (2)-unstable road, trail, pathway, or levee structures; (3) erosion around a culvert or bridge abutments; and (4) major environmental or structural damage. Stabilization methods include the installation of log crib walls, replacing existing rip-rap, extending rip-rap sections, new rip-rap, upland and riparian vegetation planting, and other bio-engineering techniques.

Mechanized equipment, including excavator, backhoe, ten-wheel dump truck, and soil compactors, will operate mostly on existing roads and levees avoiding wetted channels or waterbodies. These activities, including the potential effects to riparian, or wetland vegetation, will have temporary disturbance impacts ranging from 0.0001 acres to 0.09 acres per project. Permanent impacts to aquatic resources range from 0.0001 acres to 0.09 acres per project. The expected frequency of this activity type is three to four stabilization projects per year. The total anticipated effect for five years ranges from 0.0015 - 1.8 acres of temporary impact and 0.0015 - 1.8 acres of permanent impact to aquatic resources.

Maintenance and Installation of Spring Boxes:

Spring box repairs include the maintenance of existing wood, metal, and slotted vertically placed collector pipe located to collect water in a seep or spring. The placement of new spring boxes mostly consists of installing slotted vertical collector pipe within these waterbody types. Spring box maintenance and development may also include the installation or repair of above or underground pipelines for conveying water from these water sources to alternative locations, including water tanks or troughs in conjunction with improving the distribution of livestock. Whenever possible, pipelines will be installed in existing roads and trails. All troughs will have escape ramps for wildlife.

Mechanized equipment, including excavator, backhoe, ten-wheel dump truck, and small trucks, will operate mostly on existing roads, trails, levees, and disturbed areas. These activities, including the potential effects to riparian, or wetland vegetation, will have temporary disturbance impacts ranging from 0.0001 acres to 0.0016 acres per project. Permanent impacts to aquatic resources range from 0.005 acres to 0.01 acres per project. The expected frequency of this activity type is four to five spring boxes per year. The total anticipated effect for five years ranges from 0.002 – 0.04 acres of temporary impact and 0.1 – 0.25 acres of permanent impact to aquatic resources.

Maintenance Dredging of Silt Basins, Ponds, and Lakes:

Maintenance dredging would occur in silt basins, ponds, lakes, and muted tidal wetlands to restore silt capacity and open water habitat for listed and/or aquatic species. Sediment removal may also incorporate design features to improve flow to and from receiving waters.

Mechanized equipment including excavator, backhoe, ten-wheel dump truck, and small trucks, will operate mostly on existing roads, trails, levees, and disturbed areas. These activities, including the potential effects to riparian, or wetland vegetation, have temporary disturbance impacts ranging from 0.014 acres to 0.03 acres per project. The expected frequency of this activity type is eight to ten dredging projects per year. The total anticipated effect for five years ranges from 0.56 - 1.5 acres of temporary impact to aquatic resources.

Maintenance of Existing Recreational-Shoreline Facilities:

Maintenance to existing recreational facilities would include repairs and/or replacement of docks, fishing piers, boat launches, marsh boardwalks, pumps, and overlooks. The maintenance and replacement of these structures will preserve public access and ensure public safety. Non-toxic materials will be used in all repairs and replacement structures.

Mechanized equipment, including excavator, backhoe, crane, and ten-wheel dump truck, will access the project sites and operate mostly on existing roads and levees avoiding wetted channels or waterbodies. Small water craft could also be used in open water to provide access and conduct repairs. These activities, including the potential effects to riparian, or wetland vegetation, will have temporary disturbance impacts ranging from 0.005 acres to 0.02 acres per project. Permanent impacts to aquatic resources range from 0.005 acres to 0.02 acres per project. The expected frequency of this activity type is one to two shoreline projects per year. The total anticipated effects for five years ranges from 0.025 - 0.20 acres of temporary impact and 0.025 - 0.20 acres of permanent impact to aquatic resources.

Removal of Hazardous Man-made Structures:

Abandoned structures acting as a barrier to fish and wildlife movements or hazards to public safety will be removed from various waterbodies including streams, ponds, lakes, tidal channels estuaries, and bay waters. If possible, structures will be removed in their entirety. Excavated and disturbed areas will be restored following removal of objects.

Mechanized equipment, including excavator, backhoe, crane, ten-wheel dump truck, four wheel drive trucks, and all-terrain vehicles (ATV's), will access the project sites and operate mostly on existing roads and levees avoiding wetted channels or waterbodies. Various water craft could also be used in open water to provide access and remove objects. These activities, including the potential effects to riparian, or wetland vegetation, will have minimal temporary disturbance impacts and un-measurable permanent effects to waterbodies. This activity type will be conducted as needed. Overall, for a five and ten year period, this activity is anticipated to have minimal adverse effect to various aquatic resources.

Removal of Vessels:

Abandoned vessels acting as a barrier to fish and wildlife movements or hazards to navigation or public safety will be removed from various waterbodies including streams, ponds, lakes, tidal channels, estuaries, and bay waters. If possible, structures will be removed in their entirety. Excavated and disturbed areas will be restored following removal of objects.

Mechanized equipment, including excavator, backhoe, crane, ten-wheel dump truck, four wheel drive trucks, and ATV's, will access the project sites and operate mostly on existing roads and levees avoiding wetted channels or waterbodies. Various water craft would be used in open water to provide access and remove objects. These activities, including the potential effects to riparian, or wetland vegetation, will have minimal temporary disturbance impacts and unmeasurable permanent effects to waterbodies. This activity type will be conducted as needed. Overall, for a five and ten year period, this activity is anticipated to have a minimal adverse effect to various aquatic resources.

HABITAT RESTORATION PROJECTS:

The District will restore various water-based ecosystems, including lentic, lotic, and tidal habitat. Restoration activities will focus on enhancement and/or creation of these aquatic ecosystems, with the primary objective to promote the conservation and recovery of listed species.

Lentic Waterbody (Pond) Restoration Projects

Pond restoration projects would include major repairs and restoration of man-made lentic waterbodies. These ponds provide water for livestock and support a variety of wildlife species. Projects will be designed to enhance aquatic habitat for wildlife, reduce erosion and sedimentation to receiving waters, and improve livestock water availability and grazing distribution. Activities could include the re-construction of failed ponds, removal of sediments or de-siltation, and modifications of existing ponds to restore the original capacity and inundation period, repair and/or replacement of structural components such as spillways, overflow discharge pipes, earthen dam and embankment stabilization; removal of man-made obstructions or debris, control of noxious weeds, establishment of native vegetation, and control of non-native predators. Exotic predator control may involve the de-watering or draining of the

pond. The implementation of these activities will mostly be temporary impacts to upland, riparian, or wetland vegetation and will have minimal permanent impact. It is anticipated that between 6 and 20 pond restoration projects will be proposed during a five-year duration of the authorization.

Mechanized equipment, including excavator, backhoe, ten-wheel dump truck, four wheel drive trucks, soil compacters, and ATV's, will access the project sites and typically operate on existing roads and earthen dam levees avoiding wetted channels. The implementation of these activities will mostly be temporary impacts to riparian, or wetland vegetation and will have minimal permanent impact.

Stream (Lotic Waterbody) Restoration Projects

Stream restoration activities would involve the enhancement or restoration of ephemeral, intermittent, or perennial streams and riparian corridors to improve habitat characteristics for listed and other native species. Restoration projects will incorporate hydrologic, hydraulic, biological, and geomorphic processes and will be designed to enhance stream function, promote dynamic equilibrium, reduce erosion, improve water quality to receiving waters, and improve aquatic habitat characteristics and/or riparian vegetative structure within the restored stream reach.

Restoration may include installation of in-stream structures to stabilize and protect degraded streambanks could include using boulder riprap, boulder wing deflectors, rock weirs, root wad deflectors, log cribbing, live vegetated crib walls, tree or native material revetment, brush mattresses, and native re-vegetation. Geomorphological design could include, but not be limited to, changes in gradient, sinuosity, channel slope and type, cross-section and flood plain profile, and bankside vegetation. To the extent practicable, invasive noxious weeds will be controlled or removed. Appropriate native vegetation will be used for riparian restoration or for replanting exposed banks in a way that will replicate the existing biological conditions to stream reach corridor.

Mechanized equipment, including excavator, backhoe, crane, ten-wheel dump truck, four wheel drive trucks, soil compactors, and ATV's, will access the project sites and operate mostly on existing roads, trails, and levees avoiding wetted channels or waterbodies. The implementation

of these activities will result in mostly temporary impacts to riparian, wetland vegetation, stream substrate and bank, but will have minimal permanent impact. It is anticipated that between 4 to 6 stream reach projects will be proposed over the five-year duration of the authorization.

Tidal Emergent Wetland Restoration Projects

Wetland restoration projects would involve restoration and enhancement efforts to improve the habitat quality of tidal emergent wetlands or shorelines. This may include various restoration activities in tidal flats and wetlands, diked baylands, and directly adjacent transitional upland habitats.

Project designs could include, but not be limited to, changes in tidal action, flood plain profile, and vegetation types in degraded wetland areas. To the extent practicable, this will include the control of non-native species and predators in tidal wetlands and/or adjacent transitional upland habitats. Invasive noxious plant species will be controlled or removed. Exposed wetland areas will be replanted with the appropriate native vegetation that will be determined using reference sites of other functional wetlands with similar profiles dominated by native vegetation types.

Mechanized equipment, including excavator, backhoe, crane, ten-wheel dump truck, four wheel drive trucks, soil compactors, and ATV's, will access the project sites and operate mostly on existing roads and levees avoiding wetted channels or waterbodies. The implementation of these activities will result in mostly temporary impacts to wetland vegetation, or tidal substrate, and will have minimal permanent impact. The anticipated tidal wetland restoration projects may include, but not be limited to, the removal of non-native vegetation, the removal of man-made debris or hazardous materials, and the re-establishment of native tidal and high marsh vegetation to enhance habitat conditions. It is anticipated that between 2 to 4 tidal marsh projects will be proposed over the five-year duration of the authorization.



East Bay Regional Park District

Park District Map (update November 2022)



NOTES AND SPECIFICATIONS

GENERAL

- 1. ARTICULATED FORD CROSSINGS REQUIRE APPROVAL OF A PARK DISTRICT ENGINEER TO VERIFY APPLICABILITY OF THIS STANDARD DETAIL.
- 2. STANDARD DETAIL MAY ONLY BE USED IN AN EPHEMERAL STREAM TO REPLACE CULVERTS OR TO ARMOR AN EXISTING FORD. ALTHOUGH THE DETAIL CAN BE USED TO REPLACE CULVERTS UP TO 36". IT IS EXPECTED THAT MOST CULVERTS WILL BE 24" OR LESS.
- 3. FORD CAPACITY WILL BE COMPARED WITH THE CALCULATED 100-YEAR FLOW TO DETERMINE IF WATER DEPTH AND FREEBOARD ARE ACCEPTABLE FOR EACH LOCATION.
 - 3.1. MINIMUM FREEBOARD TO BE 1.0' MEASURED VERTICALLY, EXCEPT
- 4. STANDARD DETAIL MAY NOT BE USED FOR TRAILS FREQUENTED BY HEAVY VEHICLES. SANITATION TRUCKS AND SIMILAR HEAVY VEHICLES MAY DAMAGE THE FORD IN SATURATED CONDITIONS.
- 5. THE MINIMUM WIDTH AND MAXIMUM SIDE SLOPES OF THE FORD ARE REQUIRED FOR VEHICLE PASSAGE. THE WIDTH MAY BE INCREASED AND SIDE SLOPES DECREASED TO MORE CLOSELY MATCH THE EXISTING CHANNEL UPSTREAM AND DOWNSTREAM OF THE FORD. THE FORD MAY NOT RESTRICT CHANNEL FLOW. IN MOST CONDITIONS WHERE A CULVERT IS BEING REMOVED, THE FORD WILL BE WIDER THAN THE STREAM CHANNEL AND GRADING TRANSITIONS WILL BE REQUIRED.
- 6. DISCONNECT THE TRAIL FROM THE STREAM CROSSING BY DIVERTING TRAIL SURFACE WATER WATER AWAY FROM THE CROSSING. IF THE TRAIL IS STEEP OR KNOWN TO RUT, PROTECT THE CROSSING BY INSTALLING A DIP IN THE TRAIL ON THE UPHILL SIDE OF THE CROSSING TO DIVERT WATER AWAY FROM THE FORD.
- 7. FORD CROSSINGS ARE DANGEROUS FOR VEHICLES TRAVELING AT HIGH SPEEDS. LOCATE CROSSINGS WHERE THERE IS GOOD SITE DISTANCE. INSTALL WARNING SIGNS FOR VEHICLES ON THE TRAIL APPROXIMATELY 100 FEET AWAY FROM THE CROSSING IN BOTH DIRECTIONS, AND INSTALL OBJECT MARKERS TO DELINEATE THE CROSSING WHEN SUBMERGED.

MATERIALS

- 8. INTERLOCKING PRECAST CONCRETE CELLULAR BLOCKS (REVETMENT)
 - 8.1. MIN 4 INCHES THICK WITH NOMINAL WIDTH AND LENGTH OF 12 BY 16 INCHES.
 - 8.2. CONCRETE TO HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI AT 28 DAYS.
 - 8.3. OPEN CELL DESIGN FOR THE PLACEMENT OF POROUS FILL.
 - 8.4. BLOCKS SHALL BE ARMORLOC 3510, CONTECH CONSTRUCTION PRODUCTS, INC., OR EQUAL.
- 9. RSP (ROCK SLOPE PROTECTION) ROCK
 - 9.1. ROCKS TO BE CLASS I (6") PER 2022 CALTRANS STANDARD SPECIFICATIONS SECTION 72.
- 10. BEDDING AND BACKFILL MATERIAL SHALL BE CLASS 2 PERMEABLE MATERIAL PER 2022 CALTRANS STANDARD SPECIFICATIONS SECTION 68-2.02F(3).
- 11. BRIDGING ROCK. 2" ANGULAR GRAVEL OR CRUSHED ROCK.

EXECUTION

- 12. GRADING

 - AWAY FROM DRAINAGE.
- 13. BEDDING, BACKFILL MATERIAL, AND BRIDGING ROCK SHALL BE WELL CONSOLIDATED TO STABLE. MOISTURE CONDITIONING AND TESTING IS NOT REQUIRED.
- 14. CONCRETE BLOCKS SHALL BE CAREFULLY PLACED TO PROVIDE A UNIFORM SURFACE.
- 15. SWEEP BEDDING AND BACKFILL MATERIAL OVER REVETMENT SURFACE TO FILL VOIDS.
- 16. FILL VOIDS IN RSP WITH SOIL TO PROMOTE VEGETATION GROWTH DOWN TO THE SAME ELEVATION A ERTHEABLER OUNDING VEGETATION. MATERIAL GRADATION REQUIREMENTS

i legon lemento							
SIEVE SIZE	PERCENTAGE PASSING						
1"	100						
3/4"	90-100						
3/8"	40-100						
No. 4	25-40						
No. 8	18–33						
No. 30	5-15						
No. 50	0-7						
No. 200	0-3						
MUST HAVE A SAND EQUIVALENT OF NOT LESS THAN 75							



ARTICULATED FORD

APPROVED BY THE CHIEF OF DESIGN & CONSTRUCTION

12.1. EXCAVATE TO SUBGRADE. IF VERY SOFT SUBGRADE MATERIALS ARE ENCOUNTERED BELOW WHERE THE REVETMENT IS TO BE PLACED, EXCAVATE AN ADDITIONAL 6", AND IF THE SUBGRADE IS STILL VERY SOFT, PLACE BRIDGING ROCK. IF THE MATERIAL IS SOUND, PLACE BRIDGING ROCK OR AN ADDITIONAL THICKNESS OF GRANULAR BEDDING. 12.2. PLACE AND COMPACT EXCESS EXCAVATED MATERIAL ONTO EXISTING TRAIL AREAS

PROVIDE A FIRM REGULAR SURFACE. WORK WITH A MECHANICAL METHOD, SUCH AS A ROLLER, VIBRATORY PAD, OR REPEATEDLY CROSSING WITH A VEHICLE UNTIL MATERIAL IS



FORD	CAPACITY, V	VATER DEP	TH, AND S	SLOPE – <u>4</u>	.0' BOTTOM	M WIDTH		
DIMENS WATER IN	IONS OF I CHANNEL	FLO	FLOW Q IN CFS AT DIFFERENT SLOPES					
DEPTH "d"	WIDTH "b"	1.0%	2.0%	3.0%	4.0%	5.0%		
0.10'	4.80'	0.53	0.75	0.92	1.06	1.19		
0.20'	5.60'	1.76	2.48	3.04	3.51	3.93		
0.30'	6.40'	3.60	5.09	6.24	7.20	8.05		
0.40	7.20'	6.07	8.59	10.52	12.15	13.58		
0.50'	8.00'	9.20	13.02	15.94	18.41	20.6		
0.60'	8.80'	13.02	18.41	22.6	/26.0//	29.1		
0.70'	6.40'	17.56	24.8	30.4	/35,1//	39,3		
0.80	7.20'	22.9	32.3	/39.6//	/45.7//	51.1		
0.90'	8.00'	29.0	41.0	50.2	/57,9//	64.8		
1.00'	8.80'	35.9	50.8	62.2//	//71.8//	80.3		
	IONS OF	FLO	V Q IN C	FS AT DIFF	ERENT SLC			
WATER	CHANNEL							
DEPTH d"	WIDTH b"	1.0%	2.0%	3.0%	4.0%	5.0%		
0.10'	6.80'	0.79	1.11	1.36	1.58	1.76		
0.20'	7.60'	2.56	3.62	4.44	5.13	5.73		
0.30'	8.40'	5.18	7.32	8.96	10.35	11.57		
0.40	9.20'	8.60	12.16	14.89	17.20	19.23		
0.50'	10.00'	12.84	18.15	22.23	25.67	/28.7/		
0.60'	10.80'	17.91	25.33	31.02	/35,82/	40.05		
0.70'	11.60'	23.8	33.7	41.3/	/ /47,7//	/ 53,3/		
0.80	12.40'	30.7	43.4	//_53.1///	/61.3//	/ /68.6/ /		
0.90'	13.20'	39.4	54.3	66.5//	/ 76.8//	85,9		
1.00'	14.00'	47.1	66.6	/ /81.5/ /	//94.1//	//105//		
FLOW VE LARGER Q = (1, 1)	FLOW VELOCITIES IN SHADED AREA OF TABLE EXCEED 6.5 FPS AND LARGER RSP ROCK MAY BE REQUIRED							
$ \begin{array}{l} n = 0.0 \\ A = WA \\ R = A/ \\ P = WE \\ S = SL^{1} \end{array} $	n = 0.025 $A = WATER SECTION AREA$ $R = A/P$ $P = WETTED PERIMETER$ $S = SLOPE (1% to 5%)$ $WATER$ $4.0' TO 6.0'$							
						STD DTL		
THE CHIEF OF D	ESIGN & CONS	STRUCTION			05/26/20	D23 AF-1		
BAY REGION	JAL PARK	DISTRIC	T - STAN		TAILS	SHEET J OF J		





TED NATIV NESS OF " S SECTION		CONFOR EXISTING CH RSP L2						
PROTECTIO	N (RSP) DIME	ENSIONS						
L1 N LENGTH JPSTREAM	W1 MIN WIDTH UPSTREAM	L2 MIN LENGTH DOWNSTREAM	W2 MIN WIDTH DOWNSTREAM					
2'-0"	4'-0"	4'-0"	4'-0"					
3'-0"	6'-0"	5'-0"	6'-0"					
4'-0"	8'-0"	6'-0"	8'-0"					
ES FOR REPLACING ENERGY DISSIPATERS WHICH FILL GAPS OR EXTEND THE RSP ONLY WHERE E ROCKS. THE OBJECTIVE IS TO PLACE THE CESSIVE EROSION DUE TO THE CONCENTRATED OF CULVERTS. THE ROCK CLASS NOTED IS STING STABLE ROCKS MAY ALSO BE USED TO								
STRUCTION	T - STANDA		26/2023 SHEET 1 OF 3 NOT TO SCAL					

-CULVERT



CULVERT EMBEDMENT NOTES

- 1. ALL CULVERTS TO BE INSTALLED WITH INVERTS BELOW THE STREAM CHANNEL FLOWLINE.
- 2. STANDARD CULVERTS TO BE INSTALLED WITH INVERTS APPROXIMATELY $\frac{1}{12}$ of the culvert DIAMETER BELOW THE CHANNEL FLOWLINE AS NOTED IN TABLE 2 BELOW.
- 3. EMBEDDED CULVERTS TO BE INSTALLED IN SALMONID BEARING STREAMS AS RECOMMENDED BY THE EBRPD STEWARDSHIP DEPARTMENT.
 - 3.1. EMBEDDED CULVERTS TO BE LIMITED TO CULVERTS WITH A MAXIMUM SLOPE OF 4% AND MAXIMUM LENGTH OF 30'.
 - 3.2. INCREASE SIZE OF EMBEDDED CULVERTS ONE SIZE TO MAINTAIN CAPACITY OF STANDARD CULVERT.
 - 3.3. SEE TABLE 2 BELOW FOR INVERT EMBEDMENT.

TABLE 2: EMBEDDED INVERT REPLACEMENT CULVERT									
STANDARD CULVERT DIAMETER	STANDARD INVERT EMBEDMENT	EMBEDDED CULVERT DIAMETER	INVERT EMBEDMENT						
12"	1.0"								
18"	1.5"	18"	6"						
24"	2.0"	24"	6"						
30"	2.5"	30"	6"						
36"	3.0"	36"	6"						
42"	3.5"	42"	12"						
48"	4.0"	48"	12"						
60"	5.0"	60"	12"						



	HW DELS	0.	- 3.0 - 4.0 - 3.0 - 2.0 - 1.5 - 1.0	DISCHARGE 'Q' (CFS)
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нพ	/D	1.		E d ERI
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5.7	8.4	_	PREV	EN
11.5	18	3.	EDITI	:D DN.
	BLE 3: APACITY 1.0 2.1 5.7 11.5	BLE 3: APACITY (CFS) HW/D 1.0 1.0 1.5 2.1 3.2 5.7 8.4 11.5 18	BLE 3: APACITY (CFS) HW/D 1. 1.0 1.5 2.1 5.7 8.4 11.5 18 3.	1



+3.0

+2.0

CULVERT REPLACEMENT

32

49

72

100

175

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T-1.000

·800

600

-500 400

·300

-200

60

54

42

36

33 30

27

(s

30"

36"

42"

48"

60"

20

32

47

65

111

CULVERT REPLACEMENT NOTES AND SPECIFICATIONS

<u>GENERAL</u>

- 1. THIS STANDARD DETAIL APPLIES TO TYPICAL CONDITIONS ENCOUNTERED IN CULVERT REPLACEMENT. THIS DETAIL MAY NOT BE USED TO INSTALL A NEW CULVERT WHERE ONE DOES NOT ALREADY EXIST.
- 2. LENGTH OF CULVERT SHALL NOT BE INCREASED UNLESS EXISTING CULVERT IS TOO SHORT TO MAINTAIN THE EXISTING TRAIL WIDTH. IN WHICH CASE CULVERT LENGTH MAY BE INCREASED A MAXIMUM OF 5 FEET AT ONE OR BOTH ENDS. CULVERT MAY BE EXTENDED TO RESTORE TRAIL WIDTH BUT NOT TO INCREASE IT.
- 3. DIAMETER OF CULVERT WILL BE CHECKED BY ANALYSIS OF THE 100-YEAR RAIN EVENT. ADDITIONALLY, FIELD EVIDENCE THAT THE CULVERT SIZE IS INADEQUATE, SUCH AS OVERTOPPING, MAY BE USED TO INCREASE THE CULVERT TO THE NEXT LARGER STANDARD SIZE. TABLE 3 ON SHEET CR-2 MAY BE USED TO DETERMINE CULVERT CAPACITY.
- 4. SEE NOTES ON SHEET 2 FOR EMBEDDED CULVERTS IN SALMONID BEARING STREAMS.

MATERIALS

- 5. CULVERT
 - 5.1. MATERIAL SELECTION DEPENDS ON SITE CONDITIONS. HDPE SHALL NOT BE USED IN DENSELY FORESTED AREAS WITH HIGH FIRE DANGER. GALVANIZED STEEL SHALL NOT BE USED WHERE THE CULVERT DISCHARGES TOWARD SPAWNING FISH. ALUMINUM COATED STEEL SHALL BE USED WHERE THERE IS A HIGH FIRE DANGER AND THERE MAY BE SPAWNING FISH.
 - 5.2. HDPE PIPE
 - 5.2.1. HDPE PIPE SHALL BE TYPE S CORRUGATED POLYETHYLENE PIPE WITH SMOOTH INTERIOR PER CALTRANS STANDARD SPECIFICATIONS, SECTION 64-2.02A.
 - 5.2.2. HDPE COMPOUNDS USED IN THE MANUFACTURER OF POLYETHYLENE PIPE AND FITTINGS SHALL COMPLY WITH AASHTO M 294. EXCEPT THE MIX MUST CONTAIN FROM 2 TO 4% WELL-DISPERSED CARBON BLACK.
 - 5.2.3. JOINTS SHALL BE GASKETED AND WATERTIGHT TO 10.8 PSI PER ASTM D3212.
 - 5.3. CORRUGATED STEEL PIPE
 - 5.3.1. CORRUGATED STEEL MATERIALS TO COMPLY WITH AASHTO M36 AND BE FABRICATED WITH EITHER ZINC-COATED OR ALUMINUM COATED STEEL PER CALTRANS STANDARD SPECIFICATIONS. SECTION 66-1.02E.
 - 5.3.2. ZINC-COATED STEEL SHEET TO COMPLY WITH AASHTO M218
 - 5.3.3. ALUMINUM-COATED STEEL TO BE TYPE 2 AND TO COMPLY WITH AASHTO M274
 - 5.3.4. JOINTS SHALL BE WATERTIGHT UNDER PRESSURE PER CALTRANS STANDARD SPECIFICATIONS, SECTION 66-1.02D.
- 6. RSP ROCK
 - 6.1. RSP MATERIAL PER CALTRANS STANDARD SPECIFICATIONS, SECTION 72-2.02.
 - 6.2. ROCK SHALL BE ANGULAR MATERIAL. ROUNDED ROCK, SUCH AS RIVER ROCK IS NOT ALLOWED.
- 7. BEDDING
 - 7.1. CRUSHED ROCK (CHIPS).
 - 7.2. MATERIAL SHALL CONTAIN AT LEAST 75% OF THE PARTICLES HAVING ONE OR MORE FRACTURED FACES. NOT OVER 25% SHALL BE PIECES THAT SHOW NO SUCH FACES **RESULTING FROM CRUSHING.**
 - 7.3. THE MATERIAL SHALL BE OF SUCH SIZE THAT THE PERCENTAGE COMPOSITION BY

WEIGHT,	AS	DETERMINED	ΒY	LABO
GRADUA	TION	IS:		

SIEVE SIZE	% PASSI
$1 - 1\frac{1}{2}$ "	100
NO. 4	25 - 70
NO. 50	5 — 20
NO. 200	0 - 5

7.4. ALTERNATIVELY, $\frac{3}{4}$ " CLASS 2 AB MY BE USED FOR BEDDING WITH PROPER COMPACTION EQUIPMENT.

WORKMANSHIP

- 8. DO NOT REMOVE MORE MATERIAL THAN NECESSARY TO REPLACE CULVERT.
- SHALL BE INSTALLED WATERTIGHT PER MANUFACTURER'S RECOMMENDATIONS.
- 10. BACKFILL
 - AROUND THE CULVERT WITHOUT DAMAGING THE CULVERT.
 - 10.2. PLACE BACKFILL MATERIALS IN LIFTS NOT GREATER THAN 8-INCHES IN NON-COMPACTED OR UNCONSOLIDATED THICKNESS.
- 11. RSP ROCK PLACEMENT
 - CULVERT.
 - (DUMPING). ADJUST TOP LAYER TO STABILIZE ROCKS.
 - HEADWALLS ARE PLACED UP AGAINST NEWLY COMPACTED SOIL.
 - SAME ELEVATION AS THE SURROUNDING VEGETATION.



RATORY SIEVES WILL CONFORM TO THE FOLLOWING

ING

0

9. CULVERTS SHALL BE INSTALLED IN A SINGLE LENGTH WHERE POSSIBLE. REQUIRED JOINTS

10.1. THE BACKFILL AND BEDDING MATERIALS PROVIDE THE CULVERT STRENGTH, SO IT IS CRITICAL THAT THE MATERIALS BE WELL CONSOLIDATED OR COMPACTED COMPLETELY

11.1. DO NOT REMOVE EXISTING STABLE ROCKS EXCEPT AS NEEDED TO REPLACE

11.2. PLACE ROCKS BY CALTRANS METHOD 'A' (INDIVIDUALLY PLACED ROCKS) OR 'B'

11.3. THE ROCK PROVIDED MEETING THE CALTRANS SPECIFICATION MAY NOT HAVE ENOUGH OF THE SMALLER MATERIAL SIZE TO PROVIDE A DENSE PROTECTIVE ROCK LAYER. ADDITIONAL SMALLER ROCK, INCLUDING BEDDING MATERIAL, MAY BE ADDED TO FILL THE LARGER VOIDS. THIS IS PARTICULARLY IMPORTANT WHERE THE 11.4. FILL VOIDS IN RSP WITH SOIL TO PROMOTE VEGETATION GROWTH DOWN TO THE

> **CR-1** 05/26/2023 SHEET 3 OF 3 EAST BAY REGIONAL PARK DISTRICT - STANDARD DETAILS NOT TO SCALE

STD DTL



NOTES

- 1. THIS CRIB WALL DETAIL IS TO BE USED TO RESTORE AND STABILIZE THE ERODED BANK OF A POND OR CHANNEL.
- 2. ANALYZE STABILITY OF CRIB WALL TO DETERMINE FACE BATTER, BACK SLOPE, AND LENGTH OF STRETCHER LOGS.
- 3. ANALYZE BUOYANCY TO DETERMINE IF ADDITIONAL BOULDERS AND ANCHORAGE ARE REQUIRED
- 4. LIVE WILLOW STAKES TO BE LOCALLY SOURCED.
- 5. REFER TO THE CDFW SALMONID STREAM HABITAT RESTORATION MANUAL FOR ADDITIONAL INFORMATION
- ORIGINAL SLOPE-EXISTING ERODED SLOPE-BACK SLOPE OF STRETCHER LOGS-FACE BATTER-NOTCH AND/OR PIN LOGS TO SECURE CROSSINGS-WILLOW STAKES THROUGH JUTE NETTING (OR SIMILAR DECOMPOSING EROSION FABRIC) TO-FILL NEAR-VERTICAL SPACE BETWEEN LOGS CONTINUOUS HORIZONTAL FACE LOGS-STRETCHER LOGS SPACED 6'±-FILL FACE OF LOWER ROWS WITH ROCKS BELOW LEVEL WHERE VEGETATION WILL GROW PLACE LARGEST LOGS AT BASE AND DECREASE SIZE GOING UP BOTTOM OF CHANNEL EXCAVATE APPROX 2' BELOW BOTTOM OF CHANNEL FOR SCOUR PROTECTION





BANK STABILIZATION - LOG CRIB WALL

APPROVED BY THE CHIEF OF DESIGN & CONSTRUCTION





NOTES AND SPECIFICATIONS

GENERAL

- 1. THIS DETAIL MAY BE USED TO RESTORE AND STABILIZE AN ISOLATED AREA OF A POND OR CHANNEL BANK WHERE EROSION IS THREATENING INFRASTRUCTURE. THIS DETAIL SHOULD ONLY BE USED AFTER OTHER MORE NATURAL VEGETATIVE OPTIONS HAVE BEEN CONSIDERED.
- 2. ENGINEER TO VERIFY STABILITY OF SELECTED RSP ROCK CLASS FOR THE SITE CONDITIONS.

MATERIALS

- 3. RSP ROCK
 - 3.1. 2022 CALTRANS STANDARD SPECIFICATIONS, SECTION 72-2.02.
 - 3.2. ANGULAR ROCK MATERIAL. ROUNDED ROCK IS NOT ALLOWED.
- 4. AGGREGATE FILTER MATERIAL
 - 4.1. FILTER AGGREGATE SHALL BE CRUSHED ROCK. GRAVEL, ROCK CHIPS OR SIMILAR DURABLE ANGULAR MATERIAL.
 - 4.1. FINE FILTER AGGREGATE: CLASS 2 PERMEABLE MATERIAL PER 2022 CALTRANS STANDARD SPECIFICATIONS SECTION 68-2.0F(3). SEE TABLE 3 FOR GRADATION.
 - 4.2. COURSE FILTER AGGREGATE. SEE TABLE 2 FOR COURSE FILTER MATERIAL TO BE USED WITH CLASS II THROUGH CLASS V RSP ROCK ONLY.
 - 4.3. IF FILTER FABRIC IS REQUIRED FOR A PARTICULAR PROJECT, THE ENGINEER WILL PROVIDE JUSTIFICATION AND DETAILS IN THE PROJECT AUTHORIZATION REQUEST.

EXECUTION

- 5. DEPTH OF TOE TRENCH SHALL BE MEASURED BELOW FIRM SUBSTRATE AND POTENTIAL SCOUR.
- 6. PLACE EXCAVATED SOIL ON SLOPE AND SMOOTH SLOPE TO REMOVE IRREGULARITIES PRIOR TO INSTALLING FINE FILTER AGGREGATE THEN COVER WITH COURSE FILTER AGGREGATE.
- 7. ROCK PLACEMENT PER METHOD B, CALTRANS STANDARD SPECIFICATION, SECTION 72-2.03C. ROCKS MAY BE PLACED BY DUMPING AND MAY BE SPREAD IN LAYERS BY BULLDOZERS OR OTHER SUITABLE EQUIPMENT.
- 8. THE LARGEST ROCKS SHALL BE PLACED IN THE TOE TRENCH. THE SMALLER PIECES OF THE RSP ROCK SHALL BE PLACED ON SLOPE OVER THE COURSE FILTER AGGREGATE PRIOR TO THE INSTALLATION OF THE LARGER ROCKS. SOME SMALLER ROCKS SHALL BE SAVED TO FILL SPACES BETWEEN LARGER ROCKS ON THE COMPLETED SLOPE.

NOMINAL RSP NOMINAL RSP ARTICLE NOMINAL RSP NEEDIN PARTICLE NOMINAL RSP PARTICLE CLASS 2 PERMEABLE MATERIAL CRADATION MATERIAL CRADATION MATERIAL CRADATION PARTICLE CLASS 2 PERMEABLE SIZE PERCENTAGE PASSING SIZE CLASS 2 PERMEABLE SIZE CLASS 2 PERMEABLE SIZE PASSING PASSING SIZE CLASS 2 PERMEABLE SIZE PASSING PASSING SIZE PASSING PASSING SIZE CLASS 2 PERMEABLE SIZE PASSING PASSING SIZE PASSING PAS	TADLE 1. DOCK CRADATION AND DIMENSIONS FOR DSD						TABL	E 2:	TAB	LE 3:			
NOMMAL REP PARTICLE DAMETER PARTICLE DAMETE	NOMINAL NORMALINA					COURSE MATERIAL	FILTER GRADATION	CLASS 2 MATERIAL	PERMEABLE GRADATION				
CLASS DIAMETER W-507 MIN MAX MIN MAX MAX MIN 2.5" 100% 1.0" 100% II 9" B0 Lbs 5.5" 7.8" 8.5" 10.5" 11.5" 1.0" 100% 0.75" 90-100% III 112" 150 Lbs 7.3" 10.5" 11.5" 14.4" 2.40" 2.0" 0.75" 10-200% 0.75" 90-100% IV 15" 300 Lbs 9.2" 13.0" 14.5" 17.5" 30.0" 2.5" No. 200 5% MAX No. 8 18-33% V 18" ¼ TON 11.0" 15.5" 17.0" 2.5" No. 200 5% MAX No. 8 18-33% V 18" ½ TON 11.0" 15.5" 17.0" 2.5" No. 200 5% MAX No. 30 5-15% Resore the component of the componen	CLASS BY MEDIAN PARTICLE DIAMETER		d –1	5%	% d-50%		d-100%	THICK TT"	PARTICLE SIZE	PERCENTAGE PASSING	SIEVE SIZE	PERCENTAGE PASSING	
CONSORT LEX IP 300 Lbs 5.55 7.4° 8.6° 10.5° 10.6° 10.6° 10.4° 40-70% 0.38° 40-100% III 12° 150 Lbs 5.5° 7.4° 8.6° 10.5° 10.6° 10.6° 10.6° 10.4° 40-70% 0.38° 40-100% IV 15° 300 Lbs 9.2° 13.0° 14.5° 17.5° 30.0° 2.5° No. 200 5% MAX No. 8 18-33% V 18° 14, TON 11.0° 15.5° 17.0° 20.5° 36.0° 3.0° No. 40.75% No. 30 5-15% NO 18° 14, TON 11.0° 15.5° 17.0° 20.5° 36.0° 3.0° No. 200 0.75% No. 30 5-15% NO 18° 14.5° 17.0° 20.5° 36.0° 3.0° No. 200 0.75% No. 200 No. 200<			W_50%	MIN	MAX	MIN	MAY	ΜΑΥ	MIN	3.0"	100%	1.0"	100%
III IIII IIIII IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII				5.5"	7 9"	9.5"	10.5"	19.0"	1.5'	2.5"	80-90%	0.75"	90-100%
III 12 130 Lbs 7.3 10.3 11.3 14.5 17.5 30.0" 2.5 No. 200 7.8 10-202 No. 4 25-402 IV 15" 300 Lbs 9.2" 13.0" 14.5" 17.5" 30.0" 2.5' No. 200 57. MAX No. 4 25-402 V 16" 14.0" 15.5" 17.0" 20.5" 36.0" 3.0" 11.0" 15.5" No. 30 5-15% V 16" 14.0" 15.5" 17.0" 20.5" 36.0" 3.0" 10" No. 30 5-15% V 16" 10.0" 15.5" 17.0" 20.5" 36.0" 10" No. 50 0-7% No. 200 0.7% No. 200 0.7% No. 30 5-15% No. 50 0-7% No. 200 0.7% No.7%		10"		0.0 	10.5"	0.0	14.0"	10.0	1.5	1.0"	40-70%	0.38"	40-100%
IV 15 300 12.5 17.5 30.0 2.5 No. 200 5% MAX No. 8 18=332 V 18" ¼ TON 11.0" 15.5" 17.0" 20.5" 36.0" 3.0' FILE CRITERIA: (digo/digo) < 5 AND S < (digo/digo) < 6 AND T = 5 POR THE CONSER MATERIAL No. 30 5 - 15% RESTORE AND VEGETATE SLOPE ABOVE RSP OR ELEVEND IS NOT FEASIBLE FILL VOIDS IN RSP WITH COURSE FILTER AGGREGATE PRIOR PLACING SOL ABOVE RSP WHERE APPLICABLE RESTORE TO PO PO BANK TO CONFORM FILD VOIDS ABOVE RSP WHERE APPLICABLE RESTORE TO PO PO BANK TO CONFORM FILL VOIDS ABOVE RSP WHERE APPLICABLE RESTORE TO PO PO BANK TO CONFORM FILL VOIDS ABOVE RSP WHERE APPLICABLE RESTORE TO PO PO BANK TO CONFORM FILL VOID WITH SOIL OR ROCK EXISTING SLOPE DAMAGED BY EROSION CONFORM TOE WITH IGH WATER ELEVATION HIGH WATER ELEVATION TOE TRENCH MIN 1.0 CONFORM TOE WITH AGGREGATE FILTER 4" THICK COURSE LAVER CONFORM TOE WITH SOIL OR ROCK EXISTING SLOPE DAMAGED BY EROSION CONFORM FILL VOID WITH SOIL OR ROCK SO PO CONFORM CONFORM FILL VOID WITH SOIL OR ROCK SO PO CONFORM CONFORM FILL VOID WITH SOIL OR ROCK SO PO CONFORM CONFORM CONFORM FILL VOID WITH SOIL OR ROCK SO PO CONFORM CONFORM CONFORM FILL VOID WITH SOIL OR ROCK SO PO CONFORM CONFORM CO		12	150 LDS	7.5	10.5	14.5"	14.0	24.0	2.0	0.75"	10-20%	No. 4	25-40%
V 18 / 10N 11.0 15.5 17.0 20.5 35.0 3.0 FILTER CRITERA: (fig/dgsp/dgp/dgs/dgs/dgs/dgs/dgs/dgs/dgs/dgs/dgs/dgs		10	JUU LDS	9.2	13.0	14.5	17.5	30.0	2.5	No. 200	5% MAX	No. 8	18-33%
CONFORM TOE WITH EXISTING GRADE CONFORM TOE WITH EXISTING CONFORM TOE WITH E	V	18	1/4 ION	11.0	15.5	17.0	20.5	36.0	3.0	FILTER CRITE	RIA:	No. 30	5-15%
CONFORM TOE WITH CONFORM TOE										(^a 15C/ ^a 85F) 5 < (d _{15C} /a	< 5 AND 1 _{15F}) < 40	No. 50	0-7%
AND "F" IS FOR THE RESTORE AND VEGETATE SLOPE ABOVE RSP OR EXTEND RSP TO TOP OF SLOPE RESTORE TOP OF EXTEND RSP TO TOP OF SLOPE FILL VOIDS IN RSP WTH COURSE FILTER AGGREGATE PRIOR PLACING SOIL ABOVE RSP WHERE APPLICABLE SPREAD PLANTING SOIL OVER RSP TO FILL VOIDS SOIL ABOVE HIGH WATER ELEVATION HIGH WATER ELEVATION HIGH WATER ELEVATION ACCRECATE FILTER CONFORM TOE WITH SOIL OR ROCK CONFORM TOE WITH CONFORM TOE WITH ACCRECATE FILTER CONFORM TOE WITH CONFORM TOE WITH CONFORM TOE WITH MAX CONFORM TOE WITH MAX CONFORM TOE WITH MAX CONFORM TOE WITH CONFORM TOE WITH MAX CONFORM TOE WITH CONFORM TOE WITH MAX CONFORM TOE WITH MAX CONFORM TOE WITH CONFORM TOE WITH MAX CONFORM TOE WITH MAX CONFORM TOE WITH CONFORM TOE WITH CONFORM TOE WITH MAX CONFORM TOE WITH MAX CONFORM TOE WITH CONFORM TOE WITH CONFORM TOE WITH CONFORM TOE WITH MAX CONFORM TOE WITH CONFORM TOE WITH MAX CONFORM TOE WITH CONFORM T										SUBSCRIPT '	'C" IS FOR R MATERIAI	No. 200	0-3%
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EXISTING GRADE EXISTING SLOPE DAMAGED BY EROSION FILL VOID WITH SOIL OR ROCK AGGREGATE FILTER 4" THICK COURSE LAYER OVER 4" THICK FINE LAYER OVER 4" THICK FINE LAYER TYPICAL RSP BANK STABILIZATION SECTION TT"+0.5' MIN BANK STABILIZATION - ROCK SLOPE PROTECTION (RSP) TT"+0.5' MIN BANK STABILIZATION - ROCK SLOPE PROTECTION (RSP) STD DT. BANK STABILIZATION - ROCK SLOPE PROTECTION (RSP) STD DT. STD DT. ST	RESTORE AND VEGETATE SLOPE ABOVE RSP OR EXTEND RSP TO TOP OF SLOPE IF VEGETATION IS NOT FEASIBLE FILL VOIDS IN RSP WITH COURSE FILTER AGGREGATE PRIOR PLACING SOIL ABOVE RSP WHERE APPLICABLE SPREAD PLANTING SOIL OVER RSP TO FILL VOIDS ABOVE HIGH WATER ELEVATION 2.0												
"T"+0.5' BANK STABILIZATION - ROCK SLOPE PROTECTION (RSP) STD DTL MIN APPROVED BY THE CHIEF OF DESIGN & CONSTRUCTION 03/03/2023 MIN EAST BAY REGIONIAL PARK DISTRICT - STANDARD DETAILS SHEET 1 of 1	AGGREGATE FILTER 4" THICK COURSE LAYER OVER 4" THICK FINE LAYER EXCAVATE TOE TRENCH TYPICAL RSP BANK STABILIZATION SECTION												
"T"+0.5' MIN BANK STABILIZATION - ROCK SLOPE PROTECTION (RSP) '/ "SID DIL APPROVED BY THE CHIEF OF DESIGN & CONSTRUCTION EAST BAY REGIONIAL PARK DISTRICT - STANDARD DETAILS SHEET 1 of 1 SHEET 1 of 1					 -		ソ					yen c	L Yold J
MIN APPROVED BY THE CHIEF OF DESIGN & CONSTRUCTION 03/03/2023 SHEET 1 OF 1		, "T"-	+0.5'								ION (RSP)	J	BS-2
		M	IIN X			EVCL D							SHEET 1 OF 1



Conservation Measures

General Measures

- 1. *Biologist Approval.* The District will submit the names and credentials of biologists that will conduct the activities specified in the following measures to the Service for approval along with the preconstruction project list. All monitors must be approved in writing by the Service prior to conducting monitoring activities. For restoration projects, the District will also submit the names and credentials of biologists to CDFW for approval.
- 2. *Trash Removal.* All trash and debris within the work area will be placed in containers with secure lids before the end of each work day in order to reduce the likelihood of predators being attracted to the site by discarded food wrappers and other rubbish that may be left on-site. Containers will be emptied as necessary to prevent trash overflow onto the site and all trash will be disposed of at an appropriate off-site location.
- 3. *Work Areas*. Project activities will be restricted to the minimum area necessary. Prior to start of work, project boundaries and access routes will be clearly demarcated to prevent work vehicles from straying into adjacent habitat. To the extent feasible, maintenance and construction activities will avoid small mammal and ground squirrel burrows and potential dens that may be used by listed species for shelter.
- 4. *Equipment*. The District will implement the following measures:
 - a. The District will avoid using heavy equipment in areas where hand tools or light equipment are capable of performing the task.
 - b. When feasible, The District will use rubber-tired vehicles as opposed to track mounted equipment to avoid soil compaction and disturbance.
 - c. Prior to work, all equipment will be inspected for fuel, oil, and hydraulic leaks and will be repaired if necessary.
 - d. At the work site, fueling of equipment and vehicles will only occur in upland areas and at a minimum of 100 feet from open water.
 - e. Vehicles will be parked on pavement, existing roads, and previously disturbed areas to the maximum extent feasible.
- 5. *Entrapment Avoidance:* To prevent listed species and other animals from becoming entrapped in work areas, the District will implement the following measures:
 - a. All excavated holes or trenches deeper than 12 inches will be covered at the end of each work day with plywood or similar materials. Foundation trenches or larger excavations that cannot easily be covered will be ramped at the end of the work day to allow trapped animals an escape method. Prior to the filling of such holes, these areas will be thoroughly inspected for listed species by a Service- approved biologist. In the event that a trapped animal is observed, construction will cease until the individual has been relocated by the Service-approved biologist according to the approved relocation plan (see Measure 14).
 - b. Because listed species may take refuge in cavity-like and den-like structures such as pipes and may enter stored pipes and become trapped, all construction pipes, culverts, or similar structures that are stored at a construction site for one or more overnight periods will be either securely capped prior to storage or thoroughly inspected by a Service-approved biologist for these animals before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If any individuals have become trapped, the animal will be relocated according to the approved relocation plan (see Measure 14).

- 6. *Erosion Control*. Erosion control materials that use plastic or synthetic mono-filament netting will not be used within the action area in order to prevent listed species from becoming entangled, trapped or injured. This includes products that use photodegradable or biodegradable synthetic netting, which can take a full calendar year or more to decompose. Acceptable materials include natural fibers such as jute, coconut, twine or other similar fibers.
- 7. *Invasive Plants*. The District will ensure that the spread or introduction of invasive exotic plant species will be avoided to the maximum extent possible. When feasible, invasive exotic plants within project areas will be removed. If herbicides are needed, they will be used according to their label instructions.
- 8. *Debris Removal*. The District will implement the following measures to minimize the effects of debris and woody vegetation removal activities:
 - a. Debris removal during winter and spring to unclog culverts, etc. will be performed by hand crews to the maximum extent feasible. If hand removal is not feasible, debris will be removed using trucks with winches, and/or by backhoes operated from the top of bank.
 - b. To the extent feasible, the District will avoid removal of large woody riparian vegetation and will remove only the minimum necessary to complete the project.
 - c. Woody debris that does not cause bank instability, flooding, or culvert blockage will be left in place to provide in-stream cover and habitat for aquatic species.
 - d. To the maximum extent feasible, the District will avoid the use of heavy mechanized equipment in waterways, streams, ponds, and lakes.
- 9. *Construction Schedule*. To minimize impacts to listed species the following construction timing measures will be followed:
 - a. Within most habitats, grading and construction will be limited to the dry season, typically May-October. Exceptions would be in tidal emergent wetlands and in the San Francisco Bay and Delta where activities would be conducted between September 1 and January 31 to avoid impacts to California Ridgway's rail, western snowy plover, California least tern, and between August 1 to November 30 to avoid potential impacts to delta smelt. See species specific measures.
 - b. All construction activities will cease one half hour before sunset and will not begin prior to one half hour after sunrise. There will be no night-time construction, except for emergency situations.
- 10. *Biological Awareness Training*. Prior to construction of a project, a Service-approved biologist will conduct a mandatory biological resources awareness training for all construction personnel on listed species that may occur on site. The training will include a description of these species and their habitat, the conservation measures in this biological opinion that are to be implemented as part of the project, and the penalties for not complying with these measures. Proof of personnel attendance will be kept on file by the District. Interpretation will be provided for non-English speaking workers. When new construction personnel are added to the project, the District will ensure that the new personnel receive the training before starting work. The subsequent training of personnel can include videotape of the initial training and/or the use of written materials rather than in-person training by a biologist.
- 11. Construction Monitoring. The District will implement the following measures:
 - a. A Service-approved biologist will remain on-site during all construction activities that may result in take of federally listed species. The Service-approved biologist(s) will be given the authority to stop any work that may result in the take of listed species. If the Service-approved biologist(s) exercises this authority, the Service will be notified by telephone and electronic mail within one working day. The Service-approved biologist will be the contact

for any employee or contractor who might inadvertently kill or injure a listed species or anyone who finds a dead, injured or entrapped individual. The Service-approved biologist will possess a working wireless/mobile phone whose number will be provided to the Service.

- b. Prior to the start of each work day, a Service-approved biologist will check under construction equipment, project vehicles, and their tires to ensure no listed species are utilizing the equipment as temporary shelter.
- 12. Preconstruction Surveys. The District will implement the following measures:
 - a. Preconstruction surveys for listed species at proposed project sites covered in this biological opinion will be conducted by a Service-approved biologist(s) immediately prior to initial groundbreaking or vegetation clearing activities. All suitable habitat (upland and aquatic) within the work area will be thoroughly inspected. If any listed species are found, they will be relocated according to the approved relocation plan (See Measure 14). The Service-approved biologist will be allowed sufficient time to move all individuals from the work site before work activities begin.
 - b. All vegetation that obscures the observation of listed species within affected areas that contain or are immediately adjacent to aquatic habitats will be removed by hand just prior to the initiation of grading in order to remove cover that might be used by listed species. A Service-approved biologist will be present during vegetation removal and will survey these areas immediately prior to and following vegetation removal. If any listed species are found, they will be relocated according to the approved relocation plan (See Measure 14).
 - c. If at any point, construction activities cease for more than five consecutive days, additional preconstruction surveys will be conducted prior to the resumption of work.
- **13.** *Wildlife Exclusion Fencing*. At all proposed activity sites, a Service-approved biologist will make the determination as to whether exclusion fencing is necessary or appropriate to minimize take of listed species.
- 14. *Listed Species Relocation Plan*. Listed species relocation will be approved on a project- specific basis. The District will prepare a listed species relocation plan for a proposed project to be reviewed and approved by the Service prior to project implementation. The plan will include trapping and relocation methods, relocation sites, and post-relocation monitoring. Only Service-approved biologists will handle or relocate listed species. All relocations of listed species will be conducted according to an approved relocation plan. For restoration projects, the District will also submit the listed species relocation plan to be reviewed and approved by CDFW.
- 15. *Construction Personnel Compliance*. The District will ensure that a readily available copy of this biological opinion is maintained by the construction foreman/manager on the project site whenever earthmoving and/or construction is taking place. The name and telephone number of the construction foreman/manager will be provided to the Service prior to ground-breaking.
- 16. In-water or Dewatering Work. The District will implement the following measures:
 - a. No routine maintenance activity will be conducted that substantially disrupts the movements of aquatic indigenous life.
 - b. To the maximum extent possible, no heavy mechanized equipment will operate in standing or flowing water and disturbance in stream channels will be minimized to the maximum extent possible.
 - c. When necessary to avoid and minimize disturbance and maintain down stream flow, water will be temporarily diverted around the work area using sand bag coffer-dams, hoses, and pumps.
 - d. If a work site is to be temporarily de-watered by pumping, intakes will be completely screened with wire mesh not larger than 2.5 millimeters or 0.10 inch. Water will be released

or pumped downstream at an appropriate rate to maintain downstream flows during construction. Pumps will be placed in a perforated intake basin to allow water to be drawn into the pump to protect and ensure aquatic organisms are not pulled into the pump. Upon completion of construction activities, any barriers to flow will be removed in a manner that would allow flow to resume with the least disturbance to the substrate.

- e. The District will develop and implement a plan to relocate native fish and other native aquatic vertebrates during dewatering. Listed species in the dewatering area will be relocated according to the approved relocation plan (See Measure 14).
- f. A Service-approved biologist will permanently remove, from within the project area, any individuals of exotic species, such as bullfrogs, crayfish, and centrarchid fishes, to the maximum extent possible. The District will ensure that these activities are in compliance with the California Fish and Game Code.
- g. New concrete will not be placed or poured on-site in a location that may come into contact with any natural waterbodies. Any concrete pouring will be isolated from all natural waterbodies through appropriate wrapping or water barrier implements.
- 17. *Project Site Revegetation*. Project sites determined to require revegetation by the Service- approved biologist will be replanted with an appropriate assemblage of native riparian, wetland, and upland vegetation suitable for the area. A species list and restoration and monitoring plan will be included with the preconstruction project list for review and approval. The plan will include the location of the restoration, the species to be used, the restoration methods to be employed, the time of year the work will be done, the identifiable success criteria for completion, and the remedial actions that will be taken if the success criteria are not achieved. To avoid and minimize disturbance, the District will plant riparian vegetation by hand or with a rubber-tired backhoe from above the top of bank.
- 18. *Measures for Restoration Projects and Adaptive Management Conservation Measures*. The District will implement the following measures for proposed restoration projects:
 - a. The preconstruction project list submitted to the Service and CDFW by June 1st each year will include detailed descriptions and designs of proposed restoration projects for the upcoming year for Service and CDFW review and approval.
 - b. All restoration projects and adaptive management conservation measures will have either: permanent beneficial effects to federally listed species analyzed in this biological opinion; or at most, no permanent adverse effects (e.g., permanent effects to hydrology, water quality, or temperature in listed species habitat will be neutral to the species) to federally listed species analyzed in this biological opinion.
- 19. *Reporting.* By February 15 of each year, the District will submit an annual report describing the activities performed the previous year and the resulting habitat disturbance. This report will include a description of the work performed, specifically noting any changes to proposed projects from what was outlined in the preconstruction project list. At a minimum, the annual report will include the following information for that year and in total for all years:
 - a. A description of activities/projects completed and their location (only for that year);
 - b. Location, amount, and extent of vegetation-type and listed species habitat-type disturbed;
 - c. Amount or extent of take of listed species including a summary of listed species relocations;
 - d. Conservation measures implemented that year;
 - e. A description of the amount, type, and location of habitat restored or enhanced;
 - f. Acreage of listed species habitat that was restored or enhanced and whether the permanent effects from the restoration projects to species habitat types will be beneficial or neutral; each listed species covered under this biological opinion will be addressed to ensure that species habitat disturbance and habitat enhancement can be tracked over the 5-year period.

Species/Habitat Specific Measures

- 1. *Alameda Whipsnake*. The District will implement the following measures at parks listed in Table 1 as supporting or potentially supporting Alameda whipsnake:
 - a. To the extent possible, all rock outcroppings will be avoided.
 - b. Construction activities will occur between June 15 October 31, when Alameda whipsnake are more active, capable of escaping, and less likely to be impacted.
 - c. Ground disturbance and vegetation clearing in scrub/chaparral habitat will be avoided to the maximum extent possible. Where disturbance cannot be avoided in this habitat type, work will be limited to the fall season of September to November in order to allow the young of the year time to become sufficiently capable of escaping such activities.
 - d. Work activities will be restricted to existing roads and trails to the maximum extent possible. When existing roads and trails cannot be followed, shrub vegetation will be removed by equipment operated by hand to prevent mortality associated with mowers or other large mechanical equipment. A Service-approved biologist experienced in identifying Alameda whipsnake will be present during vegetation removal.
 - 2. *California Red-legged Frog and Foothill Yellow-legged Frog.* The District will implement the following measures in parks listed in Table 1 as supporting or potentially supporting California red-legged frog or foothill yellow-legged frog:
 - a. Work within California red-legged frog or foothill yellow-legged frog aquatic habitat will be performed only between August 31 and October 31 or under dry site conditions and will minimize potential adverse impacts to aquatic habitats. If work must occur when water is present (after August 31) and the species is known to occur in the area, then a relocation plan will be provided to the Service for review and approval prior to the commencement of construction activities.
 - b. An approved biologist will survey the work site immediately prior to construction activities. If adult, juvenile, or tadpole California red-legged frogs or foothill yellow-legged frogs are found, they will be provided the opportunity to leave the work area on their own, but if necessary, they will be relocated according to the approved relocation plan (measure 14). The approved biologist will be allowed sufficient time to move California red-legged frogs or foothill yellow-legged frogs from the work site before work activities begin.
 - c. Only approved biologists will participate in activities associated with the capture, handling, and monitoring of California red-legged frogs or foothill yellow-legged frogs.
 - d. Bare hands will be used to capture California red-legged frogs and foothill yellow-legged frogs. Approved biologists will not use soaps, oils, creams, lotions, repellents, or solvents of any sort on their hands within two hours before and during periods when they are capturing and relocating individuals. To avoid transferring diseases or pathogens while handling the amphibians, approved biologists will follow the Declining Amphibian Populations Task Force's "Code of Practice". These practices will be included in the relocation plan.
- 20. *California Tiger Salamander*. The District will implement the following measures in parks listed in Table 1 as supporting or potentially supporting California tiger salamander:
 - a. Work within California tiger salamander aquatic habitat will be performed only between August 31 and October 31 or under dry site conditions and will minimize potential adverse impacts to aquatic habitats.
 - b. An approved biologist will survey the work site immediately prior to construction activities. If adult, juvenile, or larvae California tiger salamanders are found, they will be relocated according to the approved relocation plan (measure 14). The approved biologist will be allowed sufficient time to relocate California tiger salamanders from the work site before work activities begin.

- c. Only approved biologists will participate in activities associated with the capture, handling, and monitoring of California tiger salamanders.
- d. Bare hands will be used to capture California tiger salamanders. Approved biologists will not use soaps, oils, creams, lotions, repellents, or solvents of any sort on their hands within two hours before and during periods when they are capturing and relocating individuals. To avoid transferring disease or pathogens while handling the amphibians, approved biologists will follow the Declining Amphibian Populations Task Force's "Code of Practice." These practices will be included in the relocation plan.
- 21. *San Joaquin Kit Fox*: The District will implement the following measures in parks listed in Table 1 as supporting or potentially supporting San Joaquin kit fox:
 - a. Preconstruction surveys for San Joaquin kit fox will be conducted in work areas and all areas within 200 feet of work areas to identify potential San Joaquin kit fox dens or other refugia. Surveys will include den searches following methods outlined in the *U.S Fish and Wildlife Service San Joaquin Kit Fox Survey Protocol for the Northern Range* (Service 1999). A Service-approved biologist will conduct the den searches 14 to 30 days before initiation of ground-disturbing activity in each work area. Following den searches, all identified potential dens (as defined in Appendix II of *U.S. Fish and Wildlife Service Standardized Recommendations for the Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance* (Service 2011)) will be monitored for evidence of kit fox use by placing an inert tracking medium and/or a camera station at den entrances and monitoring for at least 3 consecutive nights. The results of the surveys will be provided to the Service within 1 week of completion. If ground disturbing activities cease for 28 consecutive calendar days, a Service-approved biologist will conduct a new survey for San Joaquin kit fox prior to re-initiation of ground-disturbing activities.

If no activity is detected at potential den sites, potential den sites that will be collapsed by construction activities will be closed following guidance established in the *U.S. Fish and Wildlife Service Standardized Recommendations for the Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance* (Service 2011). If kit fox occupancy is determined during any of the surveys conducted, the Service will be notified within 24 hours and no work will occur within 200 feet of the den unless approved by the Service. Appropriate buffers and avoidance measures will be developed in consultation with the Service. Depending on the den type, measures to avoid effects to kit foxes could include seasonal limitations on work in the area (i.e., restricting the work period to avoid spring-summer pupping season), establishing a work exclusion zone around the identified site, or resurveying the den later to determine species presence or absence.

- b. Vehicle traffic will be restricted to established roads, construction areas, and other designated areas.
- c. Grading activities will be designed to minimize or eliminate effects to rodent burrows. Areas with high concentrations of burrows and large burrows suitable for San Joaquin kit fox dens will be avoided by grading activities to the maximum extent possible. In addition, when concentrations of burrows or large burrows are observed within the site these areas will be staked and flagged to ensure construction personnel are aware of their location and to facilitate avoidance of these areas.
- 24. Longhorn Fairy Shrimp, Vernal Pool Fairy Shrimp, and Vernal Pool Tadpole Shrimp. The District will implement the following measures in parks listed in Table 1 as supporting or potentially supporting listed vernal pool branchiopods:
 - a. Work within 250 feet of listed vernal pool branchiopod habitat will be performed only between August 1 and October 31 under dry site conditions and will minimize potential adverse impacts to aquatic habitats.

- b. A Service-approved biologist will monitor all construction activities within 250 feet of suitable habitat for listed vernal pool branchiopods to ensure that no unnecessary take or destruction of habitat occurs.
- c. The District or its contractors will implement dust control measures necessary to prevent the transport of soil from exposed surfaces to vernal pool, swale, and rock pool habitat. Sprinkling with water will not be done in excess to minimize the potential for non-storm water discharge.
- d. Routine maintenance activities within 250 feet of vernal pool and swale habitat will be avoided to the maximum extent possible.
- e. If work within 250 feet of suitable habitat for listed vernal pool branchiopods cannot be avoided, the District will conduct protocol-level surveys according to the Service's 2015 *Survey Guidelines for Listed Vernal Pool Branchiopods* and provide the results of the surveys to the Service along with the preconstruction project list. If listed vernal pool branchiopods are found to be present in features within 250 feet of proposed activities (or if surveys are not conducted and presence of listed branchiopods is assumed), the District will design the project so that no permanent adverse effects to hydrology to the vernal pool or vernal pool complex will result from the project. The District will then contact the Service for site specific approval and the Service will help to develop appropriate site specific conservation measures to avoid any permanent adverse effects to the hydrology of the pools. If avoidance of permanent adverse effects to hydrology is not feasible for the project, the District will contact the Corps and request initiation of a separate consultation for that project.
- 25. *Tidal Habitat*. The District will implement the following measures in tidal habitat and areas adjacent to tidal habitat:
 - a. Work vehicles driving on levees adjacent to tidal habitat will travel at speeds no greater than 10 miles per hour to minimize noise and dust disturbance.
 - b. Construction, maintenance, and management activities (including mowing) will not occur within two hours before or after extreme high tides (6.5 feet or above, as measured at the Golden Gate Bridge and adjusted to the timing of local high tides), when the marsh plain is inundated.
 - c. On appropriate structures (i.e. tall light poles, utility poles, fencing, etc.) not in conflict with recreational uses (recreational signage, boardwalk fencing, etc.) that are installed, replaced, or repaired near habitat for the salt marsh harvest mouse, California Ridgway's rail, California least tern, or western snowy plover, anti perching devices will be installed, as determined by a service approved biologist, to deter avian predators.
 - d. All equipment that may have come in contact with invasive plants (including perennial pepperweed, smooth cordgrass or its hybrids, or the seeds of these plants) will be carefully cleaned before arriving on site.
- 26. *California Ridgway's Rail*. The District will implement the following measures in parks listed in Table 1 as supporting or potentially supporting California Ridgway's rail:
 - a. To avoid causing the abandonment of an active California Ridgway's rail nest, activities (including construction and maintenance activities) within 700 feet of vegetated tidal marsh providing suitable breeding habitat for California Ridgway's rails will be avoided during the rail's breeding season from February 1 through August 31.
 - b. If a rail of any species is observed in or adjacent to a work area, work will be stopped immediately. If the rail is either identified as a California Ridgway's rail by a Service-approved biologist or cannot be positively identified, work will be stopped until the rail leaves the work area of its own volition and the Service will be notified. If the rail does not leave the work area, work will not be reinitiated until after the Service is consulted

regarding appropriate avoidance measures and permission is granted by the Service to commence work.

- 27. *Salt Marsh Harvest Mouse*. The District will implement the following measures in parks listed in Table 1 as supporting or potentially supporting salt marsh harvest mouse:
 - a. Impacts to pickleweed will be avoided to the maximum extent feasible. Excluding outboard wave exposed levees, any vegetation clearing to be conducted in areas containing pickleweed habitat or areas within 50 feet from the edge of pickleweed habitat will be conducted only with non-mechanized hand tools (i.e. trowel, hoe, rake, and shovel). No motorized equipment, including weed whackers or lawn mowers, will be used to remove this vegetation. Vegetation will be cleared to bare ground and removal will start at the edge farthest from the salt marsh and work towards the marsh. If a mouse of any species is observed within the areas being removed of vegetation work will cease until the mouse has left the area of its own volition.
 - b. During mowing of vegetation along levees adjacent to pickleweed habitat in site preparation for covered maintenance activities, mowing will start from the top (the area of least suitable habitat) and proceed downslope toward more suitable habitat so any salt marsh harvest mice present in the area to be mown can move away from the disturbance of the mower and out of the mowing area. If mowing needs to occur within 50-feet of pickleweed habitat, Conservation Measure 27a will be implemented prior to mowing. Immediately prior to start of mowing (evenafter hand-removal), a Service-approved biologist will walk the area to be mowed to look for salt marsh harvest mice and to encourage them to move out of the area. If a salt marsh harvest mouse (or mouse that could be a salt marsh harvest mouse) is detected within the area to be mowed, no mowing will occur in that area.
 - c. For ground-disturbing activities in or within 50 feet of pickleweed habitat, construction boundaries will be well marked with flagging or stakes as per General Conservation Measure 3. The final design and proposed location of the marking will be determined by a Service-approved biologist. The site will be surveyed throughout the day for any salt marsh harvest mouse individuals. Boundary flagging/staking will be removed immediately following work completion.
 - d. If an active nest is observed within work or access areas during the pre- construction surveillance or any activity, a wooden coverboard will be placed over the suspected rodent nest during trimming activities and activities will be halted and a 100-foot no disturbance buffer area implemented until the Service- approved biologist has determined that all salt marsh harvest mice have weaned or are not present within 100 feet of the work area.
- 28. *Western Snowy Plover*. The District will implement the following measures in parks listed in Table 1 as supporting or potentially supporting snowy plover:
 - a. Shoreline protection and dredging activities in or within 600 feet of known or potential Western snowy plover habitat (dunes and beach) will be performed only during the non-nesting season between September 1 and January 31.
 - b. Should a Western snowy plover be observed within or adjacent to a project area, work activities within a 50-foot radius of the bird will be suspended until the bird leaves the site voluntarily.
- 29. *California Least Tern*. The District will implement the following measures in parks listed in Table 1 as supporting or potentially supporting California least tern:
 - a. Maintenance activities in or within 600 feet of known or potential California least tern nesting habitat will be performed only during the non-nesting season between September 1 and January 31.

- b. To minimize open water turbidity during the California least tern breeding season, no dredging activities will occur in California least tern foraging habitat from April 1 to August 15.
- c. Should a California least tern be observed within or adjacent to a project area, work activities within a 50-foot radius of the bird will be suspended until the bird leaves the site voluntarily.
- 30. *Giant Garter Snake*. The District will implement the following measures in parks listed in Table 1 as supporting or potentially supporting giant garter snake:
 - a. Disturbance activities in known or potential giant garter snake aquatic or within 200 feet of habitat will be performed only between May 1 and October 1 to avoid potential impacts to this species.
 - b. Work activities will be restricted to existing roads and trails to the maximum extent possible. When existing roads and trails cannot be followed, and disturbance is in known or potential giant garter snake habitat, vegetation will be removed by hand to prevent mortality associated with mowers and other landscaping equipment.
- 22. *Plant Surveys*. A Service-approved botanist will conduct pre-construction field surveys to identify any threatened, endangered, rare, and other special-status plants located within or adjacent (within 300 feet) of proposed work areas. Surveys will be conducted prior to the initiation of work activities and coincide with the appropriate flowering period of the special-status plant species with the potential to occur in the project area. Survey results will be provided to the Service prior to the start of project work. If any listed plants are found during the surveys the project will be re-designed to avoid the plant/population. A Service-approved botanist will delineate the locations of the plant or population and install protective fencing between the work area and the plant/population such that direct or indirect effects to the plants will be avoided. If avoidance of a federally-listed plant/population is not feasible, the District will contact the Corps and request initiation of a separate consultation for that project.
- 23. *Pallid Manzanita*. The District will implement the following measures in parks listed in Table 1 as supporting or potentially supporting pallid manzanita:
 - a. All pallid manzanita populations will be mapped using GPS prior to any construction activities. Populations or individual plants will be flagged with high visibility flagging and avoided.
 - b. Adjacent to or within pallid manzanita populations, encroaching brush or noxious weedy vegetation will be removed by hand to protect and prevent harm to the species.
 - c. A specific ingress/ egress route that minimizes the potential spread of *Phytophthora cinnamomi*, will be identified by a Service-approved biologist when working in vicinity of extant populations of pallid manzanita. A wash station will be established at the ingress/ egress location. Prior to entering or exiting the ingress/ egress location, any potentially contaminated material will be removed from all boots, hand tools, clothing, and equipment, then these items will be disinfected using 70 percent isopropanol (rubbing alcohol) or another Service- approved substance known to disinfect *P. cinnamomi* contaminated equipment.
 - d. Prior to conducting routine maintenance activities within the vicinity of known extant populations of pallid manzanitas, all personnel will attend an environmental awareness training session designed to inform all workers about the long-term effects of *P*. *cinnamomi*, how it is spread, and the measures to be taken to avoid spreading it.

- 24. *Delta Smelt*. The District will implement the following measures in parks listed in Table 1 as supporting or potentially supporting delta smelt.
 - a. Disturbance activities in known or potential delta smelt habitat will be performed only between August 1 and November 30 to avoid potential impacts to this species.
- 34. *Longfin Smelt*. If dewatering is required in potential longfin or delta smelt habitat, a fish relocation plan will be prepared and submitted for Service approval prior to project commencement. All pump intakes will be screened per Service and National Marine Fisheries Service standards.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD SAN FRANCISCO BAY REGION

ORDER No. R2-2024-0010

WASTE DISCHARGE REQUIREMENTS and WATER QUALITY CERTIFICATION for:

EAST BAY REGIONAL PARK DISTRICT REGIONAL MAINTENANCE ACTIVITIES ALAMEDA AND CONTRA COSTA COUNTIES

The California Regional Water Quality Control Board, San Francisco Bay Region, hereinafter the Water Board, finds that:

- 1. The East Bay Regional Park District (hereinafter Discharger or District) proposes to conduct routine maintenance activities on land owned and/or managed by the Discharger within Alameda and Contra Costa counties. Land owned and/or managed by the Discharger currently is located on 74 regional parks, covering a total area of more than 122,890 acres. The Discharger conducts routine maintenance activities in streams, creeks, channels, catchment basins, seeps, springs, ponds, lakes, and beaches. Maintenance activities may involve culvert repair, replacement, and upgrade; removal of sediment and debris from culverts: installation of new headwalls, tailwalls, and energy dissipators; installation and maintenance of ford-stream crossings; maintenance and installation of bridges; streambank, shoreline, and levee stabilization; maintenance and replacement of spring boxes; maintenance dredging; maintenance and replacement of recreational-shoreline facilities; removal of hazardous structures and vessels; nutrient control to prevent algal blooms; beach replenishment, and lentic, lotic, and tidal restoration and enhancement. The purpose of the maintenance activities is to protect water quality and quantity, to reduce erosion, to maintain and enhance natural resources, and to provide safe access for the public and emergency vehicles. Obtaining timely regulatory agency approval for identified maintenance needs is critical, especially in heavy rainfall years.
- 2. Routine maintenance activities may occur in several watersheds within Alameda and Contra Costa counties, including Agua Caliente Creek, Alameda Creek, Arroyo de la Laguna, Arroyo Las Positas, Arroyo Mocho, Arroyo Valle, Corte Madera Creek, Mount Diablo Creek, San Lorenzo Creek, San Pablo Creek, and Walnut Creek, that drain to San Francisco Bay, San Pablo Bay, and Suisun Bay. Routine Maintenance activities may also occur within San Francisco Bay, San Pablo Bay, and Suisun Bay. Maps of the 102 creeks, lakes, reservoirs, and major ponds where routine maintenance activities could occur are contained in Appendix C of Attachment A. This Order applies to the portions of these watersheds that are located within the Water Board's jurisdiction.
- 3. The Discharger developed the document referred to as *The East Bay Regional Park District Routine Maintenance and Restoration Activities in Various Waterbodies in Alameda and Contra Costa Counties, California in the San Francisco Bay Region* (Attachment A). This document describes maintenance activities, impact avoidance measures, Best Management Practices (BMPs), Avoidance and Minimization Measures (AMMs) to protect special status species, and habitat restoration measures.

- 4. The need for maintenance activities covered by this Order is normally the result of stormwater-related erosion, channel down-cutting, and sedimentation problems resulting from high stream flow events. Generally, between 30 and 60 maintenance projects covered by this Order are anticipated to be completed annually. Routine maintenance activities are summarized in Attachment A and consist of the following main categories:
 - Vegetation management for stream flow measuring stations, for water control facilities, and for public health, safety, and benefit.
 - Planting of riparian vegetation.
 - Sediment and debris removal from siltation basins, managed ponds, lakes/reservoirs, and marinas.
 - Management of large woody debris, herbaceous vegetation, fallen trees, rubbish, garbage, sediment, and debris, as needed to maintain bank stability and minimize flood threats, while maintaining habitat for fish, amphibians, and other species that rely on aquatic habitat.
 - Restoration activities, including removal of non-native, invasive vegetation, and restoration and enhancement of marsh, lentic, and lotic water bodies.
 - Repair or replacement of small areas of damaged or failed rock riprap, gabions¹, geocells, sacked concrete, concrete walls, or cribwall bank revetments in order to maintain bank stability.
 - Streambank, shoreline and levee stabilization, including the installation of log crib walls; replacing degraded areas of existing rip-rap; extending existing rip-rap sections into adjacent, unarmored areas; the installation of new riprap on unarmored creek banks or shorelines; upland and riparian vegetation planting and other bio-engineering techniques.
 - Routine maintenance, replacement, or upgrade of culverts in stream channels associated with park trails and access roads, including the installation of energy dissipaters, headwalls, and tailwalls on existing or replacement culverts.²
 - Maintenance of swim beaches using sand recapture or replenishment.
 - Maintenance of existing bridges and installation of clear span bridges.
 - Maintenance, repair, and replacement of existing piers and docks.
 - Maintenance of existing stream fords and installation of new articulated concrete block or natural rock ford-stream crossings.
 - Maintenance and replacement of spring boxes.
 - Removal of hazardous structures and vessels.
 - Nutrient control to prevent algal blooms.
- 5. The issuance of Waste Discharge Requirements (WDRs) and Water Quality Certification (WQC) serves to govern the Discharger's various maintenance activities for the purpose of alleviating local flood damage problems, protecting fish and wildlife, and addressing public safety concerns in an environmentally responsible manner. In

¹ Gabions may not be replaced in kind, but are to be replaced with biotechnical bank stabilization methods. ² The replacement of other forms of stream crossings with culverts or the installation of new culverts is not authorized by this Order.

² The replacement of other forms of stream crossings with culverts or the installation of new culverts is not authorized by this Order.

2004, the Water Board issued WDRs and WQC (Order No. R2-2004-0057) to the Discharger for regional maintenance activities. In 2011, the Water Board updated the 2004 WDRs and WQC in Order No. R2-2011-0050. In 2018, the Water Board updated the 2011 WDRs and WQC in Order No. R2-2018-0036. This Order updates the 2018 WDRs and WQC for consistency with the current Water Quality Control Plan for the San Francisco Bay Basin, consistency with current Water Board reporting requirements, and consistency with other WDRs and WQC that have been issued by the Water Board for multi-year maintenance programs.

- 6. The majority of the Discharger's routine maintenance activities consist of improving existing conditions and enhancing habitat for aquatic species with such activities as cattail removal from choked out water bodies, removing and replacing dysfunctional culverts, and removing stream obstructions and barriers. Overall, the majority of the maintenance activities authorized under this Order will improve existing conditions or result in a net environmental benefit. However, some maintenance activities will have temporary and/or permanent impacts to waters of the State. To mitigate for these impacts, the list of proposed maintenance projects that the Discharger prepares in advance (see provisions E.15 and E.31) for each year of covered activities shall be accompanied by proposed mitigation projects that are sufficient to provide compensation for the predicted temporary and permanent impacts associated with covered maintenance projects (see the discussion of Proposed Restoration Activities in The East Bay Regional Park District Routine Maintenance and Restoration Activities in Various Waterbodies in Alameda and Contra Costa Counties, California in the San Francisco Bay Region in Attachment A). Land owned or managed by the Discharger includes tidal wetlands, lentic water bodies, and stream habitat. Many of these waterbodies are within the current distributional range of the California red-legged frog, California tiger salamander, California Ridgway's rail, salt marsh harvest mouse, Western pond turtle, and/or other state and/or federally listed species and can be enhanced to provide additional permanent habitat for these special status species, as well as a variety of other aquatic species.³ Each year's proposed list of maintenance activities shall be accompanied by proposals to restore and/or create sufficient aquatic habitat to compensate for the small-scale temporary and/or permanent, cumulative impacts associated with the various routine maintenance projects. Impacts and mitigation projects associated with individual projects shall be tracked in units of acreage and/or linear feet, as appropriate for the impacted waterbody and proposed mitigation project(s), as well as the type of water of the State to be impacted. Mitigation projects shall be implemented on property owned or managed by the Discharger. Attachment C presents typical mitigation requirements for common projects to be implemented under this Order.
- 7. If excess mitigation credits are accrued, the Discharger, subject to the Water Board's Executive Officer's approval, may make credits available to itself and other public entities to be used as compensatory mitigation for loss of functions and values of waters of the State associated with other projects located within watersheds in Alameda or Contra Costa counties and within the jurisdictional boundary of the Water Board. Subject to the Executive Officer's approval, the Discharger may accept

³ A complete list of state and/or federally listed species potentially occurring on District parklands is included as Appendix D of Attachment A.

payment from other parties to provide compensatory mitigation credit to those parties, based on excess mitigation credits that are documented from previous years.

- 8. On August 3, 2023, the Discharger received a Final Master Lake and Streambed Alteration Agreement (Notification No 1600-2022-005-R3 from the California Department of Fish and Wildlife (CDFW) for routine maintenance activities subject to State Fish and Game Code section 1601.
- 9. Between December 16, 2022, and January 16, 2023, the U.S. Army Corps of Engineers (Corps) provided public notice of its intent to issue a Regional General Permit (RGP) (File No. 28902S) to the Discharger authorizing various routine maintenance activities.
- 10. The Corps (File No. 28902S) has determined that the proposed activities associated with the Discharger's routine maintenance activities appear to be covered under the U.S. Army Corps of Engineers Proposed Procedures for Permitting Projects that will Not Adversely Affect Selected Listed Species in California (NLAA) consultation with the National Marine Fisheries Service (NMFS) (September 10, 2018). Federally listed species that occur on land managed by the Discharger are listed in Order Attachment A, Appendix D. Any proposed projects that do not fit the NLAA will require a separate NMFS authorization before work may be performed on those sites.
- 11. The Corps (File No. 28902S) has determined that the proposed activities associated with the Discharger's routine maintenance activities will not adversely impact any Essential Fish Habitat (EFH) designated under the Magnuson-Stevens Fishery Conservation and Management Act. Any proposed projects that may adversely impact EFH will require a separate section 7 authorization in consultation with NMFS before work may be performed on those sites.
- 12. The Corps (File No. 28902S) has determined that proposed activities associated with the Discharger's routine maintenance activities may affect federally listed species and their designated critical habitat. Therefore, on June 28, 2017, the Corps initiated formal section 7 consultation with the U.S. Fish and Wildlife Service (USFWS) pursuant to the federal Endangered Species Act. On February 22, 2018, USFWS issued the Formal Consultation on the East Bay Regional Park District's Routine Maintenance Activities. Contra Costa and Alameda Counties (Corps File Number 2005-28902SS) (Biological Opinion) (Reference No. 08ESMF00-2013-F-0416). With the successful implementation of the Conservation Measures, the Reasonable and Prudent Measures, the Terms and Conditions, and the Conservation Recommendations in the Biological Opinion, USFWS concluded that the proposed activities will not jeopardize the continued existence of species listed under the Endangered Species Act. The Corps has reinitiated consultation with USFWS for reissuance of the Corps' RGP in 2024. This consultation, which has not been concluded, will result in the issuance of a new Biological Opinion for the Project. When the new Biological Opinion is issued, the Order requires the Discharger to implement the Project in compliance with all of the mandatory terms and conditions in the new Biological Opinion.

- 13. On February 12, 2024, the Discharger requested a pre-application meeting and, on March 14, 2024, the Discharger applied to the Water Board for a WQC under Clean Water Act (CWA) section 401.
- 14. Issuance of a multi-year authorization to the Discharger allows for streamlining regulatory approvals, implementing watershed-scale mitigation to address cumulative impacts, and increasing the efficient use of staff resources for the Water Board and the Discharger while allowing for review of all planned maintenance projects. In addition, a multi-year permit allows the Discharger to plan and budget for routine maintenance on a fixed annual cycle.

Impacts and Mitigation Measures

15. Routine maintenance activities covered under this Order are small in scale. The footprint of individual projects shall not exceed 2,000 square feet (0.05 acres) or 150 linear feet for any one project, except: 1) localized sediment removal in limited areas that does not exceed 500 linear feet; 2) repair and stabilization of existing armoring on shorelines and levees that does not exceed 500 linear feet total per year at each District shoreline unit; 3) repair and stabilization of existing unarmored shorelines and levees that does not exceed 160 linear feet total per year at each Park District shoreline unit; 4) dredging of existing silt basins, ponds, lakes, and other waterbodies; 5) use of chemicals to control nutrient levels in lakes and ponds to prevent algal blooms; and 6) projects meeting the requirements of a Small Habitat Restoration Project, including a project size that does not exceed 5 acres or a cumulative total of 500 linear feet and whose primary purpose is habitat restoration. Activities not requiring notification include:

1) clearing of inboard ditches when necessary to prevent or reduce road and trail erosion, when the work does not result in discharge of sediment into a stream; 2) hand planting of riparian vegetation to reduce erosion; and 3) installation of fencing permeable to most wildlife species (e.g., 5-strand barbed wire) to keep people and livestock away from stream channels. Except for the project types listed above, projects over 150 feet in length or with footprints greater than 0.05 acres, shall require separate permit application to the Water Board.

- 16. Routine maintenance activities covered under this Order will not be performed in perennial, intermittent, and ephemeral streams that are known to contain anadromous fish. Routine maintenance activities in streams that are either tributary to existing anadromous fish habitat or that provide potential habitat for anadromous fish shall be performed in conformance with Order provisions E.6, E.7, and E.8.
- 17. For most bank stabilization and sediment removal projects, excavators shall be used from the top-of-bank. For projects where the use of excavators from the top-of-bank is not possible, or would cause major vegetation impacts, equipment may be used within the channel when it is dry naturally or flows are bypassed. With the exception of material used to construct cofferdams for temporary channel dewatering, no temporary fills may be placed in natural stream channels without specific authorization from the Water Board.
East Bay Regional Park District

- 18. If repair activities affect the active channel, the work area shall be isolated from flowing stream segments using cofferdams and restored to pre-project conditions after maintenance is complete. Cofferdams shall be constructed of materials that will not introduce sediment to the stream channel and can be completely removed following completion of the maintenance activity (see the discussion of *Project Specific Best Management Practices (BMPs) and Thresholds* in *The East Bay Regional Park District Routine Maintenance and Restoration Activities in Various Waterbodies in Alameda and Contra Costa Counties, California in the San Francisco Bay Region* in Attachment A to this Order).
- 19. Vegetation management techniques include removal using small hand tools and handheld equipment, mechanical removal using heavy equipment like a flail mower attached to an excavator, and spot chemical control on tree stumps and along access roads.
- 20. Where possible, staging will occur on adjacent access roads or previously disturbed areas. Soil and rip-rap will be staged in areas that have been previously disturbed (e.g., service roads, turn-outs).
- 21. The East Bay Regional Park District Routine Maintenance and Restoration Activities in Various Waterbodies in Alameda and Contra Costa Counties in the San Francisco Bay Region (Attachment A) includes planning guidelines or principles to determine how, where, and when routine maintenance activities should occur. These principles should be used in the development of each year's maintenance work plan, prior to any work. These principles consider the natural function of the system, provide an understanding of local physical constraints, identify sensitive habitats, consider watershed processes, determine when action is needed, identify maintenance activities needed, and strive to recognize and implement solutions to minimize the on-going need for maintenance activities.
- 22. Most routine maintenance activities under this Order will be conducted in a manner that results in no net loss of waters of the State, including streams and wetlands. However, some waters of the State, including wetlands, creeks, tidal marshes, basins, lakes, and stock ponds, will be temporarily and/or permanently impacted, and will require appropriate mitigation, consistent with the State's "no net loss" policy. All mitigation activities shall occur within the Discharger's jurisdiction, as described in Finding 2. Impacts and mitigations associated with individual projects shall be accounted for by acreage, linear feet, and type of water of the State impacted and shall be reported annually to the Water Board.

California Wetlands Portal

23. It has been determined through regional, State, and national studies that tracking of mitigation/restoration projects must be improved to better assess the performance of these projects, following monitoring periods that last several years. In addition, to effectively carry out the State's "no net loss" wetland policy, the State needs to closely track both wetland losses and mitigation/restoration project success. Therefore, this Order requires that the Discharger use the digital interactive mapping tool called

EcoAtlas.⁴ To provide project information related to impacts and mitigation/restoration measures (see Order provisions E.31 and E.32). EcoAtlas is a web-based tool that integrates maps, project plans, site conditions, restoration efforts, and other elements on a project-by-project basis based on data inputs. Accordingly, we require the Discharger to upload their Project information to EcoAtlas with the Project Tracker tool at https://ptrack.ecoatlas.org. The California Wetlands Monitoring Workgroup developed EcoAtlas and maintains detailed instructions for Project Tracker on its website at https://ptrack.ecoatlas.org/instructions.

Regulatory Framework

- 24. The Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) is the Water Board's master water quality control planning document. It designates beneficial uses and water quality objectives for waters of the State, including surface waters and groundwater. It also includes implementation plans to achieve water quality objectives. The Basin Plan was duly adopted by the Water Board and approved by the State Water Resources Control Board (State Water Board), Office of Administrative Law, and U.S. EPA, where required.
- 25. The Basin Plan lists the following existing and potential beneficial uses for surface waters in Alameda and Contra Costa counties within the jurisdiction of the Water Board. The Discharger conducts maintenance activities on an estimated 102 creeks, lakes, reservoirs, and major ponds in the following watersheds: Agua Caliente Creek, Alameda Creek, Arroyo de la Laguna, Arroyo Las Positas, Arroyo Mocho, Arroyo Valle, Corte Madera Creek, Mount Diablo Creek, San Lorenzo Creek, San Pablo Creek, and Walnut Creek, that drain to San Francisco Bay, San Pablo Bay, and Suisun Bay. Routine Maintenance activities may also occur within San Francisco Bay, San Pablo Bay, and Suisun Bay (See Appendix C to Order Attachment A), with the following designated beneficial uses:
 - a. Agricultural Supply (AGR)
 - b. Cold Freshwater Habitat (COLD)
 - c. Freshwater Replenishment (FRŚH)
 - d. Groundwater Recharge (GWR)
 - e. Fish Migration (MIGR)
 - f. Municipal and Domestic Supply (MUN)
 - g. Navigation (NAV)
 - h. Preservation of Rare and Endangered Species (RARE)
 - i. Water Contact Recreation (REC-1)
 - j. Non-contact Water Recreation (REC-2)
 - k. Fish Spawning (SPWN)
 - I. Warm Freshwater Habitat (WARM)
 - m. Wildlife Habitat (WILD)

⁴ Source: California Wetlands Monitoring Workgroup (CWMW), 2019. *EcoAtlas*. Accessed May 14, 2019. <u>https://www.ecoatlas.org</u>. The California Wetland Monitoring Workgroup (CWMW) provides technical oversight on the development of content and functionality of EcoAtlas. As a member of CWMW, San Francisco Estuary Institute provides day-to-day support and management of EcoAtlas, and can be contacted by email to <u>ptrackadmin@sfei.org</u>.

Sediment management, vegetation management, culvert repair or replacement, and bank stabilization activities could temporarily impact beneficial uses of waters of the State for:

- a. Warm Freshwater Habitat (WARM)
- b. Cold Freshwater Habitat (COLD)
- c. Wildlife Habitat (WILD)
- d. Preservation of Rare and Endangered Species (RARE)
- e. Fish Migration (MIGR)
- f. Fish Spawning (SPWN)
- 26. The Basin Plan lists the following existing and potential beneficial uses for portions of the shoreline of San Francisco Bay in Alameda and Contra Costa counties within the jurisdiction of the Water Board. The Discharger may conduct maintenance activities at the following shoreline parks, Bay Point Wetlands, Brooks Island, Carquinez Strait Shoreline, Coyote Hills, Crown Beach, Eastshore State Park, Hayward Shoreline, Lone Tree Point, Martin Luther King Jr. Shoreline, Martinez Shoreline, Miller/Knox, Oyster Bay, Point Isabel, Point Pinole, and, San Pablo Bay Shoreline, with the following designated beneficial uses:
 - a. Commercial and Sport Fishing (COMM)
 - b. Estuarine habitat (EST)
 - c. Marine habitat (MAR)
 - d. Industrial Service Supply (IND)
 - e. Fish Migration (MIGR)
 - f. Navigation (NAV)
 - g. Preservation of Rare and Endangered Species (RARE)
 - h. Water Contact Recreation (REC-1)
 - i. Non-contact Water Recreation (REC-2)
 - j. Fish Spawning (SPWN)
 - k. Shellfish harvesting (SHELL)⁵
 - I. Wildlife Habitat (WILD)

Sediment management, vegetation management, and bank stabilization activities could temporarily impact beneficial uses of waters of the State for:

- a. Commercial and Sport Fishing (COMM)
- b. Estuarine habitat (EST)
- c. Marine habitat. (MAR)
- d. Fish Migration (MIGR)
- e. Navigation (NAV)
- f. Rare, Threatened, or Endangered Species (RARE)
- g. Water Contact Recreation (REC-1)
- h. Non-contact Water Recreation (RÉC-2)
- i. Fish Spawning (SPWN)
- j. Wildlife Habitat (WILD)
- k. Shellfish harvesting (SHELL)

⁵ Shellfish collection observations have occurred and could potentially occur on a limited basis at all San Francisco Bay shoreline parks (Hayward Shoreline, Oyster Bay, Martin Luther King, Jr. Shoreline, Crown Beach, Eastshore State Park, Pt. Isabel, Miller/Knox, Point Pinole, Carquinez Strait Shoreline, Brooks Island, and Martinez Shoreline).

- 27. The following groundwater basins, which underlie, at least in part, land under the control of the Discharger, support the existing and potential beneficial uses listed below: Castro Valley Groundwater Basin, Niles Cone Sub-Basin, Santa Clara Valley Groundwater Basin, East Bay Plain Sub-Basin, Livermore Valley Groundwater Basin, Sunol Valley Groundwater Basin, Pittsburg Plain Groundwater Basin, Clayton Valley Groundwater Basin, Ygnacio Valley Groundwater Basin, San Ramon Valley Groundwater Basin, and Arroyo del Hambre Valley Groundwater Basin.
 - a. Agricultural Supply (AGR)
 - b. Industrial Service Supply (IND)
 - c. Industrial Process Supply (PROC)
 - d. Municipal and Domestic Supply (MUN)
- 28. The following water bodies that could be affected by routine maintenance activities covered by this Order are identified as impaired on the CWA section 303(d) list for the pollutants listed:

Impaired Water Body	Pollutant
Creeks	
Alameda Creek	Diazinon
Arroyo De La Laguna	Diazinon
Arroyo Del Valle	Diazinon
Arroyo Las Positas	Diazinon and Nutrient/Eutrophication
Arroyo Mocho	Diazinon and Temperature (water)
Baxter Creek	Trash
Cerrito Creek	Trash
Codornices Creek	Temperature (water) and Trash
Damon Slough	Trash
Grayson Creek	Trash
Kirker Creek	Pyrethroids, Toxicity, and Trash
Mount Diablo Creek	Diazinon and Toxicity
Pine Creek	Diazinon
Pinole Creek	Diazinon
Rodeo Creek	Diazinon
San Leandro Creek (Lower)	Diazinon and Trash
San Lorenzo Creek	Diazinon
San Pablo Creek	Diazinon and Trash
Sausal Creek	Trash
Strawberry Creek	Trash

Walnut Creek	Diazinon
Wildcat Creek	Diazinon
Beaches	
Crown Beach	Indicator Bacteria
Keller Beach	Indicator Bacteria
Impaired Water Body	Pollutant
Lakes and Reservoirs	
Del Valle Reservoir	Mercury and PCBs
Lafayette Reservoir	Mercury and PCBs
Lake Chabot	Chlordane, DDT, Dieldrin, Mercury, PCBs
San Pablo Reservoir	Chlordane, Dieldrin, Heptachlor Epoxide, Mercury, PCBs, and Toxaphene

- 29. Central San Francisco Bay, which is a receiving water body for some of the creeks listed above, is identified as impaired on the CWA section 303(d) list and is listed as impaired for Chlordane, DDT, Dieldrin, Dioxin Compounds, Furan Compounds, Invasive Species, Mercury, PCBs, Selenium, and Trash.
- 30. Lower San Francisco Bay, which is a receiving water body for some of the creeks listed above, is identified as impaired on the CWA section 303(d) list and is listed as impaired for Chlordane, DDT, Diazinon, Dieldrin, Dioxin Compounds, Invasive Species, Furan Compounds, Mercury, PCBs, and Trash.
- 31. San Leandro Bay, which is a receiving water body for some of the creeks listed above, is identified as impaired on the CWA section 303(d) list and is listed as impaired for Chlordane, DDT, Dieldrin, Dioxin Compounds, Furan Compounds, Invasive Species, Lead (sediment), Mercury, PAHs, Pesticides, and Zinc.
- 32. San Pablo Bay, which is a receiving water body for some of the creeks listed above, is identified as impaired on the CWA section 303(d) list and is listed as impaired for Chlordane, DDT, Dieldrin, Dioxin Compounds, Furan Compounds, Invasive Species, Mercury, PCBs, and Selenium.
- 33. Carquinez Strait, which is a receiving water body for some of the creeks listed above, is identified as impaired on the CWA section 303(d) list and is listed as impaired for Chlordane, DDT, Dieldrin, Dioxin Compounds, Furan Compounds, Invasive Species, Mercury, PCBs, and Selenium.
- 34. Suisun Bay, which is a receiving water body for some of the creeks listed above, is identified as impaired on the CWA section 303(d) list and is listed as impaired for Chlordane, DDT, Dieldrin, Dioxin Compounds, Furan Compounds, Invasive Species, Mercury, PCBs, and Selenium.
- 35. The Discharger complied with the California Environmental Quality Act (CEQA) through the *Routine Maintenance and Restoration Program (RMRP) Initial Study/Mitigated Negative Declaration (IS/MND)*, which was certified by the District's

Board of Directors on August 23, 2022. The Notice of Determination was filed with the Alameda County Clerk and Contra Costa County Clerk on August 24, 2022 (State Clearing House Number 202206073). An Addendum to the certified *RMRP Initial Study/Mitigated Negative Declaration*, which adds nutrient remediation to control algal blooms to the Program, was certified by the District's Board of Directors on March 19, 2024. The Water Board, acting as a responsible agency under CEQA, reviewed and considered the IS/MND and Addendum. The Water Board finds that the IS/MND and the Addendum address the environmental impacts of the routine maintenance activities authorized by this Order.

- 36. The goals of the California Wetlands Conservation Policy (Governor's Executive Order W-59-93, signed August 23, 1993) include ensuring no "overall loss", and achieving a "long-term net gain in the quantity, quality, and permanence of wetlands acreage and values...."
- 37. Senate Concurrent Resolution No. 28 states that, "It is the intent of the legislature to preserve, protect, restore, and enhance California's wetlands and multiple resources which depend on them for the benefit of the people of the State."
- 38. Section 13142.5 of the California Water Code (CWC) requires that "Highest priority shall be given to improving or eliminating discharges that adversely affect ... Wetlands, estuaries, and other biologically sensitive areas."
- 39. State Water Resources Control Board Resolution 68-16, Statement of Policy with Respect to Maintaining High Quality Waters in California (Antidegradation Policy), prohibits the Water Board from authorizing degradation of "high quality waters" unless it is shown that such degradation: (1) will be consistent with the maximum benefit to the people of California; (2) will not unreasonably affect beneficial uses, or otherwise result in water quality less than as prescribed in applicable policies; and (3) is minimized through the discharger's best practicable treatment or control. This Order complies with the Antidegradation Policy because it does not authorize degradation of high quality waters.
- 40. Pursuant to CWC section 13260, the Discharger shall timely pay all fees associated with this Order. The fee amount for this Order shall be in accordance with the current fee schedule, per California Code of Regulations (CCR), Division 3, Chapter 9, Article 1, section 2200(a)(3). The fee payment shall indicate the Order number, the CIWQS Place ID No. 894015, the Regulatory Measure ID no. 456241, and the applicable year.

The District anticipates permanently impacting up to 0.5 acres of waters of the State and temporarily impacting up to 2.5 acres of waters of the State. The application and project fee for these impacts is \$79,824. The Discharger shall pay any applicable fees for additional impacts due to activities authorized by this Order.

An annual fee shall also be paid to the Water Board after the initial year for each year in which impacts to waters of the State that are authorized by this Order are implemented (note: the annual fee may be changed by the State Water Board; at the time that this Order was adopted, it was \$2,509 per year). The annual fee shall continue to be paid to the Water Board until the monitoring reports required pursuant to provision E.59 have all been submitted to the Water Board, unless a new Order has been adopted. After the initial year, the annual fee shall be billed annually to the Discharger until all mitigation sites and mitigation projects required as mitigation for impacts to waters of the State have met their success criteria and the attainment of success criteria has been documented in a final monitoring report. Fee payments shall indicate the Order number, WDID number, and the Regulatory Measure ID number.

- 41. The Water Board has notified the Discharger and interested parties of its intent to issue WDRs and WQC for the Discharger's routine maintenance activities.
- 42. The Water Board, in a public meeting, heard and considered all comments pertaining to this Order.

IT IS HEREBY ORDERED that Order No. R2-2018-0036 is hereby rescinded, except for purposes of enforcement, and the East Bay Regional Park District (Discharger), in order to meet the provisions contained in CWC Division 7 and regulations adopted thereunder, shall comply with the following:

A. **Discharge Prohibitions**

- 1. The direct or indirect discharge of wastes, as defined in CWC section 13050(d), within or outside of the active project site, to surface waters or surface water drainage courses is prohibited, except as authorized in this Order.
- 2. The discharge shall not cause degradation of water quality and beneficial uses.
- 3. Excavated sediment shall remain within designated disposal areas at all times. The designated disposal areas are: (a) any offsite, authorized temporary or permanent location maintained in compliance with federal and State regulations, (b) any onsite, authorized temporary or permanent location, provided material will be isolated and contained to prevent impacts to waters of the State and their beneficial uses, or (c) a permitted landfill. Sediment may be re-used by the Discharger or offered to other parties for re-use if such re-use is consistent with the screening levels contained in the Water Board's May 2000 staff report, *Beneficial Reuse of Dredged Materials: Sediment Screening and Testing Guidelines*.
- 4. The discharge of sediment and runoff/decant water that exceeds effluent limits, from excavated materials disposed of at any temporary or permanent disposal site, to waters of the State is prohibited.
- 5. Any maintenance or dredge and disposal activity subject to these requirements shall not cause a condition of pollution or nuisance as defined in CWC section 13050 (I) and (m).
- 6. Groundwater beneficial uses shall not be degraded as a result of routine maintenance activities.
- 7. No debris, soil, silt, sand, cement, concrete, or washings thereof, or other construction related materials or wastes, oil or petroleum products or other organic or earthen material shall be allowed to enter into or be placed where it may be washed by rainfall or runoff into waters of the State. When operations are completed, any excess material

shall be removed from the work area and any areas adjacent to the work area where such material may be washed into waters of the State.

8. Project-related discharges shall not cause a violation of any water quality standard for receiving waters adopted by the Water Board or State Water Board as required by the CWA and regulations adopted thereunder. If more stringent water quality standards are promulgated or approved pursuant to CWA section 303, or amendments thereto, the Water Board may revise or modify this Order in accordance with the more stringent standards. Pond dewatering discharges, accumulated groundwater or stormwater removed during dewatering of excavations, and diverted pond and stormwater flows shall not be discharged to waters of the U.S. without meeting the receiving water objectives in the Basin Plan.

B. Discharge Specifications

- 1. Appropriate soil erosion control measures shall be undertaken and maintained to prevent discharge of sediment to surface waters or surface water drainage courses.
- 2. In accordance with CWC section 13260, the Discharger shall file with the Water Board a report of any material change in the character, location, or quantity of this waste discharge. Any proposed material change in the discharge requires approval by the Water Board after a hearing under CWC section 13263.
- 3. A responsible representative of the Discharger shall immediately, and in no case no more than 24 hours, notify Water Board staff by telephone whenever an adverse condition occurs as a result of this discharge. An adverse condition includes, but is not limited to, a violation or threatened violation of the requirements of this Order, significant spill of petroleum products or toxic chemicals, or damage to control facilities that could affect compliance. Pursuant to CWC section 13267(b), a written notification of the adverse condition shall be submitted to the Water Board within five days of occurrence. The written notification shall identify the adverse condition, describe the actions necessary to remedy the condition, and specify a timetable, subject to the modifications of the Water Board, for the remedial actions.

C. Effluent Limitations

Excavated material effluent (decant water) discharged from any permanent or temporary disposal site located on the project site or off the site shall not exceed the following numeric and narrative limits at any time:

- 1. Numeric Limits:
 - a. pH: 6.5-8.5
 - b. Settleable Matter: < 1.0 ml/l-hour
- 2. Narrative Limits:
 - a. Waters shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses; and,
 - b. All water shall be free from dissolved sulfide concentrations above natural background levels.

D. Receiving Water Limitations

- 1. Work in and around the stream channel or Bay shoreline shall not cause the following conditions to exist in waters of the State at any place:
 - a. Waters shall not contain floating material, including solids, liquids, foams, and scum, in concentrations that cause nuisance or adversely affect beneficial uses;
 - b. Waters shall not contain oils, greases, waxes, or other materials in concentrations that result in a visible film or coating on the surface of the water or on objects in the water, that cause nuisance, or that otherwise adversely affect beneficial uses;
 - c. Waters shall not contain biostimulatory substances in concentrations that promote aquatic growth to the extent that such growth cause nuisance or adversely affect beneficial uses;
 - d. Waters shall be maintained free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal, or aquatic life;
 - e. There shall be no alteration of temperature, turbidity, or apparent color beyond present natural background levels;
 - f. Dissolved oxygen, with the beneficial use designations listed in D.1.g.a. below, shall not be reduced below the listed minimums in the receiving water from the point of discharge;
 - g. Routine maintenance activities shall not cause the following limits to be exceeded in waters of the State at any point:

a. Dissolved Oxygen:	5.0 (WARM) or 7.0 (COLD) mg/l minimum. When natural factors cause lesser concentrations, then this discharge shall not cause further reduction in the concentration of dissolved oxygen.
b. Dissolved Sulfide:	All water shall be free from dissolved sulfide concentrations above natural background levels. Concentrations of only a few hundredths of a milligram per liter can cause a noticeable odor or be toxic to aquatic life. Violation of the sulfide objective will reflect violation of dissolved oxygen objectives as sulfides cannot exist to a significant degree in an oxygenated environment.
c. pH:	A variation of natural ambient pH by more than 0.5 pH units.
d. Toxicity:	All waters shall be maintained free of toxic substances in concentrations that are lethal to or that produce other detrimental responses in aquatic organisms.

- e. Un-ionized 0.025 mg/L as N, annual median; and 0.16 Ammonia: mg/L as N, maximum.
- f. Salinity: The project shall not increase total dissolved solids or salinity to adversely affect beneficial uses.
- g. Turbidity Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. Increases from normal background light penetration or turbidity relatable to waste discharge shall not be greater than 10 percent in areas where natural turbidity is greater than 50 NTU, or greater than 5 NTU where natural turbidity is less than 50 NTU.
- 2. The discharge shall not cause a violation of any particular water quality standard for receiving waters adopted by the Water Board or the State Water Board as required by the CWA and regulations adopted thereunder. If more stringent applicable water quality standards are promulgated or approved pursuant to CWA section 303, or amendments thereto, the Water Board will revise and modify this Order in accordance with such more stringent standards.
- 3. Groundwater shall not be degraded as a result of maintenance activities or sediment disposal.

E. Provisions

General Water Quality

- 1. The Discharger shall comply with all the Prohibitions, Receiving Water Limitations, and Provisions of this Order immediately upon adoption of this Order or as provided below. Requirements prescribed by this Order supersede the requirements prescribed by Order No. R2-2018-0036.
- 2. The Discharger shall be restricted to maintenance activities summarized in Attachment A that would be eligible for coverage under the following Corps Nationwide Permits (NWPs) for the purpose of this Order:
 - NWP 3, Maintenance
 - NWP 13, Bank Stabilization
 - NWP 14, Linear Transportation Projects
 - NWP 18, Minor Discharges
 - NWP 19, Minor Dredging
 - NWP 27, Aquatic Habitat Restoration, Establishment, and Enhancement Activities
 - NWP 28, Modification of Existing Marinas
 - NWP 31, Maintenance of Existing Flood Control Facilities
 - NWP 37, Emergency Watershed Protection and Rehabilitation

- NWP 40, Agricultural Activities
- NWP 42, Recreational
- NWP 45, Repair of Upland Damaged by Discrete Events
- 3. The Discharger shall submit separate WQC applications for projects that do not meet the criteria for the routine maintenance activities summarized in Attachment A or would not qualify for the Corps NWPs listed in provision E.2, with the exception of nutrient control to prevent algal blooms. At a minimum, the Discharger shall submit separate WQC applications for any single project with fill impacts to a water body or wetland of greater than 2,000 square feet (0.05 acre) or for any single channel project that would impact more than 150 linear feet, with the following exceptions; 1) clearing of inboard ditches when necessary to prevent or reduce diversion potential to road and trail systems; 2) planting riparian vegetation to reduce erosion; 3) fencing to keep people and livestock away from stream channels; 4) localized sediment removal in limited areas that does not exceed 500 linear feet; 5) repair and stabilization of existing armored shoreline banks and levees that does not exceed 500 linear feet total or 12,500 sq. ft. (0.287 acres) per year at each District shoreline unit; 6) repair and stabilization of existing unarmored shoreline banks and levees that does not exceed 160 linear feet total or 4,000 sq. ft. (0.092 acres) per year at each District shoreline unit; 7) dredging of existing silt basins, ponds, lakes, and other waterbodies; 8) projects meeting the requirements of a Small Habitat Restoration Project, including a project size that does not exceed 5 acres or a cumulative total of 500 linear feet and whose primary purpose is habitat restoration. Except for the project types listed in the preceding sentence, projects over 150 feet in length or with footprints greater than 0.05 acres shall require separate WQC applications to the Water Board.
- 4. The Discharger shall submit by June 1st of each year an Annual Notification of Proposed Projects, specifying planned routine maintenance activities that will occur in the following year. The Annual Notification of Proposed Projects shall indicate project location, scope, purpose and need; the amount of fill of waters of the State, including wetlands; and any associated mitigation.
- 5. For compensatory mitigation for Project impacts to waters of the State, including onsite restoration and offsite mitigation, the Annual Notification of Proposed Projects shall include a description of all proposed mitigation projects, along with the rationale for the proposed amount of acres and/or linear feet of mitigation to compensate for the predicted temporary and permanent impacts resulting from the proposed maintenance projects. The description of proposed mitigation projects shall include mitigation project designs, monitoring and maintenance protocols, and interim and final performance criteria for assessing the successful implementation of mitigation projects. Monitoring and maintenance protocols shall be implemented for a minimum of five years for wetland, tidal, and open water mitigation projects and a minimum of 10 years for riparian mitigation projects. Onsite performance criteria will be used to establish that habitats at impacted sites have recovered to near pre-impact levels (e.g., percent cover of disturbed surfaces with vegetation, percent survival of replanted riparian vegetation). Offsite performance criteria shall be used to establish that the mitigation projects successfully created or enhanced habitat (e.g., geomorphic stability of channels and/or berms, percent survival of planted riparian vegetation, percent

cover of planted vegetation, sufficient ponding to support breeding of listed amphibians).

- 6. For routine maintenance activities impacting watercourses that are known to support or have the potential to support threatened and/or endangered species, a qualified biologist shall conduct a pre-construction survey. If any threatened and/or endangered species are located during the pre-construction survey at the project site, the Discharger shall conduct the maintenance project in a manner that is consistent with the requirements of the U.S. Army Corps of Engineers Proposed Procedures for Permitting Projects that will Not Adversely Affect Selected Listed Species in California (NLAA) consultation with NMFS (September 10, 2018).
- 7. Under this Order, routine maintenance activities conducted in perennial or intermittent streams known to contain anadromous fish need to comply with the NLAA. Federally-listed species that occur on land managed by the Discharger are listed in Appendix D to Attachment A to this Order. Any proposed projects that do not fit the NLAA will require a separate NMFS authorization before work may be performed on those sites.
- 8. The Corps (File No. 28902S) has determined the proposed activities associated with the Discharger's routine maintenance activities may affect federally-listed species and their designated critical habitat. Therefore, on June 28, 2017, the Corps initiated formal section 7 consultation with USFWS pursuant to the federal Endangered Species Act. On February 22, 2018, USFWS issued the Formal Consultation on the East Bay Regional Park District's Routine Maintenance Activities. Contra Costa and Alameda Counties (Corps File Number 2005-28902SS) (Biological Opinion) (Reference No. 08ESMF00-2013-F-0416). The Discharger shall fully implement the Conservation Measures, the Reasonable and Prudent Measures, the Terms and Conditions, and the Conservation Recommendations in the Biological Opinion to ensure that the proposed activities do not jeopardize the continued existence of species listed under the Endangered Species Act. In 2024, USFWS plans to issue an updated Biological Opinion. After the updated Biological Opinion is issued, the Discharger shall fully implement the Conservation Measures, the Reasonable and Prudent Measures, the Terms and Conditions, and the Conservation Recommendations in the updated Biological Opinion.
- 9. The Discharger shall follow the procedures and protocols in the Fishnet 4C Manual⁶ when removing large woody debris from stream channels for maintenance purposes. Large woody debris shall not be removed or be managed in a channel if it potentially functions as habitat for salmonids or other threatened and endangered species. If the large woody debris poses a credible risk of blocking a culvert, bridge, or otherwise obstructing flow or causing structural damage, it may be relocated, repositioned, and or cabled to a stream bank in a manner to protect existing habitat. For channels that do not provide potential salmonid, or threatened and endangered species habitat that

⁶ Fishnet 4C, MFG, Inc., Prunuske Chatham, Inc., Pacific Watershed Associates (2004) *Guidelines For Protecting Aquatic Habitat and Salmon Fisheries for County Road Maintenance*, prepared for Fishnet 4C Counties, California Department of Fish and Wildlife, National Marine Fisheries Service, and the California Resources Agency

relies on large woody debris, large woody debris can be immediately removed or relocated to a more suitable location if the large woody debris is posing a significant and imminent threat of structural damage.

- 10. The Discharger shall immediately report all dead or stressed fish or amphibians that are found within 1,000 feet of work activity or discharge authorized by this Order. The Discharger shall immediately assign a qualified biologist to investigate the cause of the problem, to define an acceptable corrective action plan, and to determine if the cause is related to maintenance activities. Work shall be halted if the investigation determines that the problem was caused by work activity or discharge authorized by this Order. A copy of the qualified biologist's investigation report shall be submitted to the Water Board within 30 days of the discovery of dead or stressed fish or amphibians within 1,000 feet of work activity or discharge authorized by this Order.
- 11. The Discharger shall implement bioengineering methods as the preferred methodology for bank stabilization projects. Repairs that require alternative structural reinforcement, such as placement of rock rip-rap, shall be filled with native soil and local plant materials and mulch, unless these materials would contribute to further erosion and sedimentation. A rationale for each instance of using an alternate, more hardened bank stabilization method must be stated and discussed in the Annual Notification of Proposed Projects (see provision E.33), and more hardened bank stabilization methods shall not be implemented without the approval of the Executive Officer.
- 12. Routine maintenance activities shall not result in direct or cumulative significant impacts to water quality or beneficial uses of waters of the State.
- 13. The Discharger shall implement all applicable BMPs and AMMs described in Attachment A. Changes to bank repair methods shall be proposed in the Annual Notification of Proposed Projects package, or equivalent document, and approved in writing by the Executive Officer before implementation.
- 14. The Discharger shall comply with all applicable items of the Self-Monitoring Program (SMP) (Attachment B).

Wetland/Waters of the State Mitigation

15. Most routine maintenance activities under this Order will be conducted in a manner that results in no net loss of wetlands/waters of the State, but some maintenance activities may have impacts that require mitigation consistent with the State's "no net loss" policy. The Discharger shall maintain records of all wetland/waters of the State losses and gains associated with each individual routine maintenance activity project. The total acreage, linear feet, and type of wetland/waters of the State impacted and the total acres, linear feet, and type of wetland/water of the State created, and total credits available from prior years and the current year shall be reported in the Annual Post-Maintenance Reports (see provision E.34). In addition, the number, location, and nature of restoration sites, including pre-construction and post-construction photographs of restored sites, shall be submitted as part of the Annual Post-Maintenance Reports.

East Bay Regional Park District

- Land owned or managed by the Discharger includes tidal wetlands, lentic water 16. bodies, and stream habitat. Many of these waterbodies are within the current distributional range of the California red-legged frog, California tiger salamander, foothill yellow-legged frog, California Ridgway's rail, salt marsh harvest mouse, Western pond turtle, and other state or federally listed species identified in Appendix D of Attachment A and can be enhanced to provide additional permanent habitat for these special status species, as well as a variety of other aquatic species. Restoring and/or creating permanent aquatic habitat will be implemented by the Discharger to provide compensatory mitigation for the temporary and permanent cumulative impacts associated with the various routine maintenance projects (see the discussion of Proposed Restoration Activities in The East Bay Regional Park District Routine Maintenance and Restoration Activities in Various Waterbodies in Alameda and Contra Costa Counties, California in the San Francisco Bay Region in Attachment A). At a minimum, the Discharger shall implement sufficient compensatory mitigation in each year to compensate for the temporary and permanent impacts associated with each year's proposed maintenance projects.
- 17. The Discharger shall evaluate the anticipated impacts for which mitigation is required at each of the proposed project sites that are included in the Annual Notification of Proposed Projects (see provision E.33). For each project included in the Annual Notification of Proposed Projects, the Discharger shall describe onsite mitigation (e.g., stabilization of disturbed surfaces, re-vegetation of disturbed surfaces, planting of riparian vegetation) and the amount of any offsite mitigation that is proposed for the individual project (since many mitigation sites will be consolidated mitigation sites compensating for the impacts of multiple small projects, the appropriateness of each year's proposed mitigation shall be evaluated with respect to net impacts and net mitigation). The amount of proposed mitigation for each project type shall be based on the mitigation requirements in Attachment C. Where ranges of mitigation requirements are presented in Attachment C, the factors that may be used in selecting projectappropriate mitigation requirements from that range include the following: anticipated temporal loss of habitat associated with the interval between impacts at the project site and functioning of restored habitat at the mitigation site (longer recovery times, such as tree re-growth versus grass re-growth, require more mitigation); the distance between the impact site and the mitigation site (greater distances require more mitigation); differences in habitat type between the impacted site and mitigation site (greater differences require more mitigation); any uncertainties associated with the mitigation site (greater uncertainty requires more mitigation); and the permanence of the impact (permanent impacts require more mitigation than temporary impacts). Although most of the projects authorized by this Order are anticipated to have only temporary impacts, some projects may also have small areas of permanent impacts. The proposed mitigation in the Annual Notification of Proposed Projects is subject to review and approval by the Executive Officer.
- 18. Water Board staff shall review the Annual Notification of Proposed Projects and Annual Post-Maintenance Reports to assess the adequacy of the mitigation provided in each year for the impacts that occurred in that year. If staff determines that the Discharger has not completed sufficient mitigation, the Discharger shall be informed of the deficit and shall address it in the following year's Annual Notification of Proposed Projects. If the Executive Officer determines that the Discharger has provided excess

mitigation, the Discharger will be allowed to accrue excess mitigation credit for use as described in the following provision.

19. If excess mitigation credits are accrued, the Discharger, subject to Executive Officer approval, may accept payment from other parties to provide compensatory mitigation credit to those parties as compensatory mitigation for loss of functions and values of waters of the State associated with other projects located within watersheds in Alameda or Contra Costa counties and within the jurisdictional boundary of the Water Board. The availability of excess mitigation credits must be documented from previous years.

Sediment Management

- 20. The Discharger may temporarily stockpile excavated sediment prior to disposal or reuse, provided that appropriate State and federal regulations are met and BMPs are implemented to protect water quality and beneficial uses. The excavated sediment may be stockpiled onsite so that it can be loaded into trucks for offsite disposal within three working days. The excavated sediment may also be temporarily stockpiled at an offsite location so that runoff, sediment, or decant water from the excavated materials will not contact waters of the State.
- 21. The Discharger shall ultimately dispose of dewatered material at an appropriate upland sediment disposal site or at an approved reuse site in accordance with applicable State and federal regulations, including applicable provisions of this Order.
- 22. Sediment may be re-used by the Discharger or offered to other parties for re-use, if such re-use is consistent with the screening levels contained in the Water Board's May 2000 staff report, *Beneficial Reuse of Dredged Materials: Sediment Screening and Testing Guidelines*, including proper characterization of chemical constituents in the sediment through laboratory analytical testing.
- 23. Where possible, staging shall occur on adjacent access roads or previously disturbed areas. Soil and rip-rap shall be staged in areas that have been previously disturbed (i.e., service road, turn-outs).
- 24. If repair activities affect the active channel, the work area shall be isolated from flowing stream segments using cofferdams and restored to pre-project conditions as soon as maintenance is complete. Instream diversion techniques and instream isolation techniques are specified in Attachment A. All stream diversions shall be carefully maintained and monitored. Upon completion of work in diverted channels, the stream diversion shall be removed and flow shall be returned to the original stream channel or through any replacement culvert installed as part of the maintenance project.
- 25. The Discharger shall divert any flow around the active maintenance site in a nonerosive manner, in accordance with *Project Specific Best Management Practices* (*BMPs*) and *Thresholds* in *The East Bay Regional Park District Routine Maintenance and Restoration Activities in Various Waterbodies in Alameda and Contra Costa Counties, California in the San Francisco Bay Region* (Attachment A).

- 26. Only dewatering equipment shall operate in standing or flowing water. Work may be performed in the stream channel if no water is flowing or if flow has been diverted in accordance with provisions E.24 and E.25.
- 27. Non-ground-disturbing work may be conducted in the channel zone, but outside the low-flow channel, at any time. This includes pruning and removing select non-native invasive plant species, maintaining channel access roads for drainage and accessibility, conducting minor repairs of culverts, and repairing fences (along either side of access roads, including the upper portion of streambanks where access is from the service road). These maintenance activities may be conducted at any time, provided there is no discharge of waste that may cause an adverse impact to water quality or beneficial uses. Planting of riparian vegetation may be done at any time provided there is no erosion and sedimentation that may cause an adverse impact to water quality or beneficial uses.
- 28. Temporary road crossings that are primarily for emergency use, such as for the passage of heavy equipment for fire suppression, shall be graded carefully to preclude the discharge of sediment, soil, or rock into flowing or standing water. Any rock and gravel being graded shall not be removed from the streambed.

Waste Management

- 29. The Discharge of any hazardous, designated or non-hazardous waste as defined in California Code of Regulations (CCR), Title 27, Division 2, Subdivision 1, Chapter 2 shall be conducted in accordance with applicable State and federal regulations.
- 30. The Discharger shall remove and relocate any wastes that are discharged in violation of this Order. Waste shall be disposed of at a location in compliance with federal and State regulations and in such a way as to prevent impacts to waters of the State and their beneficial uses.

Monitoring and Reporting

- 31. To support annual program implementation, the Discharger will submit the following documents and reports annually to the Water Board:
 - a) Annual Notification of Proposed Projects,
 - b) Annual Post-Maintenance Reports, and
 - c) Any other self-monitoring reports required or deemed necessary by the Executive Officer.
- 32. The Discharger is required to upload their Project information to EcoAtlas with the Project Tracker tool at https://ptrack.ecoatlas.org. to report net habitat losses and net gains as part of the Annual Post-Maintenance Report, as specified in provision E.34. Habitat losses and gains shall be reported for each completed individual maintenance project, and the location of each project shall be reported in the Annual Post-Maintenance Report. Tracking of individual maintenance projects will be used to identify areas of ongoing instability.
- 33. The Annual Notification of Proposed Projects, prepared in conformance with the SMP in Attachment B to this Order, for the following year's proposed projects shall be

submitted by June 1 of each year. Annual Notification of Proposed Projects shall be submitted via email to <u>RB2-401Reports@waterboards.ca.gov</u>, or by mail to the attention of 401 Certifications Reports (see address on the letterhead) and reference **ANPP_456241_EBRPD_Maintenance** in the subject line when sent electronically or in the cover letter for hard copy submissions.

- 34. The Discharger shall file Annual Post-Maintenance Reports, prepared in conformance with the SMP in Order Attachment B, with the Water Board by February 15 of each year. The Annual Post-Maintenance Reports shall include descriptions of work performed, any unanticipated field conditions, and changes to planned projects or performance of mitigation measures, as well as before and after photographs of each project site. Compensatory mitigation (restoration) activities shall be reported in the Annual Post-Maintenance Reports, which shall include the number, location, and nature of mitigation sites, as well as pre-construction and post-construction photographs of mitigation sites. The Discharger shall maintain records of all wetland/waters of the State losses and gains associated with each individual routine maintenance activity project. The total acreage, linear feet, and type of wetland/waters of the State impacted and the total acres, linear feet, and type of wetland/water of the State enhanced and created, and total credits available from prior years and the current year shall be reported in the Annual Post-Maintenance Reports. Annual Post-Maintenance Reports shall also include a ledger of the acres of temporary and permanent impacts authorized by the Order, the acres of temporary and permanent impacts that were implemented in the prior year, the total acres of temporary and permanent impacts implemented since the Order's adoption, and the remaining acres of temporary and permanent impacts authorized by the Order. In addition, photographs of mitigation sites that have not yet attained their performance criteria must be submitted as part of the Annual Post-Maintenance Reports. Each restoration site shall be monitored in subsequent annual reports until the restoration site meets its performance criteria (see Attachment A). Annual Post-Maintenance Reports shall be submitted via email to RB2-401Reports@waterboards.ca.gov, or by mail to the attention of 401 Certifications Reports (see address on the letterhead) and reference AMR 456241 EBRPD Maintenance in the subject line when sent electronically or in the cover letter for hard copy submissions.
- 35. The following activities are exempt from annual notification requirements and may occur any time at the discretion of the Discharger: maintenance of existing access roads located along the top-of-bank where there will be no impact on waters of the State; maintenance of cross-slope drains across roads, on inboard ditches that run parallel to roads where all work is above the level of top-of-bank of the adjacent stream, and there is no impact to waters of the State; and removal of debris (e.g., trash, shopping carts) accumulations using hand labor and not involving the removal of vegetation or large woody debris.
- 36. After five years of routine maintenance activities, and regularly at least every five years thereafter, the Discharger and Water Board will conduct a review of the Discharger's performance and the East Bay Regional Park District Routine Maintenance and Restoration Activities in Various Waterbodies in Alameda and Contra Costa Counties, California in the San Francisco Bay Region (Order Attachment A) to evaluate its overall effectiveness. The review will include an assessment of routine maintenance

activities conducted to date, BMPs, AMMs and overall program coordination and communication between the Discharger and regulatory agencies. The Discharger shall revise the East Bay Regional Park District Routine Maintenance and Restoration Activities in Various Waterbodies in Alameda and Contra Costa Counties, California in the San Francisco Bay Region as appropriate based on this review.

Records Provisions

- 37. The Discharger shall maintain records of all routine maintenance activities, natural resources in the program area, permitting requirements, and mitigation efforts.
- 38. The Executive Officer may request that data be provided to the Water Board at times outside of the reporting requirements specified in this Order.
- 39. The Discharger shall retain records of all reports required by this Order, and records of all information used to complete the application for this Order, for a period of at least ten years. This period may be extended by request of the Executive Officer at any time.

General Provisions

- 40. This Order does not authorize commission of any act causing injury to the property of another or of the public; does not convey any property rights; does not remove liability under federal, State or local laws, regulations or rules of other programs and agencies nor does this Order authorize the discharge of waste without appropriate permits from other agencies or organizations.
- 41. Capital improvement projects and emergency maintenance activities and procedures are not covered in this Order.
- 42. The Discharger shall comply with all necessary approvals and/or permits for routine maintenance activities from applicable government agencies, including, but not limited to: CDFW, Corps, USFWS, NMFS, and local agencies. The Discharger shall submit copies of such approvals and/or permits to the Executive Officer prior to routine maintenance implementation.
- 43. The Discharger shall implement the routine maintenance activities in accordance with BMPs and AMMs described in Attachment A and the findings herein and shall comply with all applicable water quality standards.
- 44. Any change to routine maintenance activities that would have a significant or material effect on the findings, conclusions, or conditions of this Order shall be submitted to the Executive Officer for review and written approval.
- 45. Routine maintenance activities shall occur only when there is no surface flow or the channel has been dewatered during the construction period of April 15 to October 31 of any year. Routine maintenance activities shall occur beginning June 15 for streams that are tributary to streams that support anadromy. However, routine maintenance activities conducted in tidal emergent wetlands shall be performed between September 1 and January 31 to avoid potential impacts to nesting California Ridgway's rails. Routine

maintenance activities along creeks or in seasonal wetlands planned to start after October 15 shall only be started if no rain is forecast with greater than 20 percent chance of precipitation and the project can be completed before the next forecast rain event.

- 46. These WDRs and WQC are subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to CWC section 13330 and 23 CCR section 3867.
- 47. This WQC is not intended and shall not be construed to apply to any discharge from any activity involving a hydroelectric facility requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to a FERC license unless the pertinent certification application was filed pursuant to 23 CCR section 3855, Subdivision (b) and the application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.
- 48. The Water Board may add to or modify the conditions of this Order, as appropriate, to implement any new or revised water quality standard and implementation plans adopted or approved pursuant to the CWC or CWA section 303 and/or any new or revised TMDL requirements.
- 49. The Discharger shall maintain a copy of this Order and all relevant plans and BMPs and AMMs at routine maintenance work sites so as to be available at all times to site operating personnel.
- 50. The Discharger shall correct any and all problems that arise from routine maintenance activities, including a failure to meet the conditions of this Order that results in an unauthorized release of pollutants, including sediment.
- 51. The Discharger shall permit the Water Board staff or its authorized representative, upon presentation of credentials:
 - a. Entry on to the premises on which maintenance activities are planned or underway, wastes are located, or in which records are kept;
 - b. Access to copy any records required to be kept under the terms and conditions of this Order;
 - c. Access to inspect any treatment equipment, monitoring equipment or monitoring method required by this Order; and
 - d. Access to sample any discharge or surface water covered by this Order.
- 52. In the event of any violation or threatened violation of the conditions of this Order, the violation or threatened violation shall be subject to any remedies, penalties, process or sanctions as provided for under applicable State or federal law. For the purposes of CWA section 401(d), the applicability of any State law authorizing remedies, penalties, process or sanctions constitutes a limitation necessary to assure compliance with the water quality standards and other pertinent requirements incorporated into this Order. In response to a suspected violation of any condition of this Order, the Water Board may require the Discharger to furnish, under penalty of perjury, any technical or monitoring reports the Water Board deems appropriate, provided that the burden, including costs, of the reports shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports. In response to any violation of

the conditions of this Order, the Water Board may add to or modify the conditions of this Order as appropriate to ensure compliance.

- 53. This Order is not transferable.
- 54. The Discharger shall pay the appropriate fees in accordance with California Code of Regulations (CCR), Division 3, Chapter 9, Article 1, section 2200(a)(3) as discussed in finding 40. If the Discharger expects to exceed the estimated impacts described in Finding 40, the Discharger shall submit an updated estimate of impacts to waters of the state attributable to routine maintenance authorized by this Order not later than 180 days in advance of the anticipated date on which the Discharger's covered activities would equal the acreage in Finding 40. Pursuant to CWC section 13260, the Discharger shall timely pay all fees associated with any increase in impact acreage for activities covered by this Order.

I, Eileen White, Executive Officer, do hereby certify that the foregoing is a full, complete and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region on June 12, 2024.

Eleen M. White

Eileen White Executive Officer

Attachments (*Provided as separate documents*):

- A: The East Bay Regional Park District Routine Maintenance and Restoration Activities in Various Waterbodies in Alameda and Contra Costa Counties, California in the San Francisco Bay Region
- B: Self-Monitoring Program
- C: Mitigation Requirements

East Bay Regional Park District

Regional Maintenance Activities Alameda and Contra Costa Counties

ATTACHMENT A

The East Bay Regional Park District Routine Maintenance and Restoration Activities in Various Waterbodies in Alameda and Contra Costa Counties, California, in the San Francisco Bay Region The East Bay Regional Park District Routine Maintenance and Restoration Activities in Various Waterbodies in Alameda and Contra Costa Counties, California in the San Francisco Bay Region



Prepared by East Bay Regional Park District 2950 Peralta Oaks Court Oakland, California 94605 March 2024

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- **B** Table 1: S.F. Bay Region 2 Routine Maintenance Projects Anticipated Range of Impacts
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The East Bay Regional Park District Routine Maintenance and Restoration Activities in Various Waterbodies in Alameda and Contra Costa Counties, California

Project Description and Affected Waterbodies

The East Bay Regional Park District ("District") currently manages 74 regional parks, in cluding recreation areas, wilderness lands, shorelines, preserves. land bank areas, and distinct trail segments, which encompass approximately 122,890 acres in Alameda and Contra Costa Counties, California (see Appendix map). The District's mission is to acquire, preserve, protect, and operate regional parklands in perpetuity for public use, while conserving these lands for natural resources. Over 90 percent of District lands are protected and operated as natural parklands. This includes parklands along the shorelines of San Francisco Bay, San Pablo Bay, Suisun Bay, the Delta Region, and inland areas of the coastal and transverse ranges of the East Bay. Within various waterbodies and adjacent upland habitats, the District performs routine maintenance activities designed to maintain existing facilities and structures, improve watersheds and coastal shoreline conditions.

District parklands encompass the shorelines of San Francisco Bay, San Pablo Bay, Suisun Bay, the Delta Region, and inland areas of the coastal and transverse ranges of the East Bay.

Throughout the District, habitats are often delineated by elevation change (ranging from sea level to 3817 feet) and influenced by the coast and transverse ranges, creating mesic cismontane conditions in the west and xeric transmontane rain shadow effect in portions of eastern Alameda and Contra Costa Counties. A Mediterranean climate consisting of winter rain and summer dry periods influences the mosaic of vegetation types and ecotonal communities within the District. The District's natural parklands are characterized by a diversity of ecotones consisting of estuarine, saline-brackish-fresh water emergent wetlands, diked bay lands, willow woodlands, redwood forest, montane hardwood-conifer forest, mixed evergreen forest, eucalyptus forest, coastal oak woodland, valley oak woodland, blue oak woodland, blue oak-gray pine woodland, valley foothill riparian woodland, California sycamore-cottonwood riparian woodland, mixed chaparral, California sagebrush scrub, annual grassland, perennial grassland, lentic and lotic habitats.

Within the District, 61 parkland units are located within San Francisco Regional Water Quality Control Board (Region 2). Approximately 96,609 acres or 80 percent of the District's acreage is in Region 2. Currently, the District contains approximately 522 freshwater ponds, eight freshwater lakes, 102 streams (i.e. ephemeral, intermittent, and perennial) with hundreds of tributaries and interconnected drainages, and approximately 49 miles of bay-delta tidal shoreline (See Appendix Waterbody Atlas). Within the District, 72 percent of ponds are located in Region 2. The lentic waterbodies vary in size and depth, from small rock depressions or ponds less than one square meter and few centimeters deep, to larger waterbodies covering several square kilometers with depths greater than ten meters. Most lentic waterbodies are man-made ponds consisting of constructed earthen dams within stream channels or graded inland depressions creating upland waterbodies. Approximately 88 percent of the major streams within various District parklands are located in Region 2. Lotic habitat consists of very small ephemeral and seasonal drainages to intermittent and larger volume perennial streams. In addition, approximately 82 percent of baydelta tidal shoreline in the District is located in Region 2. The bay delta shoreline areas are a complex of tidal and diked, muted tidal wetlands with varied transitional upland ecotones.

Proposed Activities

The District conducts routine maintenance activities and restoration activities in streams, catch basins, seeps, springs, ponds, lakes, beaches, tidal marshes, and shoreline levees. The purpose of these activities is to maintain existing facilities, protect and improve water quality, reduce erosion in streams, provide public and emergency access, and maintain and restore natural resources that support a variety of listed, special status, and other native species. A variety of routine maintenance activities will occur in several watersheds, including: Alameda, Alhambra, Claremont, Garrity, Rheem, Kirker, Marsh, Mount Diablo, Pinole, San Pablo, San Leandro, San Lorenzo, Walnut and Wildcat Creeks, San Francisco Bay, San Pablo Bay, and Suisun Bay. Covered routine maintenance and restoration activities include replacement of culverts, replacement and upgrade of culverts with new head and tail walls, installation of new culvert head/tail walls, installation of culvert energy dissipaters, installation of natural rock fords, vegetation and debris removal from streams and drainages, bank stabilization, removal of sediment- debris from existing culverts, maintenance of bridges, installation of clear-span bridges, repair and maintenance of existing spring boxes, routine dredging of silt basins, ponds and lakes,

maintenance of existing shoreline facilities (e.g., docks, fishing piers, boat launches, marsh board walks and overlooks), removal of hazardous man-made structures and vessels from various waterbodies, repair of earthen pond dams and spillways, vegetation management to control noxious weeds, nutrient control to prevent algal blooms, and stream, pond, and tidal wetland restoration.

Thirteen years of data on the effects of these routine maintenance and restoration projects were collected and used to determine the minimum and maximum range of impact to land cover for each activity type. The overall area (acres) of disturbance or impact to aquatic and adjacent terrestrial habitat for each activity type in the San Francisco Bay Region 2 is included in the Appendix Table 1 and in the following project descriptions.

Maintenance projects authorized under this permit will have a maximum size of 2,000 square feet and/or 150 linear feet. The following types of projects are not subject to the size restriction: 1) localized sediment removal in limited areas that does not exceed 500 linear feet; 2) repair and stabilization of existing armoring on shorelines and levees that does not exceed 500 linear feet total per year at each District shoreline unit; 3) repair and stabilization of existing unarmored shorelines and levees that does not exceed 160 linear feet total per year at each Park District shoreline unit; 4) dredging of existing silt basins, ponds, lakes, and other waterbodies; 5) use of chemicals to control nutrient levels in lakes and ponds to prevent algal blooms; and 6) projects meeting the requirements of a Small Habitat Restoration Project, including a project size that does not exceed 5 acres or a cumulative total of 500 linear feet and whose primary purpose is habitat restoration.

Activities not requiring notification include: 1) clearing of inboard ditches when necessary to prevent or reduce road and trail erosion, when the work does not result in discharge of sediment into a stream; 2) hand planting of riparian vegetation to reduce erosion; and 3) installation of fencing permeable to most wildlife species (e.g., 5 strand barbed wire) to keep people and livestock away from stream channels.

Culvert Repair, Replacement and Maintenance:

Existing degraded culverts will be replaced with same-size culverts. In fish bearing streams, culverts will be placed below grade. Culverts in non-fish bearing streams or in areas above the limits of anadromy will be slightly embedded to allow for free sediment transport.

Mechanized equipment, including excavators, backhoes, ten-wheel dump trucks, water trucks, and soil compactors, will access the project sites on existing roads, trails, or levees to the maximum extent practicable. This equipment will not be operated within wetted channels or other water bodies. Impacts associated with these activities include temporary impacts to upland, riparian, and/or wetland vegetation. Permanent impacts are not anticipated. Removal of riparian and upland vegetation will be minimized. Project duration ranges from one to seven days per culvert. Within Region 2, the expected frequency of this activity type is four to five culverts per year.

Replacement Upgrade of Existing Culverts:

Existing degraded culverts will be replaced with culverts with the same length and diameter. If existing culverts are undersized to convey peak flows, they may be replaced with larger diameter culverts. Replacement culverts must be no longer than the original culvert, plus 25 percent of the original culvert length. When culverts are longer than the original culvert, mitigation must be provided for the permanent impacts associated with the longer culvert. Culvert lengths may be increase by more than 25 percent, with prior Water Board approval, if the District project engineer demonstrates that increasing the length of the culvert by more than 25 percent is necessary to enhance channel stability (e.g., extending a perched culvert to discharge flush with the invert of the downstream creek channel). This work includes the installation of new rock head and/or tail walls, or the replacement of existing head and/or tailwalls, to stabilize the streambank and prevent head cutting and/or down cutting of stream channels. In fish bearing streams, the bottoms of culverts will be embedded well below grade to support the free movement of sediment and fish through the culvert. Culverts in non-fish bearing streams or in areas above the limits of anadromy will be slightly embedded to allow for free sediment transport. To the maximum extent practicable, equipment, including excavators, backhoes, ten-wheel dump trucks, water trucks, and soil compactors, will access the project sites via existing road and levees. During project implementation, equipment will be operated on existing roads and levees to the maximum extent practicable to avoid directly impacting wetted channels or waterbodies. Removal of riparian and upland vegetation will be minimized. Most of these projects will be implemented in one to seven days. Within Region 2, the expected frequency of this activity type is seven to nine culverts per year.

Removal of Sediment and Debris from Culverts:

Authorized Projects During Normal Work Window

Accumulated sediment and debris will be removed from culverts and upstream/downstream areas to maintain flow and prevent flooding. Equipment used to remove sediment will be mostly operated from the top of banks and levees. As needed, hand crews may perform work below the top of bank to remove sediment and debris, which may include the use of hand-held tools and/or a winch (operated from above top of bank) to remove larger debris. Equipment will not be driven into any wetted channels or other waterbodies and equipment operators will avoid tracking or wheeling into any wetted channels or other waterbodies. Hydraulic arms, hoses, and buckets will be used to reach into wetted areas to remove debris and sediment. If the removal of sediment/debris is required beyond the reach of equipment that is operated from top of bank, equipment may only enter the channel when it is dry. After sediment/debris removal, the channel bed and banks will be returned as nearly as possible to pre-project conditions. Mechanized equipment used for debris and sediment removal may include backhoes, ten-wheel dump trucks, and/or trucks with winches.

To the maximum extent practicable, equipment will access project sites via existing roads/trails and a small amount of off-trail travel is anticipated. Equipment will mostly operate on existing roads, trails, or tops of levees and completely avoid wetted channels or other waterbodies. Woody debris that does not block flow will be left in place to provide habitat for fish and wildlife. These activities will only have temporary impacts.

Urgent Wet Season Work

During the wet season, if stream flows are threatening to overtop banks or damage existing infrastructure due to the accumulation of woody debris and excess sediment in the culvert and/or the stream channel, this sediment/debris may be removed if all conditions of the WDR/WQC and other permits are complied with and RWQCB staff have provided authorization for the work. In the case of an unexpected and imminent threat to life or property it may be necessary to submit after-the-fact reports of urgent sediment/debris removal. This work will be performed by hand crews, by the use of trucks with winches, and/or by backhoes operated from top of the bank. It may be necessary to conduct this work when flowing water is present.

Non-Reporting Sediment and Debris Removal

As described in the Project-Specific Best Management Practices and Thresholds, urgent debris/sediment removal projects with a footprint of less than 40 square feet that remove less than 4 CY are non-reporting. This threshold will allow the District to quickly remove small areas of debris/sediment as necessary to prevent flooding, property damage, and to minimize erosion.

Installation of New Culvert Headwalls and Tailwalls:

At locations with existing culverts, new rock headwalls and/or tailwalls will be installed to stabilize the streambank and prevent head cutting and/or down cutting in the channel bed. Headwalls/tailwalls may also provide bank stabilization where erosion has occurred. Tailwalls may also be designed to provide energy dissipation.

Mechanized equipment may include excavators, backhoes, ten-wheel dump trucks, water trucks, and soil compactors. Equipment will access the project sites via existing roads/trails and only limited off-trail travel is anticipated. Equipment will mostly operate from existing roads, trails, or tops of levees. Equipment will not be operated in wetted channels or other waterbodies.

Removal of riparian and upland vegetation will be minimized. Project duration ranges from one to four days. Within Region 2, the expected frequency of this activity type is two to three headwalls and/or tailwalls per year.

Installation of Energy Dissipaters:

Energy dissipaters will be installed to prevent erosion associated with flow discharge from existing culverts. These structures consist of rock that ranges in size from drain rock to riprap size rock.

Mechanized equipment, including excavators, backhoes and ten-wheel dump trucks, will access the project sites and operate mostly on existing roads and levees, avoiding wetted channels or waterbodies. Removal of riparian and upland vegetation will be minimized; the work typically includes the loss of bank or shoreline vegetation. Project duration ranges from one to three days. Within Region 2, the expected frequency of this activity type is one to four energy dissipaters per year.

Installation of Armored or Natural Rock Ford-Stream Crossings:

Articulated fords will be installed to address erosion and to provide year-round emergency and maintenance vehicle access. Armored concrete pre-cast, open-cell, interlocking blocks will be laid within streams channels to provide crossings for roads and/or trails Where geomorphically appropriate (e.g., smaller, lower flow streams), rock fords may be installed. These fords will be installed in select locations to replace existing culverts and at natural drainage crossings to provide stability and minimize channel bed erosion. Ford crossings will be installed so that their surface is flush with the ground surface of the channel banks and bed. Armored crossings are designed and installed to maintain or improve flow over the road or trail and to reduce erosion at the crossing.

Hand tools are used for most of these construction activities. Some mechanized equipment may be required and could include the use of an excavator, backhoe, ten-wheel dump truck, water truck, and soil compactors. Equipment will access the project sites via existing roads/trails. Equipment will operate mostly on existing roads, trails, or tops of levees and avoid wetted channels or other waterbodies. Ford crossings are 10 to 16 feet wide. The length of the crossing from bank to bank and the total area of the crossing will vary, based on the width of the channel. Project duration ranges from two to five days. Within Region 2, the expected frequency of this activity type is two to three crossings per year.

Maintenance of Existing Ford Crossings:

Repairs made to existing armored or natural rock fords will help maintain road and/or trail crossings within streambed and drainages. These fords have been installed in select locations to replace existing culverts and at drainage crossings to provide stability and minimize channel bed erosion. Armored and rock ford crossings are installed at surface level and are designed to maintain flow in the channel bed at the crossing and reduce erosion.

Hand tools are used for most of the construction activities. Some mechanized equipment may be required and could include the use of an excavator, backhoe, ten-wheel dump truck, water truck, and soil compactors. This equipment will access the project sites and operate mostly on existing roads, trails, or levees and completely avoid wetted channels or other waterbodies. The length of the crossing from bank to bank and the total area of the crossing vary, based on the width of the channel. Permanent impacts to waterbodies and adjacent uplands are expected to be minimal. Project duration ranges from two to five days. Within Region 2, the expected frequency of this activity type is one to four crossing per year.

Maintenance and Installation of Bridges:

Clear-span bridges will be installed to replace existing culverts, natural (unarmored) stream crossings, and armored fords and other low water crossings. Concrete abutments will be poured in place from above the top of the bank and will not have contact with channel flow. Precast concrete abutments or abutments made of other material may also be used. After abutments are constructed/installed, bridges will be lowered into place with a crane operated from above the top of bank of the creek or tidal channel. Where the use of a crane is not practical, bridges may also be assembled on site, which may require the temporary use of scaffolding in the creek channel. In addition to the construction of new clear span bridges, this activity also includes maintenance of all types of existing bridges.

Other mechanized equipment may include excavators, backhoes, and ten-wheel dump trucks. Equipment will access the project sites via existing roads/trails. Equipment will operate mostly on existing roads, trails, or tops of levees and avoid wetted channels or other waterbodies. Project duration ranges from one to 20 days. Within Region 2, the expected frequency of this activity type is one to five bridges per year.

Streambank, Shoreline, and Levee Stabilization:

Bank and levee stabilization methods will be used in locations where creek bank erosion or shoreline erosion has resulted in: (1) the release of sediment exceeding that generated by natural processes; (2) unstable road, trail, or levee structures; (3) erosion around a culvert or bridge abutments; and (4) other major environmental or structural damage. Stabilization methods include the installation of log crib walls, replacing degraded areas of existing rip-rap, extending existing rip-rap sections into adjacent, unarmored areas, the installation of new riprap on unarmored creek banks or shorelines, upland and riparian vegetation planting, and other bio-engineering techniques. Mechanized equipment may include excavators, backhoes, ten-wheel dump trucks, and soil compactors. Equipment will access the project sites via existing roads/trails. Equipment will operate mostly on existing roads, trails, or tops of levees and completely avoid wetted channels or other waterbodies. Project duration ranges from one to eight days. Within Region 2, the

expected frequency of this activity type is three to four stabilization projects per year.

Maintenance and Replacement of Spring Boxes:

This activity type includes repairing or replacing/redeveloping existing spring boxes, but it does not include working in springs that do not have evidence of previous spring box development. Spring box repairs may include the maintenance of existing redwood spring boxes, metal or HDPE slotted culvert collection piping, and the removal of accumulations of silt and leaf debris. Spring re-developments typically involve the installation of a new, vertically placed 18- to 24-inch-diameter culvert collection pipe centered within a wooden façade box, with washed drain rock filled in from the collection pipe to façade. The wood façade will include a gap or escape ramp to allow passage for wildlife seeking refuge in the spring box. All spring box covers are solid to prevent wildlife from entering. Spring box maintenance and development may also include the installation or repair of above or underground 1¼ inch HDPE pipelines for conveying water from these water sources to alternative locations, including water tanks or troughs in conjunction with improving livestock distribution and drawing cattle away from the sensitive resources. Whenever possible, pipelines will be installed in existing roads and trails. All troughs will have escape ramps for wildlife.

Mechanized equipment, including excavators, backhoes, ten-wheel dump trucks, and small trucks, will operate mostly on existing roads, trails, levees, and disturbed areas. Cross country access will be minimized to avoid sensitive habitats and will be mostly restricted to open grasslands. Project duration ranges from one to seven days. Within Region 2, the expected frequency of this activity type is one to four spring boxes per year.

Maintenance Dredging of Silt Basins, Ponds, and Lakes:

Maintenance dredging will occur in silt basins, ponds, lakes, and muted tidal wetlands to restore silt retention capacity and open water habitat for listed and/or aquatic species. Dredging will generally be limited to 700 cubic yards of material per project site annually, for each single dredging activity. However, on a case-by-case basis the RWQCB may authorize the removal of greater than 700 cubic yards of material for (1) sediment removal from ponds for restoration projects, and (2) to return a sediment basin to its design capacity.

Mechanized equipment including excavators, backhoes, ten-wheel dump trucks, and small trucks, will operate mostly on existing roads, trails, levees, and disturbed areas. Cross country access will be minimized to avoid sensitive habitats and will be mostly restricted to open grasslands. Project

duration ranges from one to seven days. Within Region 2, the expected frequency of this activity type is seven to eight dredging projects per year.

Maintenance and Replacement of Recreational-Shoreline Facilities:

Maintenance to recreational facilities will include repairs and/or replacement of docks, fishing piers, boat launches, marsh boardwalks and overlooks. Where replacement is required, replacement structures will not exceed the size of existing structures by more than 10 percent if inkind replacement is demonstrated to not be practical.¹ The maintenance and replacement of these structures will preserve public access and ensure public safety. Non-toxic materials will be used in all repairs and replacement structures.

Mechanized equipment, including excavators, backhoes, cranes, and ten-wheel dump trucks, will access the project sites and operate mostly on existing roads and levees, avoiding wetted channels or waterbodies. Small watercraft may also be used in open water to provide access and conduct repairs. Project duration ranges from five to twenty days. Within Region 2, the expected frequency of this activity type is one to two shoreline projects per year.

Removal of Hazardous Structures:

Abandoned structures that act as barriers to fish and wildlife movements or as hazards to public safety or wildlife (such as abandoned creosote piers) may be removed from various waterbodies including streams, ponds, lakes, tidal channels estuaries, and Bay waters. If possible, structures will be removed in their entirety. Excavated and disturbed areas will be restored following removal of structures.

Mechanized equipment, including excavators, backhoes, cranes, ten-wheel dump trucks, four wheel drive trucks, and all-terrain vehicles (ATV's), will access the project sites using existing roads and levees to the maximum extent practicable. Equipment will be operated on existing roads and levees to avoid placing equipment in wetted channels or waterbodies. Various watercraft may also be used in open water to provide access and to remove structures. These activities may have temporary impacts to upland, riparian, or wetland vegetation and may also have short term temporary disturbances to open waters (e.g., elevated turbidity during piling removal). Permanent impacts to waterbodies and adjacent uplands are anticipated to be minimal. Project duration ranges

¹ An example when in-kind replacement may not be possible is replacement of an existing floating dock with a prefabricated new dock, where limited sizes of prefabricated docks are available.

from one half day to forty days. The potentially significant temporary impacts to aquatic habitat will be mitigated by permanent benefits to aquatic habitat.

Removal of Vessels:

Abandoned vessels that act as a barrier to fish and wildlife movements or hazards to navigation, wildlife, or public safety will be removed from various waterbodies, including streams, ponds, lakes, tidal channels, estuaries, and Bay waters. If possible, structures will be removed in their entirety. Excavated and disturbed areas will be restored to pre-project conditions following removal of vessels.

Mechanized equipment, including excavators, backhoes, cranes, ten-wheel dump trucks, four wheel drive trucks, and ATV's, will access the project sites on existing roads and levees, avoiding wetted channels or waterbodies. At project sites, equipment will operate from roads and levees to the maximum extent practicable. Various watercraft may be used in open water to provide access and remove objects. These activities, including the potential impacts to upland, riparian, or wetland vegetation, will have minimal temporary disturbance impacts and insignificant permanent impacts to waterbodies and adjacent uplands. Project duration ranges from one half day to ten days. This activity type will be conducted as needed. The potentially significant temporary impacts to aquatic habitat will be mitigated by permanent benefits to aquatic habitat.

Nutrient Control to Prevent Algal Blooms:

Algal blooms in Lake Temescal and Lake Anza have triggered beach closures. The algal blooms are triggered by excess nutrients in the lakes. The District uses phosphorous binding products to reduce nutrient concentrations in lakes. The active ingredients in these products include aluminum and lanthanum ions, two highly reactive metal ions that combine with phosphate ions to form a stable bond. Treatments consist of applications of these phosphorus binding compounds, in liquid and/or granular formulations, to sequester bioavailable phosphorus in the water column and in phosphorus-rich sediments.

It is anticipated that yearly nutrient remediation will be necessary to reduce the amount of free reactive phosphorous in the water column to the greatest extent possible to reduce cyanobacterial blooms and prevent swim season closure. Treatments currently occur at Lake Temescal and Lake Anza, but treatments locations could expand to other areas as needed.

Nutrient remediation products vary in efficacy, duration of effect, and availability, due to site conditions and market pressures. Aluminum sulfate, aluminum chlorohydrate, and lanthanum products are commercially available and will be considered for use based on availability, cost, and efficacy. The District will monitor the efficacy of different products, follow emerging research on phosphorous control, and adjust treatment practices as needed to prevent algal blooms.

Application dosing will be dependent on the free reactive Phosphorous (PO4) concentrations that are measured in samples collected from the water column and in samples collected from sediment at each reservoir.

Lentic, Lotic, and Tidal Restoration:

The District will restore various aquatic ecosystems, including lentic, lotic, and tidal habitats. Restoration activities will focus on enhancement and/or creation of these aquatic ecosystems, with the primary objective to promote the conservation and recovery of state and federally listed species.

Lentic Waterbody (Pond) Restoration

Pond restoration activities will include the repair, maintenance, and restoration of lentic waterbodies. These ponds provide water for livestock and support a variety of taxa, including California tiger salamander and California red-legged frog. Projects will be designed to enhance aquatic habitat for wildlife, reduce erosion and sedimentation to receiving waters, improve climate resiliency and improve livestock water availability and grazing distribution. Activities could include the re- construction of failed ponds, removal of sediments or de-siltation, and minor modifications of existing ponds to restore the original capacity and inundation period, repair and/or replacement of structural components such as spillways, overflow discharge pipes, earthen dam and embankment stabilization; removal of man-made obstructions or debris, control of noxious weeds, establishment of native vegetation, and control of non-native predators such as bullfrogs (*Rana catesbeiana*), predatory centrarchids, catfish, and *Gambusia spp*. Exotic predator control may involve the de-watering or draining of the pond. Sediment removal from ponds for restoration projects may exceed the standard 700 cubic yards limit upon authorization from RWQCB.

Mechanized equipment, including excavators, backhoes, ten-wheel dump trucks, four wheel drive trucks, soil compacters, and ATV's, will access the project sites and typically operate on existing roads and earthen dam levees, while avoiding wetted channels. The implementation of these activities will mostly result in temporary impacts to upland, riparian, or wetland vegetation and will

have minimal permanent impacts. The size of these waterbodies is highly variable. Project duration ranges from four to twenty days.

Stream (Lotic Waterbody) Restoration

Stream restoration activities will involve the enhancement or restoration of ephemeral, intermittent, or perennial streams and riparian corridors to improve habitat characteristics for listed species and other native species. The designs of these activities will incorporate hydrologic, hydraulic, biological, and geomorphic processes. The restoration projects are designed to enhance stream function, promote dynamic equilibrium, reduce erosion, improve water quality in receiving waters, and improve aquatic habitat characteristics and/or riparian vegetative structure within the restored stream reaches.

Installation of in-stream structures to stabilize and protect degraded streambanks may include installing boulder riprap, boulder wing deflectors, rock weirs, root wad deflectors, log cribbing, live vegetated crib walls, tree or native material revetments, brush mattresses, and native revegetation. Modifications to stream channels may include, but not be limited to, removal of invasive weeds, changes in channel gradient, channel sinuosity, channel bank slopes, channel type (e.g., braided versus single thread channel, or changes between cascade, step-pool, or riffle-run channels), channel cross-section, flood plain elevation and width, and planting riparian vegetation. To the extent practicable, invasive noxious weeds will be controlled or removed. Riparian restoration projects with the primary goal of controlling/removing invasive plant species may also be conducted; this may include the removal of eucalyptus trees or invasive plants (e.g., Arundo donax, broom species) to improve habitat and hydrology conditions. Native cattails may also be removed when appropriate to restore open water habitat and improve water circulation and habitat quality. Manual and/or chemical methods may be used to control/remove invasive plant species. If herbicides are used, they will be used according to their label instructions, California state law, BMPs for Wildland Stewardship presented in Protecting Wildlife When Using Herbicides for Invasive Plant Management (Cal-IPC 2015), and best professional standards (See General Best Management Practices Number 5). Herbicides will not be allowed to contact open water except where aquatic pest management activities are covered by the District's NPDES permit (waste discharge identification number 2 01AP00002). If invasive vegetation is removed, soil surfaces will not be left bare and vulnerable to erosion. Appropriate native vegetation will be used for riparian restoration or for revegetating exposed banks.
Mechanized equipment, including excavators, backhoes, cranes, ten-wheel dump trucks, four wheel drive trucks, soil compactors, and ATV's, will access the project sites and operate mostly on existing roads, trails, and levees. To the maximum extent practicable, equipment will not be operated in wetted channels or waterbodies. The implementation of these activities will result in mostly temporary impacts to upland, riparian, wetland vegetation, and stream substrates and banks. These activities are anticipated to have a net beneficial impact. The size of these waterbodies is highly variable and project duration ranges from four to sixty days.

Tidal Emergent Wetland Restoration

Wetland restoration activities will involve restoration and enhancement efforts to improve the habitat quality of tidal emergent wetlands or shorelines. This may include various restoration activities in tidal flats and wetlands, diked baylands, and adjacent transitional upland habitats. The anticipated tidal wetland restoration projects may include, but not be limited to, the removal/treatment of non-native vegetation, the removal of man-made debris or hazardous materials, and the re-establishment of native tidal and high marsh vegetation to enhance habitat conditions for giant garter snake, Ridgway's rail, snowy plover, California least tern, and salt marsh harvest mouse.

Modifications to tidal habitat may include, but not be limited to, changes in connections to tidal action, flood plain profile, and vegetation types in degraded wetland areas. To the extent practicable, this will include the control of non-native species and predators in tidal wetlands and/or adjacent transitional upland habitats. Invasive noxious plant species will be controlled or removed. Target species will include, but not be limited to, iceplant (*Carpobrotus edulis*) and its hybrids, birdsfoot trefoil (*Lotus corniculatus*), broadleaf pepperweed (*Lepidium latifolium*), and Mediterranean saltwort (*Salsola soda*). Exposed wetland areas will be replanted. Appropriate native vegetation and species composition and density will be determined using reference sites at functional wetlands with similar topographic and tidal access that are profiles dominated by native vegetation types. Non-native predator management will mostly focus on removal and/or control of free-roaming cats (*Felis silvestris catus*), non-native red fox (*Vulpes vulpes*), Norway rat (*Rattus norvegicus*), and black rat (*Rattus rattus*) to reduce predation events on special-status wildlife. Tidal marsh restoration activities may also involve the removal of creosote treated wood.

Mechanized equipment, including excavators, backhoes, cranes, ten-wheel dump trucks, four wheel drive trucks, soil compactors, and ATV's, will access the project sites and operate mostly on

existing roads and levees. To the maximum extent practicable, equipment will not be operated in wetted channels or waterbodies. The implementation of these activities may result in temporary impacts to upland and wetland vegetation, or tidal substrate, and will have a net benefit to habitat or water quality. The size of these waterbodies is highly variable and project duration can range from a few days to several weeks.

Avoidance and Minimization Measures

The District's covered routine maintenance activities will result in the repair, maintenance, and restoration of suitable aquatic habitat, riparian habitat, tidal shoreline, and upland habitat for state and federally-listed species, resulting in net environmental benefits to listed species as well as non-listed native species. The proposed conservation practices are designed to control erosion, reduce sedimentation, restore native vegetation, restore pond habitat, improve the quality of stream and riparian habitat, and maintain tidal wetlands. All of these actions will benefit listed species and their habitats in the long-term.

However, the routine maintenance project activities could potentially result in adverse effects to state and federally listed species. As discussed, this includes temporary and permanent effects to natural land cover, affecting aquatic habitat and adjacent terrestrial uplands.

Direct impacts are defined as ground-disturbing activities or projects that remove habitat for covered species or directly affect an individual species. Direct impacts can be either permanent or temporary. Examples of activities resulting in permanent wetland, stream channel, or open water impacts include installing hardscape (i.e., rip-rap along shoreline or stream channels), placing new culverts or fords in a channel, constructing a new bridge over a channel, or reducing wetland complexity (e.g., removing pools). Temporary impacts are defined as any impact on vegetation, topography, or habitat that may be returned to pre-impact conditions within a year of the impact. Temporary impacts that affect natural land cover are limited in duration, and most sites return to their preexisting conditions within a year. However, woody vegetation often requires five to ten years of regrowth to establish comparable cover. This extended temporary impact is limited to a few activities, a small fraction of project sites, and not likely to adversely affect listed species. Examples of temporary impacts include removal of wetland, riparian, or terrestrial vegetation to the extent that natural land cover habitat is affected and other actions that temporarily reduce stream or wetland function and habitat value (e.g., dewatering). Actual wetland impacts may be

somewhat lower than those calculated because of flexibility in implementing avoidance measures (e.g., building clear-span bridges to avoid streams, building in sites where no riparian vegetation exists). Considering that the vast majority of covered projects involve the maintenance of existing structures, most of the impacts to aquatic and adjacent terrestrial habitats are anticipated to be temporary impacts and overall will result in a net benefit to water quality and/or habitat.

To avoid and minimize adverse impacts to listed species, aquatic resources, and affected habitat, the District will implement the General Avoidance and Minimization Measures, Project Specific Best Management Practices (BMPs) and Thresholds, and Species Specific Conservation Measures listed below.

General Best Management Practices

The following BMPs are incorporated into the proposed project and will be implemented for all covered maintenance and restoration activities to protect biological resources during construction and restoration activities. Additional general avoidance and minimization measures and species-specific avoidance and minimization are included further below.

- 1. **Minimization of Work Area:** Project activities will be restricted to the minimum area necessary. Prior to start of work, project boundaries and access routes will be clearly demarcated to prevent work vehicles from straying into adjacent habitat. To the extent feasible, maintenance and construction activities will avoid small mammal and ground squirrel burrows and potential dens that may be used by species for shelter.
- 2. **Daytime Work Hours:** All construction activities must cease one half hour before sunset and shall not begin prior to one half hour after sunrise. Nighttime construction is allowed only if authorized by CDFW and USFWS/NMFS.
- 3. **Permit Availability:** The District will ensure that readily available copies of biological resources permits are maintained by the construction foreman/manager and/or qualified biologist/monitor on the project site whenever earthmoving and/or construction is taking place.
- 4. **Invasive Plant Species and Pathogen Control:** The District will ensure that the spread or introduction of invasive exotic plant species and pathogens will be avoided to the maximum extent possible. This includes implementing the District's *Field BMPs for Trail Work and Vegetation Management* (March 2021). When feasible, invasive exotic plants in the project areas will be removed.

- 5. Chemical Controls: If mechanical vegetation control or removal are considered too destructive to soil and existing plant communities, herbicides will be used to limit ground disturbance, erosion potential and facilitate the establishment of desired vegetation that contribute to the function of the development. When herbicides are used, they will be used according to their label instructions, California state law, BMPs for Wildland Stewardship: *Protecting Wildlife When Using Herbicides for Invasive Plant Management* (Cal-IPC 2015), and best professional standards that include:
 - The District will use caution to apply the least practicable amount and the least concentrated formulation of herbicide necessary to effectively control invasive and non-native vegetation.
 - A licensed Pest Control Advisor will provide the written Pest Control Recommendation for herbicide use. A qualified applicator (having a Qualified Applicator Certificate [QAC]/Qualified Applicator License [QAL]) will apply or supervise the application of any herbicide deemed necessary to minimize disturbance and provide for the maintenance of functional vegetation.
 - The District shall use extreme caution to not apply any herbicide directly to water, unless covered by the District's NPDES permit (waste discharge identification number 2 01AP00002). If herbicides must be applied adjacent to water, Permittee will use aquatically registered herbicides and adjuvants. Permittee will ensure that the application does not accidentally enter a body of water through drift or through unintended soil or vegetation movement.
 - Designate a dry stream crossing where needed in project areas to avoid crossing where instream channel is wet.
 - Herbicides shall not be applied during periods of inversion or during periods of sustained wind above 10 mph at the application site. The District will use selective herbicides wherever practicable, appropriate timing and targeted spot treatment to avoid off target application and damage to native and desirable vegetation.
 - Using best practices, low toxicity products and targeted application, incidental off target application on amphibians, reptiles, insects, and other wildlife will be minimized and avoided.
 - Spraying within 60 feet of existing mitigation and other sensitive sites will be done using the most accurate application method practicable, commensurate to the size of the target plants and the site restrictions, that minimizes the potential for drift. These include handheld devices such as backpack sprayer, hand sprayer, stem injection, cut stump and hack and squirt applications.
 - Marker dye will be used to aid in the application accuracy, correct rate and provide in time feedback to avoid drift and off target application.

- The amount of herbicide that can be transported in a vehicle will be limited to the least amount necessary for the anticipated daily use.
- Concentrated herbicides will be provided with secondary containment bins during transport.
- Crews shall be trained in the use of spill kits and carry those kits to work sites so that any spills can be contained and removed immediately.
- Herbicides will only be mixed and loaded in pre-designated areas. Mixing locations will be selected where a potential spill will be easiest to contain and will have the least environmental impact.
- Mixing and loading areas shall be in or near treatment areas, shall be relatively flat, shall have few native plants or other desirable species; shall not be susceptible to erosion or runoff; shall have easy access for containment and clean-up of spills; and shall be located away from water bodies.
- Clean up and disposal of pesticide residue and containers shall follow all California state laws and regulations and label requirements that pertain to this activity. Empty pesticide containers shall be triple rinsed. Rinsate will be returned to the mix tank to be used in a subsequent application. Final tank rinsate shall be applied in the treatment area, to target plants and in a manner that will not permit rinsate to move outside of the treatment area. As soon as is practicable after treatments, empty pesticide containers will be triple rinsed, punctured, label removed and be disposed of according to label and California state and local regulations.
- If any fish or animal kills are observed following application of herbicides, such kills shall be reported to CDFW, USFWS, NMFS, the Corps, and the Water Board within 24 hours.
- The Permittee shall consult the tools listed below to identify any stipulated injunctions or other protection standards associated with listed species on District properties when planning to use herbicides and/or pesticides. The Permittee shall use the most accurate and current data to implement the most protective use limitations on herbicide and/or pesticides to provide the maximum protection for listed species (e.g., California tiger salamander, California red-legged frog) potentially present. These tools include the following:
 - The District's geographic information system (GIS) layers that cover special-status wildlife and plant community habitats as well as sensitive areas such as ponds, streams and wetlands
 - The United States Environmental Protection Agency 's(USEPA's) San Francisco Bay Area – Map Tool to Identify Interim Pesticide Use Limitations (https://www.epa.gov/ endangered-species/san-francisco-bay-area-map-tool-identify-interim-pesticide-uselimitations)
 - California Department of Pesticide Regulation's Prescribe database:

(https://calpip.cdpr. ca.gov/county.cfm?ds=PRESCRIBE)

- 6. **Revegetation:** Project sites that require revegetation to prevent erosion and/or offset weed pressure in the area will be replanted with an appropriate assemblage of native riparian, wetland, and upland vegetation suitable for the area and stabilized with erosion control materials, as necessary.
- 7. **Heavy Equipment Locations:** To the extent practicable, no heavy mechanized equipment will operate in standing or flowing water and disturbances in stream channels will be minimized.
 - To create a dry work environment and maintain down stream flow, water will be temporarily diverted around the work area using gravel-filled sandbag cofferdams, hoses, and pumps.
 - If a work site is to be temporarily dewatered by pumping, intakes will be completely screened with wire mesh not larger than 2.5 millimeters or 3/32 inch. Water will be released or pumped downstream at an appropriate rate to maintain downstream flows during construction. Upon completion of construction activities, any barriers to flow will be removed in a manner that will allow flow to resume with the least disturbance to the substrate. If the removal of ground water seepage/non-flowing water is required from an isolated work area, the water will be pumped out and discharged to a suitable upland location.
 - Pumps will be placed in a perforated intake basin (e.g., bucket) to allow water to be drawn into the pump to protect and ensure aquatic organisms are not pulled into the pump.
- 8. Work Window: Work within lentic, lotic, and coastal waterbodies will be performed during the allowed work windows described in the Species-Specific Conservation Measures included below in **Species-Specific Avoidance and Minimization Measures**. The specific District Lands in which these work windows apply are shown in **Appendix D**. These work windows include:
 - At most work sites adjacent to aquatic habitat, grading and construction will be limited to the dry season, which includes the period of April 15 to October 31.
 - In streams or ponds potentially supporting California red-legged frog or California tiger salamander, work will be conducted between August 31 and October 31, unless the area is naturally dry before that time.
 - In tidal emergent wetlands activities supporting Ridgway's rail, California black rail, Western snowy plover, and/or California least tern, construction activities will be conducted between September 1 and January 31 (outside of the nesting season of these

bird species).

- In habitat potentially occupied by federally listed fish species, consultation between the Corps and NMFS is required by Regional General Permit 15. The allowed work windows will be determined during that consultation. Generally accepted work windows are listed below but actual work windows for individual projects will be determined during the consultation with NMFS.
 - In habitat potentially occupied by anadromous salmonids (i.e., Steelhead, Chinook salmon), activities will generally occur between June 1 and November 30.
 - In habitat potentially occupied by Longfin smelt, activities generally occur between August 1 and January 1 in San Pablo Bay or between September 1 and November 30 from the Carquinez Bridge to Collinsville.
 - In habitat potentially occupied by Delta smelt, activities generally occur between August 1 and November 30.
 - In habitat potentially occupied by Green sturgeon, work may generally occur between July 1 and October 31.
- Urgent sediment and/or debris removal from culverts or streams stream that is necessary to prevent flooding or protect property/infrastructure/life may be conducted at any time upon regulatory agency approval, and under the oversight of biological monitors.
- On a case-by-case basis, the regulatory agencies may approve an extension of a construction work window for work that is in progress and cannot be completed within the approved work window, due to factors beyond the control of the Permittee. Extensions will be granted on the basis of five-day forecasts without predictions of measurable precipitation.
- 9. **Culvert Debris Removal:** To the maximum extent feasible, urgent debris removal during the wet season (e.g., to unclog culverts) will be performed by hand crews or by the use of trucks with winches and/or by backhoes operated from the top of the bank.
- 10. **Restrictions on Vegetation Removal:** As much as possible, the District will avoid the removal of large woody riparian vegetation and remove only the minimum necessary to complete the project. Large woody vegetation may be removed when necessary to allow equipment access or as a component of a restoration project that removes non-native or unhealthy trees. Woody debris that does not trigger bank instability, flooding, or culvert blockage, will be left in place to provide in-stream cover and habitat for aquatic species.
- 11. **Equipment Restrictions:** The District will avoid using heavy equipment in areas where hand tools or light equipment are capable of performing the task. Whenever feasible, the District will use rubber-tired vehicles, rather than track mounted equipment, to avoid soil compaction and disturbance.

- 12. **Concrete Pouring:** New concrete will not be placed or poured on-site in a location that may come into contact with any natural waterbodies while water is present until the concrete has cured. Compliance with this condition will be demonstrated when the pH of applied water on the surface of exposed concrete is 9.5 pH units or less. Any concrete pouring will also be isolated from all natural waterbodies and rain events through appropriate wrapping or water barriers.
- 13. **Equipment Inspections:** Prior to work, all equipment will be inspected for fuel, oil, and hydraulic leaks and will be repaired if necessary.
- 14. **Equipment Fueling:** At the work site, fueling of equipment and vehicles will only occur in upland areas. If fueling occurs within 100 feet of open or flowing water, secondary containment will be used while fueling.
- **15. Equipment Parking:** Vehicles will be parked on pavement, existing roads, and previously disturbed areas to the maximum extent feasible.
- **16. Erosion Control Measures:** Erosion control materials that use plastic or synthetic monofilament netting will not be used in order to prevent species from becoming entangled, trapped, or injured. This includes products that use photodegradable or biodegradable synthetic netting, which can take a full calendar year or longer to decompose. Acceptable materials include natural fibers, such as jute, coconut, twine, or other similar fibers.

17. General Construction Phytophthora BMPs:

- Worker Training. District employees and contractors working on routine maintenance projects will receive annual training that includes information on Phytophthora diseases and how to prevent the spread of these and other soil-borne pathogens by following approved phytosanitary procedures.
- Clothing and Gear. At the start of work at each new job site, worker clothing, including boots, should be free of mud or soil. If clothes are not freshly laundered, before arriving at the site, workers shall remove all debris and adhered soil with a stiff brush. Prior to arriving at the site, all gear should be cleaned with brushes, air, or water to remove as much visible mud and debris as possible.
- At the end of the workday, workers shall scrub, brush, and pick off soil, vegetation, or other debris from shoes, saws, vehicles and other equipment at the work site.
- Vehicles and Large Equipment. Before arrival at construction sites, vehicles and large equipment, including their tires, wheel wells, vehicle undercarriages, must be free of soil and debris.

18. Hazardous Materials Storage/Disposal

• Any hazardous or toxic materials that could be deleterious to aquatic life that could be washed into waters of the State will be contained in watertight containers or removed from

the project site.

- Use biodegradable chainsaw bar oil.
- Label all hazardous materials and hazardous wastes (such as pesticides, paints, thinners, solvents, fuel, oil, and antifreeze) in accordance with city, county, state and federal regulations.
- Store hazardous materials and wastes in watertight containers, store in appropriate secondary containment, and cover them at the end of every workday, during wet weather, or when rain is forecast.
- Follow manufacturer's application instructions for hazardous materials and use the smallest amount possible. Do not apply chemicals outdoors when rain is forecast within 24 hours.
- Arrange for appropriate disposal of all hazardous wastes.

19. Nutrient Control to Prevent Algal Blooms

Ongoing Water Quality and Sediment Monitoring at Lake Temescal and Lake Anza

- The District will continue long term monthly monitoring of critical parameters at each Lake's designated Monitoring Station² as well as contributing watersheds with the following parameters: Standard WQ (Temp, DO, pH, Specific Conductivity, turbidity), Secchi disk, and standard nutrients (NO3, PO4, Ammonia, TP, TN, Chlorophyll A). The results of the monthly sampling will be used to set the dosing levels for treatment.
- Sampling of sediments in both lakes will be performed to inform treatment dosing and treatment efficacy. If treatments are implemented or if notable water quality changes occur, then sediment sampling will occur annually.³ If treatments are not implemented in a given year and if changes in water quality do not occur, then sediment sampling may occur every two to three years.
- Timing of application(s) will be based on rainfall, vegetation growth, current professional practices, and long-term data trends. For example, current information suggests that applications in early spring are effective, but it may also be effective to do partial doses and spread them throughout the year. The early treatment could address nutrients in deeper sediments and later treatment could target the water column.

Material Handling

² The designated Monitoring Station is the site used during monthly routine sampling and is located at the deepest part of the lake/reservoir. At Lake Temescal the Monitoring Station is the northwest dock and at Lake Anza the Monitoring Station is a designated buoy. If treatments are expanded to other lakes/reservoirs, designated Monitoring Stations will be identified and reported to RWQCB. ³ If treatments are expanded to other lakes/reservoirs, regular sampling of sediments at those additional locations will be performed as described.

Nutrient remediation products will be used according to their label instructions, California state law, and, and best professional standards that include:

- The District will use caution to apply the smallest practicable amount and the least concentrated formulation of nutrient remediation products necessary to effectively sequester nutrients. The amount and concentration of product used will be based on manufacturer's label instructions and on monitoring of nutrient level in water and sediments.
- The District will use extreme caution to only apply nutrient remediation products directly to the water column and sediments, thus minimizing the potential for incidental off target application on amphibians, reptiles, insects, and other wildlife.
- The District will use application methods and techniques that minimize the potential for drift or off target application. These include devices such as backpack sprayer, granule blower, direct water injection systems, slurry systems, etc.
- The amount of nutrient remediation products that can be transported in a vehicle will be limited to the least amount necessary for the anticipated treatment.
- Crews shall be trained in the use of spill kits and carry those kits to work sites so that any spills can be contained and removed immediately.
- Mixing and loading areas will be in or near treatment areas, located on relatively flat surfaces that are, not be susceptible to erosion or run-off, and will have easy access for clean-up of spills.
- Clean up and disposal of residue and containers shall follow all California state laws and regulations and label requirements that pertain to nutrient control products.
- Any Fish or animal kills observed following application shall be reported to CDFW and the Water Board within 4 hours.

Monitoring During Applications

- Immediately before, during and up to 2 hours post product applications, the District will conduct continuous monitoring at one or more designated monitoring sites with a multi-parameter water quality meter collecting measurements throughout the water column at 1 meter intervals.
- Standard WQ measurements (pH, DO, Temperature, turbidity and Specific Conductivity) will be recorded to confirm that the following parameters are within acceptable ranges during and after the application:
 - pH stays within 1 pH unit of pre-treatment level.
 - DO ≥5.0 mg/L surface unless pre-treatment baseline DO is less than 5.0 mg/L. In this case, application will be monitored so that DO does not drop below one

standard deviation below baseline at time of treatment.⁴

- If measured values of pH and DO are outside of acceptable ranges for these parameters, application nutrient control product(s) will be halted until the pH and/or DO measurements in the water body being treated have returned to acceptable measured values.
- Lanthanum-modified bentonite applications can trigger short-term increases in turbidity as the product sinks. Turbidity measurements and Secchi disk readings will be used to confirm turbidity returns to the pre-treatment level within an expected 12-48 hour period.
- Immediately after treatment and the following day, lake perimeter surveys from the water will be performed to document any fish kills or harm to other wildlife.

General Avoidance and Minimization Measures

- 1. The District will submit the names and credentials of biologists that will conduct the activities specified in the following measures to the CDFW and USFWS for approval.
- 2. A qualified biologist or approved biological monitor will remain on-site during all construction activities. When the project site is staffed only by the biological monitor, a qualified biologist will be available to be at the site within 2 hours, if needed. The qualified biologist/ biological monitor will be given the authority to stop any work that may result in the harm of special-status species. If the qualified biologist/biological monitor exercises this authority, the CDFW and/or USFWS will be notified by telephone and electronic mail within one working day. The qualified biologist/biological monitor will be the contact for any employee or contractor who might inadvertently kill or injure a listed species or anyone who finds a dead, injured or entrapped individual.
- 3. Prior to construction, a qualified biologist/biological monitor will conduct a construction employee education program on the potential special-status species and sensitive habitats on site. At a minimum, the program will provide an overview of relevant permit/ agreement requirements, a description of special-status species potentially present, sensitive habitats on or near the site, avoidance measures to be implemented, and instruction on actions to take if wildlife species are observed. A list of employees who attend the training sessions will be maintained to be made available for review by the CDFW and/or USFWS upon request. Contractor training will be incorporated into construction contracts and will be a component of weekly project meetings.
- 4. A qualified biologist will conduct a preconstruction survey for special-status species

⁴ The Standard Deviation will be calculated based on sampling data from 2017 to current year collected from the lake surface (0.2 meter below surface) and lake bottom (0.3 meter above lake bottom).

immediately prior to groundbreaking activities. If at any point, construction activities cease for more than five consecutive days, an additional preconstruction survey will be conducted prior to the resumption of work.

- 5. The qualified biologist or biological monitor will conduct a clearance survey prior to the start of each workday. This will include walking the project site, and checking under construction equipment, project vehicles, and their tires to ensure no species are using the equipment as temporary shelter.
- 6. All wildlife species within harm's way will be given the opportunity to leave the work area on their own. With the exception of species protected by CESA, and/or California Fully Protected Species, wildlife species may be removed from the work area by the qualified biologist/biological monitor in accordance with the approved conditions of the project's corresponding authorizations associated with biological permits (e.g., Master Agreement, Biological Opinion). Any relocated wildlife species will be moved to a safe area that provides suitable habitat. The relocation of any wildlife species will be documented in the daily monitoring logs and a summary report will be provided to CDFW should the relocation of any special-status species be required. Species protected by CESA may only be relocated if the activity is covered by an ITP and in accordance with the procedures included in that ITP.

As required in the USFWS Biological Opinion, the relocation of federally listed species cannot occur until a relocation is approved by USFWS on a project-specific basis. The District will prepare a listed species relocation plan for the project to be reviewed and approved by USFWS prior to project implementation when listed species are known or suspected of being present. The plan will include trapping and relocation methods, relocation site, and post relocation monitoring. If the relocation of federally listed species is unexpectedly required, USFWS will be contacted for guidance on how to proceed.

7. If work will occur during nesting bird season (February 1 through August 31), a qualified biologist/monitor will survey a sufficient area around the work site to identify any nests that are present and determine their status. The survey will be conducted within 7 days for the commencement of construction. Once construction work begins, the survey effort will continue to ensure any nest starts established after the work commences are identified. 'Sufficient' in the context of this condition means any nest within an area that could potentially be affected by the Project. In addition to direct impacts, such as nest destruction, nesting birds might be affected by noise, vibration, odors, and movement of workers or equipment.

If an active nest(s) is found, a qualified biologist will establish appropriate setbacks or construction will be delayed until nesting is complete. Identified active nests will be monitored for a sufficient period prior to any construction related activities to establish a behavioral baseline of the adults and any nestlings. Once work commences, all active nests will be monitored by the qualified biologist to detect any signs of disturbance and behavioral

changes as a result of the project. If signs of disturbance and behavioral changes are observed, the biologist will cease the work causing that change and will contact CDFW for guidance.

- 8. To prevent the accidental entrapment of species during construction, all excavated holes or trenches deeper than 12 inches will be covered at the end of each workday with plywood or similar materials. Foundation trenches or larger excavations that cannot easily be covered will be ramped at the end of the workday to allow trapped animals an escape method. Prior to the filling of such holes, these areas will be thoroughly inspected for species by the qualified biologist or biological monitor. In the event that a trapped animal is observed, construction will cease until the individual has been relocated to an appropriate location.
- 9. Because species may take refuge in cavity-like and den-like structures such as pipes and may enter stored pipes and become trapped, all construction pipes, culverts, or similar structures that are stored at a construction site for one or more overnight periods will be either securely capped prior to storage or thoroughly inspected by a qualified biologist or biological monitor for animals before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If any individuals have become trapped, the animal will be relocated in accordance with General Avoidance and Minimization Measure 7, above.
- 10. At all proposed project sites, a qualified biologist will make the determination as to whether exclusion fencing is necessary or appropriate to prevent harm to special-status species.
- 11. All trash and debris within the work area will be placed in containers with secure lids before the end of each workday in order to reduce the likelihood of predators being attracted to the site by discarded food wrappers and other rubbish that may be left on-site. Containers will be emptied as necessary to prevent trash overflow onto the site and all rubbish will be disposed of at an appropriate off-site location.
- 12. All vegetation that obscures the observation of wildlife movement within the affected areas will be completely removed using hand-held tools just prior to the initiation of grading to remove cover that might be used by listed species. The qualified biologist will survey these areas immediately prior to vegetation removal. If species are observed they will be allowed to leave the work area on their own, or if necessary, listed species will be captured and relocated out of the work area, following methods approved by CDFW and/or the USFWS.

Species-Specific Avoidance and Minimization Measures

Federally and/or State Listed Species

Alameda Whipsnake (Federally and State Threatened)

The District will implement the following measures in parks identified in the Biological Opinion (08ESMF00-2013-F-0416) (see **Appendix D**) as supporting or potentially supporting Alameda whipsnake:

Mitigation Measure AWS-1 To the extent possible, all rock outcroppings will be avoided. Mitigation Measure AWS-2 Within potentially suitable Alameda whipsnake habitat, construction activities will occur between June 15 and October 31, when the whipsnake are more active, capable of escaping, and less likely to be impacted.

Mitigation Measure AWS-3 Ground disturbance and vegetation clearing in scrub/chaparral habitat will be avoided to the maximum extent possible. Where disturbance cannot be avoided in this habitat type, work shall be limited to the fall season of September to November in order to allow the young of the year time to become sufficiently capable of escaping such activities.

Mitigation Measure AWS-4 When disturbance is taking place in known or potential Alameda whipsnake habitat, shrub/chaparral vegetation will be removed by equipment operated by hand to prevent mortality associated with mowers or other large mechanical equipment. A qualified biologist will be present during vegetation removal.

California Red-Legged Frog (Federally Threatened, California Species of Special Concern)

The District will implement the following measures in parks identified in the Biological Opinion (08ESMF00-2013-F-0416) (see **Appendix D**) as supporting or potentially supporting California red-legged frog:

Mitigation Measure CRLF-1 Work within California red-legged frog habitat (lentic and lotic waterbodies) will be performed only between August 31 and October 31 or under dry site conditions and will minimize potential adverse impacts to aquatic habitats.

Mitigation Measure CRLF-2 A qualified biologist will survey the work site immediately prior to construction activities. If California red-legged frogs, tadpoles, or eggs are found, the approved biologist shall contact USFWS and CDFW to determine if moving any of these life-stages is appropriate. In making this determination, USFWS/CDFW will consider if an appropriate

relocation site exists, as provided in the USFWS-required relocation plan. If USFWS/CDFW approves of moving animals, the qualified biologist will be allowed sufficient time to move California red-legged frogs from the work site before work activities begin.

Mitigation Measure CRLF-3 Only USFWS-approved biologists shall participate in activities associated with the capture and handling of California red-legged frogs.

Mitigation Measure CRLF-4 Bare hands will be used to capture California red-legged frogs. USFWS-approved biologists will not use soaps, oils, creams, lotions, repellents, or solvents of any sort on their hands within 2 hours before and during periods when they are capturing and relocating individuals. To avoid transferring diseases or pathogens while handling the amphibians, USFWS-approved biologists will follow the Declining Amphibian Populations Task Force's "Code of Practice."

Central California Tiger Salamander (Federally and State Threatened)

The District will implement the following measures in parks identified in the Biological Opinion (08ESMF00-2013-F-0416) (see **Appendix D**) as supporting or potentially supporting California tiger salamander:

Mitigation Measure CTS-1 Work within California tiger salamander aquatic habitat will be performed only between August 31 and October 31 or under dry site conditions and will minimize potential adverse impacts to aquatic habitats. All projects in known or suspected California tiger salamander breeding habitat will be identified as Tier 3 projects by the District. If determined necessary by CDFW based on the location and activity proposed, an ITP will be obtained prior to the commencement of work.

Mitigation Measure CTS-2 A qualified biologist will conduct a visual encounter survey of the work site immediately prior to construction activities. If an ITP has not been obtained and Central California tiger salamanders, larvae, or eggs are found, then work will be immediately halted and the CDFW will be contacted for guidance. If an ITP has been obtained, the relocation of any of these life-stages may occur as allowed in the ITP and Biological Opinion.

Mitigation Measure CTS-3 Only USFWS- and CDFW-approved biologists will participate in activities associated with the capture, handling, and monitoring of Central California tiger salamanders.

Mitigation Measure CTS-4 Bare hands will be used to capture Central California tiger salamanders. Approved biologists will not use soaps, oils, creams, lotions, repellents, or solvents of any sort on their hands within 2 hours before and during periods when they are capturing and relocating individuals. To avoid transferring disease or pathogens while handling the amphibians, USFWS-approved biologists will follow the Declining Amphibian Populations Task Force's "Code of Practice."

Foothill Yellow-Legged Frog (State Endangered)

The District will implement the following measures in parks in the upper Alameda Creek and Arroyo Del Valle watersheds, which include Sunol and Del Valle.

Mitigation Measure FYLF-1 Work within foothill yellow-legged frog aquatic habitat will be performed only between August 31 and October 31 or under dry site conditions and will minimize potential adverse impacts to aquatic habitats. All projects in locations known or suspected of supporting foothill yellow-legged frog, and which include dewatering or a water diversion, will be identified as Tier 3 projects by the District. If determined necessary by CDFW based on the location and activity proposed, an ITP will be obtained prior to the commencement of work.

Mitigation Measure FYLF-2 A qualified biologist will survey the work site immediately prior to construction activities. If an ITP has not been obtained and foothill yellow-legged frog, larvae, or eggs are found, then work will be immediately halted and the CDFW will be contacted for guidance. If an ITP has been obtained, the relocation of any of these life- stages may occur only as allowed in the ITP.

Mitigation Measure FYLF-3 Only CDFW-approved biologists will participate in activities associated with the capture, handling, and monitoring of foothill yellow-legged frog.

Mitigation Measure FYLF-4 Bare hands will be used to capture foothill yellow-legged frog. Approved biologists will not use soaps, oils, creams, lotions, repellents, or solvents of any sort on their hands within 2 hours before and during periods when they are capturing and relocating individuals. To avoid transferring disease or pathogens while handling the amphibians, USFWS-approved biologists will follow the Declining Amphibian Populations Task Force's "Code of Practice."

San Joaquin Kit Fox (Federally Endangered, State Threatened)

The District will implement the following measures in parks identified in the Biological Opinion (08ESMF00-2013-F-0416) (see **Appendix D**) as supporting or potentially supporting San Joaquin kit fox:

Mitigation Measure SJKF-1 Preconstruction surveys for San Joaquin kit fox will be conducted in work areas and all areas within 200 feet of work areas to identify potential San Joaquin kit fox dens or other refugia. Surveys will include den searches following methods outlined in USFWS *San Joaquin Kit Fox Survey Protocol for the Northern Range* (USFWS 1999). A USFWS-approved biologist will conduct the den searches 14 to 30 days before initiation of ground- disturbing activity in each work area. Following den searches, all identified potential dens (as defined in Appendix II of the USFWS *Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance* (USFWS 2011)) will be monitored for evidence of kit fox use by placing an inert tracking medium and/or a camera station at den entrances and monitoring for at least 3 consecutive nights. The results of the surveys will be provided to USFWS and CDFW within 1 week of completion. If ground-disturbing activities cease for 28 consecutive calendar days, a USFWS- and CDFW-approved biologist will conduct a new survey for San Joaquin kit fox prior to re-initiation of ground-disturbing activities.

Mitigation Measure SJKF-2 If no activity is detected at potential den sites, potential den sites that will be collapsed by construction activities will be closed following guidance established in the USFWS *Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance* (USFWS 2011). If kit fox occupancy is determined during any of the surveys conducted, USFWS and CDFW will be notified within 24 hours and no work will occur within 200 feet of the den unless approved by USFWS and CDFW. Appropriate buffers and avoidance measures will be developed in consultation with USFWS and CDFW. Depending on the den type, measures to avoid effects to kit foxes could include seasonal limitations on work in the area (i.e., restricting the work period to avoid spring-summer pupping season), establishing a work exclusion zone around the identified site, or resurveying the den later to determine species presence or absence.

Mitigation Measure SJKF-3 Vehicle traffic will be restricted to established roads, construction areas, and other designated areas.

Mitigation Measure SJKF-4 Grading activities will be designated to minimize or eliminate effects to rodent burrows. Areas with high concentrations of burrows and large burrows suitable for San Joaquin kit fox dens will be avoided by grading activities to the maximum extent possible. In addition, when concentrations of burrows or large burrows are observed within the site these areas will be staked and flagged to ensure construction personnel are aware of their location and to facilitate avoidance of these areas.

Longhorn Fairy Shrimp, Vernal Pool Fairy Shrimp, and Vernal Pool Tadpole Shrimp (Federally Endangered or Threatened)

The District will implement the following measures in parks identified in the Biological Opinion (08ESMF00-2013-F-0416) (**Appendix D**) as supporting or potentially supporting listed vernal pool branchiopods:

Mitigation Measure VPBR-1 Work within 250 feet of listed vernal pool branchiopod habitat will be performed only between August 1 and October 31 under dry site conditions and will minimize potential adverse impacts to aquatic habitats.

Mitigation Measure VPBR-2 A USFWS-approved biologist will monitor all construction activities within 250 feet of suitable habitat for listed vernal pool branchiopods to ensure that no unnecessary take or destruction of habitat occurs.

Mitigation Measure VPBR-3 The District or its contractors will implement dust control measures necessary to prevent the transport of soil from exposed surfaces to vernal pool, swale, and rock pool habitat. Sprinkling with water will not be done in excess to minimize the potential for non-storm water discharge.

Mitigation Measure VPBR-4 Routine maintenance activities within 250 feet of vernal pool and swale habitat will be avoided to the maximum extent possible.

Mitigation Measure VPBR-5 If work within 250 feet of suitable habitat for listed vernal pool branchiopods cannot be avoided, the District will conduct protocol-level surveys according to USFWS's 2015 *Survey Guidelines for Listed Vernal Pool Branchiopods* and provide the results of the surveys to USFWS along with the preconstruction project list. If listed vernal pool branchiopods are found to be present in features within 250 feet of proposed activities (or if surveys are not conducted and presence of listed branchiopods is assumed), the District will design the project so that no permanent adverse effects to hydrology to the vernal pool or vernal pool complex will result from the project. The District will then contact USFWS for site specific approval and

USFWS will help to develop appropriate site-specific conservation measures to avoid any permanent adverse effects to the hydrology of the pools. If avoidance of permanent adverse effects to hydrology is not feasible for the project, the District will contact the Corps and request initiation of a separate consultation for that project.

Giant Garter Snake (Federally and State Threatened)

The District will implement the following measures in parks identified in the Biological Opinion (08ESMF00-2013-F-0416) (see **Appendix D**) as supporting or potentially supporting giant garter snake:

Mitigation Measure GGS-1 Disturbance activities in known or potential giant garter snake aquatic habitat or within 200 feet of aquatic habitat will be performed only between May 1 and October 1 to avoid potential impacts to this species.

Mitigation Measure GGS-2 Work activities will be restricted to existing roads and trails to the maximum extent possible. When existing roads and trails cannot be followed, and disturbance is in known or potential giant garter snake habitat, vegetation will be removed by hand to prevent mortality associated with mowers and other landscaping equipment.

Ridgway's Rail (California Clapper Rail) (Federally and State Endangered, State Fully Protected) and **California Black Rail** (State Threatened, State Fully Protected)

The District will implement the following measures in parks identified in the Biological Opinion (08ESMF00-2013-F-0416) (see **Appendix D**) as supporting or potentially supporting Ridgway's rail, as well as at the following locations potentially supporting California black rail: Bay Point, Point Pinole, MLK Shoreline, and Coyote Hills.

Mitigation Measure RAIL-1 To avoid causing the abandonment of an active Ridgway's rail or California black rail nest, activities (including construction and maintenance activities) within 700 feet of vegetated tidal marsh providing suitable breeding habitat for these species will be avoided during the breeding season from February 1 to August 31. Consequently, the allowed work window in shoreline areas extends from September 1 to January 31.

Mitigation Measure RAIL-2 If a rail of any species is observed in or adjacent to a work area, work will be stopped immediately. If the rail is either identified as a Ridgway's rail or California black rail by the qualified biologist or cannot be positively identified, work will be stopped until the rail leaves the work area of its own volition and USFWS and CDFW will be notified. If the rail

does not leave the work area, work will not be reinitiated until after USFWS and CDFW are consulted regarding appropriate avoidance measures and permission is granted by USFWS and CDFW to commence work.

California Least Tern (Federally and State Endangered)

The District will implement the following measures in parks identified in the Biological Opinion (08ESMF00-2013-F-0416) (see **Appendix D**) as supporting or potentially supporting California least tern:

Mitigation Measure LETE-1 Maintenance activities in or within 600 feet of known or potential California least tern nesting habitat will be performed only during the non-nesting season between September 1 and January 31.

Mitigation Measure LETE-2 To minimize open water turbidity during the California least tern breeding season, no dredging activities will occur in California least tern foraging habitat from April 1 to August 15.

Western Snowy Plover (Federally Threatened, California Species of Special Concern)

The District will implement the following measures in parks identified in the Biological Opinion (08ESMF00-2013-F-0416) (see **Appendix D**) as supporting or potentially supporting western snowy plover:

Mitigation Measure SNPL-1 Shoreline protection and dredging activities in or within 600 feet of known or potential Western snowy plover habitat (dunes, beaches, constructed islands) will be performed only during the non-nesting season between September 1 and January 31.

Mitigation Measure SNPL-2 Should a western snowy plover be observed within or adjacent to a project area, work activities within a 50-foot radius of the bird will be suspended until the bird leaves the site voluntarily.

Salt Marsh Harvest Mouse (Federally and State Endangered, State Fully Protected)

The District will implement the following measures in parks identified in the Biological Opinion (08ESMF00-2013-F-0416) (see **Appendix D**) as supporting or potentially supporting salt marsh harvest mouse:

Mitigation Measure SMHM-1 Impacts to pickleweed will be avoided to the maximum extent feasible. Excluding outboard wave exposed levees, any vegetation clearing to be conducted in

areas containing pickleweed habitat or areas within 50 feet from the edge of pickleweed habitat will be conducted only with non-mechanized hand tools (i.e. trowel, hoe, rake, and shovel). No motorized equipment, including weed whackers or lawn mowers, will be used to remove this vegetation. Vegetation will be cleared to bare ground and removal will start at the edge farthest from the salt marsh and work towards the marsh. If a mouse of any species is observed within the areas being removed of vegetation work will cease until the mouse has left the area of its own volition.

Mitigation Measure SMHM-2 During mowing of vegetation in habitats between 50 feet to 200 feet from pickleweed habitat potentially supporting salt marsh harvest mouse during site preparation for covered maintenance activities, mowing will start from the top (the area of least suitable habitat) and proceed downslope toward more suitable habitat so any salt marsh harvest mice present in the area to be mown can move away from the disturbance of the mower and out of the mowing area. If mowing needs to occur within 50-feet of pickleweed habitat, Mitigation Measure SMHM-1, above, will be implemented prior to mowing. Immediately prior to start of mowing (even after hand-removal), a USFWS- and CDFW-approved biologist will walk the area to be mowed to look for salt marsh harvest mice and to encourage them to move out of the area. If a salt marsh harvest mouse (or mouse that could be a salt marsh harvest mouse) is detected within the area to be mowed, no mowing will occur in that area.

Mitigation Measure SMHM-3 For ground-disturbing activities in or within 50 feet of pickleweed habitat, construction boundaries will be well marked with flagging or stakes. The final design and proposed location of the boundary marking will be determined by a qualified biologist. The site will be surveyed throughout the day for any salt marsh harvest mouse individuals. Boundary flagging/staking will be removed immediately following work completion.

Tricolored Blackbird (State Threatened)

Mitigation Measure TRB-1 If a tricolored blackbird is observed in or adjacent to a work area, work will be stopped immediately and until the bird leaves the work area of its own volition and CDFW will be notified. If the tricolored blackbird does not leave the work area, work will not be reinitiated until after the CDFW are consulted regarding appropriate avoidance measures and permission is granted by the CDFW to commence work. General Avoidance Measure #7 will also be implemented, which requires a preconstruction nesting bird survey and avoidance of active nests.

Also see General Avoidance and Minimization Measure #7 (Preconstruction Nesting Bird Survey).

Delta Smelt (Federally Threatened, State Endangered)

The District will implement the following measures in parks identified in the Biological Opinion (08ESMF00-2013-F-0416) (see **Appendix D**) as supporting or potentially supporting Delta smelt.

Mitigation Measure DS-1 Disturbance activities in known or potential delta smelt habitat will be performed only between August 1 and November 30 to avoid potential impacts to this species. All projects that require work in standing water within potential delta smelt habitat will be identified as Tier 3 projects by the District. If determined necessary by CDFW based on the location and activity proposed, an ITP will be obtained prior to the commencement of work.

Longfin Smelt (Federal Candidate, State Threatened), Green Sturgeon (Federally Threatened), Steelhead (Federally Threatened), Chinook Salmon (Winter-run Endangered/Spring-run Threatened)

Mitigation Measure FISH-1 All work within tidal habitat suitable for special-status fish species will be conducted at low tide when the work area is dry. To the degree feasible, work in non-tidal aquatic habitat suitable for special-status fish will be conducted when the stream/water body is naturally dry. Work within standing water where longfin smelt, green sturgeon, chinook salmon, and/or steelhead may be present will not be conducted without appropriate approvals by the National Marine Fisheries Service, USFWS, and/or CDFW and not without an agency approved fish relocation plan. Please see General Best Management Practice #8 (Work Windows), above, for more details on work windows and consultation with NMFS.

Pallid Manzanita (Federally Threatened, State Endangered)

The District will implement the following measures in parks identified in the Biological Opinion (08ESMF00-2013-F-0416) (see **Appendix D**) as supporting or potentially supporting pallid manzanita:

Mitigation Measure PM-1 All pallid manzanita populations will be mapped using GPS prior to any construction activities. Populations or individual plants will be flagged with high visibility flagging and avoided.

Mitigation Measure PM-2 Adjacent to or within pallid manzanita populations, encroaching brush or noxious weedy vegetation will be removed by hand to protect and prevent harm to the species.

Mitigation Measure PM-3 A specific ingress/egress route that minimizes the potential spread of *Phytophthora cinnamomi*, will be identified by a USFWS- approved biologist when working in vicinity of extant populations of pallid manzanita. A wash station will be established at the

ingress/egress location. Prior to entering or exiting the ingress/ egress location, any potentially contaminated material will be removed from all boots, hand tools, clothing, and equipment, then these items will be disinfected using 70 percent isopropanol (rubbing alcohol) or another USFWS-approved substance known to disinfect P. *cinnamomi* contaminated equipment.

Mitigation Measure PM-4 Prior to conducting routine maintenance activities within the vicinity of known extant populations of pallid manzanitas, all personnel will attend an environmental awareness training session designed to inform all workers about the long-term effects of

P. cinnamomi, how it is spread, and the measures to be taken to avoid spreading it.

Other Special-Status and Protected Species

San Francisco Dusky-Footed Woodrat

Mitigation Measure SFWR-1 For projects occurring within suitable habitat for San Francisco dusky-footed woodrat, a qualified biologist or biological monitor shall survey the worksite for nests within two weeks of the proposed activities. If nests of the dusky-footed woodrat are found, the biological monitor, in consultation with the qualified biologist, shall determine an appropriate buffer distance based on the type of work being conducted.

If avoidance of woodrat nest(s) is not possible on a project site, the District shall request written permission from CDFW to conduct a phased removal of the nest(s) according to the San Francisco Dusky-Footed Woodrat Relocation Plan for the East Bay Regional Park District Routine Maintenance Activities or another CDFW-approved relocation plan. No woodrat nests may be removed without written authorization from CDFW and the qualified biologist removing a nest must be approved for the task by CDFW. If any San Francisco dusky-footed woodrats are detected within the vicinity of the work site during construction, all work shall cease in the vicinity of the individuals until they move out of the area of active construction.

Roosting Bats

Mitigation Measure BATS-1 A qualified biologist shall conduct a habitat assessment for bats at work sites where culverts, structures and/or trees would be removed or disturbed during work. The habitat assessment shall include a visual inspection of features within 50 feet of the work site for potential roosting features (bats need not be present) no more than 48 hours prior to disturbance of such features. Habitat features found during the survey shall be flagged or marked.

If any habitat features identified in the habitat assessment will be altered or directly disturbed by project activities, a phased disturbance strategy shall be employed. Non-habitat trees or structural features will be removed 1 day prior to removal of habitat features. The construction team will not attempt to directly disturb (e.g., shake, prod) roosting features, as such disturbance constitutes "harassment".

If roosting bats (individuals or colonies, not just roosting habitat) are detected during the habitat assessment, CDFW shall be notified immediately for guidance on how to proceed.

Western Pond Turtle

See General Avoidance and Minimization Measures 1 through 6, and 8 through 12.

Northern California legless lizard, coast horned lizard, San Joaquin pocket mouse

See General Avoidance and Minimization Measures 1 through 6, and 8 through 12.

San Pablo vole, salt-marsh wandering shrew

See General Avoidance and Minimization Measures 1 through 6, and 8 through 12; and Mitigation Measures SMHM-1 through SMHM-3.

San Joaquin pocket mouse

See General Avoidance and Minimization Measures 1 through 6, and 8 through 12.

American Badger

See General Avoidance and Minimization Measures 1 through 6, and 8 through 12. In addition, Mitigation Measure AB-1 would be implemented if a potential badger den is found during the preconstruction survey.

Mitigation Measure AB-1 If a potential American badger den is found during the required preconstruction survey, and if the den cannot be avoided, construction activities will be halted until the qualified biologist determines if the den is active. If the den is found to be active, then badgers may only be passively relocated when young are not present and in accordance with a CDFW-approved badger relocation plan.

Mitigation Measures for Special-Status Plants

MM Special-Status Plants-1 To the degree feasible, all staging locations will be on existing access roads/trails or other previously disturbed areas. Given the locations of typical routine maintenance and restoration projects, the District does not foresee any scenarios when it would not be feasible to locate staging areas on access roads/trails or other previously disturbed areas. However, if staging is necessary in an off-trail area with suitable habitat for special-status plants, the staging area will be included in the special-status plant survey area (see below).

MM Special-Status Plants-2 Before commencing the routine maintenance activity, a qualified botanist will survey potential habitat (if present) within and adjacent to the disturbance footprint of the activity, during the appropriate identification period for the targeted special-status plant species (as shown in the flowering phenology column of **Appendix D**). If no special-status plants are observed during appropriately timed surveys by a qualified botanist, it is assumed that the maintenance activity will have no impact on special-status plants. The surveys will be considered valid for no longer than 3 years.

MM Special-Status Plants-3 If special-status plants are identified within or adjacent to the routine maintenance area, the individuals or populations will be flagged, mapped, and quantified and reported to the CNDDB. All special-status plants will be avoided when feasible. When avoidance is feasible, a non-disturbance buffer will be established around the population during construction activities. The size of the buffer will be determined by a qualified botanist taking into consideration threats (e.g., inadvertent trampling), types of equipment to be used, and other specific activities at that location. All construction personnel will be instructed as to the location and extent of the special-status plants or populations and the importance of avoiding impacts to the species and its habitat.

If avoidance is not possible, then a Rare Plant Mitigation Plan shall be designed and implemented. CDFW approval of the Rare Plant Mitigation Plan is required before implementation of an activity that could directly or indirectly impact a federally or state listed or CRPR 1A, 1B, 2A, or 2B species, and under no circumstances will state or federally listed plants be impacted without additional consultation with appropriate regulatory agencies. At a minimum, the plan shall include the following elements:

For annual species, seed shall be collected from plants that will be impacted, seed shall be stored in an appropriate seed banking facility, and a portion of the seeds shall be redistributed in the project vicinity, as directed by a District botanist. Individual plants may also be transplanted. For perennial species, seed collection and seed banking may be augmented by transplanting entire plants or cuttings, as directed by the District botanist.

Suitable sites shall be identified and prepared for redistribution of seeds (or transplants) at mitigation ratios that are appropriate for the species lifeform (e.g., annual or perennial). Success of plant redistribution shall be based on performance standards that are calibrated by comparison to established reference populations. The plan shall outline the site preparation activities for redistribution of plants.

Monitoring surveys of the seeded or transplanted areas shall be conducted for a minimum of 2 years. The District shall prepare monitoring reports that document the monitoring results and the success of the rare plant mitigation program.

Mitigation will be deemed successful when the mitigation population provides the same ecological functions as the impacted population, after taking into account natural fluctuations in population size, health, etc. Successful redistribution requires that each of the relocated species establishes at least one stable population of approximately the same size as the impacted population, defined as species presence and population size over a 2-year period, taking into account fluctuations in local reference populations. If this goal is not achieved in 3 years, then contingency measures shall be implemented. Such measures will include evaluating the environmental or other characteristics affecting plant survival and implementing corrective measures, which may include additional seeding and planting; altering or implementing a weed control regime; or introducing or altering other management activities. Efforts shall continue until the mitigation site meets the success criteria for two consecutive years.

Project Specific Best Management Practices (BMPs) and Thresholds

Culvert Repair, Maintenance, Replacement, Upgrade, and Installation:

- 1. Whenever feasible, the District will install replacement culverts large enough to accommodate anticipated 25-year frequency storm events. This will minimize the need for follow up maintenance and stream disturbance.
- 2. Replacement culverts will be installed at the existing grade to maintain natural stream gradient and minimize under cutting and erosion.
- 3. Whenever feasible, the District will remove culverts to restore and enhance the natural stream corridor and riparian vegetation.
- 4. Whenever feasible, the District will remove culverts and replace them with clear-span bridges or armored articulated fords. This will re-establish typical stream flow and reduce erosion.
- 5. To stabilize culverts, the District will construct headwalls and tailwalls where appropriate to minimize bank erosion.

Maintenance of Sediment-Debris from Culverts:

- 1. Whenever feasible, debris will be removed from culverts using equipment operated from the top of banks and levees, or by hand crews.
- 2. Woody debris that does not block flow will be left in place to provide habitat for fish and wildlife.
- 3. During the wet season, if stream flows are threatening to overtop banks or damage existing infrastructure due to the accumulation of woody debris and excess sediment in the stream channel, this debris may be removed by hand or using equipment from top of bank outside of the April 15 to October 31 dry season work window, if all conditions of the WDR/WQC and other permits are complied with and regulatory agency staff have provided authorization for the work. In the case of an unexpected and imminent threat to life or property it may be necessary to submit after-the-fact reports of urgent debris/sediment removal.
- 4. Targeted and localized sediment removal will occur in limited areas that will not exceed 500 linear feet.
- 5. Urgent debris/sediment removal projects with a footprint of less than 40 sq ft that require removing less than 4 CY are non-reporting. This will allow the District to quickly remove small areas of debris/sediment immediately necessary to prevent flooding, property damage, and minimize erosion at any time. This work will be performed by hand crews, by the use of trucks with winches, and/or by backhoes operated from top of the bank. Woody debris which does not cause a problem of bank instability, flooding, or culvert blockage will be left in place to provide instream cover and habitat for aquatic species.

Natural stream crossings (fords):

1. Natural stream crossings shall be evaluated regularly by District staff for sediment accumulation, erosion, scouring on approaches, loose ford blocks, and other issues requiring maintenance.

Bank Stabilization and Erosion Control:

- 1. The District will use bio-engineering techniques where appropriate, such as planting riparian woody vegetation or installing willow wattles, willow mattresses, log crib- walls, log and stump deflectors, or vortex weirs to stabilize banks and reduce erosion.
- 2. Where appropriate, jute netting or other erosion control fabrics will be used to provide protection until adequate plant growth establishes to stabilize the temporarily disturbed area.
- 3. Where appropriate, creek banks will be stabilized and protected from erosion with native seed mixes of grasses and forbs that are either broadcast seeded or hydro-seeded and by planting willow, maple, alder, and other native riparian woody vegetation.
- 4. When maintaining shoreline levees and armored embankments, work will be done during low tide to the greatest extent possible to minimize the potential for sediment discharge to bay water.
- 5. Repair and stabilization of existing armored shoreline banks and levees will not exceed 500 linear feet total or 12,500 sq ft. (assuming 25 ft. width) per year at each District shoreline unit.
- 6. Repair and stabilization of existing unarmored shoreline banks and levees will not exceed 160 linear feet total or 4,000 sq ft. (assuming 25 ft. width) per year at each District shoreline unit. This includes installing riprap on unarmored levees and/or shoreline banks.

Routine Maintenance Dredging of Ponds, Lakes and Silt Basins:

- 1. When feasible, the work will be performed in dry conditions or above the water level when water is present. Otherwise, floating open water turbidity curtains will be used to contain sediment. Other methods to contain sediment may be used upon authorization by RWQCB.
- 2. Whenever feasible, dredging will be done with an excavator from the top of bank.
- 3. All removed dredged sediments will be disposed of at an appropriate upland location(s) where the spoils and decant water will not reenter a waterbody.
- 4. Removal of riparian vegetation will be minimized during dredging operations.
- 5. To properly maintain existing silt basins, ponds, lakes, and other waterbodies, dredging of these basins will generally be limited to 700 CY of material as this covers the design capacity of most District silt basins and allows for maintenance of larger water features that accumulate sediment such as the Miller Knox Lagoon. However, on a case-by-case basis the RWQCB may

authorize the removal of greater than 700 cubic yards of material for (1) sediment removal from ponds for restoration projects, and (2) to return a sediment basin to its designed capacity.

Maintenance of Existing Recreational Shoreline Facilities:

1. Whenever feasible, floating docks and gangways will utilize light transmitting materials to reduce overwater shading.

Pile repairs are generally conducted by installing a fiberglass jacket around the pile, filling the annular space with grout, and then filling the top two inches with epoxy to form a cap. Other appropriate materials and methods may be used upon RWQCB authorization.

Proposed restoration and enhancement:

While conducting routine maintenance, the District will incorporate an adaptive management strategy to improve existing conditions. Overall, implementing the above conservation measures reduces adverse effects to District lands and nearby waterbodies. The District will also restore and enhance existing ponds, streams, and other waterbodies and will focus on the enhancement and/or creation of these aquatic ecosystems, with the primary objective to promote the conservation and recovery of listed species. Habitat creation, restoration and enhancement will include, but is not limited to:

- Stream and pond restoration and creation for special status species and other aquatic species
- Removing instream man-made structures to restore natural stream processes
- Planting native riparian and wetland vegetation to improve water quality
- Controlling and removing non-native invasive species (i.e. bullfrogs, exotic fish, Chinese mitten crab etc.)
- Identifying and removing instream barriers to fish passage and barriers to movement of other aquatic species
- Installing nest boxes for riparian bird species (i.e. wood ducks, tree swallows, and flycatchers)
- Removing non-native invasive vegetation to improve wetland and/or riparian habitat conditions
- Implementing streambank bioengineering practices to reduce erosion and stabilize streambanks

Aquatic Restoration and Enhancement:

The preconstruction project list submitted by June 1st each year will include detailed descriptions and designs of proposed restoration projects for the upcoming year.

All restoration activities will have either: (1) a permanent beneficial effect to state and federally listed species or other wildlife species, (2) beneficial impacts to water quality, natural stream processes, and/or riparian habitat, or (3) no permanent adverse effects (e.g. permanent effects to hydrology, water quality, or temperature in listed species habitat will be neutral to the species) to state and federally listed species.

Pond Restoration and Enhancement:

- General pond restoration dredging will occur during dry site conditions, which may require dewatering of ponds prior to dredging activities.
- Stock ponds will only be dredged when dry and after determining that no California redlegged frogs and/or California tiger salamanders are present (or in accordance with state and/or federal take permits).

Monitoring and Reporting:

A detailed annual preconstruction report of the proposed maintenance activities to be performed each year will be prepared and submitted by June 1st each year. The report will contain preliminary jurisdictional determinations for each of the proposed projects illustrating the expected extent of waters of the State in relation to the dimensions of each proposed project (see Appendix project specific illustrations). The report will also include the following information for each project:

- 1. Project location
- 2. Project description
- 3. Amount of temporary and permanent impacts to waters of the State, to thousandth of an acre and in linear feet for impacts to creek channels or shorelines.
- 4. Detailed descriptions, designs, and performance criteria of proposed restoration projects for the upcoming year.

By February 15 of each year, the District will submit an annual post-construction report describing the activities performed the previous year and the resulting temporary and permanent impacts to waters of the State. This report will include a description of the work performed, specifically noting any changes to proposed projects from what was outlined in the preconstruction project list. At a minimum, the annual report will include the following information for that year:

- 1. A description of projects completed and their location. Any changes to the project description due to unanticipated field conditions will be identified;
- 2. The acreage of temporary and permanent impacts to waters of the State for lakes, ponds, basins, and Bay waters, and the linear feet of temporary and permanent impacts to creek

channels associated with each project;

- 3. Pre- and post-construction photos of each project site
- 4. Information regarding compensatory mitigation activities, including:
 - The number, location, type (tidal, lentic, or lotic) of mitigation sites
 - A summary of losses and gains of wetlands/waters of the State associated with each individual routine maintenance activity project, and the total compensation/restoration credits available from prior years and the current year (which is based Attachment D – Mitigation Ratios for EBRPD Routine Maintenance Activities)
 - Photographs of mitigation sites that have not yet attained their performance criteria
 - Discussions of the monitoring of restoration/enhancement sites and of each site's progress towards meeting its performance criteria

Other Regulatory Permits and Supporting Documents

U.S. Army Corps of Engineers Regional General Permit (File Number 2003-28902S) authorizes the District to conduct various routine maintenance activities. Expires October 31, 2023, and the District has submitted materials for renewal.

U.S. Army Corps of Engineers (File Number 28902S) has determined that the District's proposed routine maintenance activities appear to be covered under the *U.S. Army Corps of Engineers Proposed Procedures for Permitting Projects that will Not Adversely Affect Selected Listed* Species in California (NLAA) consultation with the National Marine Fisheries Service (NMFS).

The Army Corps of Engineers' (File Number 28902S) has determined that the proposed activities associated with the Discharger's routine maintenance activities will not adversely impact any Essential Fish Habitat (EFH) designated under the Magnuson-Stevens Fishery Conservation and Management Act. Any proposed projects that may adversely impact EFH will require a separate Section 7 authorization in consultation with the National Marine Fisheries Service (NMFS) before work may be performed on those sites.

U.S. Army Corps of Engineers (File Number 28902S) has determined that the proposed project may affect federally-listed species and their designated critical habitat. Therefore, on June 28, 2017, the Corps initiated formal section 7 consultation with U.S. Fish and Wildlife Service pursuant to the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. §1531 *et seq.*) and the implementing regulations 50 C.F.R. §§ 402.13 and 402.14. Expires October 31, 2023 and District has submitted materials for renewal.

The East Bay Regional Park District prepared a Biological Assessment titled *East Bay Regional Park District Biological Assessment on the Effects of Routine Maintenance Activities on Fifteen Federally Listed Species* – Steven Bobzien and Courtney Wilson, East Bay Regional Park District, May 23, 2017

California Department of Fish and Wildlife Master Lake or Streambed Alteration Agreement (Notification Number: 1600-2022-005-R3), August 3, 2023.

Bay Conservation and Development Commission. Expires on December 31, 2023. Renewal process has been initiated.

Appendices

- A District Map
- B Table 1: S.F. Bay Region 2 Routine Maintenance Projects Anticipated Range of Impacts
- C Waterbody Atlas for East Bay Regional Park District
- $D-Park\ District\ Lands\ with\ State\ and\ Federally\ Listed\ Species$
- E Standard Project Design Drawings



Project Type	Minimum Temporary Impact (acres)	Maximum Temporary Impacts (acres)	Minimum Permanent Impact (acres)	Maximum Permanent Impact (acres)
Culvert Repair, Replacement and Maintenance	0.0018	0.0035	0	0
Replacement Upgrade of Existing Culvert	0.0035	0.188	0.0035	0.1624
Removal of Sediment/Debris from Culverts	0.0018	0.705	0	0
Installation of New Culvert Headwalls and Tailwalls	0.018	0.066	0.018	0.066
Installation of Energy Dissipaters	0.0044	0.018	0.0044	0.008
Installation of New Armored or Natural Rock Ford- Stream Crossings	0.035	0.044	0.035	0.126
Maintenance of Existing Ford Crossings	0.005	0.011	0	0
Maintenance and Installation of Bridges	0.00044	0.013	0	0
Streambank, Shoreline, and Levee Stabilization	0.0012	0.106	0.0012	0.135
Maintenance and Replacement of Spring Boxes	0.0016	0.002	0	0
Maintenance Dredging of Silt Basins, Ponds, Lakes	0.440	1.027	0	0
Maintenance and Replacement of Recreational- Shoreline Facilities	0.022	0.265	0.001	0.003
Removal of Hazardous Structures ⁵	0.0	0.05	0.0	0.0
Removal of Vessels	0.0	0.001	0.0	0.0
Estimated Range of Impacts for Five (5) Years	0.535	2.500	0.063	0.500

Appendix B Table 1: Region 2 - S.F. Bay Routine Maintenance Projects Anticipated (5 years) Range of Impacts

Note: All projects will comply with the linear feet requirements describe in Proposed Activities. Temp/Perm linear feet of impacts for all future projects will be tracked and ranges of min/max linear feet of impacts for each activity type will be provided in future versions of this table.

⁵ The District has not yet conducted Removal of Hazardous Structures or Removal of Vessels under its Routine Maintenance Order.

 $\label{eq:construct} \mbox{Appendix } C-\mbox{Waterbody Atlas of East Bay Regional Park District}$
Waterbody Atlas for East Bay Regional Park District



Prepared by Planning, Stewardship, & GIS Services March 2011



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DATA SOURCES: Contra Costa County Department of Conservation and Development Creek and Drainage GIS Data, Oakland Museum of California Creek and Watershed GIS Data for Pleasanton, Dublin, and Western Alameda County, USGS National Hydrography Dataset, The Regional Water Quality Control Board Justicitional Boundary, and EBRPD GIS Data.









Bay Point Wetlands

Spring boxSpring head

Spring

ę

Streams

Streams and Creeks 0 Lakes and Ponds

0.25 0.5 Miles



























































Redwood & Roberts[®]

Spring boxSpring head

ę

- Streams and Creeks Lakes and Ponds

0
























Appendix D – District Lands with Federally Listed Species

					Federally Listed (Endangered or Threatened) Species															
Parkland	Park	ECC C	Total Non-	Alameda Whip-	CA Red- Legged	Central CA Tiger Salamand	Foothill Yellow- Legged	Western Pond	San Joaquin	Ridowav's	Salt Marsh Harvest	Longhorn Fairv	Vernal Pool Fairy	Vernal Pool Tadpole	Giant Garter	CA Least	Western	Delta	Longfin	Pallid
Units	Acres	НСР	НСР	snake	Frog	er	Frog	Turtle	Kit Fox	Rail	Mouse	Shrimp	Shrimp	Shrimp	Snake	Tern	Plover	Smelt	Smelt	Manzanita
CHABOT	3,314.26		3,314.26	3,314.26																
² ANTIOCH/OAK LEY SHORE	6.32		6.32												6.32			6.32	6.32	
3 ARDENWOOD	208.00		208.00																	
⁴ BAY POINT	149.70		149.70								149.70							149.70	149.7	
⁵ BIG BRK/DELTA REC	1,648.00		1,648.00					1,648.00			1,648.00				1,648.00			1,648.00	1,648.00	
6 BISHOP RANCH	806.13		806.13	806.13																
7 BLACK DIAMOND MINES	5,580.20	462.75	5,117.45	5,117.45	5,117.45	5,117.45		5,117.45	5,117.45											
8 BRIONES	6,255.18		6,255.18	6,255.18	6,255.18			6,255.18												
9 BROOKS ISLAND	372.82		372.82					372.82								372.82	372.82		372.82	
10 BROWN'S ISLAND	595.00		595.00								595.00				595.00			595.00	595.00	
¹¹ BRUSHY PEAK	1,979.07		1,979.07	1,979.07	1,979.07	1,979.07			1,979.07			1,979.07	1,979.07	1,979.07						
12 BYRON VERNAL POOLS	1,472.45	1,472.4	0.00		0.00	0.00			0.00			0.00	0.00	0.00						
¹³ CARQUINEZ ST SHORE	1,568.27		1,568.27															1,568.27	1,568.27	
14 CLAREMONT	208.31		208.31	208.31																
¹⁵ CLAYTON PANICU	4,078.50	3,016.8	1,061.69	1,061.69	1,061.69	1,061.69		1,061.69												
¹⁶ THURGOOD	2,608.00	400.90	2,207.10	2,207.10	2,207.10	2,207.10		2,207.10												
17 CONTRA LOMA	779.35		779.35	779.35		779.35		779.35	779.35											
¹⁸ COYOTE HILLS	1,274.05		1,274.05								1,274.05									
19 CROCKETT HILLS	2,124.75		2,124.75																	
²⁰ CROWN BEACH SHORE	386.89		386.89							386.89							386.89		386.89	
²¹ CULL CANYON	360.00		360.00	360.00																
22 DEER VALLEY	3,076.58	3,076.5	0.00	0.00	0.00	0.00		0.00	0.00											
23 DEL VALLE	4,395.21		4,395.21	4,395.21	4,395.21	4,395.21	4,395.21	4,395.21	1	1		1			1	1	1	ł	1	<u> </u>
24 DELTA ACCESS	1,011.95	640.16	371.79	1			1		371.79						371.79					
²⁵ DIABLO FOOTHILLS	1,060.00		1,060.00	1,060.00	1,060.00															
26 DON CASTRO	101.00		101.00	101.00			1													

Appendix D. Acres of Species Distributional Range on the District Parkland Units and East Contra Costa County Habitat Conservation Plan (ECCCHCP) Preserves District Lands

					Federally Listed (Endangered or Threatened) Species															
Parkland Units	Park Acres	ECC C HCP	Total Non- HCP	Alameda Whip- snake	CA Red- Legged Frog	Central CA Tiger Salamand er	Foothill Yellow- Legged Frog	Western Pond Turtle	San Joaquin Kit Fox	Ridgway's Rail	Salt Marsh Harvest Mouse	Longhorn Fairy Shrimp	Vernal Pool Fairy Shrimp	Vernal Pool Tadpole Shrimp	Giant Garter Snake	CA Least Tern	Western Snowy Plover	Delta Smelt	Longfin Smelt	Pallid Manzanita
27 DOOLAN CANYON	640.00		640.00		640.00	640.00		640.00	640.00											
28 DRY CREEK PIONEER	1,626.45		1,626.45	1,626.45	1,626.45	1,626.45														
29 DUBLIN HILI	s 654.22		654.22	654.22	654.22															
30 GARIN	4,215.24		4,215.24	4,215.24	4,215.24	4,215.24														
31 HAYWARD SHORELINE	1,815.05		1,815.05							1,815.05	1,815.05					1,815.05	1,815.05		1,815.05	
32 HUCKLEBER	AY 240.33		240.33	240.33																240.33
33 KENNEDY GROVE	221.46		221.46	221.46																
34 LAKE CHABC	т 1,755.22		1,755.22	1,755.22																
35 LAS TRAMPAS	5,657.43		5,657.43	5,657.43	5,657.43	5,657.43		5,657.43												
³⁶ LEONA CANYON	289.64		289.64	289.64																
37 LITTLE HILLS RANCH	100.00		100.00	100.00				100.00												
³⁸ M L KING, JR SHORE	748.52		748.52							748.52	748.52						748.52		748.52	
39 MARTINEZ SHORELINE	343.00		343.00							343.00	343.00							343.00	343.00	
40 MCLAUGHLII EASTSHORE	N 1,849.51		1,849.5 1							1,849.51	1,849.51								1,849.51	
41 MILLER/KNO SHORE	X 306.51		306.51																306.51	
42 MISSION PEA	к ^{3,023.55}		3,023.5 5	3,023.55	3,023.55	3,023.55														
43 MORGAN TERRITORY	5,320.65	604.84	4,715.8	4,715.81	4,715.81	4,715.81		4,715.81		1		ľ								
44 OHLONE	9,049		9,049	9,049	9,049	9,049	9,049	9,049												
⁴⁵ OYSTER BAY SHORE	194.78		194.78							194.78	194.78								194.78	
46 PLEASANTON RIDGE	9,086.07		9,086.0 7	9,086.07	9,086.07	9,086.07		9,086.07												
47 PT ISABEL SHORE	22.70		22.70							22.70	22.70								22.70	
48 PT PINOLE SHORE	2,444.95		2,444.9		1					2,444.95	2,444.95				1				2,444.95	1
49 QUARRY LAKES	471.25		471.25		1			471.25		1					1					1
50 RANCHO PINOLE	1,053.00		1,053.0	1,053.00	1,053.00															1
51 REDWOOD	1,831.59		1,831.5 9	1,831.59						1										1,831.59

Appendix D. Acres of Species Distributional Range on the District Parkland Units and East Contra Costa County Habitat Conservation Plan (ECCCHCP) Preserves District Lands

						Federally Listed (Endangered or Threatened) Species															
Pa U	arkland nits	Park Acres	ECC C HCP	Total Non- HCP	Alameda Whip- snake	CA Red- Legged Frog	Central CA Tiger Salamand er	Foothill Yellow- Legged Frog	Western Pond Turtle	San Joaquin Kit Fox	Ridgway's Rail	Salt Marsh Harvest Mouse	Longhorn Fairy Shrimp	Vernal Pool Fairy Shrimp	Vernal Pool Tadpole Shrimp	Giant Garter Snake	CA Least Tern	Western Snowy Plover	Delta Smelt	Longfin Smelt	Pallid Manzanita
52	ROBERTS	86.92		86.92	86.92																
53	ROUND VALLEY	1,910.42		1,910.4 2	1,910.42	1,910.42	1,910.42		1,910.42	1,910.42											
54	SAN PABLO BAY SHORE	321.81		321.81							321.81	321.81								321.81	
55	SHADOW CLIFFS	265.80		265.80					265.80												
56	SIBLEY	928.08		928.08	928.08																928.08
57	SOBRANTE RIDGE	277.02		277.02	277.02	277.02															277.02
58	SUNOL	6,858.42		6,858.4 2	6,858.42	6,858.42	6,858.42	6,858.42	6,858.42												
59	SYCAMORE VALLEY	695.49		695.49		695.49															
60	TEMESCAL	49.92		49.92					49.92												
61	TILDEN	2,078.79		2,078.7 9	2,078.79	2,078.79															2,078.75
62	VARGAS PLATEAU	1,249.02		1,249.0 2	1,249.02	1,249.02	1,249.02		2,078.79												
63	VASCO CAVES	719.84		719.84		719.84	719.84			719.84			719.84	719.84	719.84						
64	VASCO HILLS	3,662.14	3,499.3 8	162.76		162.76	162.76			162.76			162.76	162.76	162.76						
65	WATERBIRD	197.83		197.83					197.83			197.83									
66	WILDCAT CANYON	2,789.15		2,789.1 5	2,789.15				2,789.15												
·	Parklands (Acres)	120,471.08	13,173. 86	107,297 .22	87,341.90	75,748.5 6	64,454.21	20,302.63	70,677.12	11,680.68	8,127.21	11,604.90	2,861.67	2,861.67	2,861.67	2,621.11	2,187.87	3,323.28	4,310.29	12,773.83	5,355.77
	Trails (Acres)	1,735.31	0.00	1,735.3 1	1,441.72	1,116.66	55.42	0.00	30.87	55.42	64.48	0.03	0.00	0.00	0.00	15.48	0.00	0.00	83.23	89.78	0.00
	Total Acres	122,206.39		109,032 .53	88,783.62	76,865.2 2	64,509.63	20,302.63	70,708	11,736.10	8,191.69	11,604.93	2,861.67	2,861.67	2,861.67	2,636.59	2,187.87	3,323.28	4,393.52	12,863.61	5,355.77
	Percentage of Total Land				81.43%	70.50%	54.7%	18.62%	64.85%	10.70%	7.47%	10.58%	2.61%	2.61%	2.61%	2.40%	1.99%	2.70%	4.00%	11.8%	4.88%

Appendix D. Acres of Species Distributional Range on the District Parkland Units and East Contra Costa County Habitat Conservation Plan (ECCCHCP) Preserves District Lands

¹Potential Regional Park pending land transfer; ²These acreage are to indicate species range and potential presence <u>only</u>, because (1) the entire distributional range overestimates the actual extent of suitable habitat, (2) not all land cover types within the District are natural open space land, and (3) not all potentially suitable habitat is occupied by the covered species. For Delta Smelt and Longfin Smelt, "total acreage" is grossly overestimated because only shoreline/tidal areas within those parks provide suitable habitat.

NOTE: Park Acres subject to change based on acquisition of new lands and therefore may not be precise. Regional Trails/Interpark Trails not specifically addressed in Table 1.

Appendix F – Standard Project Design Drawings



NOTES AND SPECIFICATIONS

GENERAL

- 1. ARTICULATED FORD CROSSINGS REQUIRE APPROVAL OF A PARK DISTRICT ENGINEER TO VERIFY APPLICABILITY OF THIS STANDARD DETAIL.
- 2. STANDARD DETAIL MAY ONLY BE USED IN AN EPHEMERAL STREAM TO REPLACE CULVERTS OR TO ARMOR AN EXISTING FORD. ALTHOUGH THE DETAIL CAN BE USED TO REPLACE CULVERTS UP TO 36". IT IS EXPECTED THAT MOST CULVERTS WILL BE 24" OR LESS.
- 3. FORD CAPACITY WILL BE COMPARED WITH THE CALCULATED 100-YEAR FLOW TO DETERMINE IF WATER DEPTH AND FREEBOARD ARE ACCEPTABLE FOR EACH LOCATION.
 - 3.1. MINIMUM FREEBOARD TO BE 1.0' MEASURED VERTICALLY, EXCEPT
- 4. STANDARD DETAIL MAY NOT BE USED FOR TRAILS FREQUENTED BY HEAVY VEHICLES. SANITATION TRUCKS AND SIMILAR HEAVY VEHICLES MAY DAMAGE THE FORD IN SATURATED CONDITIONS.
- 5. THE MINIMUM WIDTH AND MAXIMUM SIDE SLOPES OF THE FORD ARE REQUIRED FOR VEHICLE PASSAGE. THE WIDTH MAY BE INCREASED AND SIDE SLOPES DECREASED TO MORE CLOSELY MATCH THE EXISTING CHANNEL UPSTREAM AND DOWNSTREAM OF THE FORD. THE FORD MAY NOT RESTRICT CHANNEL FLOW. IN MOST CONDITIONS WHERE A CULVERT IS BEING REMOVED, THE FORD WILL BE WIDER THAN THE STREAM CHANNEL AND GRADING TRANSITIONS WILL BE REQUIRED.
- 6. DISCONNECT THE TRAIL FROM THE STREAM CROSSING BY DIVERTING TRAIL SURFACE WATER WATER AWAY FROM THE CROSSING. IF THE TRAIL IS STEEP OR KNOWN TO RUT, PROTECT THE CROSSING BY INSTALLING A DIP IN THE TRAIL ON THE UPHILL SIDE OF THE CROSSING TO DIVERT WATER AWAY FROM THE FORD.
- 7. FORD CROSSINGS ARE DANGEROUS FOR VEHICLES TRAVELING AT HIGH SPEEDS. LOCATE CROSSINGS WHERE THERE IS GOOD SITE DISTANCE. INSTALL WARNING SIGNS FOR VEHICLES ON THE TRAIL APPROXIMATELY 100 FEET AWAY FROM THE CROSSING IN BOTH DIRECTIONS, AND INSTALL OBJECT MARKERS TO DELINEATE THE CROSSING WHEN SUBMERGED.

MATERIALS

- 8. INTERLOCKING PRECAST CONCRETE CELLULAR BLOCKS (REVETMENT)
 - 8.1. MIN 4 INCHES THICK WITH NOMINAL WIDTH AND LENGTH OF 12 BY 16 INCHES.
 - 8.2. CONCRETE TO HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI AT 28 DAYS.
 - 8.3. OPEN CELL DESIGN FOR THE PLACEMENT OF POROUS FILL.
 - 8.4. BLOCKS SHALL BE ARMORLOC 3510, CONTECH CONSTRUCTION PRODUCTS, INC., OR EQUAL.
- 9. RSP (ROCK SLOPE PROTECTION) ROCK
 - 9.1. ROCKS TO BE CLASS I (6") PER 2022 CALTRANS STANDARD SPECIFICATIONS SECTION 72.
- 10. BEDDING AND BACKFILL MATERIAL SHALL BE CLASS 2 PERMEABLE MATERIAL PER 2022 CALTRANS STANDARD SPECIFICATIONS SECTION 68-2.02F(3).
- 11. BRIDGING ROCK. 2" ANGULAR GRAVEL OR CRUSHED ROCK.

EXECUTION

- 12. GRADING

 - AWAY FROM DRAINAGE.
- 13. BEDDING, BACKFILL MATERIAL, AND BRIDGING ROCK SHALL BE WELL CONSOLIDATED TO STABLE. MOISTURE CONDITIONING AND TESTING IS NOT REQUIRED.
- 14. CONCRETE BLOCKS SHALL BE CAREFULLY PLACED TO PROVIDE A UNIFORM SURFACE.
- 15. SWEEP BEDDING AND BACKFILL MATERIAL OVER REVETMENT SURFACE TO FILL VOIDS.
- 16. FILL VOIDS IN RSP WITH SOIL TO PROMOTE VEGETATION GROWTH DOWN TO THE SAME ELEVATION A ERTHEABLER OUNDING VEGETATION. MATERIAL GRADATION REQUIREMENTS

SIEVE SIZE	PERCENTAGE PASSING								
1"	100								
3/4"	90-100								
3/8"	40-100								
No. 4	25-40								
No. 8	18–33								
No. 30	5-15								
No. 50	0-7								
No. 200	0-3								
MUST HAY EQUIVALEI LESS 1	VE A SAND NT OF NOT THAN 75								



ARTICULATED FORD

APPROVED BY THE CHIEF OF DESIGN & CONSTRUCTION

12.1. EXCAVATE TO SUBGRADE. IF VERY SOFT SUBGRADE MATERIALS ARE ENCOUNTERED BELOW WHERE THE REVETMENT IS TO BE PLACED, EXCAVATE AN ADDITIONAL 6", AND IF THE SUBGRADE IS STILL VERY SOFT, PLACE BRIDGING ROCK. IF THE MATERIAL IS SOUND, PLACE BRIDGING ROCK OR AN ADDITIONAL THICKNESS OF GRANULAR BEDDING. 12.2. PLACE AND COMPACT EXCESS EXCAVATED MATERIAL ONTO EXISTING TRAIL AREAS

PROVIDE A FIRM REGULAR SURFACE. WORK WITH A MECHANICAL METHOD, SUCH AS A ROLLER, VIBRATORY PAD, OR REPEATEDLY CROSSING WITH A VEHICLE UNTIL MATERIAL IS



FORD (CAPACITY, W	VATER DEP	ΓH, AND S	SLOPE – <u>4</u>	.0' BOTTOM	<u>M WIDTH</u>					
DIMENS WATER IN	ONS OF CHANNEL	FLOV	VQINC	FS AT DIFF	ERENT SLO	PES					
DEPTH "d"	WIDTH "b"	1.0%	2.0%	3.0%	4.0%	5.0%					
0.10'	4.80'	0.53	0.75	0.92	1.06	1.19					
0.20'	5.60'	1.76	2.48	3.04	3.51	3.93					
0.30'	6.40'	3.60	5.09	6.24	7.20	8.05					
0.40	7.20'	6.07	8.59	10.52	12.15	13.58					
0.50'	8.00'	9.20	13.02	15.94	18.41	20,6					
0.60'	8.80'	13.02	18.41	22.6	/26.0//	/29.1/					
0.70' 6.40' 17.56 24.8 30.4 35,1											
0.80	7.20'	22.9	32.3	/39.6//	/45.7//	/51.1/					
0.90'	8.00'	29.0	41.0	50.2	/_57,9//	64,8					
1.00'	8.80'	35.9	50.8	62.2//	//71.8//	80.3					
DIMENSIONS OF WATER IN CHANNEL FLOW Q IN CFS AT DIFFERENT SLOPES											
DEPTH	DEPTH WIDTH 1.0% 2.0% 3.0% 4.0% 5										
0.10'	6.80'	0.79	1 1 1	1 36	1 58	1.76					
0.10	7 60'	2.56	3.62	4.44	5.13	5.73					
0.30'	8 40'	5.18	7.32	8.96	10.35	11.57					
0.40	9.20'	8.60	12.16	14.89	17.20	19.23					
0.50'	10.00'	12.84	18.15	22.23	25.67	/28.7//					
0.60'	10.80'	17.91	25.33	31.02	/ 35,82 /	40,05					
0.70'	11.60'	23.8	33.7	41.3/	/ / 47.7 / /	53,3					
0.80	12.40'	30.7	43.4	//53.1//	/61.3//	68.6					
0.90'	13.20'	39.4	54.3	66.5	//76,8//	85,9					
1.00'	14.00'	47.1	66.6	//81.5//	//94.1//	105					
FLOW VE LARGER Q = (1.) n = 0.0 A = WA R = A/R P = WE S = SLO	LOCITIES IN RSP ROCK 49/n)*A*R ^G 25 IER SECTIO D ITED PERIN DPE (1% to	N SHADED MAY BE F 2/3)*S ^(1/2) ≮: N AREA IETER 5 5%)	AREA OF REQUIRED	TABLE EXC "t ODE 4.0' T	EED 6.5 F	PS AND					
						STD DTL					
THE CHIEF OF DE	SIGN & CONS				05/26/20	SHEET 3 OF 3					
BAY REGION	JAL PARK		t - stan	IDARD DE	ETAILS	NOT TO SCAL					





% TED NATIV NESS OF " S SECTION		CONFOR EXISTING CH RSP L2		
PROTECTIO	N (RSP) DIME	INSIONS		
L1 N LENGTH IPSTREAM	W1 MIN WIDTH UPSTREAM	L2 MIN LENGTH DOWNSTREAM	W2 MIN WIDTH DOWNSTREAM	
2'-0"	4'-0"	4'-0"	4'-0"	
3'-0"	6'-0"	5'-0"	6'-0"	
4'-0"	8'-0"	6'-0"	8'-0"	
ES FOR RE FILL GAPS E ROCKS. CESSIVE EI OF CULVE STING STAB	PLACING ENER OR EXTEND T THE OBJECTIV ROSION DUE ERTS. THE RO LE ROCKS MA	RGY DISSIPATE HE RSP ONLY E IS TO PLAC TO THE CONC CK CLASS NC AY ALSO BE U	RS WHICH WHERE CE THE ENTRATED DTED IS JSED TO	
				_
STRUCTION	T - STANDA		26/2023 SHEET 1 OF STREET ST	3

-CULVERT **N**2 L2

(E)

ENERGY DISSIPATER

-PER RSP DIMENSION

TABLE BELOW



CULVERT EMBEDMENT NOTES

- 1. ALL CULVERTS TO BE INSTALLED WITH INVERTS BELOW THE STREAM CHANNEL FLOWLINE.
- 2. STANDARD CULVERTS TO BE INSTALLED WITH INVERTS APPROXIMATELY $\frac{1}{12}$ of the culvert DIAMETER BELOW THE CHANNEL FLOWLINE AS NOTED IN TABLE 2 BELOW.
- 3. EMBEDDED CULVERTS TO BE INSTALLED IN SALMONID BEARING STREAMS AS RECOMMENDED BY THE EBRPD STEWARDSHIP DEPARTMENT.
 - 3.1. EMBEDDED CULVERTS TO BE LIMITED TO CULVERTS WITH A MAXIMUM SLOPE OF 4% AND MAXIMUM LENGTH OF 30'.
 - 3.2. INCREASE SIZE OF EMBEDDED CULVERTS ONE SIZE TO MAINTAIN CAPACITY OF STANDARD CULVERT.
 - 3.3. SEE TABLE 2 BELOW FOR INVERT EMBEDMENT.

TABLE 2: EMBEDDED INVERT REPLACEMENT CULVERT												
STANDARD CULVERT DIAMETER	STANDARD INVERT EMBEDMENT	EMBEDDED CULVERT DIAMETER	INVERT EMBEDMENT									
12"	1.0"											
18"	1.5"	18"	6"									
24"	2.0"	24"	6"									
30"	2.5"	30"	6"									
36"	3.0"	36"	6"									
42"	3.5"	42"	12"									
48"	4.0"	48"	12"									
60"	5.0"	60"	12"									



	427			7	<u>= 20</u> .		
			/ _	- 1	- 40	~	~
	70					/-	
	36-			∕ ∓			
	33–	- /	<u> </u>	∠∔	, 20	'	
	30-				- 15	/-	
	27-				-/10	-	
_	24-		,	1	-8.0	-/	<i>[</i>
ches)	21-	- /			-5.0	/	/
, (In					- 3.0	/	
ER 'I	18–	Z	, S/		2.0	CFS)	
METI	15_	الد		$\sqrt{4}$	-1.5	č o	
DIA	2		10 ^m	ŧ	-1.0	א	
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CULV	12-	2				DISC	
	TABL	E 3:		NO ⁻	TES_		
VER1	CAF	PACITY (C	;FS)		T • F •		
	-			1.	IABL	<u>-</u> E 3	LI

HW/D = 1.5

60

54

T-1.000

800

600

-500 400

300

·200

ULVERT C	APACITY	(CFS)		
CULVERT	нพ	/D	1.	
SIZE	1.0	1.5		CON
12"	2.1	3.2	2.	HW/ WHE
18"	5.7	8.4	_	PRE
24"	11.5	18	3.	EDIT
30"	20	32		FEDI
36"	32	49		
42"	47	72		
48"	65	100		JISC
60"	111	175		JR



+ 3.0

+2.0

CULVERT REPLACEMENT

APPROVED BY THE CHIEF OF DESIGN & CONSTRUCTION

CULVERT REPLACEMENT NOTES AND SPECIFICATIONS

<u>GENERAL</u>

- 1. THIS STANDARD DETAIL APPLIES TO TYPICAL CONDITIONS ENCOUNTERED IN CULVERT REPLACEMENT. THIS DETAIL MAY NOT BE USED TO INSTALL A NEW CULVERT WHERE ONE DOES NOT ALREADY EXIST.
- 2. LENGTH OF CULVERT SHALL NOT BE INCREASED UNLESS EXISTING CULVERT IS TOO SHORT TO MAINTAIN THE EXISTING TRAIL WIDTH. IN WHICH CASE CULVERT LENGTH MAY BE INCREASED A MAXIMUM OF 5 FEET AT ONE OR BOTH ENDS. CULVERT MAY BE EXTENDED TO RESTORE TRAIL WIDTH BUT NOT TO INCREASE IT.
- 3. DIAMETER OF CULVERT WILL BE CHECKED BY ANALYSIS OF THE 100-YEAR RAIN EVENT. ADDITIONALLY, FIELD EVIDENCE THAT THE CULVERT SIZE IS INADEQUATE, SUCH AS OVERTOPPING, MAY BE USED TO INCREASE THE CULVERT TO THE NEXT LARGER STANDARD SIZE. TABLE 3 ON SHEET CR-2 MAY BE USED TO DETERMINE CULVERT CAPACITY.
- 4. SEE NOTES ON SHEET 2 FOR EMBEDDED CULVERTS IN SALMONID BEARING STREAMS.

MATERIALS

- 5. CULVERT
 - 5.1. MATERIAL SELECTION DEPENDS ON SITE CONDITIONS. HDPE SHALL NOT BE USED IN DENSELY FORESTED AREAS WITH HIGH FIRE DANGER. GALVANIZED STEEL SHALL NOT BE USED WHERE THE CULVERT DISCHARGES TOWARD SPAWNING FISH. ALUMINUM COATED STEEL SHALL BE USED WHERE THERE IS A HIGH FIRE DANGER AND THERE MAY BE SPAWNING FISH.
 - 5.2. HDPE PIPE
 - 5.2.1. HDPE PIPE SHALL BE TYPE S CORRUGATED POLYETHYLENE PIPE WITH SMOOTH INTERIOR PER CALTRANS STANDARD SPECIFICATIONS, SECTION 64-2.02A.
 - 5.2.2. HDPE COMPOUNDS USED IN THE MANUFACTURER OF POLYETHYLENE PIPE AND FITTINGS SHALL COMPLY WITH AASHTO M 294. EXCEPT THE MIX MUST CONTAIN FROM 2 TO 4% WELL-DISPERSED CARBON BLACK.
 - 5.2.3. JOINTS SHALL BE GASKETED AND WATERTIGHT TO 10.8 PSI PER ASTM D3212.
 - 5.3. CORRUGATED STEEL PIPE
 - 5.3.1. CORRUGATED STEEL MATERIALS TO COMPLY WITH AASHTO M36 AND BE FABRICATED WITH EITHER ZINC-COATED OR ALUMINUM COATED STEEL PER CALTRANS STANDARD SPECIFICATIONS. SECTION 66-1.02E.
 - 5.3.2. ZINC-COATED STEEL SHEET TO COMPLY WITH AASHTO M218
 - 5.3.3. ALUMINUM-COATED STEEL TO BE TYPE 2 AND TO COMPLY WITH AASHTO M274
 - 5.3.4. JOINTS SHALL BE WATERTIGHT UNDER PRESSURE PER CALTRANS STANDARD SPECIFICATIONS, SECTION 66-1.02D.
- 6. RSP ROCK
 - 6.1. RSP MATERIAL PER CALTRANS STANDARD SPECIFICATIONS, SECTION 72-2.02.
 - 6.2. ROCK SHALL BE ANGULAR MATERIAL. ROUNDED ROCK, SUCH AS RIVER ROCK IS NOT ALLOWED.
- 7. BEDDING
 - 7.1. CRUSHED ROCK (CHIPS).
 - 7.2. MATERIAL SHALL CONTAIN AT LEAST 75% OF THE PARTICLES HAVING ONE OR MORE FRACTURED FACES. NOT OVER 25% SHALL BE PIECES THAT SHOW NO SUCH FACES **RESULTING FROM CRUSHING.**
 - 7.3. THE MATERIAL SHALL BE OF SUCH SIZE THAT THE PERCENTAGE COMPOSITION BY

WEIGHT,	AS	DETERMINED	ΒY	LABO
GRADUA	TION	IS:		

SIEVE SIZE	% PASSI
1-11/2"	100
NO. 4	25 - 70
NO. 50	5 — 20
NO. 200	0 - 5

7.4. ALTERNATIVELY, $\frac{3}{4}$ " CLASS 2 AB MY BE USED FOR BEDDING WITH PROPER COMPACTION EQUIPMENT.

WORKMANSHIP

- 8. DO NOT REMOVE MORE MATERIAL THAN NECESSARY TO REPLACE CULVERT.
- SHALL BE INSTALLED WATERTIGHT PER MANUFACTURER'S RECOMMENDATIONS.
- 10. BACKFILL
 - AROUND THE CULVERT WITHOUT DAMAGING THE CULVERT.
 - 10.2. PLACE BACKFILL MATERIALS IN LIFTS NOT GREATER THAN 8-INCHES IN NON-COMPACTED OR UNCONSOLIDATED THICKNESS.
- 11. RSP ROCK PLACEMENT
 - CULVERT.
 - (DUMPING). ADJUST TOP LAYER TO STABILIZE ROCKS.
 - HEADWALLS ARE PLACED UP AGAINST NEWLY COMPACTED SOIL.
 - SAME ELEVATION AS THE SURROUNDING VEGETATION.



RATORY SIEVES WILL CONFORM TO THE FOLLOWING

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9. CULVERTS SHALL BE INSTALLED IN A SINGLE LENGTH WHERE POSSIBLE. REQUIRED JOINTS

10.1. THE BACKFILL AND BEDDING MATERIALS PROVIDE THE CULVERT STRENGTH, SO IT IS CRITICAL THAT THE MATERIALS BE WELL CONSOLIDATED OR COMPACTED COMPLETELY

11.1. DO NOT REMOVE EXISTING STABLE ROCKS EXCEPT AS NEEDED TO REPLACE

11.2. PLACE ROCKS BY CALTRANS METHOD 'A' (INDIVIDUALLY PLACED ROCKS) OR 'B'

11.3. THE ROCK PROVIDED MEETING THE CALTRANS SPECIFICATION MAY NOT HAVE ENOUGH OF THE SMALLER MATERIAL SIZE TO PROVIDE A DENSE PROTECTIVE ROCK LAYER. ADDITIONAL SMALLER ROCK, INCLUDING BEDDING MATERIAL, MAY BE ADDED TO FILL THE LARGER VOIDS. THIS IS PARTICULARLY IMPORTANT WHERE THE 11.4. FILL VOIDS IN RSP WITH SOIL TO PROMOTE VEGETATION GROWTH DOWN TO THE

> **CR-1** 05/26/2023 SHEET 3 OF 3 EAST BAY REGIONAL PARK DISTRICT - STANDARD DETAILS NOT TO SCALE

STD DTL



NOTES

- 1. THIS CRIB WALL DETAIL IS TO BE USED TO RESTORE AND STABILIZE THE ERODED BANK OF A POND OR CHANNEL.
- 2. ANALYZE STABILITY OF CRIB WALL TO DETERMINE FACE BATTER, BACK SLOPE, AND LENGTH OF STRETCHER LOGS.
- 3. ANALYZE BUOYANCY TO DETERMINE IF ADDITIONAL BOULDERS AND ANCHORAGE ARE REQUIRED
- 4. LIVE WILLOW STAKES TO BE LOCALLY SOURCED.
- 5. REFER TO THE CDFW SALMONID STREAM HABITAT RESTORATION MANUAL FOR ADDITIONAL INFORMATION
- ORIGINAL SLOPE-EXISTING ERODED SLOPE-BACK SLOPE OF STRETCHER LOGS-FACE BATTER-NOTCH AND/OR PIN LOGS TO SECURE CROSSINGS-WILLOW STAKES THROUGH JUTE NETTING (OR SIMILAR DECOMPOSING EROSION FABRIC) TO-FILL NEAR-VERTICAL SPACE BETWEEN LOGS CONTINUOUS HORIZONTAL FACE LOGS-STRETCHER LOGS SPACED 6'±-FILL FACE OF LOWER ROWS WITH ROCKS BELOW LEVEL WHERE VEGETATION WILL GROW PLACE LARGEST LOGS AT BASE AND DECREASE SIZE GOING UP BOTTOM OF CHANNEL EXCAVATE APPROX 2' BELOW BOTTOM OF CHANNEL FOR SCOUR PROTECTION





BANK STABILIZATION - LOG CRIB WALL

APPROVED BY THE CHIEF OF DESIGN & CONSTRUCTION





NOTES AND SPECIFICATIONS

GENERAL

- 1. THIS DETAIL MAY BE USED TO RESTORE AND STABILIZE AN ISOLATED AREA OF A POND OR CHANNEL BANK WHERE EROSION IS THREATENING INFRASTRUCTURE. THIS DETAIL SHOULD ONLY BE USED AFTER OTHER MORE NATURAL VEGETATIVE OPTIONS HAVE BEEN CONSIDERED.
- 2. ENGINEER TO VERIFY STABILITY OF SELECTED RSP ROCK CLASS FOR THE SITE CONDITIONS.

MATERIALS

- 3. RSP ROCK
 - 3.1. 2022 CALTRANS STANDARD SPECIFICATIONS, SECTION 72-2.02.
 - 3.2. ANGULAR ROCK MATERIAL. ROUNDED ROCK IS NOT ALLOWED.
- 4. AGGREGATE FILTER MATERIAL
 - 4.1. FILTER AGGREGATE SHALL BE CRUSHED ROCK. GRAVEL, ROCK CHIPS OR SIMILAR DURABLE ANGULAR MATERIAL.
 - 4.1. FINE FILTER AGGREGATE: CLASS 2 PERMEABLE MATERIAL PER 2022 CALTRANS STANDARD SPECIFICATIONS SECTION 68-2.0F(3). SEE TABLE 3 FOR GRADATION.
 - 4.2. COURSE FILTER AGGREGATE. SEE TABLE 2 FOR COURSE FILTER MATERIAL TO BE USED WITH CLASS II THROUGH CLASS V RSP ROCK ONLY.
 - 4.3. IF FILTER FABRIC IS REQUIRED FOR A PARTICULAR PROJECT, THE ENGINEER WILL PROVIDE JUSTIFICATION AND DETAILS IN THE PROJECT AUTHORIZATION REQUEST.

EXECUTION

- 5. DEPTH OF TOE TRENCH SHALL BE MEASURED BELOW FIRM SUBSTRATE AND POTENTIAL SCOUR.
- 6. PLACE EXCAVATED SOIL ON SLOPE AND SMOOTH SLOPE TO REMOVE IRREGULARITIES PRIOR TO INSTALLING FINE FILTER AGGREGATE THEN COVER WITH COURSE FILTER AGGREGATE.
- 7. ROCK PLACEMENT PER METHOD B, CALTRANS STANDARD SPECIFICATION, SECTION 72-2.03C. ROCKS MAY BE PLACED BY DUMPING AND MAY BE SPREAD IN LAYERS BY BULLDOZERS OR OTHER SUITABLE EQUIPMENT.
- 8. THE LARGEST ROCKS SHALL BE PLACED IN THE TOE TRENCH. THE SMALLER PIECES OF THE RSP ROCK SHALL BE PLACED ON SLOPE OVER THE COURSE FILTER AGGREGATE PRIOR TO THE INSTALLATION OF THE LARGER ROCKS. SOME SMALLER ROCKS SHALL BE SAVED TO FILL SPACES BETWEEN LARGER ROCKS ON THE COMPLETED SLOPE.

NOMINAL RSP DARDELAN NOMINAL RSP MEDIAN CLASS BY MEDIAN DECIMAN CLASS BY MEDIAN DECIMAN PARTICLE DARDELON CASS BY MEDIAN DECIMAN PARTICLE DARDELON DARDELON DARDE		TABLE 1. BOOK OBADATION AND DIMENSIONS FOR BSD									TABLE 2: TABLE 3:			
NOMMAL RSP PARTICLE d = 15% d = 50% d = 100% High Free Percentace Free Percentace Percentace<		··· ·								COURSE MATERIAL	FILTER GRADATION	CLASS 2 MATERIAL	PERMEABLE GRADATION	
CLASS DIAMETER W-SOT MIN MAX MIN MAX MAX MIN 2.5" 80-907 0.75" 90-1008 II 9" 60 Lbs 5.5" 7.8" 8.5" 10.5" 18.0" 1.5" 1.0" 40-702 0.38" 40-1008 III 12" 150 Lbs 7.3" 10.5" 11.5" 1.0" 1.5" 10-207 No. 4 25-400 IV 15" 300 Lbs 9.2" 13.0" 14.6" 17.5" 30.0" 2.5" No. 200 5% MAX No. 8 18-33% V 18" 14.0" 15.5" 17.0" 2.0" 3.0" PLTER CRITENAL (bg/cdgsp) < 5 AND 5 < (dg/cdgsp) < 5 AND 7 No. 200 5% NND 5 < (dg/cdgsp) < 4DNO	NOMIN CLASS B PARTICLE	AL RSP Y MEDIAN DIAMETER	MEDIAN PARTICLE	d –1	5%	d-5	50%	d-100%	LAYER THICK "T"	PARTICLE SIZE	PERCENTAGE PASSING	SIEVE SIZE	PERCENTAGE PASSING	
0.01500 Domentation 0.000			W-50%	MIN	ΜΔΧ	MIN	ΜΔΧ	ΜΑΧ	MIN	3.0"	100%	1.0"	100%	
III III IIII IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII		Q"	60 Lbs	5 5"	7.8"	8.5"	10.5"	18.0"	1.5'	2.5"	80-90%	0.75"	90-100%	
III 12 100 Lbs 9.2" 10.0 11.0" 12.5" 10.0 2.45 IV 15" 300 Lbs 9.2" 13.0" 14.5" 17.5" 30.0" 2.5" No. 4 25-407. V 16" 14.0" 15.5" 17.0" 20.5" 36.0" 3.0" III No. 4 25-407. V 16" 14.0" 15.5" 17.0" 20.5" 36.0" 3.0" III No. 4 25-407. V 16" 14.0" 15.5" 17.0" 20.5" 36.0" 3.0" IIII No. 50 0-778. No. 50 0-778. No. 50 0-778. No. 50 0-778. No. 50 0-778. No. 18" RESTORE AND VECETATE SLOPE ABOVE RESTORE MATCHL No. 50 0-738. SAND EQUIVALENT RSP OR EXTEND RSP WTH COURSE FLITER AGGREGATE PHICABLE PHICH WATER ELEVATION Restore the course with MICH ADOLES OF PROTECTION (RSP) SAND EQUIVALENT NOT FLIL VOIDS IN RSP WTH COURSE FLITER AGGREGATE FILL VOID WTH SALE OF PROTECTION SALE OF PROTECTION SALE OF PROTECTION SALE OF		12"	150 Lbs	7 3"	10.5"	11 5"	14.0"	24.0"	2.0'	1.0"	40-70%	0.38"	40-100%	
IV IS JOU LIS S.2 TAO IV.3 JOU C S.2 IA.0 IV.3 JOU C S.2 IV.3 JOU C S.2 IV.3 JOU C S.2 IV.3 JOU C S.2 JOU C S.2 JOU C S.2 JOU C JOU C <thjo< td=""><td></td><td>15"</td><td>300 Lbs</td><td>0.0 0.2"</td><td>13.0"</td><td>14.5"</td><td>17.5"</td><td>30.0"</td><td>2.0</td><td>0.75"</td><td>10-20%</td><td>No. 4</td><td>25-40%</td></thjo<>		15"	300 Lbs	0.0 0.2"	13.0"	14.5"	17.5"	30.0"	2.0	0.75"	10-20%	No. 4	25-40%	
V 16 10		19"	14. TON	J.Z	15.0	17.0"	20.5"	36.0"	2.5	No. 200	5% MAX	No. 8	18–33%	
CONFORM TOE WITH EXISTING GRADE CONFORM TOE WITH EXISTING GRADE CONFORM TOE WITH EXISTING GRADE CONFORM TOE WITH EXISTING GRADE CONFORM TOE WITH CONFORM TOE WITH CO	V	10	74 TON	11.0	13.5	17.0	20.5	50.0	5.0	FILTER CRITE	RIA:	No. 30	5-15%	
CONFORM TO: WITH CONFORM TO: CONFORM TO: CONFORM CONFORM TO: CONFORM TO: CONFORM CONFORM TO: CONFORM CONFORM TO: CONFORM TO: CONFORM CONFORM TO: CON										$5 < (d_{15C}/d_{85F})$	d _{15F}) < 40	No. 50	0-7%	
AND "F" IS FOR THE RESTORE AND VECETATE SLOPE ABOVE RSP OR EXTEMD RSP TO TOP OF SLOPE IF VEGETATION IS NOT FEASIBLE FILL VOIDS IN RSP WITH COURSE FILTER AGGREGATE PRIOR PLACING SOIL ABOVE RSP WHERE APPLICABLE SPREAD PLANTING SOIL OVER HIGH WATER ELEVATION HIGH WATER ELEVATION ACCREGATE FILTER CONFORM TOE WITH ADJACENT CONFORM TOE WITH ADJACENT CONFORM TOE WITH ADJACENT CONFORM TOE WITH MAX CONFORM TOE WITH ADJACENT CONFORM TOE WITH ADJACENT CONFORM TOE WITH ADJACENT CONFORM TOE WITH MAX CONFORM TOE WITH ADJACENT CONFORM TOE WITH ADJACENT ADJACENT ADJACENT CONFORM TOE WITH ADJACENT ADJACENT CONFORM TOE WITH ADJACENT										THE COURSE	C IS FOR R MATERIAL	No. 200	0-3%	
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"T"+0.5' BANK STABILIZATION - ROCK SLOPE PROTECTION (RSP) STD DTL "T"+0.5' MIN 03/03/2023 BBS-2 MIN EAST BAY REGIONIAL PARK DISTRICT STANDARD DETAILS SHEET 1 of 1	CONFOR	CONFORM TOE WITH EXISTING GRADE												
"T"+0.5' BANK STABILIZATION - ROCK SLOPE PROTECTION (RSP) Image: Sto DTL BS-2 MIN APPROVED BY THE CHIEF OF DESIGN & CONSTRUCTION 03/03/2023 BBS-2 SHEET 1 of 1		1090902	ÉCÉCEC:		,	(A	y				(Jen E	2 Gildet	
MIN APPROVED BY THE CHIEF OF DESIGN & CONSTRUCTION 03/03/2023 SHEET 1 OF 1	•	, "T"-	+0.5					ON - ROC			ION (RSP)	y		
		M	IIN X			FACT P		OF DESIGN					SHEET 1 OF 1	



East Bay Regional Park District

Regional Maintenance Activities Alameda and Contra Costa Counties

ATTACHMENT B

California Regional Water Quality Control Plan San Francisco Bay Region Self-Monitoring Program

CALIFORNIA REGIONAL WATER QUALITY CONTROL PLAN SAN FRANCISCO BAY REGION SELF-MONITORING PROGRAM

for

East Bay Regional Park District Regional Maintenance Activities

I. General

A. Basis

Reporting responsibilities of the East Bay Regional Park District as "Discharger" are specified in Sections 13225(a), 13267(b), 13268, 13383, 13387(b) of the California Water Code and this Board's Resolution No. 73-167.

B. Purpose

The principal purposes of a monitoring program by a discharger, also referred to as a Self-Monitoring Program, are to document compliance with discharge requirements and prohibitions established by this Board and to facilitate self-policing by the discharger in the prevention and abatement of pollution arising from maintenance activities.

C. Monitoring Methods

Monitoring of impact and mitigation sites shall be consistent with standard protocols for assessing percent coverage by plants, survival of plants, stability of banks, stability of berms, geomorphic stability of channels. Monitoring reports shall be signed by either an individual or a position having responsibility for the overall operation of the regulated activity (e.g., authorized agent, field supervisor, or project manager).

II. Specifications for Monitoring

The Discharger is required to perform monitoring in accordance with the following conditions and requirements:

A. Standard Observations

As appropriate, the following observations shall be recorded annually for each impact and mitigation site, until the appropriate performance criteria are attained (For some sites, such as sedimentation ponds or beach replenishment, these observations are not necessary).

- 1. Impact Sites:
- a. Percent coverage by vegetation relative to pre-impact vegetation.
- b. Percent survival of planted shrubs and trees.
- c. Stability of impacted creek bed and banks (e.g., slumping, undercutting, headcuts, knickpoints, incision, etc.).
- d. Stability of culvert inlets and outlets, including adjacent natural creek channels.
- e. Pre-construction and post-construction photographs

f. Annual post-construction photographs for all sites that have not attained their performance criteria.

- 2. <u>Mitigation Sites:</u>
- a. Percent coverage by vegetation relative to pre-restoration/enhancement vegetation.
- b. Percent survival of planted shrubs and trees.
- c. Stability of impacted creek bed and banks (e.g., slumping, undercutting, headcuts, knickpoints, incision, etc.).
- d. Stability of berms supporting mitigation ponds.
- e. Duration and depth of ponding during breeding seasons for listed amphibians at pond restoration or enhancement sites.
- f. Pre-construction and post-construction photographs
- g. Annual post-construction photographs for all sites that have not attained their performance criteria.
- h. Any observations of use of mitigation sites by California red-legged frog, California tiger salamander, California clapper rail, salt marsh harvest mouse, Western pond turtle, or any other special status aquatic species.

B. Records to be maintained

1. Written reports, maintenance records, field notes, photographs and other records shall be maintained by the Discharger for a minimum of five years. Records shall include notes and observations for each site as follows:

- a. Identification of each impact or mitigation site.
- b. The dimensions (square feet and/or linear feet) of impacted waters of the State at each impact site
- c. The dimensions (square feet and/or linear feet) of enhanced or restored waters of the State at each mitigation site
- d. Date and time of monitoring event.
- e. Observations made of vegetation (percent coverage, percent survival, etc.)
- f. Observations of channel and/or berm stability (e.g., slumping, undercutting, headcuts, knickpoints, incision, etc.)
- g. Depth and duration of ponding.
- h. Any records of species observed using the site
- i. Site photographs
- j. Map or maps of each site showing the areas in which work was performed at each site and the locations and directions at which photographs were taken.
- 2. Written reports, maintenance records, field notes, photographs and other records shall be made accessible to Regional Water Board staff upon request.

III. Reports to be filed with the Board

A. Reports and the letter transmitting reports shall be signed by the general manager or assistant general manager(s) of the Discharger, or by a duly authorized representative of that person.

B. Annual Notification of Proposed Projects

- 1. The Annual Notification of Proposed Projects for the following year's proposed projects shall be submitted by June 1st of each year.
- 2. The Annual Notification of Proposed Projects shall include:
 - a. All routine maintenance activities planned for the following year, including the Nationwide Permit (NWP) that would have authorized each project;
 - b. Individual project locations, scope, purpose and need;
 - c. The amount of fill of waters of the State, including wetlands, for each project, in square feet and/or linear feet as appropriate. For culvert replacement or rehabilitation projects, the length of existing and replacement culverts shall also be reported. ¹:
 - d. Descriptions of all on-site mitigation (e.g., stabilization of disturbed surfaces, revegetation of disturbed surfaces, planting of riparian vegetation, etc) for that year's projects.
 - e. Descriptions of the off-site mitigation projects proposed for that year's projects (Since many mitigation sites will be consolidated mitigation sites compensate for impacts of multiple small projects, the appropriateness of each year's proposed mitigation shall be evaluated with respect to net impacts and net mitigation).
 - f. Performance criteria for on-site restoration that can be used to establish that habitats at impacted sites have recovered to near pre-impact levels (e.g., percent cover of disturbed surfaces with vegetation, percent survival of replanted riparian vegetation, etc.).
 - g. Performance criteria for off-site mitigation that can be used to establish that the mitigation projects have successfully created or enhanced habitat (e.g., geomorphic stability of channels and/or berms, percent survival of planted riparian vegetation, percent cover of planted vegetation, sufficient ponding to support breeding of listed amphibians, etc.).

C. Annual Post-Maintenance Reports

- 1. Following the end of the year, the discharger shall prepare and submit by February 15th of each year, a detailed report (annual report) on all completed routine maintenance projects and mitigation sites implemented during the previous year.
- 2. The annual report shall contain:
- a. Information regarding the various maintenance projects' locations, length and width of impact areas. At culvert sites, the report shall include the length of the existing and replacement culverts. This information may be submitted in a tabular format with supporting text.
- b. Information regarding the various mitigation projects' locations, length and width of impact areas. For each mitigation site, the annual report shall describe the type of mitigation habitat that was restored and/or enhanced. This information may be submitted in a tabular format with supporting text.

¹ Due to the relatively small footprint of most projects and the similar nature of many projects, the notification and post-maintenance reports may be organized as a large table. This table should be augmented with explanatory text for any unusual impact or mitigation sites.

- c. At bank stabilization sites, the project report shall include a description of the bioengineering bank stabilization methods used at the site. If bio-engineering bank stabilization was not implemented, the annual report shall include a rationale for selecting an alternate bank stabilization method.
- d. A list of all BMPs applied to the various maintenance projects completed within each preceding year as part of the required annual report described above.
- e. A description of any unanticipated field conditions that affected the implementation of maintenance or mitigation projects.
- f. Any changes to planned maintenance projects or mitigation projects, as they were described in the Annual Notification of Proposed Projects.
- g. All of the Standard Observations specified in Section II.A of this SMP.
- h. Discussions of each site's progress toward meeting its performance criteria, including any recommendations for maintenance necessary to help attain the performance criteria and summaries of maintenance activities that have been performed in the prior year. If necessary, contingency measures for all mitigation projects shall be discussed. The discharger shall also identify any special approaches or conditions utilized to complete the maintenance and mitigation projects.
- i. A current account of impacts and mitigation restoration, including: a summary of losses of wetlands/waters of the State associated with each individual routine maintenance activity project, including the total acreage, linear feet, and type of wetland/waters of the State impacted; a summary of the gains of wetlands/waters of the State associated with each mitigation site including the total acreage, linear feet, and type of wetland/waters of the State enhanced or restored; and a summary of net increase (or decrease) in the total acres, linear feet, and type of wetland/water of the State created in the previous year. This information will be used to determine whether or not the Discharger has created excess mitigation credits for use by the Discharger as mitigation for future maintenance projects, or as otherwise allowed by the Provisions of the Order.
- j. If any impact or mitigation sites have attained their performance criteria, the Annual Report will present the basis for determining that such sites have met their performance criteria. Upon receiving concurrence from the Executive Officer of the Regional Board, these sites may be removed from annual monitoring and reporting requirements.

East Bay Regional Park District

Regional Maintenance Activities Alameda and Contra Costa Counties

ATTACHMENT C

Mitigation Requirements for East Bay Regional Park District Regional Maintenance Activities

ATTACHMENT C

MITIGATION REQUIREMENTS FOR EBRPD ROUTINE MAINTENANCE ACTIVITIES

ACTIVITY	IMPACT TYPE	MITIGATION	RATIO (LF or Acre basis, as appropriate for the impacted water body)			
Culverts						
Replacement of Existing Culverts (replacement culverts with same length as prior culvert and equal or larger diameter).	Temporary	Temporary Impacts: Revegetation of disturbed surfaces with appropriate native seed mixes, shrubs, and/or trees.	Temporary Impacts: 1:1 for restoration of vegetation in temporary impact areas.			
Constructing new Head & Tail Walls for culverts (may include replacement culvert with same length as prior culvert and equal or larger diameter).	Temporary and Permanent	Temporary Impacts: Revegetation of disturbed surfaces with appropriate native seed mixes, shrubs, and/or trees. Permanent Impacts: Restoration: Restore lentic, lotic or tidal waters Enhancement: removal of non- native vegetation from lentic, lotic or tidal waters and	Temporary Impacts: 1:1 for restoration of vegetation in temporary impact areas. Permanent Impacts: 1.5:1 to 2.5:1 for Restoration 4:1 to 7:1 for Enhancement			
		successful revegetation with appropriate native species.				
Routine Maintenance of Existing Culvert (sediment and debris removal)	Temporary	Temporary Impacts: Revegetation of disturbed surfaces with appropriate native seed mixes, shrubs, and/or trees	Temporary Impacts: 1:1 for restoration of vegetation in temporary impact areas			

ACTIVITY	IMPACT	MITIGATION	RATIO
	TYPE		(LF or Acre basis, as appropriate
			for the impacted water body)
Installation of	Temporary	Temporary Impacts:	Temporary Impacts:
Energy Dissipaters	and	Revegetation of disturbed	1:1 for restoration of vegetation in
(Rock Riprap	Permanent	surfaces with appropriate native	temporary impact areas.
Armoring at		seed mixes, shrubs, and/or	
Culvert Inlets or		trees.	
Outlets)			
		Permanent Impacts:	Permanent Impacts:
		Restoration: Restore lentic, lotic	1.5:1 to 2.5:1 for Restoration
		or tidal waters	
		Enhancement: removal of non-	4:1 to 7:1 for Enhancement
		native vegetation from lentic,	
		lotic or tidal waters and	
		successful revegetation with	
	I	appropriate native species.	
Dredging			
Routine	Temporary	Temporary Impacts:	NA
Maintenance		No mitigation necessary for	
Dredging of silt		dredging of silt basins and	
basins and ponds		ponds that provide habitat for	
		special status species.	
Streambank, sh	oreline and	Levee Stabilization	
Replacement of	Temporary	No mitigation required for work	NA
existing rip-rap or		performed within the prior	
existing shoreline		footprint of bank armoring.	
/levee			
stabilization			
Streambank, sh	oreline and	Levee Stabilization	
Installation of	Temporary	Temporary Impacts:	Temporary Impacts:
new rip-rap, or	and	Revegetation of disturbed	1:1 for restoration of vegetation in
other non-	Permanent	surfaces with appropriate native	temporary impact areas.
bioengineered		seed mixes, shrubs, and/or	
bank stabilization		trees.	
		Permanent Impacts:	Permanant Impacts:
		Permanent impacts:	1 5:1 to 2 5:1 for Postoration
		or tidal waters	
		Enhancement: removal of non-	4.1 to 7.1 for Enhancement
		native vegetation of lentic lotic	
		or tidal waters and successful	
		revegetation with appropriate	
		native species.	

ACTIVITY	IMPACT	MITIGATION	RATIO
	TYPE		(LF or Acre basis, as appropriate
			for the impacted water body)
Installation of new rip-rap in combination with bioengineered bank stabilization	Temporary and Permanent	Temporary Impacts: Revegetation of disturbed surfaces with appropriate native seed mixes, shrubs, and/or trees.	Temporary Impacts: 1:1 for restoration of vegetation in temporary impact areas.
		Permanent Impacts: Restoration: Restore lentic, lotic or tidal waters	Permanent Impacts: 1:1 to 2:1 for Restoration
		Enhancement: removal of non- native vegetation of lentic, lotic or tidal waters and successful revegetation with appropriate native species.	2:1 to 4:1 for Enhancement
Installation of	Temporary	Temporary Impacts:	Temporary Impacts:
bioengineered	and	Revegetation of disturbed	1:1 for restoration of vegetation in temporary impact areas
	rennanent	seed mixes, shrubs, and/or	
		trees.	
		Permanent Impacts: Restoration: Restore lentic, lotic or tidal waters Enhancement: removal of non- native vegetation of lentic, lotic or tidal waters and successful revegetation with appropriate native species.	Permanent Impacts: 0.5:1 for Restoration 2:1 for Enhancement
Rock Ford Cross	sings	1	
Installation of	Temporary	Temporary Impacts:	Temporary Impacts:
new armored or natural rock ford crossings	& Permanent	Revegetation of disturbed surfaces with appropriate native seed mixes, shrubs, and/or trees.	1:1 for restoration of vegetation in temporary impact areas.
		Down on out house star	
		Permanent Impacts:	Permanent Impacts:
		or tidal waters	
		Enhancement: removal of non- native vegetation of lentic, lotic or tidal waters and successful revegetation with appropriate native species.	4:1 to 7:1 for Enhancement

ΑCTIVITY	IMPACT	MITIGATION	RATIO		
	TYPE		(LF or Acre basis, as appropriate		
			for the impacted water body)		
Maintenance of existing armored rock fords	Temporary	Temporary Impacts: Revegetation of disturbed surfaces with appropriate native seed mixes, shrubs, and/or trees	Temporary Impacts: 1:1 for restoration of vegetation in temporary impact areas.		
Clear Span Brid	ges, Spring	boxes and Existing Shorelin	e Facilities		
Maintenance and Installation of Clear span bridges	Temporary	Temporary Impacts: Revegetation of disturbed surfaces with appropriate native seed mixes, shrubs, and/or trees	Temporary Impacts: 1:1 for restoration of vegetation in temporary impact areas. Note: Replacement of a culvert with a clear span bridge may create creek restoration credits.		
Maintenance of spring boxes	Temporary	Temporary Impacts: Revegetation of disturbed surfaces with appropriate native seed mixes, shrubs, and/or trees	Temporary Impacts: 1:1 for restoration of vegetation in temporary impact areas.		
Maintenance of Existing Recreational Shoreline Facilities	Temporary	Temporary Impacts: Revegetation of disturbed vegetated surfaces with appropriate native seed mixes, shrubs, and/or trees	Temporary Impacts: 1:1 for restoration of vegetation in temporary impact areas, if aquatic or shoreline vegetation was disturbed.		
Material Removal					
Removal of Vessels from Waterbodies	Temporary	Temporary Impacts: Revegetation of disturbed surfaces with appropriate native seed mixes, shrubs, and/or trees	Temporary Impacts: 1:1 for restoration of vegetation in temporary impact areas, if aquatic or shoreline vegetation was disturbed.		
Removal of Debris from Waterbodies (including hazardous man- made structures)	Temporary	Temporary Impacts: Revegetation of disturbed surfaces with appropriate native seed mixes, shrubs, and/or trees	Temporary Impacts: 1:1 for restoration of vegetation in temporary impact areas, if aquatic, shoreline, or riparian vegetation was disturbed.		



United States Department of the Interior

FISH AND WILDLIFE SERVICE Sacramento Fish and Wildlife Office 2800 Cottage Way, Suite W-2605 Sacramento, California 95825-1846 SFWO_mail@fws.gov



In Reply Refer to: 2023-0050708-S7-001

June 4, 2024 Sent-Electronically

Regulatory Division Chief Attn: Frances Malamud-Roam Department of the Army San Francisco District, Corps of Engineers 450 Golden Gate Avenue San Francisco, California 94102 frances.p.malamud-roam@usace.army.mil

Subject:Reinitiation of Formal Consultation and Conference on the East Bay Regional
Park District's Routine Maintenance Activities (U.S. Army Corps of Engineers
File No. SPN-2003-289020) in Alameda and Contra Costa Counties, California.

Dear Regulatory Division Chief:

This letter is in response to the U.S. Army Corps of Engineers' (Corps) January 20, 2023, request to reinitiate formal consultation and conference with the U.S. Fish and Wildlife Service (Service) on the proposed East Bay Regional Park District's (District) Routine Maintenance Activities in Alameda and Contra Costa Counties, California. Your request was received by the Service on January 20, 2023. This reinitiation is needed to renew the routine maintenance program for another five years and update the list of species included in the analysis of effects. At issue are the proposed project's effects on the following federally listed as endangered and threatened species and their critical habitat, and species proposed for listing:

- endangered California Ridgway's rail (*Rallus obsoletus obsoletus*)
- endangered California least tern (Sternula antillarum browni)
- endangered salt marsh harvest mouse (*Reithrodontomys raviventris*)
- endangered San Joaquin kit fox (*Vulpes macrotis mutica*)
- endangered longhorn fairy shrimp (Branchinecta longiantenna) and its critical habitat
- endangered vernal pool fairy shrimp (Branchinecta lynchi) and its critical habitat
- endangered vernal pool tadpole shrimp (*Lepidurus packardi*)
- threatened Alameda whipsnake (Masticophis lateralis) and its critical habitat
- threatened California red-legged frog (Rana draytonii) and its critical habitat
- threatened Central California Distinct Population Segment of the California tiger salamander (*Ambystoma californiense*)
- threatened delta smelt (Hypomesus transpacificus) and its critical habitat
- threatened foothill yellow legged frog (*Rana boylii*)
- threatened giant garter snake (*Thamnophis gigas*)

- threatened Pacific coast population of the western snowy plover (*Charadrius nivosus nivosus*) and its critical habitat
- threatened pallid manzanita (*Araostaphylos pallida*)
- proposed endangered San Francisco Bay-Delta Distinct Population Segment of the longfin smelt (*Spirinchus thaleichthys*)

Critical habitat has been designated for vernal pool tadpole shrimp and California tiger salamander, but none occurs in the action area. This response is provided under the authority of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act), and in accordance with the implementing regulations pertaining to interagency cooperation (50 CFR 402).

The federal action on which we are consulting is the Corps issuing a permit to the District pursuant to Section 404 of the Clean Water Act of 1972, as amended (33 U.S.C. § 1344 et seq.), for the proposed routine maintenance activities and restoration projects in Alameda and Contra Costa Counties, California. Pursuant to 50 CFR 402.12(j), you submitted a biological assessment for our review and requested concurrence with the findings presented therein. These findings conclude that the proposed project may affect, and is likely to adversely affect, California Ridgway's rail, California least tern, salt marsh harvest mouse, San Joaquin kit fox, longhorn fairy shrimp and its critical habitat, vernal pool fairy shrimp and its critical habitat, vernal pool tadpole shrimp, Alameda whipsnake and its critical habitat, California red-legged frog and its critical habitat, California tiger salamander, delta smelt and its critical habitat, pallid manzanita, and longfin smelt.

In considering your request, we based our evaluation on the following:

- 1) The January 20, 2023, initiation letter from the Corps;
- 2) The May 23, 2017, Biological Assessment (District 2017);
- 3) The November 3, 2022, Supplement to East Bay Regional Park District Biological Assessment;
- 4) The January 24, 2024, Supplement to East Bay Regional Park District Biological Assessment;
- 5) Emails and exchanges between the Service and District biologists; and
- 6) Other information available to the Service.

The remainder of this document provides our biological opinion on the effects of the proposed project on the California Ridgway's rail, California least tern, salt marsh harvest mouse, San Joaquin kit fox, longhorn fairy shrimp and its critical habitat, vernal pool fairy shrimp and its critical habitat, vernal pool tadpole shrimp, Alameda whipsnake and its critical habitat, California red-legged frog and its critical habitat, California tiger salamander, delta smelt and its critical habitat, foothill yellow-legged frog, giant garter snake, western snowy plover and its critical habitat, and pallid manzanita. Additionally, this document provides a conference opinion on the longfin smelt.
ADMINISTRATION OF THE BIOLOGICAL AND CONFERENCE OPINION

Many of the proposed maintenance, restoration projects, and adaptive management conservation measures occur in waters regulated by the Corps require a Corps' permit, and potentially affect federally listed species and designated critical habitat. Many of these projects have a small, individual footprint and can be permitted under a Corps' Regional General Permit (RGP) or Nationwide Permit (NWP). Because of the small project size of the routine maintenance projects, the District requested a biological opinion that covers take authorization for five years for all these projects. By providing one comprehensive biological opinion for these projects, the Corps would not have to consult separately for each activity on District lands. The Service supported this approach because it allows for a more efficient workload and is more appropriate than consulting on individual projects, allowing the Service to evaluate the District activities at a larger scale. The Service worked with the Corps to help the District streamline the Clean Water Act/Endangered Species Act compliance for routine maintenance activities as well as certain restoration projects. The District worked with the Corps and the Service to define criteria for projects that would qualify for coverage under this comprehensive biological opinion, including qualifying criteria for applicable Corps RGPs/NWPs, Best Management Practices (BMPs), and conservation measures to avoid and minimize adverse effects to listed species. Development of these criteria allowed the Service to address the effects of a broad array of District routine maintenance and restoration activities in this comprehensive biological opinion.

The District will submit a detailed list of proposed maintenance, restoration projects, and adaptive management conservation measures for the upcoming year (the preconstruction project list) to the Corps, Service, and CDFW prior to June 1st each year for review. Only restoration projects and adaptive management conservation measure projects will require approval by the Service and CDFW. Upon receipt of the appropriate information as detailed in the Description of the Proposed Action and the Terms and Conditions, the Service will review the material and determine consistency with this biological opinion. Projects determined inconsistent with this biological opinion are those that exceed minimal effects to this species, including direct, indirect, and cumulative effects and these would require a separate consultation. At the Service's discretion, proposed actions that are not consistent with the covered activities as described in the Description of the Proposed Action may still be included, if the complete implementation of appropriate additional conservation measures sufficiently reduces the effects of the action or that the project has minimal effects that are consistent with the intent of this biological opinion and the Corps' permit. At the time of review of the June 1st project list, the Service can require species-specific conservation measures in the future in any parks covered under this biological opinion, if the species is found to inhabit parks or are reasonably certain to occur due to close proximity of future occurrences.

This biological opinion is effective for a period of five (5) calendar years from the date of its issuance and can be extended if deemed appropriate by both agencies. The Service will review this consultation, as appropriate, to ensure that its application is consistent with the intended criteria. If, at the time of the five-year review, the proposed affected acreage of species habitat by routine maintenance activities (Table 22) has not been reached, the Corps can continue to use this biological opinion for District routine maintenance activities, if acceptable to the Service. The Corps can then continue to use this biological opinion as long as the affected acreage of listed species habitat is consistent and does not exceed that which is detailed in Table 22.

Consultation History (since the issuance of the February 22, 2018 biological opinion)

February 19, 2021:	District staff requested to remove the requirements for Callippe silverspot butterfly given that the <i>Species Status Assessment for the Callippe</i> <i>Silverspot Butterfly</i> (Service 2020a) indicates that they are not present in the East Bay and the East Bay is no longer considered part of the species range.
March 2, 2021:	The Service approved the removal of requirements for Callippe silverspot butterfly.
January 20, 2023:	The Service received the reinitiation of consultation letter from the Corps.
April 3, 2023:	The Service, Corps, and District staff went on a site visit to see some of the standard project sites.
April 12, 2023:	The Service received an email from the Corps requesting to add foothill yellow-legged frog to the consultation.
July 21, 2023:	The Service requested an updated list of park unit acreages and environmental baseline.
August 21, 2023:	The Service received an updated version of Table 1 and environmental baseline.
September 27, 2023:	The District requested a meeting with the Service, Corps, and California Department of Fish and Wildlife (CDFW) to discuss possible changes to the biological opinion that would enable CDFW to issue a Consistency Determination.
October 13, 2023:	The Service, Corps, CDFW, and District met virtually to discuss a possible Consistency Determination.
December 4, 2023:	The Service, Corps, and District met virtually to discuss adding a conference opinion for western pond turtle and longfin smelt.
January 22, 2024:	The Service, CDFW, and District met virtually to further discuss a possible Consistency Determination.
March 7, 2024:	The Service notified the Corps and District that they would not be proceeding with a conference opinion for western pond turtle at this time.

BIOLOGICAL OPINION AND CONFERENCE OPINION

Description of the Proposed Action

Background

The District currently manages 66 regional parks, recreation areas, wilderness lands, shorelines, and preserves, as well as 43 distinct trail segments, which encompass approximately 122,206 acres in Alameda and Contra Costa Counties, California (Table 1). The District's mission is to

acquire, preserve, protect, and operate regional parklands in perpetuity for public use, while conserving these lands for natural resources. Over 90 percent of District lands are protected and operated as natural parklands. This includes parklands along the shorelines of San Francisco, San Pablo, Suisun Bays and the Delta Region, and inland areas of the coastal and transverse ranges of the East Bay.

Each year, the District performs routine maintenance activities designed to maintain existing facilities and structures the District also implements restoration projects to improve watersheds and coastal shoreline conditions. Activities included in this biological opinion are routine maintenance activities that will be conducted over a five-year period on District lands by the District (or their contractors) consistent with the Corps RGP-15 and restoration projects that will be covered under the Corps RGP-15 and Nationwide 27. Not all activities will be conducted annually and the number of projects conducted under RGP-15 or Nationwide may vary by year. Therefore, routine maintenance projects (defined in Table 2) and restoration projects to be conducted in any given year will vary by year over the five-year period and will be reviewed annually by the Service. District routine maintenance or restoration activities within East Contra Costa County Habitat Conservation Plan (ECCCHCP) Preserve Lands will not be covered in this biological opinion, as these activities will receive take authorization through the ECCCHP's incidental take permit (Fish and Wildlife Permit No. TE-160958-0). These parks are identified in Table 1.

The District will submit a detailed annual pre-construction project list for the upcoming year to the Corps and the Service by June 1 each year for approval. Additional projects may be reviewed by the Service after submittal deadline if information needed for projects was not available at the submittal deadline. The Service will inform the Corps and the District immediately if any routine maintenance projects are not consistent with this biological opinion. The Service and CDFW will respond with a letter approving that year's proposed restoration projects and adaptive management conservation measures (described in the Project Description section of this document) found to be consistent with this biological opinion. At a minimum, the annual preconstruction project list will include the following:

- A description of activities/projects proposed and their location
- Location and extent of habitat disturbance (temporary and permanent)
- Anticipated effects to listed species (restoration projects only)
- Conservation measures to be implemented during project work (restoration projects only)
- Any additional conservation measures the District deems necessary to minimize adverse effects to listed species (would require Service approval)

Covered Activities

Covered activities will include routine maintenance activities in streams, catch basins, seeps, springs, ponds, lakes, beaches, tidal marshes, and shoreline levees. The purpose of these activities is to maintain existing facilities, protect water quality, to reduce erosion, provide public and emergency access, and maintain natural resources that support a variety of listed, special status, and other native species. Routine maintenance activities will occur in the following watersheds: Alameda, Alhambra, Claremont, Garrity, Rheem, Kirker, Marsh, Mount Diablo, Pinole, San Pablo, San Leandro, San Lorenzo, Walnut and Wildcat Creeks, San Francisco Bay, San Pablo Bay, and Suisun Bay. Table 2 below describes covered routine maintenance activities.

					Federally Listed (Endangered or Threatened) Species															
Pa Ui	urkland nits	Park Acres	ECCC HCP	Total Non-HCP	Alameda Whipsnake	CA Red- Legged Frog	Central CA Tiger Salamander	Foothill Yellow- Legged Frog	San Joaquin Kit Fox	CA Ridgway's Rail	Salt Marsh Harvest Mouse	Longhorn Fairy Shrimp	Vernal Pool Fairy Shrimp	Vernal Pool Tadpole Shrimp	Giant Garter Snake	CA Least Tern	Western Snowy Plover	Delta Smelt	Longfin Smelt	Pallid Manzanita
1	ANTHONY	3,314.26		3,314.26	3,314.26							•	•	•						
2	ANTIOCH/OAKL EY SHORE	6.32		6.32											6.32			6.32	6.32	
3	ARDENWOOD	208.00		208.00																
4	BAY POINT	149.70		149.70							149.70							149.70	149.70	
5	BIG BRK/DELTA REC	1,648.00		1,648.00							1,648.00				1,648.00			1,648.00	1,648.00	
6	BISHOP RANCH	806.13		806.13	806.13															
7	BLACK DIAMOND MINES	5,580.20	462.75	5,117.45	5,117.45	5,117.45	5,117.45		5,117.45											
8	BRIONES	6,255.18		6,255.18	6,255.18	6,255.18														
9	BROOKS ISLAND	372.82		372.82												372.82	372.82		372.82	
10	BROWN'S ISLAND	595.00		595.00							595.00				595.00			595.00	595.00	
11	BRUSHY PEAK	1,979.07		1,979.07	1,979.07	1,979.07	1,979.07		1,979.07			1,979.07	1,979.07	1,979.07						
12	BYRON VERNAL POOLS	1,472.45	1,472.45	0.00		0.00	0.00		0.00			0.00	0.00	0.00						
13	CARQUINEZ ST SHORE	1,568.27		1,568.27														1,568.27	1,568.27	
14	CLAREMONT CANYON	208.31		208.31	208.31															
15	CLAYTON RANCH	4,078.50	3,016.81	1,061.69	1,061.69	1,061.69	1,061.69													
16	CONTRA LOMA	779.35		779.35	779.35		779.35		779.35											
17	COYOTE HILLS	1,274.05		1,274.05							1,274.05									
18	CROCKETT HILLS	2,124.75		2,124.75																
19	CROWN BEACH SHORE	386.89		386.89						386.89							386.89		386.89	
20	CULL CANYON	360.00		360.00	360.00															
21	DEER VALLEY	3,076.58	3,076.58	0.00	0.00	0.00	0.00		0.00											
22	DEL VALLE	4,395.21		4,395.21	4,395.21	4,395.21	4,395.21	4,395.21												
23	DELTA ACCESS	1,011.95	640.16	371.79					371.79						371.79					
24	DIABLO FOOTHILLS	1,060.00		1,060.00	1,060.00	1,060.00														
25	DON CASTRO	101.00		101.00	101.00															
26	DOOLAN CANYON	640.00		640.00		640.00	640.00		640.00											
27	DRY CREEK PIONEER	1,626.45		1,626.45	1,626.45	1,626.45	1,626.45													
28	DUBLIN HILLS	654.22		654.22	654.22	654.22														
29	GARIN	4,215.24		4,215.24	4,215.24	4,215.24	4,215.24													

Table 1. Acres¹ of Species Distributional Range on the District Parkland Units and East Contra Costa County Habitat Conservation Plan (ECCCHCP) Preserves District Lands

					Federally Listed (Endangered or Threatened) Species															
Pa U	arkland nits	Park Acres	ECCC HCP	Total Non-HCP	Alameda Whipsnake	CA Red- Legged Frog	Central CA Tiger Salamander	Foothill Yellow- Legged Frog	San Joaquin Kit Fox	CA Ridgway's Rail	Salt Marsh Harvest Mouse	Longhorn Fairy Shrimp	Vernal Pool Fairy Shrimp	Vernal Pool Tadpole Shrimp	Giant Garter Snake	CA Least Tern	Western Snowy Plover	Delta Smelt	Longfin Smelt	Pallid Manzanita
30	HAYWARD	1,815.05		1,815.05						1,815.05	1,815.05					1,815.05	1,815.05		1,815.05	
31	HUCKLEBERRY	240.33		240.33	240.33															240.33
32	KENNEDY GROVE	221.46		221.46	221.46															
33	LAKE CHABOT	1,755.22		1,755.22	1,755.22															
34	LAS TRAMPAS	5,657.43		5,657.43	5,657.43	5,657.43	5,657.43													
35	LEONA CANYON	289.64		289.64	289.64															
36	LITTLE HILLS RANCH	100.00		100.00	100.00															
37	M L KING, JR SHORE	748.52		748.52						748.52	748.52						748.52		748.52	
38	MARTINEZ SHORELINE	343.00		343.00						343.00	343.00							343.00	343.00	
39	MCLAUGHLIN EASTSHORE	1,849.51		1,849.51						1,849.51	1,849.51								1,849.51	
40	MILLER/KNOX SHORE	306.51		306.51															306.51	
41	MISSION PEAK	3,023.55		3,023.55	3,023.55	3,023.55	3,023.55													
42	MORGAN TERRITORY	5,320.65	604.84	4,715.81	4,715.81	4,715.81	4,715.81													
43	OHLONE	9,049.00		9,049.00	9, 049.00	9, 049.00	9,049.00	9, 049.00												
44	OYSTER BAY SHORE	194.78		194.78						194.78	194.78								194.78	
45	PLEASANTON RIDGE	9,086.07		9,086.07	9,086.07	9,086.07	9,086.07													
46	PT ISABEL SHORE	22.70		22.70						22.70	22.70								22.70	
47	PT PINOLE SHORE	2,444.95		2,444.95						2,444.95	2,444.95								2,444.95	
48	QUARRY LAKES	471.25		471.25																
49	RANCHO PINOLE	1,053.00		1,053.00	1,053.00	1,053.00														
50	REDWOOD	1,831.59		1,831.59	1,831.59															1,831.59
51	ROBERTS	86.92		86.92	86.92															
52	ROUND VALLEY	1,910.42		1,910.42	1,910.42	1,910.42	1,910.42		1,910.42											
53	SAN PABLO BAY SHORE	321.81		321.81						321.81	321.81								321.81	
54	SHADOW CLIFFS	265.80		265.80																
55	SIBLEY	928.08		928.08	928.08															928.08
56	SOBRANTE RIDGE	277.02		277.02	277.02	277.02														277.02
57	SUNOL	6,858.42		6,858.42	6,858.42	6,858.42	6,858.42	6,858.42			1				1			1		

						Federally Listed (Endangered or Threatened) Species														
Parkland Units		Park Acres	ECCC HCP	Total Non-HCP	Alameda Whipsnake	CA Red- Legged Frog	Central CA Tiger Salamander	Foothill Yellow- Legged Frog	San Joaquin Kit Fox	CA Ridgway's Rail	Salt Marsh Harvest Mouse	Longhorn Fairy Shrimp	Vernal Pool Fairy Shrimp	Vernal Pool Tadpole Shrimp	Giant Garter Snake	CA Least Tern	Western Snowy Plover	Delta Smelt	Longfin Smelt	Pallid Manzanita
58	SYCAMORE VALLEY	695.49		695.49		695.49														
59	TEMESCAL	49.92		49.92																
60	THURGOOD MARSHALL ²	2,608.00	400.90	2,207.10	2,207.10	2,207.10	2,207.10													
61	TILDEN	2,078.79		2,078.79	2,078.79	2,078.79														2,078.75
62	VARGAS PLATEAU	1,249.02		1,249.02	1,249.02	1,249.02	1,249.02													
63	VASCO CAVES	719.84		719.84		719.84	719.84		719.84			719.84	719.84	719.84						
64	VASCO HILLS	3,662.14	3,499.38	162.76		162.76	162.76		162.76			162.76	162.76	162.76						
65	WATERBIRD	197.83		197.83							197.83									
66	WILDCAT CANYON	2,789.15		2,789.15	2,789.15															
	Parklands (Acres)	120,471.08	13,173.86	107,297.22	87,341.90	75,748.56	64,454.21	20,302.63	11,680.68	8,127.21	11,604.90	2,861.67	2,861.67	2,861.67	2,621.11	2,187.87	3,323.28	4,310.29	12,773.83	5,355.77
	Trails (Acres)	1,735.31	0.00	1,735.31	1,441.72	1,116.66	55.42	0.00	55.42	64.48	0.03	0.00	0.00	0.00	15.48	0.00	0.00	83.23	89.78	0.00
	Total Acres	122,206.39		109,032.53	88,783.62	76,865.22	64,509.63	20,302.63	11,736.10	8,191.69	11,604.93	2,861.67	2,861.67	2,861.67	2,636.59	2,187.87	3,323.28	4,393.52	12,863.61	5,355.77
	Percentage of Total Land				81.43%	70.50%	54.70%	18.62%	10.70%	7.47%	10.58%	2.61%	2.61%	2.61%	2.40%	1.99%	2.70%	4.00%	11.80%	4.88%

¹ These acreage are to indicate species range and potential presence <u>only</u>, because (1) the entire distributional range overestimates the actual extent of suitable habitat, (2) not all land cover types within the District are natural open space land, and (3) not all potentially suitable habitat is occupied by the covered species. For delta smelt and longfin smelt, "total acreage" is grossly overestimated because only shoreline/tidal areas within those parks provide suitable habitat; ² Previously known as Concord Hills

NOTE: Park Acres subject to change based on acquisition of new lands and therefore may not be precise. Regional Trails/Interpark Trails not specifically addressed in Table 1.

Routine Maintenance Activity	Description	Frequency of Activity/ Duration	Predicted Maximum Annual Extent of Impacts	Best Management Practices (BMPs)
1. Culvert repair, replacement, and maintenance	Existing degraded culverts will be replaced with same-size culverts, or if existing culverts are inadequate to convey peak flows, with culverts of a larger size (diameter and/or length). Culverts will be installed at existing channel grade. Mechanized equipment, including excavator, backhoe, ten-wheel dump truck, water truck, and soil compactors, will access the project sites and operate mostly on existing roads, trails, or levees and will avoid	1 - 7 days per culvert 4 - 5 culverts per year	Temporary = 0.09 acre to uplands, riparian, and wetlands Permanent = None Removal of vegetation will be minimized; work typically only requires removal of lateral limbs to	 When feasible, the District will replace old metal-galvanized culverts with modern plastic culverts. When feasible, the District will install replacement culverts large enough to accommodate anticipated 25-year frequency storm events. Replacement
2. Replacement and upgrade of existing culverts with installation of new head or tail walls	wetted channels/waterbodies. Existing degraded culverts will be replaced with same-or larger- size culverts and will include the installation of new rock head and/or tail walls to stabilize the streambank and prevent head cutting and/or down cutting of stream channels. Culverts will be installed at existing channel grade. Mechanized equipment, including excavator, backhoe, ten-wheel dump truck, water truck, and soil compactors, will access the project sites and operate mostly on existing roads, trails, or levees and will avoid	1- 7 days per culvert 8 - 10 culverts per year	allow access. Temporary = 0.18 acre to uplands, riparian, and wetlands Permanent =0 .18 acre to uplands, riparian, and wetlands Removal of vegetation will be minimized; work typically only requires removal of	culverts will be installed at the existing grade to maintain natural stream gradient and minimize under cutting and erosion. 4. When feasible, the District will remove culverts to restore and enhance the natural stream corridor and riparian vegetation. 5. When feasible, the District will remove culverts and replace them with clear-span bridges or armored
3. Installation of new culverts	 wetted channels/waterbodies. When no other alternative channel crossing is feasible, new culverts will be installed in manmade or natural drainages, ephemeral, intermittent, and perennial streams, or utilized as outflow discharge structures in man-made ponds or wetlands. Mechanized equipment, including excavator, backhoe, ten-wheel dump truck, water truck, and soil compactors, will access the project sites and operate mostly on existing roads and levees and will avoid wetted channels or waterbodies. 	1- 7 days per culvert 2 - 3 culverts per year	lateral limbs to allow access. Temporary = 0.05 acre to uplands, riparian, and wetlands Permanent =0 .06 acre to uplands, riparian, and wetlands Removal of vegetation will be minimized; work typically only requires removal of lateral limbs to allow access.	articulated fords. 6. The District will construct headwalls or discharge end splash pads, and will install armoring with porous materials or use other techniques that allow plant growth and avoid the permanent elimination of stream habitat.

Table 2. Covered Maintenance Activities

Routine Maintenance Activity	Description	Frequency of Activity/ Duration	Predicted Maximum Annual Extent of Impacts	Best Management Practices (BMPs)
4. Maintenance of sediment-debris from culverts	During and/or prior to high winter flows, accumulated sediment and debris will be removed from culverts using equipment operated from the top of banks and levees, or by hand crews to maintain flow and prevent flooding. Woody debris that does not block flow will be left in place to provide habitat for fish and wildlife. Some mechanized equipment may be required, and could include backhoe, ten-wheel dump truck, or four-wheel drive truck. This equipment will access the project sites and operate mostly on existing roads, trails, or levees and completely avoid wetted channels or other waterbodies.	0.5-1 day 4 – 5 culverts per year	Temporary = 0.22 acre to uplands, riparian, and wetlands Permanent = None Removal of vegetation will be minimized; work typically only requires removal of lateral limbs to allow access.	None
5. Installation of new culvert head- and tail-walls	New rock head and/or tail walls will be installed at locations with existing culverts to stabilize the streambank and prevent head and/or down cutting. These rock structures will be installed in the channel bed and bank. Mechanized equipment, including excavator, backhoe, ten-wheel dump truck, water truck, and soil compactors, will access the project sites and operate mostly on existing roads and levees and will avoid wetted channels or waterbodies.	1-4 days 2 - 3 head and/or tail walls per year	Temporary = 0.015 acre to uplands, riparian, and wetlands Permanent = 0.015 acre to uplands, riparian, and wetlands Removal of vegetation will be minimized; work typically only requires removal of lateral limbs to allow access.	None
6. Installation of energy dissipaters	Energy dissipaters will be installed to prevent erosion associated with flow discharge from existing culverts. These structures consist of drain to rip-rap size rock and are similar to or an extension of a culvert tail-wall structure. Energy dissipaters are effective in reducing channel erosion and down cutting. Mechanized equipment, including excavator, backhoe and ten-wheel dump truck, will access the project sites and operate mostly on existing roads and levees and will avoid wetted channels or waterbodies.	1-3 days 1 - 2 energy dissipaters per year	Temporary = 0.02 acre to uplands, riparian, and wetlands Permanent = 0.02 acre to uplands, riparian, and wetlands Removal of vegetation will be minimized; work typically only requires removal of	None

Routine Maintenance Activity	Description	Frequency of Activity/ Duration	Predicted Maximum Annual Extent of Impacts	Best Management Practices (BMPs)
			lateral limbs to allow access.	
7. Installation of armored or natural rock ford-stream crossings	Armored concrete pre-cast, open- cell, interlocking blocks will be laid within road crossings and/or trails and on top of the streambed and drainages. These fords will be installed in select locations to replace existing culverts and at natural drainage crossings to provide stability and minimize channel bed erosion. Ford crossings will be installed at the ground surface of the channel banks and bed. The armored crossings are designed and installed to maintain or improve flow and reduce erosion. Ford crossings are approximately 10 to 12 feet wide and equivalent to the width of the corresponding road or trail crossing. The length of the crossing from bank to bank and the total area of the crossing vary based on the width of the channel.	2-5 days 2 - 3 crossings per year	Temporary = 0.027 acre to uplands, riparian, and wetlands Permanent = 0.027 acre to uplands, riparian, and wetlands	 The District will conduct a District-wide annual evaluation of natural stream crossings to determine the need for maintenance. Minimal grading or debris removal will be performed to make the crossing passable. Stream gravel and sediments will be left within the dry portion of the stream channel rather than moved to upland areas. Natural crossings (which require less intensive maintenance) rather than culverts, will be used and used
	Hand tools are used for most of these construction activities. Some mechanized equipment may be required and could include the use of an excavator, backhoe, ten-wheel dump truck, water truck, and soil compactors. This equipment will access the project sites and operate mostly on existing roads, trails, or levees and completely avoid wetted channels or other waterbodies.			where feasible.
8. Maintenance of existing ford crossings	Repairs will be made to existing armored or natural rock fords to help maintain road and/or trail crossings within streambed and drainages. Hand tools are used for most of the construction activities. Some mechanized equipment may be required and could include the use of an excavator, backhoe, ten-wheel dump truck, water truck, and soil compactors. This equipment will access the project sites and operate mostly on existing roads, trails, or levees and completely avoid wetted channels or other waterbodies.	2-5 days 1 crossing per year	Temporary = 0.01 acre to uplands, riparian, and wetlands Permanent = None	

Routine Maintenance Activity	Description	Frequency of Activity/ Duration	Predicted Maximum Annual Extent of Impacts	Best Management Practices (BMPs)
9. Maintenance and installation of clear span bridges	Clear-span bridges will be installed to replace existing culverts, natural (unarmored) stream crossings, concrete fords, and failing non-clear span bridges. Bridge concrete footings and abutments will be poured in place from above the top of the bank and will not have contact with channel flow. Each bridge span will be lowered into place by a crane operated from above the bank or tidal channel or other appropriate methods. While only clear span bridges will be installed, existing bridges (clear span and non-clear span) can be repaired/maintained. Other mechanized equipment, including excavator, backhoe, and ten-wheel dump truck, will access	1-20 days 1 bridge per year	Temporary = 0.01 acre to uplands, riparian, and wetlands Permanent = None	None
	 Ine project sites and operate mostry on existing roads and levees avoiding wetted channels or waterbodies. Maintenance of existing bridges consists of protection and stabilization of bank erosion around bridge abutments (detailed methods are described below). 			
10. Streambank, shoreline, and levee stabilization	Bank and levee stabilization will be conducted in locations where bank or shoreline erosion has resulted in: (1) the release of sediment exceeding that generated by natural processes; (2) unstable road, trail, pathway, or levee structures; (3) erosion around a culvert or bridge abutments; and (4) major environmental or structural damage. Stabilization methods include the installation of log crib walls, replacing existing rip-rap, extending rip-rap sections, new rip- rap, upland and riparian vegetation planting, and other bio-engineering techniques. Mechanized equipment, including excavator, backhoe, ten-wheel dump truck, and soil compactors, will	1-8 days 3 - 4 stabilizatio ns per year	Temporary = 0.36 acre to uplands, riparian, and wetlands Permanent = 0.36 acre to uplands, riparian, and wetlands	 When feasible, the District will use bio- engineering techniques, such as planting riparian woody vegetation and installing willow waddles and mattresses, log crib- walls, log and stump deflectors, or vortex weirs to stabilize banks and reduce erosion. Where appropriate jute netting, or other erosion control fabrics will be used to provide protection until adequate plant growth

Routine Maintenance Activity	Description	Frequency of Activity/ Duration	Predicted Maximum Annual Extent of Impacts	Best Management Practices (BMPs)
	operate mostly on existing roads and levees avoiding wetted channels or waterbodies.			can provide permanent protection. 3. Where appropriate broadcast and/or hydro- seeding (native mix) and planting of willow, maple, alder, and other native riparian woody vegetation will be carried out to stabilize banks and prevent erosion.
11. Maintenance and installation of spring boxes	Includes the maintenance of existing wood, metal, and slotted vertically placed collector pipe located to collect water in a seep or spring. The placement of new spring boxes mostly consists of installing slotted vertical collector pipe within a seep or spring. Spring box maintenance and development may also include the installation or repair of above or underground pipelines for conveying water from these water sources to alternative locations, including water tanks or troughs. Whenever possible, pipelines will be installed in existing roads and trails. All troughs will have escape ramps for wildlife. Mechanized equipment, including excavator, backhoe, ten-wheel dump truck, and small trucks, will operate mostly on existing roads, trails, levees, and disturbed areas. Cross country access will be minimized to avoid sensitive habitats and will be mostly restricted to open grasslands.	1-7 days 4-5 spring boxes per year	Temporary = 0.008 acre to uplands, riparian, and wetlands Permanent = 0.05 acre to uplands, riparian, and wetlands	 Installation will include materials such as sand and/or gravel and non-woven geotextile fabric filter to prevent sediment from entering the system. Sufficient spring flow will remain in the wetland area to maintain wetland functions and values. Overflow from the development will be directed back into the wetland area. All spring developments will be designed to have a no net loss of wetlands.
12. Maintenance dredging of silt basins, ponds, lakes, and muted tidal wetlands	Maintenance dredging will occur in silt basins, ponds, lakes, and muted tidal wetlands to restore silt capacity and open water habitat for listed and/or aquatic species. Sediment removal may also incorporate design features to improve flow to and from receiving waters. Mechanized equipment including excavator, backhoe, ten-wheel dump truck, and small trucks, will operate mostly on existing roads, trails,	1-7 days 8-10 dredging projects per year	Temporary = 0.3 acre to uplands, riparian, and wetlands Permanent = None	 When feasible, work will be performed in dry conditions and above water level. Otherwise, floating open water turbidity curtains will be used to contain sediment. Other erosion, sediment, and turbidity control measures will be implemented as needed to contain

Routine Maintenance Activity	Description	Frequency of Activity/ Duration	Predicted Maximum Annual Extent of Impacts	Best Management Practices (BMPs)
13 Maintenance	levees, and disturbed areas. Cross country access will be minimized to avoid sensitive habitats and will be mostly restricted to open grasslands.	5-20 days	Temporary =	sediments, minimize siltation, and prevent downstream turbidity. 3. Whenever feasible, dredging will be done with an excavator from the top of bank. 4. Based on permits conditions, sediment removed during pond and/or stream project activities will be placed at appropriate upland locations as designated by the Service- approved biologist. Removed sediment will not be placed where it can enter into aquatic habitat, and to the maximum extent possible not be placed in areas with ground squirrel burrows. 5. Removal of riparian vegetation will be minimized during dredging operations. 6. When feasible, dredged ponds and earthen dams will be reconfigured to enhance the habitat for aquatic species (i.e. deepening pond or pond section to increase inundation period, removing dense emergent vegetation. 1 Anti-perching
of existing recreational shoreline facilities.	and/or replacement of docks, fishing piers, boat launches, marsh board walks and overlooks. The maintenance and replacement of these structures will preserve public	1 - 2 maintenanc e projects	0.04 acre to uplands, riparian, and wetlands Permanent –	devices that are not in conflict with recreational uses will be installed to deter
	these structures will preserve public access and ensure public safety. Non-toxic materials will be used in all repairs and replacement structures.	per year	Permanent = 0.04 acre to uplands, riparian, and wetlands	avian predators. As determined by a Service-approved biologist, the anti- perching devices will be installed at
	Mechanized equipment, including excavator, backhoe, crane, and ten- wheel dump truck, will access the			appropriate locations and on suitable structures (i.e. tall light

Routine Maintenance Activity	Description	Frequency of Activity/ Duration	Predicted Maximum Annual Extent of Impacts	Best Management Practices (BMPs)
	project sites and operate mostly on existing roads and levees avoiding wetted channels or waterbodies. Small water craft could also be used in open water to provide access and conduct repairs.			posts, utility poles, fencing, recreational signage).
14. Removal of hazardous man- made structures from waterbodies	Abandoned structures acting as a barrier to fish and wildlife movements or hazards to public safety will be removed from various waterbodies including streams, ponds, lakes, tidal channels estuaries, and bay waters. If possible, structures will be removed in their entirety. Excavated and disturbed areas will be restored following removal of objects. Mechanized equipment, including excavator, backhoe, crane, ten-wheel dump truck, four wheel drive trucks, and all-terrain vehicles (ATV's), will access the project sites and operate mostly on existing roads and levees avoiding wetted channels or waterbodies. Various water craft could also be used in open water to provide access and remove objects.	0.5-10 days As needed	Temporary and permanent impacts will be minimal	 To the extent possible, no heavy equipment will be operated in standing or flowing water and disturbance to waterbodies will be minimized. Any toxic or hazardous materials that could be deleterious to aquatic will be contained and prevented from re- contaminating the substrate and/or entering the waterbody.
15. Removal of vessels	Abandoned vessels acting as a barrier to fish and wildlife movements or hazards to navigation or public safety will be removed from various waterbodies including streams, ponds, lakes, tidal channels, estuaries, and bay waters. If possible, structures will be removed in their entirety. Excavated and disturbed areas will be restored following removal of objects	0.5-10 days As needed	Temporary and permanent impacts will be minimal	 To the extent possible, no heavy equipment will operated in standing or flowing water and disturbance to waterbodies will be minimized. Any toxic or hazardous materials that could be deleterious to aquatic will be contained and prevented from re- contaminating the substrate and/or entering the waterbody.

Adaptive Management Conservation Measures

While conducting routine maintenance, the District will incorporate an adaptive management strategy to improve existing conditions. Overall, implementation of adaptive management conservation measures reduces adverse effects to District lands and nearby waterbodies during implementation of routine maintenance projects. Adaptive management conservation measures will include but are not limited to:

- Planting native riparian and wetland vegetation to improve water quality
- Controlling and removing non-native invasive species (i.e., bullfrogs, exotic fish, Chinese mitten crab, etc.)
- Installing nest boxes for riparian bird species (i.e., wood ducks, tree swallows, and flycatchers)
- Removing non-native invasive vegetation to improve riparian habitat conditions
- Implementing streambank bioengineering techniques to reduce erosion and stabilize streambanks

Restoration Projects

Restoration projects to be implemented by the District will include revegetating disturbed sites, new grazing management practices benefiting listed/sensitive species, enhancing habitat conditions (aquatic, grasslands, and upland), reducing fuel loads, removing invasive aquatic and terrestrial plants (including reduction and cover of annual exotic grasses), developing spring boxes, and restoring existing levees. Additional Conservation Measures to those described below may be required by the Service and CDFW for restoration projects when projects are submitted for Service and CDFW approval.

Pond (Lentic Waterbody) Restoration Projects

Pond restoration projects will include the creation, repair, enhancement, and restoration of manmade lentic waterbodies. These ponds provide water for livestock and support a variety of taxa including California tiger salamander and California red-legged frog. The ponds also support western pond turtle, as well as various common amphibian species. Projects will be designed to enhance aquatic habitat for wildlife, reduce erosion and sedimentation to receiving waters, improve hydro-periods for breeding amphibians, and improve livestock water availability and grazing distribution. Projects could include but are not limited to: the re-construction of failed ponds; removal of sediments or de-siltation; and modifications of existing ponds to restore the original capacity and inundation period; repair and/or replacement of structural components such as spillways overflow discharge pipes or channels; and earthen dam and embankment repair and stabilization. Maintenance project (Table 2) activities may also include controlling noxious weeds, managing emergent vegetation when appropriate to improve habitat conditions, establishing native vegetation, and controlling non-native predators such as bullfrogs, predatory centrarchids, catfish, and Gambusia spp. Pond restoration projects may require the temporary dewatering or draining of the pond. It is anticipated that between six and twenty pond restoration projects will be conducted during a five-year period.

Mechanized equipment, including excavator, backhoe, ten-wheel dump truck, four wheel drive trucks, soil compacters, and ATV's, will access the project sites and typically operate on existing roads and earthen dam levees avoiding wetted channels. The implementation of these projects

will mostly cause temporary effects to upland, riparian, wetland vegetation, but overall will have neutral or beneficial permanent impacts. The size of these waterbodies is highly variable. Project duration will range from four to twenty days.

Stream (Lotic Waterbody) Restoration Projects

Stream restoration projects will involve the enhancement or restoration of ephemeral, intermittent, or perennial streams and riparian corridors to improve habitat characteristics for listed and other native species. Restoration projects will incorporate hydrologic, hydraulic, biological, and geomorphic process and will be designed to enhance stream function, promote dynamic equilibrium, reduce erosion, improve water quality to receiving waters, and improve aquatic habitat characteristics and/or riparian vegetative structure within the restored stream reach sites. Restoration projects may include removing instream man-made structures or instream barriers (when the project size exceeds the routine maintenance specifications) to fish and other aquatic species to restore the natural stream condition or installing instream structures to stabilize and protect degraded streambanks when the project size exceeds the routine maintenance specifications. Instream structures could include boulder riprap, boulder wing deflectors, rock weirs, root wad deflectors, log cribbing, live vegetated crib walls, tree or native material revetment, brush mattresses, and native re-vegetation. Other modifications could include changes in gradient, sinuosity, channel slope and type, cross-section and flood plain profile, and bankside vegetation. To the extent practicable, invasive noxious weeds will be controlled or removed during restoration activities. Appropriate native vegetation will be used for riparian restoration and for replanting exposed banks in a way that will replicate the existing biological conditions to stream reach corridor sites that support listed species.

Mechanized equipment, including excavator, backhoe, crane, ten-wheel dump truck, four wheel drive trucks, soil compactors, and ATV's, will access the project sites and operate mostly on existing roads, trails, and levees avoiding wetted channels or waterbodies. The implementation of these projects will mostly be temporary effects to upland, riparian, wetland vegetation, stream substrate and bank, but overall will have neutral or beneficial permanent impacts. The size of these waterbodies is highly variable and project duration will range from four to sixty days. It is anticipated that lotic restoration projects will be conducted in four to six stream reach sites within a five-year period.

Tidal Emergent Wetland Restoration Projects

Efforts to improve the habitat quality of tidal emergent wetlands or shorelines may include various restoration projects in tidal flats, tidal wetlands, diked baylands, and adjacent transitional upland habitats. Modifications could result in changes in tidal action, flood plain profile, and vegetation types in degraded wetland areas. Projects may include the removal of non-native vegetation, the removal of man-made debris or hazardous materials, and the re-establishment of native tidal and high marsh vegetation to enhance habitat conditions for giant garter snake, Ridgway's rail, and the salt marsh harvest mouse.

To the extent practicable, restoration projects will include the control of non-native species and predators in tidal wetlands and/or adjacent transitional upland habitats. Invasive noxious plant species will be controlled or removed. Target species will include, but not be limited to, iceplant and its hybrids, birdsfoot trefoil, broadleaf pepperweed, and Mediterranean saltwort. Exposed wetland areas will be replanted with the appropriate native vegetation and species composition

and density will be determined using reference sites of other functional wetlands with similar profiles dominated by native vegetation types. Non-native predator management will mostly focus on feral cats, non-native red fox, Norway rat, and black rat removal and control to reduce predation events to giant garter snake, Ridgway's rail, and salt marsh harvest mouse.

Mechanized equipment, including excavator, backhoe, crane, ten-wheel dump truck, four wheel drive trucks, soil compactors, and ATV's, will access the project sites and operate mostly on existing roads and levees avoiding wetted channels or waterbodies. The implementation of these projects will result in mostly temporary effects to upland and wetland vegetation, or tidal substrate, but overall will have neutral or beneficial permanent impacts. The size of these waterbodies is highly variable and project duration can range from a few days to several weeks. It is anticipated that tidal emergent restoration projects will be conducted at two to four sites within a five-year period.

Conservation Measures

General Measures

- 1. *Biologist Approval*. The District will submit the names and credentials of biologists that will conduct the activities specified in the following measures to the Service for approval along with the preconstruction project list. All monitors must be approved in writing by the Service prior to conducting monitoring activities. For restoration projects, the District will also submit the names and credentials of biologists to CDFW for approval.
- 2. *Trash Removal*. All trash and debris within the work area will be placed in containers with secure lids before the end of each work day in order to reduce the likelihood of predators being attracted to the site by discarded food wrappers and other rubbish that may be left on-site. Containers will be emptied as necessary to prevent trash overflow onto the site and all trash will be disposed of at an appropriate off-site location.
- 3. *Work Areas*. Project activities will be restricted to the minimum area necessary. Prior to start of work, project boundaries and access routes will be clearly demarcated to prevent work vehicles from straying into adjacent habitat. To the extent feasible, maintenance and construction activities will avoid small mammal and ground squirrel burrows and potential dens that may be used by listed species for shelter.
- 4. *Equipment*. The District will implement the following measures:
 - a. The District will avoid using heavy equipment in areas where hand tools or light equipment are capable of performing the task.
 - b. When feasible, The District will use rubber-tired vehicles as opposed to track mounted equipment to avoid soil compaction and disturbance.
 - c. Prior to work, all equipment will be inspected for fuel, oil, and hydraulic leaks and will be repaired if necessary.
 - d. At the work site, fueling of equipment and vehicles will only occur in upland areas and at a minimum of 100 feet from open water.
 - e. Vehicles will be parked on pavement, existing roads, and previously disturbed areas to the maximum extent feasible.

- 5. *Entrapment Avoidance:* To prevent listed species and other animals from becoming entrapped in work areas, the District will implement the following measures:
 - a. All excavated holes or trenches deeper than 12 inches will be covered at the end of each work day with plywood or similar materials. Foundation trenches or larger excavations that cannot easily be covered will be ramped at the end of the work day to allow trapped animals an escape method. Prior to the filling of such holes, these areas will be thoroughly inspected for listed species by a Service-approved biologist. In the event that a trapped animal is observed, construction will cease until the individual has been relocated by the Service-approved biologist according to the approved relocation plan (see Measure 14).
 - b. Because listed species may take refuge in cavity-like and den-like structures such as pipes and may enter stored pipes and become trapped, all construction pipes, culverts, or similar structures that are stored at a construction site for one or more overnight periods will be either securely capped prior to storage or thoroughly inspected by a Service-approved biologist for these animals before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If any individuals have become trapped, the animal will be relocated according to the approved relocation plan (see Measure 14).
- 6. *Erosion Control.* Erosion control materials that use plastic or synthetic mono-filament netting will not be used within the action area in order to prevent listed species from becoming entangled, trapped or injured. This includes products that use photodegradable or biodegradable synthetic netting, which can take a full calendar year or more to decompose. Acceptable materials include natural fibers such as jute, coconut, twine or other similar fibers.
- 7. *Invasive Plants*. The District will ensure that the spread or introduction of invasive exotic plant species will be avoided to the maximum extent possible. When feasible, invasive exotic plants within project areas will be removed. If herbicides are needed, they will be used according to their label instructions.
- 8. *Debris Removal*. The District will implement the following measures to minimize the effects of debris and woody vegetation removal activities:
 - a. Debris removal during winter and spring to unclog culverts, etc. will be performed by hand crews to the maximum extent feasible. If hand removal is not feasible, debris will be removed using trucks with winches, and/or by backhoes operated from the top of bank.
 - b. To the extent feasible, the District will avoid removal of large woody riparian vegetation and will remove only the minimum necessary to complete the project.
 - c. Woody debris that does not cause bank instability, flooding, or culvert blockage will be left in place to provide in-stream cover and habitat for aquatic species.
 - d. To the maximum extent feasible, the District will avoid the use of heavy mechanized equipment in waterways, streams, ponds, and lakes.
- 9. *Construction Schedule*. To minimize impacts to listed species the following construction timing measures will be followed:
 - a. Within most habitats, grading and construction will be limited to the dry season, typically May-October. Exceptions would be in tidal emergent wetlands and in

the San Francisco Bay and Delta where activities would be conducted between September 1 and January 31 to avoid impacts to California Ridgway's rail, western snowy plover, California least tern, and between August 1 to November 30 to avoid potential impacts to delta smelt. See species specific measures.

- b. All construction activities will cease one half hour before sunset and will not begin prior to one half hour after sunrise. There will be no night-time construction, except for emergency situations.
- 10. *Biological Awareness Training*. Prior to construction of a project, a Service-approved biologist will conduct a mandatory biological resources awareness training for all construction personnel on listed species that may occur on site. The training will include a description of these species and their habitat, the conservation measures in this biological opinion that are to be implemented as part of the project, and the penalties for not complying with these measures. Proof of personnel attendance will be kept on file by the District. Interpretation will be provided for non-English speaking workers. When new construction personnel are added to the project, the District will ensure that the new personnel receive the training before starting work. The subsequent training of personnel can include videotape of the initial training and/or the use of written materials rather than in-person training by a biologist.
- 11. Construction Monitoring. The District will implement the following measures:
 - a. A Service-approved biologist will remain on-site during all construction activities that may result in take of federally listed species. The Service-approved biologist(s) will be given the authority to stop any work that may result in the take of listed species. If the Service-approved biologist(s) exercises this authority, the Service will be notified by telephone and electronic mail within one working day. The Service-approved biologist will be the contact for any employee or contractor who might inadvertently kill or injure a listed species or anyone who finds a dead, injured or entrapped individual. The Service-approved biologist will be provided to the Service.
 - b. Prior to the start of each work day, a Service-approved biologist will check under construction equipment, project vehicles, and their tires to ensure no listed species are utilizing the equipment as temporary shelter.
- 12. Preconstruction Surveys. The District will implement the following measures:
 - a. Preconstruction surveys for listed species at proposed project sites covered in this biological opinion will be conducted by a Service-approved biologist(s) immediately prior to initial groundbreaking or vegetation clearing activities. All suitable habitat (upland and aquatic) within the work area will be thoroughly inspected. If any listed species are found, they will be relocated according to the approved relocation plan (See Measure 14). The Service-approved biologist will be allowed sufficient time to move all individuals from the work site before work activities begin.
 - b. All vegetation that obscures the observation of listed species within affected areas that contain or are immediately adjacent to aquatic habitats will be removed by hand just prior to the initiation of grading in order to remove cover that might be used by listed species. A Service-approved biologist will be present during vegetation removal and will survey these areas immediately prior to and

following vegetation removal. If any listed species are found, they will be relocated according to the approved relocation plan (See Measure 14).

- c. If at any point, construction activities cease for more than five consecutive days, additional preconstruction surveys will be conducted prior to the resumption of work.
- 13. Wildlife Exclusion Fencing. At all proposed activity sites, a Service-approved biologist will make the determination as to whether exclusion fencing is necessary or appropriate to minimize take of listed species.
- 14. Listed Species Relocation Plan. Listed species relocation will be approved on a project-specific basis. The District will prepare a listed species relocation plan for a proposed project to be reviewed and approved by the Service prior to project implementation. The plan will include trapping and relocation methods, relocation sites, and post-relocation monitoring. Only Service-approved biologists will handle or relocate listed species. All relocations of listed species will be conducted according to an approved relocation plan. For restoration projects, the District will also submit the listed species relocation plan to be reviewed and approved by CDFW.
- 15. Construction Personnel Compliance. The District will ensure that a readily available copy of this biological opinion is maintained by the construction foreman/manager on the project site whenever earthmoving and/or construction is taking place. The name and telephone number of the construction foreman/manager will be provided to the Service prior to ground-breaking.
- 16. In-water or Dewatering Work. The District will implement the following measures:
 - a. No routine maintenance activity will be conducted that substantially disrupts the movements of aquatic indigenous life.
 - b. To the maximum extent possible, no heavy mechanized equipment will operate in standing or flowing water and disturbance in stream channels will be minimized to the maximum extent possible.
 - c. When necessary to avoid and minimize disturbance and maintain down stream flow, water will be temporarily diverted around the work area using sand bag coffer-dams, hoses, and pumps.
 - d. If a work site is to be temporarily de-watered by pumping, intakes will be completely screened with wire mesh not larger than 2.5 millimeters or 0.10 inch. Water will be released or pumped downstream at an appropriate rate to maintain downstream flows during construction. Pumps will be placed in a perforated intake basin to allow water to be drawn into the pump to protect and ensure aquatic organisms are not pulled into the pump. Upon completion of construction activities, any barriers to flow will be removed in a manner that would allow flow to resume with the least disturbance to the substrate.
 - e. The District will develop and implement a plan to relocate native fish and other native aquatic vertebrates during dewatering. Listed species in the dewatering area will be relocated according to the approved relocation plan (See Measure 14).
 - f. A Service-approved biologist will permanently remove, from within the project area, any individuals of exotic species, such as bullfrogs, crayfish, and centrarchid

fishes, to the maximum extent possible. The District will ensure that these activities are in compliance with the California Fish and Game Code.

- g. New concrete will not be placed or poured on-site in a location that may come into contact with any natural waterbodies. Any concrete pouring will be isolated from all natural waterbodies through appropriate wrapping or water barrier implements.
- 17. *Project Site Revegetation*. Project sites determined to require revegetation by the Serviceapproved biologist will be replanted with an appropriate assemblage of native riparian, wetland, and upland vegetation suitable for the area. A species list and restoration and monitoring plan will be included with the preconstruction project list for review and approval. The plan will include the location of the restoration, the species to be used, the restoration methods to be employed, the time of year the work will be done, the identifiable success criteria for completion, and the remedial actions that will be taken if the success criteria are not achieved. To avoid and minimize disturbance, the District will plant riparian vegetation by hand or with a rubber-tired backhoe from above the top of bank.
- 18. *Measures for Restoration Projects and Adaptive Management Conservation Measures.* The District will implement the following measures for proposed restoration projects:
 - a. The preconstruction project list submitted to the Service and CDFW by June 1st each year will include detailed descriptions and designs of proposed restoration projects for the upcoming year for Service and CDFW review and approval.
 - b. All restoration projects and adaptive management conservation measures will have either: permanent beneficial effects to federally listed species analyzed in this biological opinion; or at most, no permanent adverse effects (e.g., permanent effects to hydrology, water quality, or temperature in listed species habitat will be neutral to the species) to federally listed species analyzed in this biological opinion.
- 19. *Reporting.* By February 15 of each year, the District will submit an annual report describing the activities performed the previous year and the resulting habitat disturbance. This report will include a description of the work performed, specifically noting any changes to proposed projects from what was outlined in the preconstruction project list. At a minimum, the annual report will include the following information for that year and in total for all years:
 - a. A description of activities/projects completed and their location (only for that year);
 - b. Location, amount, and extent of vegetation-type and listed species habitat-type disturbed;
 - c. Amount or extent of take of listed species including a summary of listed species relocations;
 - d. Conservation measures implemented that year;
 - e. A description of the amount, type, and location of habitat restored or enhanced;
 - f. Acreage of listed species habitat that was restored or enhanced and whether the permanent effects from the restoration projects to species habitat types will be beneficial or neutral; each listed species covered under this biological opinion will

be addressed to ensure that species habitat disturbance and habitat enhancement can be tracked over the 5-year period.

Species/Habitat Specific Measures

- 20. *Alameda Whipsnake*. The District will implement the following measures at parks listed in Table 1 as supporting or potentially supporting Alameda whipsnake:
 - a. To the extent possible, all rock outcroppings will be avoided.
 - b. Construction activities will occur between June 15 October 31, when Alameda whipsnake are more active, capable of escaping, and less likely to be impacted.
 - c. Ground disturbance and vegetation clearing in scrub/chaparral habitat will be avoided to the maximum extent possible. Where disturbance cannot be avoided in this habitat type, work will be limited to the fall season of September to November in order to allow the young of the year time to become sufficiently capable of escaping such activities.
 - d. Work activities will be restricted to existing roads and trails to the maximum extent possible. When existing roads and trails cannot be followed, shrub vegetation will be removed by equipment operated by hand to prevent mortality associated with mowers or other large mechanical equipment. A Service-approved biologist experienced in identifying Alameda whipsnake will be present during vegetation removal.
- 21. *California Red-legged Frog and Foothill Yellow-legged Frog*. The District will implement the following measures in parks listed in Table 1 as supporting or potentially supporting California red-legged frog or foothill yellow-legged frog:
 - a. Work within California red-legged frog or foothill yellow-legged frog aquatic habitat will be performed only between August 31 and October 31 or under dry site conditions and will minimize potential adverse impacts to aquatic habitats. If work must occur when water is present (after August 31) and the species is known to occur in the area, then a relocation plan will be provided to the Service for review and approval prior to the commencement of construction activities.
 - b. An approved biologist will survey the work site immediately prior to construction activities. If adult, juvenile, or tadpole California red-legged frogs or foothill yellow-legged frogs are found, they will be provided the opportunity to leave the work area on their own, but if necessary, they will be relocated according to the approved relocation plan (measure 14). The approved biologist will be allowed sufficient time to move California red-legged frogs or foothill yellow-legged frogs from the work site before work activities begin.
 - c. Only approved biologists will participate in activities associated with the capture, handling, and monitoring of California red-legged frogs or foothill yellow-legged frogs.
 - d. Bare hands will be used to capture California red-legged frogs and foothill yellow-legged frogs. Approved biologists will not use soaps, oils, creams, lotions, repellents, or solvents of any sort on their hands within two hours before and during periods when they are capturing and relocating individuals. To avoid transferring diseases or pathogens while handling the amphibians, approved biologists will follow the Declining Amphibian Populations Task Force's "Code of Practice". These practices will be included in the relocation plan.

- 22. *California Tiger Salamander*. The District will implement the following measures in parks listed in Table 1 as supporting or potentially supporting California tiger salamander:
 - a. Work within California tiger salamander aquatic habitat will be performed only between August 31 and October 31 or under dry site conditions and will minimize potential adverse impacts to aquatic habitats.
 - b. An approved biologist will survey the work site immediately prior to construction activities. If adult, juvenile, or larvae California tiger salamanders are found, they will be relocated according to the approved relocation plan (measure 14). The approved biologist will be allowed sufficient time to relocate California tiger salamanders from the work site before work activities begin.
 - c. Only approved biologists will participate in activities associated with the capture, handling, and monitoring of California tiger salamanders.
 - d. Bare hands will be used to capture California tiger salamanders. Approved biologists will not use soaps, oils, creams, lotions, repellents, or solvents of any sort on their hands within two hours before and during periods when they are capturing and relocating individuals. To avoid transferring disease or pathogens while handling the amphibians, approved biologists will follow the Declining Amphibian Populations Task Force's "Code of Practice." These practices will be included in the relocation plan.
- 23. *San Joaquin Kit Fox*: The District will implement the following measures in parks listed in Table 1 as supporting or potentially supporting San Joaquin kit fox:
 - a. Preconstruction surveys for San Joaquin kit fox will be conducted in work areas and all areas within 200 feet of work areas to identify potential San Joaquin kit fox dens or other refugia. Surveys will include den searches following methods outlined in the U.S Fish and Wildlife Service San Joaquin Kit Fox Survey Protocol for the Northern Range (Service 1999). A Service-approved biologist will conduct the den searches 14 to 30 days before initiation of ground-disturbing activity in each work area. Following den searches, all identified potential dens (as defined in Appendix II of U.S. Fish and Wildlife Service Standardized Recommendations for the Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance (Service 2011)) will be monitored for evidence of kit fox use by placing an inert tracking medium and/or a camera station at den entrances and monitoring for at least 3 consecutive nights. The results of the surveys will be provided to the Service within 1 week of completion. If ground disturbing activities cease for 28 consecutive calendar days, a Service-approved biologist will conduct a new survey for San Joaquin kit fox prior to re-initiation of ground-disturbing activities.
 - b. If no activity is detected at potential den sites, potential den sites that will be collapsed by construction activities will be closed following guidance established in the U.S. Fish and Wildlife Service Standardized Recommendations for the Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance (Service 2011). If kit fox occupancy is determined during any of the surveys conducted, the Service will be notified within 24 hours and no work will occur within 200 feet of the den unless approved by the Service. Appropriate buffers and avoidance measures will be developed in consultation with the Service. Depending on the den type, measures to avoid effects to kit foxes could

include seasonal limitations on work in the area (i.e., restricting the work period to avoid spring-summer pupping season), establishing a work exclusion zone around the identified site, or resurveying the den later to determine species presence or absence.

- c. Vehicle traffic will be restricted to established roads, construction areas, and other designated areas.
- d. Grading activities will be designed to minimize or eliminate effects to rodent burrows. Areas with high concentrations of burrows and large burrows suitable for San Joaquin kit fox dens will be avoided by grading activities to the maximum extent possible. In addition, when concentrations of burrows or large burrows are observed within the site these areas will be staked and flagged to ensure construction personnel are aware of their location and to facilitate avoidance of these areas.
- 24. Longhorn Fairy Shrimp, Vernal Pool Fairy Shrimp, and Vernal Pool Tadpole Shrimp. The District will implement the following measures in parks listed in Table 1 as supporting or potentially supporting listed vernal pool branchiopods:
 - a. Work within 250 feet of listed vernal pool branchiopod habitat will be performed only between August 1 and October 31 under dry site conditions and will minimize potential adverse impacts to aquatic habitats.
 - b. A Service-approved biologist will monitor all construction activities within 250 feet of suitable habitat for listed vernal pool branchiopods to ensure that no unnecessary take or destruction of habitat occurs.
 - c. The District or its contractors will implement dust control measures necessary to prevent the transport of soil from exposed surfaces to vernal pool, swale, and rock pool habitat. Sprinkling with water will not be done in excess to minimize the potential for non-storm water discharge.
 - d. Routine maintenance activities within 250 feet of vernal pool and swale habitat will be avoided to the maximum extent possible.
 - e. If work within 250 feet of suitable habitat for listed vernal pool branchiopods cannot be avoided, the District will conduct protocol-level surveys according to the Service's 2015 *Survey Guidelines for Listed Vernal Pool Branchiopods* and provide the results of the surveys to the Service along with the preconstruction project list. If listed vernal pool branchiopods are found to be present in features within 250 feet of proposed activities (or if surveys are not conducted and presence of listed branchiopods is assumed), the District will design the project so that no permanent adverse effects to hydrology to the vernal pool or vernal pool complex will result from the project. The District will then contact the Service for site specific approval and the Service will help to develop appropriate site specific conservation measures to avoid any permanent adverse effects to hydrology is not feasible for the project, the District will contact the Corps and request initiation of a separate consultation for that project.
- 25. *Tidal Habitat*. The District will implement the following measures in tidal habitat and areas adjacent to tidal habitat:
 - a. Work vehicles driving on levees adjacent to tidal habitat will travel at speeds no greater than 10 miles per hour to minimize noise and dust disturbance.

- b. Construction, maintenance, and management activities (including mowing) will not occur within two hours before or after extreme high tides (6.5 feet or above, as measured at the Golden Gate Bridge and adjusted to the timing of local high tides), when the marsh plain is inundated.
- c. On appropriate structures (i.e. tall light poles, utility poles, fencing, etc.) not in conflict with recreational uses (recreational signage, boardwalk fencing, etc.) that are installed, replaced, or repaired near habitat for the salt marsh harvest mouse, California Ridgway's rail, California least tern, or western snowy plover, anti perching devices will be installed, as determined by a service approved biologist, to deter avian predators.
- d. All equipment that may have come in contact with invasive plants (including perennial pepperweed, smooth cordgrass or its hybrids, or the seeds of these plants) will be carefully cleaned before arriving on site.
- 26. *California Ridgway's Rail*. The District will implement the following measures in parks listed in Table 1 as supporting or potentially supporting California Ridgway's rail:
 - a. To avoid causing the abandonment of an active California Ridgway's rail nest, activities (including construction and maintenance activities) within 700 feet of vegetated tidal marsh providing suitable breeding habitat for California Ridgway's rails will be avoided during the rail's breeding season from February 1 through August 31.
 - b. If a rail of any species is observed in or adjacent to a work area, work will be stopped immediately. If the rail is either identified as a California Ridgway's rail by a Service-approved biologist or cannot be positively identified, work will be stopped until the rail leaves the work area of its own volition and the Service will be notified. If the rail does not leave the work area, work will not be reinitiated until after the Service is consulted regarding appropriate avoidance measures and permission is granted by the Service to commence work.
- 27. *Salt Marsh Harvest Mouse*. The District will implement the following measures in parks listed in Table 1 as supporting or potentially supporting salt marsh harvest mouse:
 - a. Impacts to pickleweed will be avoided to the maximum extent feasible. Excluding outboard wave exposed levees, any vegetation clearing to be conducted in areas containing pickleweed habitat or areas within 50 feet from the edge of pickleweed habitat will be conducted only with non-mechanized hand tools (i.e. trowel, hoe, rake, and shovel). No motorized equipment, including weed whackers or lawn mowers, will be used to remove this vegetation. Vegetation will be cleared to bare ground and removal will start at the edge farthest from the salt marsh and work towards the marsh. If a mouse of any species is observed within the areas being removed of vegetation work will cease until the mouse has left the area of its own volition.
 - b. During mowing of vegetation along levees adjacent to pickleweed habitat in site preparation for covered maintenance activities, mowing will start from the top (the area of least suitable habitat) and proceed downslope toward more suitable habitat so any salt marsh harvest mice present in the area to be mown can move away from the disturbance of the mower and out of the mowing area. If mowing needs to occur within 50-feet of pickleweed habitat, Conservation Measure 27a will be implemented prior to mowing. Immediately prior to start of mowing (even

after hand-removal), a Service-approved biologist will walk the area to be mowed to look for salt marsh harvest mice and to encourage them to move out of the area. If a salt marsh harvest mouse (or mouse that could be a salt marsh harvest mouse) is detected within the area to be mowed, no mowing will occur in that area.

- c. For ground-disturbing activities in or within 50 feet of pickleweed habitat, construction boundaries will be well marked with flagging or stakes as per General Conservation Measure 3. The final design and proposed location of the marking will be determined by a Service-approved biologist. The site will be surveyed throughout the day for any salt marsh harvest mouse individuals. Boundary flagging/staking will be removed immediately following work completion.
- d. If an active nest is observed within work or access areas during the preconstruction surveillance or any activity, a wooden coverboard will be placed over the suspected rodent nest during trimming activities and activities will be halted and a 100-foot no disturbance buffer area implemented until the Serviceapproved biologist has determined that all salt marsh harvest mice have weaned or are not present within 100 feet of the work area.
- 28. *Western Snowy Plover*. The District will implement the following measures in parks listed in Table 1 as supporting or potentially supporting snowy plover:
 - a. Shoreline protection and dredging activities in or within 600 feet of known or potential Western snowy plover habitat (dunes and beach) will be performed only during the non-nesting season between September 1 and January 31.
 - b. Should a Western snowy plover be observed within or adjacent to a project area, work activities within a 50-foot radius of the bird will be suspended until the bird leaves the site voluntarily.
- 29. *California Least Tern*. The District will implement the following measures in parks listed in Table 1 as supporting or potentially supporting California least tern:
 - a. Maintenance activities in or within 600 feet of known or potential California least tern nesting habitat will be performed only during the non-nesting season between September 1 and January 31.
 - b. To minimize open water turbidity during the California least tern breeding season, no dredging activities will occur in California least tern foraging habitat from April 1 to August 15.
 - c. Should a California least tern be observed within or adjacent to a project area, work activities within a 50-foot radius of the bird will be suspended until the bird leaves the site voluntarily.
- 30. *Giant Garter Snake*. The District will implement the following measures in parks listed in Table 1 as supporting or potentially supporting giant garter snake:
 - a. Disturbance activities in known or potential giant garter snake aquatic or within 200 feet of habitat will be performed only between May 1 and October 1 to avoid potential impacts to this species.
 - b. Work activities will be restricted to existing roads and trails to the maximum extent possible. When existing roads and trails cannot be followed, and disturbance is in known or potential giant garter snake habitat, vegetation will be

removed by hand to prevent mortality associated with mowers and other landscaping equipment.

- 31. *Plant Surveys*. A Service-approved botanist will conduct pre-construction field surveys to identify any threatened, endangered, rare, and other special-status plants located within or adjacent (within 300 feet) of proposed work areas. Surveys will be conducted prior to the initiation of work activities and coincide with the appropriate flowering period of the special-status plant species with the potential to occur in the project area. Survey results will be provided to the Service prior to the start of project work. If any listed plants are found during the surveys the project will be re-designed to avoid the plant/population. A Service-approved botanist will delineate the locations of the plant or population and install protective fencing between the work area and the plant/population such that direct or indirect effects to the plants will be avoided. If avoidance of a federally-listed plant/population is not feasible, the District will contact the Corps and request initiation of a separate consultation for that project.
- 32. *Pallid Manzanita*. The District will implement the following measures in parks listed in Table 1 as supporting or potentially supporting pallid manzanita:
 - a. All pallid manzanita populations will be mapped using GPS prior to any construction activities. Populations or individual plants will be flagged with high visibility flagging and avoided.
 - b. Adjacent to or within pallid manzanita populations, encroaching brush or noxious weedy vegetation will be removed by hand to protect and prevent harm to the species.
 - c. A specific ingress/ egress route that minimizes the potential spread of *Phytophthora cinnamomi*, will be identified by a Service-approved biologist when working in vicinity of extant populations of pallid manzanita. A wash station will be established at the ingress/ egress location. Prior to entering or exiting the ingress/ egress location, any potentially contaminated material will be removed from all boots, hand tools, clothing, and equipment, then these items will be disinfected using 70 percent isopropanol (rubbing alcohol) or another Service-approved substance known to disinfect *P. cinnamomi* contaminated equipment.
 - d. Prior to conducting routine maintenance activities within the vicinity of known extant populations of pallid manzanitas, all personnel will attend an environmental awareness training session designed to inform all workers about the long-term effects of *P. cinnamomi*, how it is spread, and the measures to be taken to avoid spreading it.
- 33. *Delta Smelt*. The District will implement the following measures in parks listed in Table 1 as supporting or potentially supporting delta smelt.
 - a. Disturbance activities in known or potential delta smelt habitat will be performed only between August 1 and November 30 to avoid potential impacts to this species.

34. *Longfin Smelt*. If dewatering is required in potential longfin or delta smelt habitat, a fish relocation plan will be prepared and submitted for Service approval prior to project commencement. All pump intakes will be screened per Service and National Marine Fisheries Service standards.

Action Area

The action area is defined in 50 CFR § 402.02, 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 proposed project, the action area encompasses the approximately 122,206 acres of land owned or managed by the District displayed in Table 1 as well as the lands immediately adjacent that may have indirect effects.

Analytical Framework for the 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 considers the effects of the proposed federal action, and any cumulative effects, on the rangewide survival and recovery of the listed species. It relies on four components: (1) the *Status of the Species*, which describes the current rangewide condition of the species, the factors responsible for that condition, and its survival and recovery needs; (2) the *Environmental Baseline*, which analyzes the current condition of the species in the action area without the consequences to the listed species caused by the proposed action, 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 determines all consequences to listed species that are caused by the proposed federal action; and (4) the *Cumulative Effects*, which evaluates the effects of future, non-federal activities in the action area on the species. The *Effects of the Action* and *Cumulative Effects* are added to the *Environmental Baseline* and in light of the status of the species, the Service formulates its opinion as to whether the proposed action is likely to jeopardize the continued existence of the listed species.

Analytical Framework for the 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. A final rule revising the regulatory definition of "destruction or adverse modification" (DAM) was published on August 27, 2019 (84 FR 44976). The final rule became effective on October 28, 2019. The revised definition states:

"*Destruction or adverse modification* means a direct or indirect alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species."

The DAM analysis in this biological opinion relies on four components: (1) the Status of Critical Habitat, which describes the current rangewide condition of the critical habitat in terms of the key components (i.e., essential habitat features, primary constituent elements, or physical and biological features) that provide for the conservation of the listed species, the factors responsible for that condition, and the intended value of the critical habitat overall for the conservation/recovery of the listed species; (2) the Environmental Baseline, which analyzes the current condition of the critical habitat in the action area without the consequences to designated critical habitat caused by the proposed action, the factors responsible for that condition, and the value of the critical habitat in the action area for the conservation/recovery of the listed species; (3) the Effects of the Action, which determines all consequences to designated critical habitat that are caused by the proposed federal action on the key components of critical habitat that provide for the conservation of the listed species, and how those impacts are likely to influence the conservation value of the affected critical habitat; and (4) Cumulative Effects, which evaluate the effects of future non-federal activities that are reasonably certain to occur in the action area on the key components of critical habitat that provide for the conservation of the listed species and how those impacts are likely to influence the conservation value of the affected critical habitat. The Effects of the Action and Cumulative Effects are added to the Environmental Baseline and in light of the status of critical habitat, the Service formulates its opinion as to whether the action is likely to destroy or adversely modify designated critical habitat. The Service's opinion evaluates whether the action is likely to impair or preclude the capacity of critical habitat in the action area to serve its intended conservation function to an extent that appreciably diminishes the rangewide value of critical habitat for the conservation of the listed species. The key to making that finding is understanding the value (i.e., the role) of the critical habitat in the action area for the conservation/recovery of the listed species based on the *Environmental Baseline* analysis.

Status of the Species

Alameda Whipsnake

For the most recent comprehensive assessment of the species' rangewide status, please refer to the *Alameda Whipsnake (Masticophis lateralis euryxanthus) 5-Year Review* (Service 2020b). No change in the species' listing status was recommended in this 5-year review. Threats evaluated during that review and discussed in the final document have continued to act on the species since the 2020 5-year review was finalized, with loss of habitat being the most significant effect. Alameda whipsnake was included in the 2002 *Draft Recovery Plan for Chaparral and Scrub Community Species East of San Francisco Bay, California* (Service 2002a)..

Within the action area, habitat fragmentation and loss through urban development and build-out of major transportation corridors represent major threats to the Alameda whipsnake (Service 2020b). The increasing urban development in the East Bay adjacent to protected properties has been shown to increase the number of feral cats and dogs that may affect Alameda whipsnake populations (District 2017). Although most major reservoirs and water projects in the East Bay were completed prior to the Alameda whipsnake listing, these projects have been responsible for loss and fragmentation of its habitat and represent continuing threats due to infrastructure build-out and reservoir expansion. New reservoir construction in the region remains a potential threat. Direct and indirect effects of off-highway vehicle use, such as what occurs at the Carnegie State Vehicular Recreation Area in Recovery Unit 5 in eastern Alameda and San Joaquin Counties,

and trail use by mountain bikers and other recreationists, may represent threats to the Alameda whipsnake (District 2017).

California Red-legged Frog

For the most recent comprehensive assessment of the species' rangewide status, please refer to the *California Red-Legged Frog (Rana draytonii) 5-Year Review: Summary and Evaluation* (Service 2022a) and the *Recovery Plan for the California Red-legged Frog (Rana aurora draytonii)* (Service 2002b). No change in the species' listing status was recommended in this 5-year review. Threats evaluated during that review and discussed in the final document have continued to act on the species since the 2022 5-year review was finalized, with loss of habitat being the most significant effect.

Within the action area, loss of habitat due to increased development poses the biggest threat to California red-legged frog populations in Alameda and Contra Costa Counties. Numerous recent developments have reduced habitat and known California red-legged frog populations. Other threats within the Action area include off-road vehicle use and various forms of recreation (Carnegie State Vehicular Recreation Area), inappropriate levels of grazing, agriculture, flood control maintenance, herbicide and pesticide use, and non-human activities, such as predation by introduced species, feral animals, and/or domestic animals, such as cats and dogs (District 2017).

Foothill Yellow-legged Frog

For the most recent comprehensive assessment of the species' rangewide status, please refer to the *Foothill Yellow-Legged Frog; Threatened Status with Section 4(d) Rule for Two Distinct Population Segments and Endangered Status for Two Distinct Population Segments; Final Rule* (Service 2023a) (Final Rule) and the *Species Status Assessment Report for the Foothill Yellow-legged Frog (Rana boylii)* (Service 2023b). The Service listed the Central Coast and North Feather distinct population segments as threatened and South Coast and South Sierra distinct population segments as endangered in the Final Rule. Threats evaluated and discussed in the Final Rule have continued to act on the species since the Service issued the document, with loss of habitat (altered hydrology), competition with nonnative species, and effects of climate change having the most significant effects.

California Tiger Salamander

For the most recent comprehensive assessment of the species' rangewide status, please refer to the *California Tiger Salamander Central California Distinct Population Segment (Ambystoma californiense) 5-Year Review* (Service 2023c) and the Recovery Plan for the Central California Distinct Population Segment of the California Tiger Salamander (Service 2017a). No change in the species' listing status was recommended in this 5-year review. Threats evaluated during that review and discussed in the final document have continued to act on the species since the 2023 5-year review was finalized, with loss of habitat being the most significant effect.

Within the action area, loss of habitat due to increased development poses the biggest threat to California tiger salamander populations in Alameda and Contra Costa Counties. Numerous recent developments have reduced habitat and known California tiger salamander populations. Numerous recent developments have reduced habitat and known California tiger salamander populations: Dublin Ranch and other developments along Tassajara Road; Positano, Jordan

Ranch, and East Ranch developments within the East Dublin Specific Plan; and Las Positas College build out, business parks, various road projects, and vineyards in North Livermore. Other threats to California tiger salamanders in the action area include habitat destruction, degradation, and fragmentation due to urban development and conversion to intensive agriculture, off-road vehicle use and various forms of recreation (such as the Carnegie State Vehicular Recreation Area), inappropriate levels of grazing, exposure to various contaminants, rodent population control efforts, mosquito control, hybridization with non-native tiger salamanders and predation by introduced species and/or feral animals (District 2017).

Longhorn Fairy Shrimp

For the most recent comprehensive assessment of the species' rangewide status, please refer to the *Longhorn Fairy Shrimp (Branchinecta longiantenna) 5-Year Review* (Service 2022b). No change in the species' listing status was recommended in this 5-year review. Threats evaluated during that review and discussed in the final document have continued to act on the species since the 2022 5-year review was finalized, with loss of habitat being the most significant effect. Longhorn fairy shrimp was included in the 2005 *Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon* (Service 2005a).

Vernal Pool Fairy Shrimp

For the most recent comprehensive assessment of the species' rangewide status, please refer to the *Vernal Pool Fairy Shrimp (Branchinecta lynchi), Vernal Pool Tadpole Shrimp (Lepidurus packardi), Conservancy Fairy Shrimp (Branchinecta conservatio) 5-Year Review: Summary and Evaluation* (Service 2024). No change in the species' listing status was recommended in this 5-year review. Threats evaluated during that review and discussed in the final document have continued to act on the species since the 2024 5-year review was finalized, with loss of habitat being the most significant effect. Vernal pool fairy shrimp was included in the 2005 *Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon* (Service 2005a).

Vernal Pool Tadpole Shrimp

For the most recent comprehensive assessment of the species' rangewide status, please refer to the *Vernal Pool Fairy Shrimp (Branchinecta lynchi), Vernal Pool Tadpole Shrimp (Lepidurus packardi), Conservancy Fairy Shrimp (Branchinecta conservatio) 5-Year Review: Summary and Evaluation* (Service 2024). No change in the species' listing status was recommended in this 5-year review. Threats evaluated during that review and discussed in the final document have continued to act on the species since the 2024 5-year review was finalized, with loss of habitat being the most significant effect. Vernal pool tadpole shrimp was included in the 2005 *Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon* (Service 2005a).

San Joaquin Kit Fox

For the most recent comprehensive assessment of the species' rangewide status, please refer to the *San Joaquin kit fox (Vulpes macrotis mutica) 5-Year Review* (Service 2020c). No change in the species' listing status was recommended in this 5-year review. Threats evaluated during that review and discussed in the final document have continued to act on the species since the 2020 5-year review was finalized, with loss of habitat being the most significant effect. San Joaquin

kit fox was included in the 1998 Recovery Plan for Upland Species of the San Joaquin Valley, California (Service 1998).

Threats to San Joaquin kit foxes in the action area include loss and modification of habitat due to agricultural conversion, infrastructure construction, and urban development, pesticides and rodenticides, road mortality and off-road vehicle use, competition, and predation (District 2017). Numerous developments and activities have reduced and/or fragmented habitat for the San Joaquin kit fox within Alameda County: Dublin Ranch and other developments along Tassajara Road; Positano, Jordan Ranch, and East Ranch developments within the East Dublin Specific Plan; and Las Positas College build out, business parks and vineyards in North Livermore, commercial and private racetracks and off-road vehicle parks, energy and water infrastructure projects, and agricultural conversions.

Pallid Manzanita

For the most recent comprehensive assessment of the species' rangewide status, please refer to the *Pallid Manzanita (Arctostaphylos pallida) 5-Year Review* (Service 2023d) and the *Recovery Plan for Arctostaphylos pallida (pallid manzanita)* (Service 2015). No change in the species' listing status was recommended in this 5-year review. Threats evaluated during that review and discussed in the final document have continued to act on the species since the 2023 5-year review was finalized, with fire suppression and overshading by other plants, hybridization, and *Phytophthora cinnamomic* infection being the most significant effects.

Giant Garter Snake

For the most recent comprehensive assessment of the species' rangewide status, please refer to the *Giant Garter Snake (Thamnophis gigas) 5-Year Review: Summary and Evaluation* (Service 2020d) and the *Recovery Plan for the Giant Garter Snake (Thamnophis gigas)* (Service 2017b). No change in the species' listing status was recommended in this 5-year review. Ongoing threats to giant garter snake include habitat loss from urbanization, the resultant fragmentation and population isolation, flood channel maintenance, agricultural practices (e.g., rice fallowing due to drought conditions, habitat disturbance and loss from irrigation and drainage ditch maintenance), climate change, water transfers, and invasive species. Our review emphasizes urbanization as one of the greatest threats to the species, particularly where associated with rice agriculture.

According to Halstead et al. (2015a), habitat quality plays a central role in the population ecology of this species, depending on factors like refuge and prey availability, vegetation type and density, and scouring floods. Our recovery plan outlines actions needed to protect and enhance the species sufficiently to remove it from the list of endangered species (Service 2017). This includes but is not limited to, the protection, connection, and improvement of the quality and presence of habitat through various management actions aimed at water quality and presence of summer water.

More recent studies examining the use of uplands have bearing on the effects of the proposed project (Halstead et al. 2015b). It has been known for some time that the giant garter snake spends half of the year, roughly November through April, hibernating in uplands. However, it is now known that the snake also spends more than half the time in terrestrial environments during the active period during summer. While in such terrestrial habitats in summer, the snake is often underground, especially during extreme temperatures. Animal burrows are believed to be an

important component of upland refugia, although other elements such as brush piles and even riprap may be used (e.g., Wylie and Amarello 2008). Although snakes can venture as much as 500 feet or more from the water edge, the overwhelming majority of both the summer and winter upland captures are within the first 10 meters from the water edge.

California Ridgway's Rail

For the most recent comprehensive assessment of the species' rangewide status, please refer to the *California clapper rail (Rallus longirostris obsoletus) 5-Year Review* (Service 2020e). No change in the species' listing status was recommended in this 5-year review. Threats evaluated during that review and discussed in the final document have continued to act on the species since the 2020 5-year review was finalized, with loss of habitat being the most significant effect. California Ridgway's rail was included in the 2013 *Recovery Plan for Tidal Marsh Ecosystems of Northern and Central California* (Service 2013)..

Salt Marsh Harvest Mouse

For the most recent comprehensive assessment of the species' rangewide status, please refer to the *Salt marsh harvest mouse (Reithrodontomys raviventris) 5-Year Review* (Service 2021). No change in the species' listing status was recommended in this 5-year review. Threats evaluated during that review and discussed in the final document have continued to act on the species since the 2020 5-year review was finalized, with loss of habitat being the most significant effect. Salt marsh harvest mouse was included in the 2013 *Recovery Plan for Tidal Marsh Ecosystems of Northern and Central California* (Service 2013).

California Least Tern

For the most recent comprehensive assessment of the species' rangewide status, please refer to the *California Least Tern (Sternula antillarum browni) (= Sterna a. b.) 5-Year Review: Summary and Evaluation* (Service 2020f). No change in the species' listing status was recommended in this 5-year review. Threats evaluated during that review and discussed in the final document have continued to act on the species since the 2020 5-year review was finalized, with loss of habitat being the most significant effect. In 2009, the Service published a *Spotlight Species Action Plan for the California Least Tern* (Service 2009), which included the statement that nesting has occurred sporadically but increasingly at inland sites in the Bay-Delta and Central Valley.

Western Snowy Plover

For the most recent comprehensive assessment of the species' rangewide status, please refer to the *Western Snowy Plover [Pacific Coast population Distinct Population Segment] (Charadrius nivosus nivosus) 5-Year Review* (Service 2019) and the *Recovery Plan for the Pacific Coast Population of the Western Snowy Plover (Charadrius alexandrinus nivosus)* (Service 2007). No change in the species' listing status was recommended in this 5-year review.. Threats evaluated during that review and discussed in the final document have continued to act on the species since the 2019 5-year review was finalized, with predation and disturbance and loss of habitat being the most significant effects.

Delta Smelt

For the most recent comprehensive assessment of the species' rangewide status, please refer to the *Hypomesus transpacificus (delta smelt) 5-Year Review* (Service 2010b) and page 41560 of the 2023 Candidate Notice of Review for the status of the species. The Service found that the status of the species warrants reclassification from threatened to endangered, but that this reclassification is precluded by higher priority actions. The Service is in the process of finalizing its most current 5-year review for the species.

The CDFW's Fall Midwater Trawl (FMWT) Survey is one of the longest running indicators of the delta smelt's abundance trend. Indices of delta smelt relative abundance from this survey date to 1967. The FMWT index has traditionally been the primary indicator of delta smelt trend because it samples later in the life cycle, providing an indicator of annual recruitment. The FMWT deploys more than 400 net tows per year over its four-month sampling season (September through December). The highest FMWT index for delta smelt (1,673) was recorded in 1970 and a comparably high index (1,654) was reported in 1980. The last FMWT index exceeding 1,000 was reported in 1993. The last FMWT indices exceeding 100 were reported in 2003 and 2011. In 2018, the FMWT index was zero for the first time, and the FMWT index has been zero every year from 2018 through 2023. Thus, the FMWT has recorded a 40-50 year decline in which delta smelt went from a minor (but common) species to essentially undetectable by this long-term survey.

In December 2021, the Service, along with CDFW, California Department of Water Resources, and U.S. Bureau of Reclamation, began experimentally releasing captively produced delta smelt into the Sacramento-San Joaquin River Delta in an experiment intended to help inform future supplementation of the species in the wild. A total of 5 releases were completed, totaling 55,733 brood year 2021 marked (adipose fin clip or Visible Implant Elastomer) delta smelt from UC Davis' Fish Conservation and Culture Laboratory. The releases occurred in various locations including Rio Vista, the Sacramento Deep Water Ship Channel, and Suisun Marsh. A subsample of those marked fish were recaptured in the Deep Water Ship Channel, central Delta, south Delta, and Suisun Marsh by the Service's Enhanced Delta Smelt Monitoring, Chipps Island Trawl, CDFW's Spring Kodiak Trawl, Bay Study, and in the Central Valley Project salvage facility.

Experimental release of captively produced, marked delta smelt continued for a second year in November 2022 through January 2023. These releases occurred at both Rio Vista and the Sacramento Deep Water Ship Channel. A total of 43,705 delta smelt were released. A small subsample of those marked fish have also been recaptured. A third year of experimental release has started with releases starting in November 2023, with approximately 90,000 cultured delta smelt slated for release.

Longfin Smelt

The Service proposed to list the San Francisco Bay-Delta DPS of the longfin smelt as endangered on October 7, 2022 (Service 2022c). For the comprehensive assessment of the longfin smelt DPS, please refer to the proposed listing rule at https://www.govinfo.gov/content/pkg/FR-2022-10-07/pdf/2022-21605.pdf#page=1 and the Species Status Assessment for the San Francisco Bay-Delta Distinct Population Segment of the Longfin Smelt at https://ecos.fws.gov/ServCat/DownloadFile/223002 (Service 2022d).

Status of Critical Habitat

Critical habitat is defined in Section 3 of the Act as: (1) The specific areas within the geographical area occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (a) essential to the conservation of the species and (b) that may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. In determining which areas to designate as critical habitat, the Service considers those physical and biological features that are essential to a species' conservation and that may require special management considerations or protection (50 CFR 424.12(b)). The Service is required to list the known primary constituent elements (PCEs) together with the critical habitat description. Such physical and biological features include, but are not limited to, the following:

- 1. Space for individual and population growth, and for normal behavior;
- 2. Food, water, air, light, minerals, or other nutritional or physiological requirements;
- 3. Cover or shelter;
- 4. Sites for breeding, reproduction, rearing of offspring, or dispersal; and
- 5. Generally, habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of a species.

With the designation of critical habitat, the Service intends to conserve the geographic areas containing the physical and biological features that are essential to the conservation of the species through the identification of the appropriate quantity and spatial arrangement of the PCEs sufficient to support the life-history functions of the species. Not all life-history functions require all the PCEs, therefore, not all areas designated as critical habitat will contain all the PCEs.

Alameda Whipsnake Critical Habitat

On October 2, 2006, the final rule determining critical habitat for the Alameda whipsnake was published in the Federal Register (Service 2006c). The rule identifies approximately 154,834 acres within six critical habitat units in Alameda, Contra Costa, Santa Clara, and San Joaquin counties, California.

Based on our current knowledge of the life history, biology, and ecology of the Alameda whipsnake and the requirements of the habitat necessary to sustain the essential life history functions of the subspecies, the Service has determined that the PCEs for the Alameda whipsnake are:

PCE 1: <u>Scrub/shrub communities with a mosaic of open and closed canopy</u>. Scrub/shrub vegetation dominated by low-to medium-stature woody shrubs with a mosaic of open and closed canopy as characterized by the chamise, chamise-eastwood manzanita, chaparral whitethorn, and interior live oak shrub vegetation series (as identified in the Manual of California Vegetation (Sawyer and Keeler-Wolf 1995), A Guide to Wildlife Habitats of California ((Mayer and Laudenslayer 1988), and California Wildlife Habitat Relationship System (CDFG 1998)), occurring at elevations from sea level to approximately 3,850 feet. Such scrub/shrub vegetation within these series forms a pattern of open and closed canopy used by the Alameda whipsnake for shelter from predators; temperature

regulation because it provides sunny and shady locations; prey-viewing opportunities; and nesting habitat and substrate. These features contribute to support a prey base consisting of western fence lizards and other prey species such as skinks, frogs, snakes, and birds;

PCE 2: Woodland or annual grassland plant communities contiguous to lands containing <u>PCE 1.</u> Woodland or annual grassland vegetation series comprised of one or more of the following: blue oak, coast live oak, California bay, California buckeye, and California annual grassland vegetation series (as identified in the Manual of California Vegetation (Sawyer and Keeler-Wolf 1995), A Guide to Wildlife Habitats of California (Mayer and Laudenslayer 1988), and California Wildlife Habitat Relationship System (CDFG 1998)) are PCE 2. This mosaic of vegetation is essential to the conservation of the Alameda whipsnake because it supports a prey base, consisting of western fence lizards and other prey species such as skinks, frogs, snakes, and birds. This provides opportunities for foraging by allowing snakes to come in contact with and visualize, track, and capture prey (especially western fence lizards along with other prey such as skinks, frogs, birds); short and long distance dispersal within, between, or to adjacent areas containing essential features (i.e., PCE 1 or PCE 3); and contact with other Alameda whipsnakes for mating and reproduction;

PCE 3: <u>Lands containing rock outcrops, talus, and small mammal burrows within or</u> <u>adjacent to PCE 1 and or PCE 2.</u> These areas are essential to the conservation of the Alameda whipsnake because they are used for retreats (shelter), hibernacula, foraging, and dispersal, and provide additional prey population support functions. Refer to the final designation of critical habitat for additional information.

California Red-legged Frog Critical Habitat

The Service designated critical habitat for the California red-legged frog on April 13, 2006 (71 FR 19244) (Service 2006a) and a revised designation to the critical habitat was published on March 17, 2010 (75 FR 12816) (Service 2010a). At this time, the Service recognized the taxonomic change from *Rana aurora draytonii* to *Rana draytonii* (Shaffer et al. 2010).

The PCEs defined for the California red-legged frog was derived from its biological needs. The area designated as revised critical habitat provides aquatic habitat for breeding and non-breeding activities and upland habitat for shelter, foraging, predator avoidance, and dispersal across its range. The PCEs and, therefore, the resulting physical and biological features essential for the conservation of the species were determined from studies of California red-legged frog ecology. Based on the above needs and our current knowledge of the life history, biology, and ecology of the species, and the habitat requirements for sustaining the essential life-history functions of the species, the Service determined that the PCEs essential to the conservation of the California red-legged frog are:

PCE 1: <u>Aquatic Breeding Habitat</u> Standing bodies of fresh water (with salinities less than 7.0 parts per thousand), including: natural and manmade (e.g., stock) ponds, slow-moving streams or pools within streams, and other ephemeral or permanent water bodies that typically become inundated during winter rains and hold water for a minimum of 20 weeks in all but the driest of years;

PCE 2: <u>Non-Breeding Aquatic Habitat</u> Freshwater and wetted riparian habitats, as described above, that may not hold water long enough for the subspecies to hatch and complete its aquatic life cycle but that do provide for shelter, foraging, predator avoidance, and aquatic dispersal for juvenile and adult California red-legged frogs. Other wetland habitats that would be considered to meet these elements include, but are not limited to: plunge pools within intermittent creeks; seeps; quiet water refugia during high water flows; and springs of sufficient flow to withstand the summer dry period.

PCE 3: <u>Upland Habitat</u> Upland areas adjacent to or surrounding breeding and nonbreeding aquatic and riparian habitat up to a distance of 1 mile in most cases and comprised of various vegetational series such as grasslands, woodlands, wetland, or riparian plant species that provide the frog shelter, forage, and predator avoidance. Upland features are also essential in that they are needed to maintain the hydrologic, geographic, topographic, ecological, and edaphic features that support and surround the wetland or riparian habitat. These upland features contribute to the filling and drying of the wetland or riparian habitat and are responsible for maintaining suitable periods of pool inundation for larval frogs and their food sources, and provide breeding, nonbreeding, feeding, and sheltering habitat for juvenile and adult frogs (e.g., shelter, shade, moisture, cooler temperatures, a prey base, foraging opportunities, and areas for predator avoidance). Upland habitat should include structural features such as boulders, rocks and organic debris (e.g., downed trees, logs), as well as small mammal burrows and moist leaf litter; and

PCE 4: <u>Dispersal Habitat</u>: Accessible upland or riparian dispersal habitat within designated units and between occupied locations within a minimum of 1 mile of each other that allow for movement between such sites. Dispersal habitat includes various natural habitats and altered habitats such as agricultural fields, which do not contain barriers (e.g., heavily traveled road without bridges or culverts) to dispersal. Dispersal habitat does not include moderate- to high-density urban or industrial developments with large expanses of asphalt or concrete, nor does it include large reservoirs over 50 acres in size, or other areas that do not contain those features identified in PCEs 1, 2, or 3 as essential to the conservation of the subspecies.

Longhorn Fairy Shrimp Critical Habitat

A final rule designated approximately 858,846 acres of critical habitat collectively for four vernal pool crustaceans and 11 vernal pool plants in 34 counties in California and one county in southern Oregon on August 11, 2005 (Service 2005c). On February 10, 2006, a final rule describing species-specific unit descriptions and maps identifying the critical habitat for each individual species was published (Service 2006b). The rule identifies approximately 13,557 acres within three critical habitat units in Alameda, Contra Costa, Merced, and San Luis Obispo counties, California.

The PCEs of critical habitat for longhorn fairy shrimp are the habitat components that provide:

PCE 1: Topographic features characterized by mounds and swales and depressions within a matrix of surrounding uplands that result in complexes of continuously, or intermittently, flowing surface water in the swales connecting the pools and providing for dispersal and promoting hydroperiods of adequate length in the pools;
PCE 2: Depressional features including isolated vernal pools with underlying restrictive soil layers that become inundated during winter rains and that continuously hold water for a minimum of 23 days, in all but the driest years; thereby providing adequate water for incubation, maturation, and reproduction. As these features are inundated on a seasonal basis, they do not promote the development of obligate wetland vegetation habitats typical of permanently flooded emergent wetlands;

PCE 3: Sources of food, expected to be detritus occurring in the pools, contributed by overland flow from the pools' watershed, or the results of biological processes within the pools themselves, such as single-celled bacteria, algae, and dead organic matter, to provide for feeding;

PCE 4: Structure within the pools consisting of organic and inorganic materials, such as living and dead plants from plant species adapted to seasonally inundated environments, rocks, and other inorganic debris that may be washed, blown, or otherwise transported into the pools, that provide shelter.

Vernal Pool Fairy Shrimp Critical Habitat

The Service designated approximately 858,846 acres of critical habitat collectively for four vernal pool crustaceans and 11 vernal pool plants in 34 counties in California and one county in southern Oregon on August 11, 2005 (Service 2005c). On February 10, 2006, a final rule describing species-specific unit descriptions and maps identifying the critical habitat for each individual species was published (Service 2006b). The rule identifies approximately 597,821 acres within 32 critical habitat units in Jackson County, Oregon, and Alameda, Amador, Contra Costa, Fresno, Kings, Mariposa, Monterey, Napa, Placer, San Benito, San Joaquin, San Luis Obispo, Santa Barbara, Shasta, Stanislaus, Tehama, Tulare, Ventura, and Yuba counties, California.

The PCEs of critical habitat for vernal pool fairy shrimp are the habitat components that provide:

PCE 1: Topographic features characterized by mounds and swales and depressions within a matrix of surrounding uplands that result in complexes of continuously, or intermittently, flowing surface water in the swales connecting the pools and providing for dispersal and promoting hydroperiods of adequate length in the pools;

PCE 2: Depressional features including isolated vernal pools with underlying restrictive soil layers that become inundated during winter rains and that continuously hold water for a minimum of 18 days, in all but the driest years; thereby providing adequate water for incubation, maturation, and reproduction. As these features are inundated on a seasonal basis, they do not promote the development of obligate wetland vegetation habitats typical of permanently flooded emergent wetlands;

PCE 3: Sources of food, expected to be detritus occurring in the pools, contributed by overland flow from the pools' watershed, or the results of biological processes within the pools themselves, such as single-celled bacteria, algae, and dead organic matter, to provide for feeding;

PCE 4: Structure within the pools consisting of organic and inorganic materials, such as living and dead plants from plant species adapted to seasonally inundated environments, rocks, and other inorganic debris that may be washed, blown, or otherwise transported into the pools, that provide shelter.

Western Snowy Plover Critical Habitat

On June 19, 2012, the final rule determining critical habitat for the western snowy plover was published in the Federal Register (Service 2012). The rule identifies approximately 24,527 acres of critical habitat units in Washington, Oregon, and California. In California, a total of 47 units on 16,337 acres throughout northern and southern California coastal areas were designated.

The PCEs essential to the conservation of the western snowy plover are sandy beaches, dune systems immediately inland of an active beach face, salt flats, mud flats, seasonally exposed gravel bars, artificial salt ponds and adjoining levees, and dredge spoil sites, with:

PCE 1: Areas that are below heavily vegetated areas or developed areas and above the daily high tide;

PCE 2: Shoreline habitat areas for feeding with no or very sparse vegetation that are between the annual low tide or low-water flow and annual high tide or high-water flow, subject to inundation but not constantly under water, that support small invertebrates, such as crabs, worms, flies, beetles, spiders, sand hoppers, clams, and ostracods, that are essential food sources;

PCE 3: Surf- or water-deposited organic debris, such as seaweed (including kelp and eelgrass) or driftwood located on open substrates that supports small invertebrates as described in PCE 2 for food, and provides cover or shelter from predators and weather, and assists in avoidance of detection (crypsis) for nests, chicks, and incubating adults;

PCE 4: Minimal disturbance from the presence of humans, pets, vehicles, or humanattracted predators, which provide relatively undisturbed areas for individual and population growth and for normal behavior.

Delta Smelt Critical Habitat

The Service designated critical habitat for the delta smelt on December 19, 1994 (Service 1994). The geographic area encompassed by the designation includes all water and all submerged lands below ordinary high water and the entire water column bounded by and contained in Suisun Bay (including the contiguous Grizzly and Honker Bays); the length of Goodyear, Suisun, Cutoff, First Mallard (Spring Branch), and Montezuma sloughs; and the existing contiguous waters contained within the legal Delta (as defined in section 12220 of the California Water Code). The Primary Constituent Elements (PCEs) designated by the Service are physical habitat (PCE 1), water (PCE 2), and river flow (PCE 3).

In designating critical habitat for the delta smelt, the Service identified the following primary constituent elements essential to the conservation of the species: physical habitat, water, river flow, and salinity concentrations required to maintain delta smelt habitat for spawning, larval and

juvenile transport, rearing, and adult migration. The elements required for suitable spawning, larval and juvenile transport, rearing, and adult migration are:

- <u>Spawning.</u> Delta smelt adults seek hallow, fresh or slightly brackish backwater sloughs and edgewaters for spawning. To ensure egg hatching and larval viability, spawning areas also must provide suitable water quality (i.e. low concentrations of pollutants) and substrates for egg attachment (e.g. submerged tree roots and branches and emergent vegetation). Specific areas that have been identified as important delta smelt spawning habitat include Barker, Lindsey, Cache, Prospect, Georgiana, Beaver, Hog, and Sycamore sloughs and the Sacramento River in the Delta, and tributaries of northern Suisun Bay.
- <u>Larval and juvenile transport</u>. Adequate river flow is necessary to transport larvae from upstream spawning areas to rearing habitat in Suisun Bay and to ensure that rearing habitat is maintained in Suisun Bay. To ensure this, 2 ppt isohaline (a line drawn to connect all points of equal salinity) must be located westward of the confluence of the Sacramento-San Joaquin Rivers, located near Collinsville (Confluence), during the period when larvae or juveniles are being transported, according to historical salinity conditions. 2 ppt isohaline is important because the "entrapment zone" or zone where particles, nutrients, and plankton are "trapped," leading to an area of high productivity, is associated with its location. Habitat conditions suitable for transport of larvae and juveniles may be needed by the species as early as February 1 and as late as August 31, because the spawning season varies from year to year and may start as early as December and extend until July.
- <u>Rearing habitat.</u> An area extending eastward from Carquinez Strait, including Suisun, Grizzly, and Honker bays, Montezuma Slough and its tributary sloughs, up the Sacramento River to its confluence with Three Mile Slough, and south along the San Joaquin River including Big Break, defines the specific geographic area critical to the maintenance of suitable rearing habitat. Three Mile Slough represents the approximate location of the most upstream extent of historical tidal incursion. Rearing habitat is vulnerable to impacts of export pumping and salinity intrusion from the beginning of February to the end of August.
- <u>Adult migration</u>. Adequate flow and suitable water quality is needed to attract migrating adults in the Sacramento and San Joaquin river channels and their associated tributaries, including Cache and Montezuma sloughs and their tributaries. These areas are vulnerable to physical disturbance and flow disruption during migratory periods.

Environmental Baseline

Environmental baseline refers to 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.

General

District parklands encompass the shorelines of San Francisco Bay, San Pablo Bay, Suisun Bay, the Delta Region, and inland areas of the coastal and transverse ranges of the East Bay. Located within Alameda and Contra Costa Counties, the parklands are situated in the Central California Coast, Central California Coast Range, and Northern California Coast Ecoregions (CDFW 2015). Currently, the District encompasses approximately 123,000 acres in 66 regional parks, including over 1,250 miles of trails and 55 miles of bay-delta tidal shoreline. The major watersheds on District parklands include Alameda, Alhambra, Claremont, Garrity, Rheem, Kirker, Marsh, Mount Diablo, Pinole, San Pablo, San Leandro, San Lorenzo, Walnut and Wildcat Creeks, San Francisco Bay, San Pablo Bay, and Suisun Bay. More than 90 percent of Park District lands are protected and operated as natural parklands.

Throughout the District, habitats are often delineated by elevation change (ranging from sea level to 3817 feet) and influenced by the coast and transverse ranges, creating mesic cismontane conditions in the west and xeric transmontane rain shadow effect in portions of eastern Alameda and Contra Costa Counties. A Mediterranean climate consisting of winter rain and summer dry periods influences the mosaic of vegetation types and ecotonal communities within the District. District natural parklands are characterized by a diversity of ecotones consisting of estuarine, saline-brackish-fresh water emergent wetlands, diked bay lands, willow woodlands, redwood forest, montane hardwood-conifer forest, mixed evergreen forest, eucalyptus forest, coastal oak woodland, valley oak woodland, blue oak woodland, blue oak-gray pine woodland, valley foothill riparian woodland, California sycamore-cottonwood riparian woodland, mixed chaparral, California sagebrush scrub, annual grassland, and perennial grassland.

Habitat within District parklands also includes lentic (i.e., still fresh water, such as a pond or lake) and lotic (i.e., flowing fresh water, such as a stream) features. Lentic waterbodies vary in size and depth, from small rock depressions or ponds less than one square meter and few centimeters deep, to larger waterbodies covering several square kilometers with depths greater than ten meters. Most lentic waterbodies are man-made ponds consisting of constructed earthen dams within stream channels or graded inland depressions creating upland waterbodies. Lotic habitat consists of very small ephemeral and seasonal drainages to intermittent and larger volume perennial streams. The bay delta shoreline areas are a complex of tidal and diked, muted tidal wetlands with varied transitional upland ecotones.

Throughout Alameda and Contra Costa Counties, the loss of habitat continues to further fragment and isolate listed species populations. Urban expansion and conversion of open grasslands to vineyards is prevalent in eastern regions and adversely affects Alameda whipsnake, California red-legged frog, California tiger salamander, San Joaquin kit fox, longhorn fairy shrimp, vernal pool fairy shrimp, and vernal pool tadpole shrimp.

Many anthropogenic effects are contributing to the fragmentation and degradation of tidal marsh habitat; most notable factors include: development of transitional upland ecotones, invasion of non-native species, contaminants, global climate change and sea level rise, which threaten giant garter snake, Ridgway's rail, western snowy plover, California least tern, and salt marsh harvest mouse populations throughout this region.

Species

Alameda Whipsnake

Presence within the Action Area:

The Alameda whipsnake occurs, has the potential to occur, and has habitat on District lands in the following thirty-six park units: Anthony Chabot, Bishop Ranch, Black Diamond Mines, Briones, Brushy Peak, Claremont Canyon, Clayton Ranch, Contra Loma, Cull Canyon, Del Valle, Diablo Foothills, Don Castro, Dry Creek Pioneer, Dublin Hills, Garin, Huckleberry, Kennedy Grove, Lake Chabot, Las Trampas, Leona Canyon, Little Hills Ranch, Mission Peak, Morgan Territory, Ohlone, Pleasanton Ridge, Rancho Pinole, Redwood, Roberts, Round Valley, Sibley, Sobrante Ridge, Sunol, Thurgood Marshall, Tilden, Vargas Plateau, and Wildcat Canyon. See Enclosure 1 and Table 1 for more detail on habitat acreages for each park. General habitat types of Alameda whipsnake on District lands include chaparral, riparian woodlands, and montane hardwood land cover types.

In addition, California Natural Diversity Data Base (CNDDB) records list 67 occurrences for Alameda whipsnake on District properties: Anthony Chabot, Black Diamond Mines, Briones, Chabot-Garin Bay Area Ridge Trail, Claremont Canyon, Clayton Ranch, Del Valle, Diablo Foothills, Dry Creek/Pioneer, Garin, Huckleberry, Lake Chabot, Las Trampas, Mission Peak, Morgan Territory, Pleasanton Ridge, Redwood, Round Valley, Sibley, Sunol, Tilden; the majority of CNDDB occurrences are in Black Diamond Mines, Tilden, and Briones Regional Parks. Not all of the known District Alameda whipsnake locations have been included in the CNDDB (District 2017).

The Draft Recovery Plan for the Alameda whipsnake (Service 2002a) designated the following seven Recovery Units: Unit 1 (Tilden-Briones), Unit 2 (Oakland-Las Trampas), Unit 3 (Hayward-Pleasanton Ridge), Unit 4 (Mount Diablo-Black Hills), Unit 5 (Sunol-Cedar Mountain), Unit 6 (Caldecott Tunnel Corridor) and Unit 7 (Niles Canyon/Sunol Corridor). The action area includes all seven recovery units. Unit 1 includes Wildcat and Tilden Regional Parks, and Claremont Canyon Regional Preserve; Unit 6 includes portions of Sibley Regional Preserve; Unit 2 includes Huckleberry Preserve and Roberts Redwood and Anthony Chabot Regional Parks; Unit 3 includes portions of Don Castro, Pleasanton Ridge Garin/Dry Creek and Vargas Plateau Regional Parks; Unit 4 includes Dublin Hills, Black Diamond Mines and Morgan Territory Regional Preserves and Contra Loma Reservoir; Unit 5 includes extensive portions of Pleasanton Ridge Regional Park.

Through its mission to preserve and protect listed species, the District is implementing or has implemented the parts of the Draft Recovery Plan for the Alameda whipsnake (Service 2002a) that call for the protection of existing populations and habitat through purchase of private lands and adaptive management of public lands (Recovery Action 1; Service 2002a). The District protects Alameda whipsnake habitat on lands it either owns or manages throughout all seven recovery units. Specifically, the District has acquired the following acreage of land in the following recovery units that will be added to existing District lands in each region:

• Recovery Unit 3 includes the Hayward and Pleasanton Ridges and Recovery Unit 7 encompasses the Niles Canyon Sunol Corridor. The District has acquired substantial properties in this recovery unit, including 3,664 acres in the Garin/Dry Creek area

(Recovery Action 5.3.1.3, Service 2002a) and 4,953 acres in the Pleasanton Ridge/Sunol Ridge area (Recovery Actions 5.3.1.3 and 5.3.1.7, Service 2002a). These acquisitions provide vital corridor links to existing District lands, improving habitat connectivity between recovery units.

- Recovery Unit 4 (Mount Diablo-Black Hills). The District in conjunction with the East Contra Costa County Habitat Conservancy has acquired 10,893 acres of preserve lands in this unit. These acquisitions provide expanded habitat protection and links to other District properties and the extensive land holdings at Los Vaqueros Reservoir, Mount Diablo State Park and Cowell Ranch State Park.
- Recovery Unit 6 (Caldecott Tunnel Corridor). The District acquired 636 acres of land known as the McCosker and Western Hills properties in this extremely important Alameda whipsnake movement corridor (Recovery Action 5.3.1.6, Service 2002a), directly adjacent to the Sibley Regional and Huckleberry Regional Parks.

The Service has determined that Alameda whipsnake occurs within the action area (in District lands identified in Table 1) as demonstrated by: (1) historic and recent observation of the species at numerous locations within and outside the District (Service 2002a; CDFW 2017); (2) the biology and ecology of the animal, especially the ability of individuals to move considerable distances; and (3) the action area contains suitable scrub habitat for breeding and foraging, and suitable grassland, riparian, and oak woodland habitat for foraging and dispersal.

Critical Habitat:

The Service issued a Final Rule on Critical Habitat for the Alameda whipsnake on October 2, 2006 (Service 2006c). All designated Critical Habitat Units (1-5) overlap with either all of, or portions of, District park units, preserves and regional wildernesses located throughout Contra Costa and Alameda Counties. In addition, significant portions of the Critical Habitat Units also include lands of other public agencies, such as the East Bay Municipal Utility District, Contra Costa Water District, San Francisco Water District, and Mount Diablo State Park. Table 3 shows the current acreage and percentage of District lands in the proposed action within Alameda whipsnake critical habitat units. Overall, the District currently contains 43,817 acres of designated critical habitat for Alameda whipsnake (Table 3).

Critical Habitat Subunits	District Parks within Subunits	Critical Habitat Unit Acres Overlap with District Parks	Total Acres in Unit	Percent of Critical Habitat Unit on District Lands
1		11,897	34,119	34.86%
	Trail: Bay Area Ridge to Sobrante Ridge	166		
	Briones	6,071		
	Kennedy Grove	221		
	Rancho Pinole	659		
	Sobrante Ridge	14		

Table 3. Alameda Whipsnake Critical Habitat Acres within District Lands

		Critical Habitat		
		Unit		
		Acres		Percent of
Critical		Overlap		Critical Hobitot Unit
Habitat		District	Total Acres in	on District
Subunits	District Parks within Subunits	Parks	Unit	Lands
	Tilden	1,958		
	Wildcat Canyon	2,789		
	Other Trail Segments	19		
2		7,109	24,436	29.09%
	Anthony Chabot	403		
	Cull Canyon	80		
	Lake Chabot	39		
	Las Trampas	5,657		
	Little Hills Ranch	52		
	Redwood	705		
	Trail Segments	173		
3		12,998	25,966	50.00%
	Dry Creek Pioneer	1,555		
	Garin	2,850		
	Pleasanton Ridge	8,579		
	Trail Segments	14		
			I	Γ
4	1	578	23,225	2.48%
	Diablo Foothills	410		
	Morgan Territory	166		
	Trail Segments	2		
5A	I	605	24,723	2.45%
	Del Valle	605		
5B	1	8,869	18,214	48.69%
	Mission Peak	368		
	Ohlone Wilderness	2,183		
	Sunol Wilderness	6,318		
6		1,376	4,151	33.14%
	Claremont Canyon	208		
	Huckleberry Botanic	240		
	Sibley Volcanic	928		
Grand Total		43,817	1	

In Critical Habitat Unit 4, the Service (Service 2006c) excluded District lands (Morgan Territory, Black Diamond Mines, Clayton Ranch, Round Valley, Vasco Caves) and all lands associated with acquisition under the ECCCHCP on the basis of assurances through the District's Master Plan, which provides for monitoring and conservation of rare, threatened and endangered species, including the Alameda whipsnake, and calls for species conservation efforts to take precedence over other park activities.

District lands contain and manage all three primary constituent elements: PCE 1) Scrub/shrub communities with a mosaic of open and closed canopy; PCE 2) Woodland or annual grassland plant communities contiguous to lands containing PCE 1; and PCE 3) Lands containing rock outcrops, talus, and small mammal burrows within or adjacent to PCE 1 or PCE 2.

California Tiger Salamander

Presence within the Action Area:

Data from the District (District 2017) and CNDDB shows that the California tiger salamander is widely distributed in the eastern parklands of Alameda and Contra Costa Counties, with several small populations remaining in the East Bay Hills south of Highway 580 (Table 1). Overall, California tiger salamanders have been documented in 16 parkland units, including Black Diamond Mines Regional Preserve, Brushy Peak Regional Preserve, Clayton Ranch Regional Preserve, Contra Loma Regional Park, Del Valle Regional Park, Dry Creek Regional Park, Garin Regional Park, Las Trampas, Mission Peak Regional Wilderness, Morgan Territory Regional Preserve, Ohlone Regional Wilderness, Pleasanton Ridge Regional Park, Round Valley Regional Preserve, Sunol Regional Wilderness, Vargas Plateau Regional Preserve, and Vasco Caves Regional Preserve (see Enclosure 1, Figure 1)). However, California tiger salamanders appear to have recently disappeared from Dry Creek Regional Park and Garin Regional Park and the population is likely extirpated. A few higher elevation sites in the Bay Area occur in the Ohlone Wilderness, Alameda County (Service 2016).

The CNDDB contains 108 occurrence records of California tiger salamander within the District (CDFW 2023). Four of these CNDDB records are from areas where the populations are likely extirpated. Moreover, the District believes that not all of the 85 District California tiger salamander locations (1996 to present) have been included in the CNDDB (District 2017). Prior to a discovery in 2018, California tiger salamander had not been documented in or near Las Trampas Wilderness Regional Preserve for over 60 years (CNDDB 2018); the closest documented occurrence was approximately 1 mile north of the site but was extirpated in 1952 (CNDDB Occurrence No. 530), while other documented occurrences were greater than 5 miles from the site. However, a potentially gravid female California tiger salamander was observed in a pond on December 7, 2018, and a total of 26 adults were observed in the same pond on December 13, 2021.

The action area is located within the Central Valley and East Bay draft recovery units (Service 2016). The Central Valley draft recovery unit includes all or parts of 24 District parklands that fall within its boundaries: Antioch-Oakley Shore, Bay Point, Big Break Delta Recreation Area, Bishop Ranch, Black Diamond Mines, Briones, Browns Island, Brushy Peak, Byron Vernal Pools, Clayton Ranch, Contra Loma, Deer Valley, Delta Access, Diablo Foothills, Doolan Canyon, Las Trampas, Morgan Territory, Round Valley, Sycamore Valley, Vasco Caves, Vasco

Hills, Waterbird, Little Hills Ranch, and Thurgood Marshall. The East Bay draft recovery unit includes all or parts of 18 District parklands that fall within its boundaries: Ardenwood, Bay Area Ridge Trail, Bishop Ranch Open Space, Coyote Hills, Coyote Hills-Ardenwood Trail, Del Valle, Dry Creek Pioneer, Dublin Hills, Garin, Las Trampas, Mission Peak, Ohlone Wilderness, Pleasanton Ridge, Quarry Lakes, Shadow Cliffs, Sunol Wilderness, and Vargas Plateau.

In the Central Valley draft recovery unit, conserving rangelands and protecting the species from hybridization with non-native tiger salamanders is a high priority. The East Bay draft recovery unit has a high degree of habitat protection relative to other recovery units. Protecting the species from hybridization with non-native tiger salamanders and monitoring species status and trends is a high priority for this unit.

On District lands, California tiger salamanders breed almost exclusively in seasonal and perennial stock ponds from near sea level to above 3,700 feet. The only natural waterbodies where California tiger salamander breeding has been documented are the rock-outcrop depressions at Vasco Caves Regional Preserve and Frick Lake at Brushy Peak Regional Preserve (District 2017). Within the distributional range, California tiger salamander reproduction has occurred in 80 lentic (stock pond) waterbodies, four rock-outcrop depression pools, and Frick Lake (District 2017).

Between 1996 and 2008, the number of lentic waterbodies on District lands supporting California tiger salamander reproduction annually ranged from 29 to 35 ponds. Although the number of ponds with reproduction has remained relatively constant, the total number of ponds available for breeding has increased over this time period. However, the percent of ponds supporting California tiger salamander reproduction has decreased by 10 percent (District 2017). During years with average to above average rainfall, California tiger salamanders appear to only utilize \leq 50 percent of the known breeding locations (District 2017). Moreover, in a subsequent and moderately dry year (2012), California tiger salamander breeding was limited to nine pond locations and one rock-outcrop pool (District 2017). This represented only 11.76 percent of known District breeding locations and was directly correlated with unseasonable dry conditions at many of the lentic waterbodies known to support salamander reproduction (District 2017). In contrast to other areas, California tiger salamander found on District land exhibit low reproductive site fidelity and often shift breeding locations (District 2017).

The Service has determined that California tiger salamander occurs within the action area (in District lands identified in Table 1) as demonstrated by: (1) historic and recent observation of the species at numerous locations within and outside the District (Service 2002; CDFW 2023); (2) the biology and ecology of the animal, especially the ability of individuals to move considerable distances and their ability to spend the dry months of the year in habitats with suitable environmental conditions; (3) the action area contains breeding habitat in the form of constructed drainage features, perennial and seasonal ponds, including stock ponds as well as upland non-breeding habitat in annual grassland and oak woodlands that contains rodent burrows and burrow complexes and provide valuable refuge, forage, and dispersal habitat for California tiger salamanders.

California Red-legged Frog

Presence within the Action Area:

The action area is located within the range and current distribution of the California red-legged frog. The survival and recovery of this species in the action area is important because most of the known populations of this species are found in the San Francisco Bay region and the central coast range (Service 2002b; Fellers 2005). The CNDDB contains 123 California red-legged frog occurrence records within the District (CDFW 2023). Moreover, not all of the 157 District California red-legged frog locations (1996 to present) have been included in CNDDB.

California red-legged frogs occur in small populations in the East Bay foothills on District lands and are widely distributed in the eastern District parklands of Alameda and Contra Costa Counties. California red-legged frogs have been documented in 24 parkland units, including Black Diamond Mines Regional Preserve, Briones Regional Park, Brushy Peak Regional Preserve, Castle Rock Regional Recreation Area, Clayton Ranch Regional Preserve, Del Valle Regional Park, Diablo Foothills Regional Park, Dry Creek Regional Park, Garin Regional Park, Las Trampas Regional Wilderness, Mission Peak Regional Wilderness, Morgan Territory Regional Preserve, Ohlone Regional Wilderness, Pleasanton Ridge Regional Park, Round Valley Regional Preserve, Sobrante Ridge Regional Preserve, Sunol Regional Wilderness, Sycamore Valley Regional Preserve, Tassajara Creek Regional Park, Thurgood Marshall Regional Park, Tilden Regional Park, Vargas Plateau Regional Preserve, and Vasco Caves Regional Preserve (see Enclosure 1 Figure 1).

The action area for the District Routine Maintenance Activities contains one recovery unit that was designated in the recovery plan for the California red-legged frog (Service 2002b): the South and East San Francisco Bay Unit with the East San Francisco Bay Core Area. (Service 2002b). This recovery unit extends from the northernmost portion of Contra Costa County, includes a portion of San Joaquin County south to Santa Clara County, includes the eastern portion of San Mateo County, and all of the San Francisco County. Within this Recovery Unit, red-legged frogs seem to have been nearly eliminated from the western lowland areas near urbanization, although they still occur in isolated populations in the East Bay Foothills (between Interstate 580 and Interstate 680), and are abundant in several areas in the eastern portions of Alameda and Contra Costa Counties. This Recovery Unit is essential to the survival and recovery of the California red-legged frog, as it contains the largest number of occupied drainages in the northern portion of its range (Service 2002b). Upper Alameda Creek (Sunol Regional Wilderness) and other creeks in Alameda County, as well as the Coral Hollow Creek Watershed near the San Joaquin/Alameda County border, support numerous occurrences (Service 2002b). The Recovery Plan established the following conservation needs for the East San Francisco Bay Core Area: (1) protect existing populations; (2) control non-native predators; (3) study effects of grazing on riparian corridors, ponds, and uplands (e.g. on District lands); (4) reduce impacts associated with livestock grazing; (5) protect habitat connectivity; (6) minimize effects of recreation and off-road vehicle use (e.g. Corral Hollow watershed); (7) avoid and reduce impacts of urbanization; and (8) protect habitat buffers from nearby urbanization (Service 2002b).

According to the District, California red-legged frogs occur in 126 lentic waterbodies, 27 distinct stream reaches, and four spring box locations on their lands (District 2017). Between 1996 and 2008 the number of lentic waterbodies where California red-legged frogs were observed ranged from 51 to 73 ponds. From 1996 to the present, California red-legged frogs have exhibited

relatively consistent fidelity at lentic and lotic breeding sites. Within District lentic waterbodies, 73 percent to 89 percent of known California red-legged frog locations supported successful reproduction (District 2017). Similarly, nine of ten stream reaches had breeding activity most years with conditions suitable to complete metamorphosis. In contrast, egg deposition has been documented in only one of the four spring box locations. Depending on annual precipitation, the California red-legged frog populations vary considerably, with notable decline during drier years or extended drought periods.

The Service has determined that California red-legged frog occurs within the action area (in District lands identified in Table 1) as demonstrated by: (1) historic and recent observation of the species at numerous locations within and outside the District (Service 2002b; CDFW 2017); (2) the biology and ecology of the animal, especially the ability of individuals to move considerable distances and their ability to spend the dry months of the year in habitats with suitable environmental conditions; (3) the action area contains numerous creeks, streams, constructed drainage features, perennial and seasonal ponds, including stock ponds that provide breeding and non-breeding aquatic habitat for the California red-legged frog. Riparian vegetation along creeks and drainages and landscape vegetation in the action area contains upland habitat with rodent burrows and other cover sites; (5) the action area contains upland habitat that provides refuge, forage, and dispersal habitat for the species; and (6) the numerous locations and movement corridors where the species can move within the parklands between breeding sites.

Critical Habitat:

The action area is within California red-legged frog critical habitat units ALA-1A, ALA-1B, ALA-2, CCS-1, CCS-2a, and CCS-2b (Table 4). Overall, the District currently contains 33,470 acres of designated critical habitat for California red-legged frog. See Table 4 for the current acreage and percentage of District lands in the proposed action within California red-legged frog critical habitat units.

Critical Habitat Subunits	District Parks within Subunits	Acres Overlap with District Parks	Total Acres in Unit	Percent of Critical Habitat Unit in District Park
ALA-1A		642	3,653	17.6%
	Bishop Ranch Open Space	2		
	Dublin Hills	639		
	Trail Segments	1		
ALA-1B		4,511	10,166	44.4%
	Dry Creek Pioneer	595		
	Garin	2,219		
	Pleasanton Ridge	1,695		
	Trail Segments	2		
ALA-2		19,724	153,689	12.8%
	Del Valle	3,802		
	Mission Peak	370		

Table 4. California Red-legged Frog Critical Habitat Acres within District Lands

Critical Habitat Subunits	District Parks within Subunits	Acres Overlap with District Parks	Total Acres in Unit	Percent of Critical Habitat Unit in District Park
	Ohlone Wilderness	9,049		
	Sunol Wilderness	6,504		
CCS-1		4,744	13,853	34.2%
	Briones	4,194		
	Rancho Pinole	548		
	Trail Segments	3		
CCS-2A		520	4,227	12.3%
	Diablo Foothills	517		
	Trails	3		
CCS-2B	·	3,268	44,478	7.3%
	Brushy Peak	1,932		
	Doolan Canyon	774		
	Morgan Territory	562		
Grand Total		33,411		

Subunits ALA-1A, ALA-1B, ALA-2, CCS-1, CCS-2a, and CCS-2b contain the features that are essential for the conservation of the species. These subunits contain aquatic habitat for breeding and non-breeding activities (PCE 1 and PCE 2), and upland habitat for foraging and dispersal activities (PCE 3 and PCE 4). These six subunits were all known to be occupied at the time of listing and are currently occupied. The subunits contain permanent and ephemeral aquatic habitats, which provide breeding for frogs. They consist of manmade stock ponds and natural streams with emergent vegetation, willows, or are surrounded by riparian vegetation, grasslands and oak forest. These aquatic habitats also have adjacent upland areas for dispersal, shelter, and foraging opportunities. Subunits ALA-1A and ALA-1B provide for connectivity between populations farther south in the East San Francisco Bay foothills and represent the southernmost distribution of the California red-legged frogs and its habitat in the East San Francisco Bay region. The physical and biological features essential to the conservation of California redlegged frog in all six subunits may require special management considerations or protection due to the removal and alteration of habitat as a result of urbanization, alteration of aquatic and riparian habitats, dumping, and erosion and siltation of ponded habitat, which may alter aquatic or upland habitats and thereby result in the direct or indirect loss of egg masses or adults.

Foothill Yellow-legged Frog

Presence within the Action Area:

The species has historically been documented on Park District Lands in the East Bay Hills, Mount Diablo Range, and Mount Hamilton ecoregions (CNDDB 2022). However, based on Park District surveys and current CNDDB records, the species is currently believed to be restricted to District Lands within the upper Alameda Creek and Arroyo Del Valle watersheds, which includes the following Park District Lands: Sunol Wilderness Regional Preserve, Ohlone Wilderness Regional Preserve, and possibly Del Valle Regional Park. Based on historic and recent observations of the species within and outside the District, the presence of suitable habitat, and the biology and ecology of the species, the Service has determined that foothill yellow-legged frog occurs within the action area (in District lands identified in Table 1).

Longhorn Fairy Shrimp

Presence within the Action Area:

Occupied longhorn fairy shrimp habitat located on District lands is only found in depressed pools in sandstone or rock outcroppings (District 2017) however, other vernal pool substrates may provide habitat if the appropriate inundation period occurs. Systematic surveys from 2009 to 2012 for longhorn fairy shrimp on District lands in Contra Costa and Alameda counties have detected longhorn fairy shrimp at just two locations in sandstone rock pools at Vasco Caves and Brushy Peak Regional Preserves, respectively, in a single year (2011). Based on these results, no conclusions about population trends in longhorn fairy shrimp on District lands can made at this time. CNDDB records list just one occurrence (but two locations) of longhorn fairy shrimp at Vasco Caves Regional Preserve; additionally, there are two occurrences just outside of Brushy Peak Preserve. The likely District lands with occurrences, potential for occurrence, and potential habitat include four parks: Brushy Peak, Byron Vernal Pools, Vasco Caves, and Vasco Hills (See Table 1 for more detail).

The action area is located within three recovery units, the Livermore Recover Unit (Altamont Hills Core Area), the Central Coast Recovery Unit, and the Santa Rosa Recovery Unit. The Livermore Vernal Pool Region includes Altamont Hills core area and includes District owned lands or lands managed by the District at Vasco Caves Regional Preserve, Byron Hills Regional Preserve, and Brushy Peak Regional Preserve. The Livermore Vernal Pool Region with the Altamont Hills core area was identified as being one of the highest priority areas for recovery (Zone 1 ranking). Through its mission to preserve and protect listed species, the District is implementing or has implemented elements of the Vernal Pool Ecosystems Recovery Plan strategy (Service 2005a) for the benefit of the longhorn fairy shrimp and other vernal pool species. All known suitable longhorn fairy shrimp vernal pool habitat (Recovery Criteria 1A and 1B; Service 2012) in the Livermore Vernal Pool Region core area is protected public land at Vasco Caves Regional Preserve and Brushy Peak Regional Preserve, including land owned by the Livermore Area Recreation and Park District. Known occurrences in this region, to date, include only rock vernal pools located in sandstone outcroppings on both properties. In addition, the District has acquired and continues to acquire land in the immediate vicinity of these two units of the core area, which contain vernal pools and may support or have the potential to support longhorn fairy shrimp (Recovery Criteria 1D; Service 2012). The District acquired the 4,767 acre Byron Hills Regional Preserve in conjunction with the ECCHCP and NCCP. If funding can be obtained, the District plans to address the experimental introduction of longhorn fairy shrimp to other rock vernal pools within the preserve complexes in an effort to increase pool occupancy beyond the two existing pools (Recovery Criterion 1C). Habitat protection of existing rock vernal pools has maintained and protected the hydrology of the rock vernal pools that support longhorn fairy shrimp (Recovery Criterion 1E).

Based on these occurrences, the presence of suitable habitat as described above, and the biology and ecology of the species, the Service concludes that the longhorn fairy shrimp occurs within the action area at the lands identified in Table 1.

Critical Habitat:

In its Final Rule, the Service (2006a, 2006b) designated a total of 13,557 acres of land as critical habitat for this species in three major units: The critical habitat designation on District lands encompasses the northern limit of this longhorn fairy shrimp. The Service has designated Unit 1, Altamont Hills Units A (304 acres) and B (487 acres), Contra Costa and Alameda Counties, 791 acres of critical habitat (Service 2003, 2006a, 2006b). Unit 1A almost entirely overlaps a small western portion of Vasco Caves Regional Preserve (269 acres) and Vasco Hills Preserve (4 acres), and Unit 1B has a small portion that overlaps a small part of the northeastern section of Brushy Peak Preserve (42 acres). Vasco Caves Regional Preserve makes up to 88 percent of Unit 1A while the Vasco Hills Preserve about 1 percent. The Brushy Peak Preserve makes up about 8.6 percent of Unit 1B.

Vernal Pool Fairy Shrimp

Presence within the Action Area:

The CNDDB contains six occurrence records of vernal pool fairy shrimp on District lands (CDFW 2023) located in Brushy Peak Preserve, Vasco Hills Preserve, Vasco Caves Preserve, and Byron Vernal Pools Preserve. General habitat types on District lands used by vernal pool fairy shrimp include rock outcrop depressions and vernal pools. On District properties there are known occurrences in numerous sandstone depression vernal pools (rock pools) at the 1,400 acre Vasco Caves Regional Preserve and the 507 acre Bushy Peak Regional Preserve (District 2017). Systematic surveys for fairy shrimp were undertaken at Vasco Caves and Brushy Peak during the rainy seasons of 2009-2012 (District 2017). In any given year, not all rock pools sampled harbored vernal pool fairy shrimp, and percent occupancy varied over time and space. For example, at Vasco Caves and Brushy Peak, the percentage of sampled rock pools occupied by vernal pool fairy shrimp ranged from 0-90 percent depending on the sample date, and peak population densities can be greater than 200 individuals per rock pool in February (District 2017). At the 3,543-acre Byron Hills Regional Preserve, presence/absence surveys for fairy shrimp were undertaken in 34 soil-based, grassland vernal pools, and vernal pool fairy shrimp were detected in only three pools (District 2017). The latter preserve was acquired jointly between the ECCCHCP and the District.

Given the non-systematic record of historical occurrences and the short duration of intensive monitoring for vernal fairy shrimp on District lands, the District does not have any population trends for this species at this time. With up to 91 percent pool occupancy, it would appear that the populations of vernal pool fairy shrimp on District lands are potentially sustainable. However, the percent occupancy by vernal pool fairy shrimp of sampled rock pools varies substantially within and between years.

The action area encompasses the same recovery units for vernal pool fairy shrimp as those described above for longhorn fairy shrimp. The District protects vernal pool fairy shrimp habitat (Recovery Criteria 1A and 1B; Service 2012) in the Livermore Vernal Pool Region at Vasco Caves Regional Preserve and Brushy Peak Regional Preserve, including land owned by the Livermore Area Recreation and Park District. Known occurrences in this region to-date include the rock vernal pools (tinajas) located in sandstone outcroppings on both properties. Habitat protection of existing rock vernal pools and the soil-based vernal pools has maintained and protected the hydrology of these ecosystems that support vernal pool fairy shrimp (Recovery Criteria 1E).

The District lands with occurrences, potential for occurrence, and potential habitat include four parks: Brushy Peak, Byron Vernal Pools, Vasco Caves, and Vasco Hills (see Table 1 for more detail). Based on these occurrences, the presence of suitable habitat as described above, and the biology and ecology of the species, the Service concludes that the vernal pool fairy shrimp occurs within the action area at District lands identified in Table 1.

Critical Habitat:

In the Final Rule, the Service (2006a, 2006b) designated a total of 7,892 acres of critical habitat for the vernal pool fairy shrimp in the Altamont Hills core area subdivided into Units 19A (1,524 acres), 19B (4,912 acres), and 19C (1,455 acres)(Service 2003, 2006a). This critical habitat includes the only known locations of rock outcrops containing rock pools which support vernal pool fairy shrimp. Small portions of this critical habitat are on District owned lands or on lands managed by the District: 19B slightly overlaps 158 acres of Vasco Hills Regional Preserve and 291 acres of Byron Vernal Pools Regional Preserve; 19C slightly overlaps 56 acres of Brushy Peak Regional Preserve; 19A is located about 600 feet east of a small portion of Deer Valley Regional Park and will not be affected by proposed activities. In total, about three percent of 19B and four percent of 19C are included on District lands.

Vernal Pool Tadpole Shrimp

Presence within the Action Area:

General habitat types on District lands used by vernal pool tadpole shrimp include seasonal ponds and vernal pools. While extensive surveys have occurred on District lands, no tadpole shrimp have been detected. Potential habitat for the vernal pool tadpole shrimp on District lands includes the northeast section of Brushy Peak Regional Preserve and Vasco Caves Regional Preserve. Extensive surveys of all rock-based vernal pools at Vasco Caves and Brushy Peak Regional Preserves over three winters did not record this species (District 2017). Surveys of 34 grassland vernal pools on District properties in Black Diamond Mines, Vasco Caves, and Byron Hills Regional Preserves did not detect any vernal pool tadpole shrimp and the East Contra Costa County Habitat Conservancy has no records of occurrences in Contra Costa County (District 2017).

The action area encompasses the same recovery units for vernal pool tadpole shrimp as those described above for vernal pool fairy shrimp and longhorn fairy shrimp. The District protects vernal pool tadpole shrimp habitat (Recovery Criteria 1A and 1B; Service 2012) in the Livermore Vernal Pool Region at Vasco Caves Regional Preserve and Brushy Peak Regional Preserve, including land owned by the Livermore Area Recreation and Park District. Known occurrences in this region to-date include the rock vernal pools (tinajas) located in sandstone outcroppings on both properties. Habitat protection of existing rock vernal pools and the soil-based vernal pools has maintained and protected the hydrology of these ecosystems that support vernal pool fairy shrimp (Recovery Criterion 1E).

The CNDDB contains no occurrence records of vernal pool tadpole shrimp on District lands. The closest known occurrences of vernal pool tadpole shrimp in terms of their proximity to District lands are located at Collinsville and the Jepson Prairie, in the vicinity of Fremont on private land, and within the San Francisco Bay National Wildlife Refuge complex (Service 2024). Given that these occurrences are within 5 to 15 miles from District properties, and the fact that this species may be more prone to dispersal by birds than other fairy shrimp (King et al. 1996), there is a potential for this species to occur on District lands within the action area as identified in Table 1.

The likely District lands with potential for occurrence and potential habitat include four parks: Brushy Peak, Byron Vernal Pools, Vasco Caves, and Vasco Hills (See Table 1 for more detail).

San Joaquin Kit Fox

Presence within the Action Area:

General habitat types on District lands used by San Joaquin kit fox include grasslands and oak savannahs. In the northern part of its range, including Alameda and Contra Costa Counties, most of the valley floor habitat has been eliminated and, in this area, kit foxes now occur primarily in foothill grasslands, valley oak savanna, and alkali grasslands (Service 1998). From 1990 to the present, there have been a total of 12 San Joaquin kit fox occurrences on District lands in eastern Alameda and Contra Costa Counties. This includes occurrences at Black Diamond Mines Regional Preserve, Brushy Peak Regional Preserve, Contra Loma Regional Park, Round Valley Regional Preserve, and Vasco Caves Regional Preserve (District 2017, CDFW 2017). All documented occurrences are of individual kit foxes, with the exception of the Round Valley sightings (1992), when two adults and four juvenile kit fox were documented (District 2017). The most recent San Joaquin kit fox sightings occurred in July and August 2002 at Vasco Caves and Brushy Peak Regional Preserves, respectively (District 2017).

The action area is located in the north-eastern most part of San Joaquin kit fox's range. Eastern portions of Alameda and Contra Costa County are located within the San Joaquin kit fox recovery satellite populations, also labeled as S1 or Livermore Unit. In addition to protection of core areas, the protection of at least three satellite populations is required for down-listing, and the protection of additional satellite populations, with three or more showing stable or increasing populations during one precipitation cycle is required for delisting. The area of the Livermore Unit is almost entirely within Contra Costa and Alameda Counties with a small portion in San Joaquin county connecting to linkage populations. According to the recent species status assessment (Service 2020g), the condition for the Livermore Unit, the population within the action area, is very low, with no evidence of a current population and the only records are 10 years old or greater. The Recovery Plan (Service 1998) lists as recovery actions the protection of habitat in the northern, northeastern, and northwestern segments of the range and the preservation of existing connections between habitat in those areas and habitat to the south.

From 1997 through 1999, extensive live trapping and/or spotlight surveys for San Joaquin kit fox were conducted at Black Diamond Mines, Round Valley, and Vasco Caves Regional Preserves (District 2017). During this period, no San Joaquin kit fox were captured or observed on these parklands. Subsequently, all of the occurrences on District lands and throughout the East Bay region have consisted of incidental observations of individual foxes. Although historically San Joaquin kit fox were declining, remaining in isolated pockets, and being extirpated from Contra Costa County and northern parts of Alameda County (District 2017). It appears that the current population density of San Joaquin kit fox on District lands is extremely low and most recent observations suggest this portion of their range is occasionally frequented by dispersing transient individuals rather than resident animals.

Based on these occurrences, the presence of suitable habitat as described above, and the biology and ecology of the species, the Service concludes that the San Joaquin kit fox may occur within the action area. The likely District lands with occurrences, potential for occurrence, and potential habitat include ten parks: Black Diamond Mines, Brushy Peak, Byron Vernal Pools, Contra Loma, Deer Valley, Delta Access, Doolan Canyon, Round Valley, Vasco Caves, and Vasco Hills (See Table 1 for more detail).

Pallid Manzanita

Presence within the Action Area:

Only two large, naturally-occurring pallid manzanita populations are known to exist: one at Huckleberry Ridge, the presumed type locality in Alameda and Contra Costa Counties, and the other at Sobrante Ridge Regional Preserve in Contra Costa County. Most of the population at Huckleberry Ridge occurs on land owned and managed by the District as part of the 236-acre Huckleberry Botanic Regional Preserve. At the present time, these pallid manzanita populations consist of 924 plants at Huckleberry Ridge (mostly within the boundaries of Huckleberry Botanic Regional Preserve) and an estimated 454 plants on Sobrante Ridge (entirely within the 277-acre Sobrante Ridge Regional Preserve). Additionally, three plants (one confirmed) have been reported in Sibley Volcanic Regional Preserve, 75 plants are confirmed in Redwood Regional Park, and 20 plants have been located and mapped in Tilden Regional Park (District 2017). General habitat types of pallid manzanita on the District lands include chaparral and montane hardwood land cover types.

The Sobrante Ridge population of pallid manzanita has the least human impact. The genetic integrity of pallid manzanita is threatened by hybridization with other species of manzanita introduced into the vicinity of pallid manzanita populations (District 2017). Approximately 50 percent of the Huckleberry Ridge population of pallid manzanita was affected in the 1980's by a *Botryosphaeia* fungus and an unknown root fungus that attacked the roots of the plants, causing branch and stem dieback (District 2017).

The CNDDB contains seven occurrence records of pallid manzanita on District lands (CDFW 2017). Based on these occurrence records, the presence of suitable chaparral habitat, and the biology and ecology of the species, the Service has determined that the pallid manzanita occurs within the action area at District lands identified in Table 1.

Giant Garter Snake

Presence within the Action Area:

Most information on the status of the snake comes from work on agricultural and managed refuge lands; much less is known about the snake outside of these areas in other habitats. Nevertheless, scattered records documented on the CNDDB indicate a wider distribution that includes marshes and waterways of the Delta, which includes and is hydrologically connected to the proposed project area. Big Break Regional Shoreline (1,648 acres), which includes the mouth of Marsh Creek and its watershed, near Oakley, Delta Access (366 acres) near Discovery Bay, and Browns Island (595 acres), at the confluence of the Sacramento and San Joaquin Rivers, as well as all locations in the Sacramento-San Joaquin Delta, Contra Costa County, are considered District locations where the giant garter snake is assumed to occur (District 2017). The four parks that could or do support giant garter snakes include Antioch/Oakely Shoreline, Big Break Shoreline, Brown's Island, and Delta Access based on nearby occurrences, potential aquatic and adjacent upland habitat, and the ecology of the species. The CNDDB lists only one occurrence of giant garter snake on District lands at Antioch/Oakely Shoreline, although Big Break Shoreline has multiple occurrences adjacent to it within the Delta.

The action area is located within the draft Delta Basin Recovery Unit (Service 2017b). The Delta Basin draft recovery unit (380,863 acres) has four management units, two of which include District lands. The draft White Slough Management Unit includes Brown's Island (595 acres) and the draft Stockton Management Unit includes Big Break Shoreline (1,648 acres) and Delta Access (1,012 acres). The recovery plan calls for a minimum of ten habitat block pairs with no less than two block pairs per management unit in the draft Delta Basin Recovery Unit. These blocks should provide sufficient quality connected habitat in each Recovery Unit that will reduce the threats associated with habitat loss.

The four District lands within the action area include permanent waters with varying amounts of aquatic vegetation and adjacent uplands which could potentially support the snake. The distribution of the snake and range of habitat types at these parks, lead the Service to conclude that the snake is present in the action area on the four parks identified in Table 1.

California Ridgway's Rail

Presence within the Action Area:

California Ridgway's rail has been documented in the following shoreline parks and tidal emergent wetland locations within the Bay Area: Martin Luther King Jr. Regional Shoreline at Airport Channel, Alameda East, Arrowhead Marsh, Damon Marsh, Doolittle Pond, Fan Marsh, New Marsh, and San Leandro Creek; Crown Beach Regional Shoreline at Elsie Roemer Marsh; Hayward Regional Shoreline at Cogswell A, Cogswell West, Cogswell East, Hayward Landing/Triangle, H.A.R.D Marsh, Hoffman Marsh, Johnson's Landing, Meeker Slough, Oro Loma East and Oro Loma West, and Triangle Marsh; Oyster Bay Regional Shoreline, Emeryville Crescent, Hoffman Marsh, Southern Marsh, Sulphur Creek, and Whittel Marsh. Martinez Shoreline, McLaughline Eastshore, North Richmond Shore, Point Isabel Shore, Point Pinole Shore, and San Pablo Bay Shore parks are also areas of potential habitat and occurrence for California Ridgway's rail within the action area.

District data show that nine of the parks within the action area have known or potentially occupied rail tidal marsh habitat (see Table 1). The general habitat type used by California Ridgway's rail on District lands is saline – brackish emergent wetland land cover types.

The estimated, all-time historical low of 500 California Ridgway's rails was in 1991 and at that time, the majority of rails were found in the South Bay (District 2017). Within District marshes, annual District survey results documented a rebound in California Ridgway's rail numbers between 1993 and 2007. During the 2006 and 2007 breeding seasons, Arrowhead Marsh supported 148 and 137 rails, respectively. Similarly, winter surveys of 2007 documented 134 California Ridgway's rails in four marshes of the San Leandro Bay Complex, including 112 rails in Arrowhead Marsh (District 2017). From 2007 to 2009, data collected showed substantial declines throughout the South Bay eco-region (47 marshes) (District 2017). This population decline continued from 2007 to 2012, with an overall negative trend of 70.9% within San Leandro Bay and most notably at Arrowhead Marsh, with a negative trend of 77.3 percent (District 2017). Moreover, since 2009 California Ridgway's rails have not been documented during high tide surveys at six locations within the San Leandro Bay Complex, most notably Elsie Roemer and Doolittle Marsh (District 2017).

California Ridgway's rail density and population trend data throughout the District marsh complexes suggests there is a strong positive correlation between the presence of non-native

Spartina spp., and increased rail densities and reproductive success. Conversely, the removal of non-native *Spartina spp.* appears to be a major contributing factor in the decline of California Ridgway's rails. Survey results indicated a shift in distribution and density of California Ridgway's rails at Arrowhead Marsh following treatment of non-native *Spartina spp.* (District 2017) where areas largely dominated by non-native *Spartina spp.* had higher densities of rails per hectare.

District shoreline tidal marshes support California Ridgway's rail populations within three of the five units identified in the *Recovery Plan for Tidal Marsh Ecosystems of Northern and Central California* (Service 2013): Suisun Bay Area Recovery Unit, San Pablo Bay Recovery Unit, and Central/South San Francisco Bay Recovery Unit. The Recovery Units include 11 parks in the Central/South San Francisco Bay Recovery Unit, three in the San Pablo Bay Recovery Unit, and five within the Suisun Bay Recovery Unit (Table 5).

	Recovery Unit	Tetel Asses	Percent of District
District Lands and Recovery Units	Acres Overlap with District Parks	l otal Acres in Recovery Unit	Lands in Recovery Units
Central/South SF Bay	5,830	243,073	2.4%
Brooks Island	378		
Coyote Hills	1,246		
Coyote Hills /Ardenwood Trail	12		
Crown Beach Shoreline	166		
East Bay Gateway	8		
Hayward Shoreline	1,063		
ML King Jr Shoreline	755		
McLaughlin EastShore	1,824		
Miller-Knox Shoreline	159		
Oyster Bay Shoreline	195		
Point Isabel Shoreline	24		
San Pablo Bay	2,059	146,792	1.4%
North Richmond Shoreline	33		
Point Pinole Shoreline	1,789		
San Pablo Bay Shoreline	237		
Suisun Bay	1,183	115,556	1.0%
Bay Point	135		
Brown's Island	600		
Carquinez St. Shoreline	40		
Martinez Shoreline	330		
Waterbird	78		
Grand Total	9,072		

Table 5. Tidal Marsh Recovery Unit Acres within District Lands

The Plan identifies high priority areas for tidal marsh and ecotone restoration, including restoring to tidal action many of the salt ponds and other diked baylands along San Francisco Bay. The

Central/South San Francisco Bay Recovery Unit supports the majority of California Ridgway's rail populations and dispersal to other units appears to be limited (Service 2013).

The CNDDB contains 12 occurrence records of California Ridgway's rail within District lands (CDFW 2017). Some of these CNDDB records are from areas where the populations are likely extirpated (i.e. Elsie Roemer Marsh, Damon Marsh). Moreover, not all of the District locations have been included in the CNDDB. Based on these occurrences, the presence of suitable habitat in ten parks identified in Table 1, and the biology and ecology of the species, the Service has determined that California Ridgway's rail occurs within the action area.

Salt Marsh Harvest Mouse

Presence within the Action Area:

The action area is located within the Central/South San Francisco Bay, San Pablo Bay, and Suisun Bay recovery units. See California Ridgway's rail discussion for more information on these Recovery Units.

General habitat types used by salt marsh harvest mouse on District lands include saline – brackish emergent wetland land cover types. District data show that fourteen of the parks within the action area have known or potentially occupied marsh habitat (see Table 1). The southern salt marsh harvest mouse subspecies (*R. r. raviventris*) is found within the tidal marshes of the District lands, predominately the Hayward Regional Shoreline, Coyote Hills Regional Park, and Point Pinole Regional Shoreline. Salt marsh harvest mouse is also highly likely to occur at Martin Luther King Jr. Shoreline (Arrowhead Marsh), Martinez Regional Shoreline, North Richmond Shoreline, McLaughlin Eastshore State Park, and Waterbird Regional Preserve. CNDDB contains 10 occurrence records of salt marsh harvest mouse on District lands (CDFW 2017).

District biologists have conducted systematic salt marsh harvest mouse surveys at tidal marshes of Coyote Hills Regional Park, Hayward Regional Shoreline, specifically Oro Loma Marsh and Hayward Shoreline Mouse Preserve, and Point Pinole Regional Shoreline. The results from Oro Loma Marsh and Hayward Shoreline Marsh Preserve illustrated substantial population variability from year to year, with the highest density of salt marsh harvest mice at Oro Loma Marsh and the lowest densities at Coyote Hills. The salt marsh harvest mouse population at Point Pinole Regional Shoreline has shown little population fluctuation over the years.

Based on these occurrences (detailed above), the presence of suitable habitat on parklands identified in Table 1, and the biology and ecology of the species, the Service has determined that the salt marsh harvest mouse occurs within the action area.

California Least Tern

Presence within the Action Area:

The California least tern occurs and has habitat on District lands on the Hayward Regional Shoreline and Brooks Shoreline (see Table 1). The CNDDB contains one occurrence record of California least tern on District land (CDFW 2014) at Hayward Shoreline. California least terns have been observed foraging near shore or interior waters and periodically roosting at several District locations, including Hayward Regional Shoreline and Brooks Island. California least terns have only been noted to occasionally forage in the channel offshore of Robert W. Crown

Memorial State Beach, but do not utilize shoreline or interior waters. Generally, the habitat types used by California least tern on these District lands include estuarine, open shoreline beaches, plains, and islands land cover types.

Since the Hayward Regional Shoreline colonies' establishment in 2005, the number of breeding pairs has steadily increased from a low of 8 in 2005 to a high of 162 in 2012, with a nine year average of 62 breeding pairs (District 2017). While the California least tern nesting island at the Hayward Regional Shoreline is relatively small and limited as compared to other locations in the state, this colony has a very successful egg hatching and fledgling rate compared to other areas of the state. The California least tern breeding population at the Hayward Regional Shoreline has substantially increased and is expected to stabilize as the island becomes saturated with nesting terns.

The California Least Tern Recovery Plan was finalized in 1985 (Service 1985) and no recovery units were designated. Within the action area, the plan calls for the development of management plans and programs that identify special site protection problems of certain insecure colonies, including Coyote Hills in Alameda County. However, according to District biologist Steve Bobzien (pers. com. 2017), no habitat exists at the Coyote Hills park and too many raptor predators preclude tern nesting in that area.

Based on these occurrence records (above), the presence of suitable habitat within the two parks identified in Table 1, and the biology and ecology of the species, the Service has determined that it is reasonable to conclude that the California least tern occurs in the action area.

Western Snowy Plover

Presence within the Action Area:

General habitat types of snowy plover on District lands include estuarine, open shoreline beaches, plains, and islands land cover types. The western snowy plover occurs, has been documented at and has habitat on District lands in the following four park units: Brooks Island, Crown Beach Shoreline, Martin Luther King Jr. Shoreline, and Hayward Regional Shoreline (Table 1). Western snowy plovers have also been documented foraging, roosting, and/or exhibiting courtship behavior at Robert W. Crown Memorial State Beach, Martin Luther King Jr. Shoreline, and Brooks Island. These parks generally have open shoreline habitat that the plovers use for foraging. However, within the District western snowy plover breeding populations are extremely small, highly variable, and exhibit limited population growth. A total of 15 snowy plover nest sites have been documented at the Hayward Regional Shoreline where nesting occurs on a small 0.59 acre island and several levee sites. Since early 2000, all of the plover breeding activity has been on this island that also supports a colony of nesting California least tern (*Sternula antillarum browni*).

The action area includes the snowy plover Recovery Unit 3 (San Francisco Bay) and overlaps with 40 acres of the snowy plover Recovery Plan site CA-28 (Alameda South Shoreline) on the District's Crown Beach (Service 2007). Recovery unit 3 is unique and has been designated as a separate recovery unit because much of the habitat in the San Francisco Bay area consists of salt ponds and salt pond levees. According to the Recovery Plan (Service 2007), the population in Recovery Unit 3 is relatively lower than a third of the population, but has the potential to increase with intensive management of salt pond habitat. The Recovery Plan calls for each of the six recovery units to maintain metapopulation dynamics and ensure protection and appropriate

management of wintering and migratory habitat to ensure the long term health and sustainability of the Pacific Coast population of western snowy plovers across its current range.

The CNDDB contains two occurrence records of Western snowy plover on District lands (CDFW 2017). Based on these occurrence records, the presence of suitable habitat on District lands, and the biology and ecology of the species, the District has determined it is reasonable to conclude that the Western snowy plover occurs in the action area at the parks identified in Table 1.

Critical Habitat:

Western snowy plover critical habitat unit CA 12 is completely included in 0.56 acre of Hayward Regional Shoreline. A small nesting population in this habitat unit is restricted to a small 0.59 acre island and several levee sites at Hayward Regional Shoreline. A total of 15 snowy plover nest sites have been documented at the Shoreline. Since early 2000, all of the plover breeding activity has been on an island that supports a colony of nesting California least tern. Hayward Regional Shoreline is separated by Highway 92 and just north of critical habitat designation Eden Landings Subunits CA13A, CA 13B, or CA 13C. Western snowy plovers have also been documented foraging, roosting, and/or exhibiting courtship behavior at Robert W. Crown Memorial State Beach, Martin Luther King Jr. Shoreline, and Brooks Island. These District parklands are considerable distance from any critical habitat designation units. Overall, the District currently contains 0.56 acres of designated critical habitat for western snowy plover.

Delta Smelt

Presence within the Action Area:

The action area includes shallow subtidal waters that can be used by the species. The action area also includes adjacent levees and vegetation; however, the quality of that habitat for smelt varies with location within the action area and the immediate vicinity. Some portions of the action area include heavily armored channels with limited vegetation on levee slopes or in adjacent shallow water. Other parts of the action area have less armoring and more vegetation growing on the levee slopes.

The most recent survey results show low overall abundance for larval and adult delta smelt along District shoreline areas. Delta smelt were observed around Sherman Island, West Island, Browns Island, and in Carquinez Straight (CDFW 2016). Within the District, delta smelt may occur in the waterbodies of Carquinez Shoreline, Martinez Shoreline, Bay Point, Antioch/Oakley, Browns Island, and Big Break.

The Service has determined that the delta smelt occur in the action area at or near six of the parks identified in Table 1 based on the recent observations of this species near the parks, the biology and ecology of the species, the location of the project area within critical habitat, and the presence of suitable habitat in and near the parks.

Critical Habitat:

The action area of the proposed projects includes tidal waterways of the Delta that are wholly within critical habitat for the species. The action area is within delta smelt critical habitat Unit 1 (818,953 acres), which covers the entire delta and implies that efforts to recover the delta are essential to restoring the delta smelt. Delta smelt critical habitat extends east from San Pablo Bay along the entire delta. This includes all of the Sacramento and San Joaquin Delta and the parts of

the delta within Solano, Contra Costa, and Alameda counties (Service 2010b). This unit encompasses 3,546 acres of District lands including Antioch/Oakley Regional Shoreline, Bay Point Regional Shoreline, Big Break Regional Shoreline, Browns Island, Carquinez Straight Regional Shoreline, Martinez Regional Shoreline, and several shoreline trails (Table 6). District lands account of 0.42 percent of delta smelt critical habitat.

Delta smelt are not isolated to certain parts of their critical habitat and their population locations vary considerably every year and in every season. They are more likely to be found in the open water of Suisun Bay, but are sometimes found in marshland, as well. Individual delta smelt occasionally occur in turbid water (Moyle 2002) and it is possible to find these lone delta smelt distributed around their critical habitat.

	Critical Habitat Unit Acres Overlap with District
Recovery Unit	Parks (acres)
Antioch/Oakley Shoreline	9
Bay Point Shoreline	6
BB Delta Shoreline Trail	5
Big Break Regional Trail	4
Big Break Shoreline	1,657
Browns Island	600
Carquinez Strait Shoreline	21
Delta Access	993
Martinez Shoreline	186
Shoreline Trails	66
Grand Total	3,546

Table 6. Delta Smelt Critical Habitat within on District Lands

Longfin Smelt

Presence within the Action Area:

Juvenile and sub adult longfin smelt predominately inhabit brackish water areas of the San Francisco Bay estuary (San Pablo Bay and Central Bay) and nearshore coastal marine waters outside the Golden Gate (Baxter 1990, Rosenfield and Baxter 2007). Adult longfin smelt return to spawn in the freshwater regions of the lower Sacramento River, near or downstream of Rio Vista, and the lower San Joaquin River downstream of Medford Island.

Knowledge of longfin smelt use and distribution in tributaries feeding into the Bay, such as Coyote Creek, and the Napa and Petaluma Rivers, is limited. Longfin smelt use of bay tributaries is likely related to the extent of a freshwater signal in the Bay right before and during the longfin spawning migration (Baxter, pers. comm.). Sampling done in the Lower South Bay, near Coyote Creek in February 2010, found high numbers of longfin smelt in Coyote Creek, Alviso Slough, and nearby salt ponds (James Hobbs, unpublished data). Bay Study data shows spawner use of Coyote Creek (adults then larvae in the South Bay) in 1982 and 1983, both very high outflow years. Longfin smelt inhabits various depths depending on the time of day and life history stage, with adults inhabiting deeper areas close to the bottom during the day and becoming more associated with surface waters at night (Chigbu et al. 1998 in Garwood 2017).

Distribution of adult longfin smelt changes seasonally, with the majority of adults found in Central Bay, San Pablo Bay and Suisun Bay in the summer, and moving upstream in early fall. Adult distribution is the most widespread in the winter and spring, extending from the South Bay through the Delta, with the greatest concentrations in San Pablo Bay, Suisun Bay, and the West Delta (Rosenfield 2009).

While there may be seasonal variations in abundance of longfin smelt, the species occurs yearround throughout the Bay and larger bay tributaries, including areas in the action area. However, the action area is outside of known spawning areas of the species.

The Service has determined that the longfin smelt occur in the action area at or near sixteen of the parks identified in Table 1 based on the recent observations of this species near the parks, the biology and ecology of the species, and the presence of suitable habitat in and near the parks.

Effects of the Action

Effects of the action are 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.

General

The District proposed activities and routine maintenance projects include the replacement of existing structures and facilities, minor improvement projects, and the restoration of various waterbodies to enhance habitat for listed species. The proposed activities consist of minor construction and the maintenance of existing structures or facilities that are mostly small in scale. The footprint of individual projects, except for restoration projects, is extremely small and rarely exceeds 2,000 square feet or 0.05 acres. Overall, the anticipated range of cumulative impacts for the five-year period of 2024-2029 is estimated to be a maximum of approximately 10.41 acres within the District's approximately 109,033 acres on non-Habitat Conservation Plan (HCP) lands (Table 7). Annually, this equates to about 2.08 acres of impact to various habitats that could potentially support listed species on the District lands. This includes disturbed sites and developed areas, which are unlikely to provide the habitat features suitable to support the listed species covered under this biological opinion. Considering that the vast majority of covered projects involve the maintenance of existing structures, most of the effects are anticipated to be temporary, with little permanent loss of vegetation or habitats.

Nonetheless, adverse effects to listed species could occur as a result of the work activities associated with these various construction and continuing maintenance projects. However, these effects are expected to be minor, since the vast majority of the projects are of short duration, with very small footprints and have minimal ground disturbance or permanent habitat alteration. As anticipated for a five-year period, the total impact to all habitat types (land cover area) is extremely small and less than 0.010 percent of District non-HCP lands.

Temporary impacts are defined as any impact that affects natural land cover for a limited duration with most sites returning to their preexisting conditions in less than two years. Most of the activity impacts defined as temporary in Table 2 would return to their preexisting condition

in a year; only a few would take less than two years to return. Examples of temporary impacts include removal of wetland, riparian, or terrestrial vegetation to the extent that natural land cover habitat is affected and other actions that temporarily reduce stream or wetland function and habitat value (e.g., dewatering). Actual wetland impacts may be somewhat lower than those calculated because of flexibility in implementing avoidance measures (e.g., building clear-span bridges to avoid streams, building in sites where no riparian vegetation exists).

Project Type	Maximum Temporary Effect (acres)	Maximum Permanent Effect (acres)	Maximum Total Effect
Replacing Same Size	0.450	0.000	0.450
Culvert			
Upgrade Culvert	0.900	0.900	1.800
Install New Culvert	0.270	0.305	0.575
Clearing Culvert	1.075	0.000	1.075
Culvert Head-Tailwalls	0.075	0.075	0.150
Install Energy Dissipaters	0.100	0.100	0.200
Installation of New Armored Fords	0.135	0.135	0.270
Maintenance of Existing Armored Fords	0.050	0.000	0.050
Maintenance and Installation of Bridges	0.050	0.000	0.050
Bank Stabilization	1.800	1.800	3.600
Springbox Maintenance and Installation	0.04	0.250	0.290
Maintenance Dredging of Waterbodies	1.500	0.000	1.500
Maintenance Shoreline Facilities	0.200	0.200	0.400
Removal of Hazardous Structures	0.000	0.000	0.000
Removal of Vessels	0.000	0.000	0.000
Total	6.645	3.765	10.410

Table 7. Acreage of Anticipated Routine Maintenance Projects (5 years)

Species

The effects of the Proposed Action on individual species are described below. This analysis assumes that projects in a specific District Park will be affecting the species determined as located in that District parks by Table 1. Conservation Measures are referenced below with the acronym CM. Effects common to all species are as follows:

Direct effects on all listed species as a result of the proposed project would include injury or mortality from being crushed by equipment, maintenance materials, or worker foot traffic. These effects would be reduced by the avoidance and minimization measures proposed by the District, including minimizing and clearly demarcating the boundaries of activity areas (CM3), pre-construction surveys (CM12), and the presence of a Service-approved biologist during construction activities (CM11). Relocating listed species out of harm's way, as proposed, may further reduce injury or mortality (CM14, CM21, CM22). However, injury or mortality of listed species may occur as a result of improper handling, containment, or transport of individuals or from releasing them into unsuitable habitat (e.g., where exotic predators are present).

Uninformed workers could disturb, injure, or kill listed species. The potential for this to occur may be greatly reduced by proposed education of workers as to the presence and protected status of species and the measures that are being implemented to protect it during District activities (CM10).

Indirect effects on listed species could occur through the possible spread of invasive plant species that could degrade or remove species habitat. To reduce adverse effects of invasive plant species being brought in by project activities, the District will ensure that the spread or introduction of any invasive exotic plants will be avoided and will remove any located in project areas when feasible (CM7). Additionally, proposed projects, restoration projects, and adaptive management conservation measures will benefit listed species because they include the control and removal of known populations of invasive species that are adversely affecting listed species habitats.

Temporary effects from vegetation removal include vegetative cover reduction in terrestrial areas and increased water flow, increased turbidity, and increased sediment loading in waterbodies; most of these effects should be gone within a year. In-channel removal of vegetation would be limited and is expected to have a negligible effect on channel flow or ponding, respectively. Such maintenance activities are typically localized (generally less than 0.01 acre), have a limited footprint and are usually targeted at road crossings, culverts, and at storm drain outlets. It is expected that most removal of in-channel vegetation that does not involve the placement of riprap or armoring will reestablish to its current condition within a year. Conservation measures (CM6) and BMPs (Table 2) as described above for erosion control will be required for any mechanized vegetation removal activities and sedimentation or erosion effects will be minimized and avoided.

Selective pruning and removal activities for site access may result in the short-term reduction of canopy and vegetative cover provided by understory trees, shrubs, and plants. The loss of cover may encourage the growth of invasive plants, such as cattails, in the creek or channel or yellow star thistle along the banks, which may require future removal. The presence of invasive species may reduce the quality of breeding, foraging, or dispersal habitat, inhibiting listed species from reproducing, foraging, or dispersing. Invasive species management during project activities would minimize the invasion or re-invasion of invasive plant species and will also allow for planting of native species (CM7).

Most effects from sediment removal will be temporary and localized as effects will be immediately around roads, culverts, bridges, crossings, shorelines, levees, and at target locations along streams; also, the time required to complete the work at each site will usually be short (approximately a week) and during the dry season when water levels are reduced or absent. Overall, sediment removal activities would not significantly alter stream function. Removal of fine sediment from the stream channel outfalls will improve water filtration and flow rates.

Accidental spills of hazardous materials or careless fueling or oiling of vehicles or equipment could degrade water quality or upland habitat to a degree where species are adversely affected or killed. The potential for this effect to occur will be reduced by implementation of measures proposed by the District to thoroughly inform workers of the importance of preventing hazardous materials from entering the environment and by locating staging and fueling areas away from channels and the immediate floodplain (CM4).

Best Management Practices (BMP) described in the Conservation Measures section above will be implemented prior to and during work activities in order to avoid and minimize adverse effects to all life stages of listed species. The proposed lentic, lotic, and tidal restoration projects may involve sediment and vegetation removal that would temporarily affect aquatic and upland habitat for these species. However, all restoration projects are required to have permanent neutral or beneficial effects to all listed species. Therefore, no significant habitat degradation would occur as a result of these activities (CM 18) to listed species covered in this biological opinion. The proposed lentic, lotic, and tidal restoration activities may involve sediment and vegetation removal that would temporarily affect aquatic and upland habitat for these species. However, all restoration projects and adaptive management conservation measures are required to have permanent neutral or beneficial effects to all listed-species and so no significant habitat degradation would occur as a result of these activities (CM18) to listed species habitat in this biological opinion. Additionally, as described in the Description of the Proposed Action above, all restoration projects covered under this biological opinion will have the primary objective to promote the conservation and recovery of listed species. Adaptive management conservation measures, as detailed above, will provide suitable habitat for feeding, dispersal, or sheltering commensurate with or better than habitat lost as a result of the proposed routine maintenance projects implemented at that site. The continued preservation and restoration of lands essential to the conservation of these listed species by the District also helps offset these routine maintenance activities. Long-term management for the health of these listed species populations and their habitats is part of the District's mission and District lands will continue to provide essential conservation for these species and their populations despite some temporary and permanent effects from these routine maintenance, conservation measures, and restoration projects.

In summary, routine maintenance projects will enhance or protect habitat from the adverse effects to water quality from sedimentation and erosion, while the combined beneficial effects of District preservation of habitat, adaptive management conservation measures, and restoration projects will create or enhance habitat and will likely contribute to the recovery of the listed species addressed in this biological opinion.

Alameda Whipsnake

While most activities do not take place within scrub habitat or rock outcroppings, they will occur within or near waterbodies or along roads where Alameda whipsnakes forage and disperse through grasslands, riparian areas, and oak savanna. In these areas, injury or mortality could be a direct result of contact with construction equipment, vehicles, or personnel. Activities associated with the proposed projects will result in the loss of suitable Alameda whipsnake habitat-specifically riparian or scrub habitat, and could reduce the protective cover and foraging area needed for survival.

In the absence of conservation measures, District activities could result in increased level of disturbance to Alameda whipsnake from noise, vibrations from equipment, and maintenance activities. Disturbance through noise and vibration could result in the displacement of Alameda whipsnake from protective cover which may disrupt normal behavior of foraging, sheltering, and dispersal. Displaced individuals may be more vulnerable to predators or starvation. Avoidance and minimization measures will be utilized to reduce potential adverse effects to the Alameda whipsnake. These measures include avoiding rock outcroppings and scrub habitats, limiting the timing of activities to the summer and early fall to avoid disturbance to breeding and young, and

removing vegetation by hand in areas with shrub vegetation (CM20). They also include the use of biological monitors (CM10); covering all holes and trenches deeper than 12 inches at the end of each day (CM5); and use of BMPs to reduce soil erosion into waterways (Table 2, CM6). In addition, all handling of Alameda whipsnake will be by a Service-approved biologist (CM11, CM14).

Sediment removal activities should not affect Alameda whipsnake habitat or individuals other than direct effects described above. Vegetation removal activities would most likely remove protective cover in foraging and dispersal areas but acreage should be so minimal as to be discountable. If scrub habitat is removed for project activities, it is likely to be for site access, stream crossing, or culvert replacement work and will be minimal.

Effects of District routine maintenance activities on Alameda whipsnake populations, and on these species as a whole, will be relatively low proportionally - only 8.5 acres (0.010 percent) of 88,784 acres of potential range area in the District for the Alameda whipsnake would be affected by activities in the five-year period; while this is an overestimation of the proportion of habitat affected (because not all area in the range is habitat and the range acres depicted here may not be suitable habitat- see Table 1), the proportion of habitat affected would still be a small percentage, and should affect whipsnake populations negligibly. Additionally, most of the proposed effects are temporary and involve ongoing maintenance of a type that has been performed along these roads and streams, and in these waterbodies, for decades (or longer) and habitat in those areas are already disturbed and marginal. Therefore, the number of individuals and the effects of habitat disturbance to its populations that will be impacted by District routine maintenance are expected to be low (Table 8). The installation of livestock water systems could result in some removal of shrub habitat but will also improve grazing management, resulting in reduced weed species and improved foraging and dispersal habitat in grasslands for the Alameda whipsnake. Improved grazing practices can also reduce fuel loads, minimizing the chances of catastrophic wildfires, which are a threat to Alameda whipsnake habitat. The long-term effects of construction and continuing maintenance projects on the Alameda whipsnake and its habitat are likely to be negligible, neutral, or beneficial.

Restoration projects that involve sediment and vegetation removal would affect aquatic and upland habitat for this species. In additional, all restoration projects are required to have permanent neutral or beneficial effects to all listed-species and so no significant habitat degradation would occur as a result of these activities (CM18). The Alameda whipsnake would directly benefit from District project work involving the construction, maintenance and restoration of stock ponds and spring boxes, which provide foraging habitat, may be used for thermoregulation, and the enhancement of stream reach conditions and riparian habitat within areas that the species' may utilize. The proposed District spring boxes and pond construction projects will improve livestock water systems and grazing distribution which can enhance grassland habitat conditions for this species in over and underutilized areas allowing for reduced barriers to movement through grasslands. Proposed restoration or creation of riparian habitat along stream reaches would enhance or restore important dispersal and foraging habitat, adaptive management conservation measures, and restoration projects will create or enhance habitat and will contribute to the recovery of this species.

Project Type	Maximum Temporary Effect (acres)	Maximum Permanent Effect (acres)	Maximum Total Effect
Replacing Same Size	0.367	0.000	0.367
Culvert			
Upgrade Culvert	0.734	0.734	1.468
Install New Culvert	0.220	0.248	0.469
Clearing Culvert	0.877	0.000	0.877
Culvert Head-Tailwalls	0.061	0.061	0.122
Install Energy Dissipaters	0.082	0.082	0.163
Installation of New Armored Fords	0.110	0.110	0.220
Maintenance of Existing Armored Fords	0.041	0.000	0.041
Maintenance and Installation of Bridges	0.041	0.000	0.041
Bank Stabilization	1.468	1.468	2.936
Springbox Maintenance and Installation	0.033	0.204	0.237
Maintenance Dredging of Waterbodies	1.223	0.000	1.223
Maintenance Shoreline Facilities	0.163	0.163	0.326
Removal of Hazardous Structures	0.000	0.000	0.000
Removal of Vessels	0.000	0.000	0.000
	5.419	3.070	8.489

Table 8. Acreage of Anticipated Routine Maintenance Projects (5 years) to Alameda Whipsnake Potential Range on District lands^{1,2}

²Land cover types used in the analysis for Alameda whipsnake includes chaparral, montane hardwood, and riparian woodlands within parks listed in Table 1.

Alameda Whipsnake Critical Habitat

The proposed project is located throughout the entire designated Alameda whipsnake critical habitat. The Service anticipates that the activities associated with the proposed activities could negatively affect some of the PCEs of Alameda whipsnake critical habitat within the action area temporarily. However, the proposed project will not affect significant amounts of any scrub/shrub communities or rocky features, two primary constituent elements (PCE 1; PCE 3) for Alameda whipsnake, or oak woodland and grassland habitat (PCE 2). Most of the proposed projects are located in riparian areas and along creeks and not in core scrub habitat. Thus, these activities will only result in minor effects to critical habitat and these activities (implemented with the conservation measures) and will not prevent critical habitat from providing essential conservation values for the Alameda whipsnake permanently. Most activities will be maintenance to existing facilities, are small in scale, and are not likely to diminish the quality of the PCEs in critical habitat, in general. All restoration projects and adaptive management conservation measures proposed would result in either beneficial effects to critical habitat or no effect. The effects of the project on Primary Constituent Elements (PCEs) for Alameda whipsnake will be minor based on the small project areas annually, the temporary nature of most project effects, and the implementation of the proposed Conservation Measures. The temporary disturbance of such small areas annually that provide PCE 1, PCE 2, and PCE 3 for Alameda whipsnake is not expected to appreciably diminish the value or function of the Alameda

whipsnake's designated critical habitat. Because the PCE's will remain intact and the District will manage and restore whipsnake habitat within its parks, the units will continue to contribute to the high conservation value of the units as a whole, and to sustain the units' role in the conservation and recovery of the species.

California Tiger Salamander, California Red-legged Frog, and Foothill Yellow-legged Frog

Direct effects on California tiger salamanders, California red-legged frogs, and foothill yellowlegged frogs as a result of the proposed project would include injury or mortality from being crushed during construction work as described above. Avoidance and minimization measures will be utilized to reduce potential adverse effects to the California red-legged frog, foothill yellow-legged frog and California tiger salamander. These measures include use of work windows to avoid times when ponds may have red-legged frog or yellow-legged frog tadpoles and California tiger salamander larvae; use of biological monitors; avoidance of areas with high numbers of small mammal burrows; pre-construction surveys; environmental awareness training; covering all holes and trenches deeper than 12 inches at the end of each day; and use of BMPs to reduce soil erosion into streams. In addition, all handling of California red-legged frogs, foothill yellow-legged frogs, or California tiger salamanders will be by a Service-approved biologist (CM5, CM9, CM10, CM11, CM12, CM14, CM21, CM22).

Work activities, including noise and vibration, may cause California tiger salamanders, California red-legged frogs, and foothill yellow-legged frogs to leave the work area. This disturbance may increase the potential for individual frogs to become victims of predation and/or desiccation. Minimizing the area disturbed by District activities will reduce the potential for fleeing as a result of the action (CM3). California tiger salamanders, California red-legged frogs, and foothill yellow-legged frogs are more likely to disperse overland in mesic conditions. Because all ground-disturbing maintenance activities occurring in the channel would take place during the dry season, these impacts are less likely (CM9, CM21a, CM22a). Temporary dewatering of creeks, ponds, or wetlands may harm or kill California red-legged frog, foothill yellow-legged frog, and California tiger salamander adults, larvae and eggs if they are not translocated to suitable habitat. Tadpoles or larvae may be injured or killed if entrained by pump or water diversion intakes (CM16). Screening pump intakes as proposed by the District will reduce the potential that tadpoles would be caught in the inflow.

The possible spread of chytrid fungus or other pathogens would be minimized by following the Declining Amphibian Populations Task Force's Fieldwork Code of Practice (CM 21d), in conjunction with the use of a Service-approved biologist, to reduce or prevent improper handling, containment, or transport of California tiger salamanders, California red-legged frogs, and foothill yellow-legged frogs. These measures have been included in the conservation measures for the California tiger salamander, California red-legged frog, and foothill yellow-legged frog described above.

Work in active streams or in floodplains could cause high levels of siltation downstream. This siltation could alter the quality of the habitat to the extent that use by individuals of the species is precluded. Implementing BMPs for erosion control and reducing the area to be disturbed to the minimum necessary through conservation measures (CM6, CM8d, Table 2) and BMP's from Section 404, 401, and Regional Water Quality permits should decrease the amount of sediment that is washed downstream as a result of District activities. Erosion control materials that use plastic or synthetic monofilament netting could entrap individuals. To prevent injury or mortality

from entrapment, these erosion control materials are prohibited from project sites and only acceptable materials with natural fibers will be used.

Any replacement of natural or armored banks that provide refugia for California tiger salamanders, California red-legged frogs, and foothill yellow-legged frogs with banks that provide no such refugia (e.g., concrete crib walls or sacked concrete) would result in permanent habitat loss for the California tiger salamander, California red-legged frog, and foothill yellow-legged frog. Bank stabilization activities include: installation of culvert head/tail walls, installation of energy dissipaters, installation of new armored fords, and bank stabilization. Based on the locations where bank stabilization activities have generally been required and the annual limits (Table 2) on these activities, the acreage of potential California tiger salamander, California red-legged frog, and foothill yellow-legged frog habitat that may be both temporarily and permanently impacted by bank stabilization work is estimated at 1.95 acres for California tiger salamander, approximately 2.54 acres for California red-legged frog, and 0.65 acres for foothill yellow-legged frog for the five-year time period covered by the biological opinion (Table 9, Table 10, and Table 11). The loss of habitat will decrease survivorship of individuals by reducing the availability of cover, dispersal, and foraging habitat near aquatic habitats.

Sediment removal activities (e.g., sediment removal in silt basins, ponds, and lakes; access road construction; road maintenance; and staging area construction) may result in the removal of instream or inbasin emergent vegetation, rocky substrate, and riparian vegetation along the channel banks, resulting in the loss of up to instream habitat and associated streamside habitat for California red-legged frogs and foothill yellow-legged frogs (i.e., the emergent vegetation, submerged roots, or rocky substrate to which eggs are attached). The actual acreage cannot be determined at this time, but sediment removal in lakes, basins, and ponds, would remove up to 1.06 acres of potential egg-laying and cover habitat for California red-legged frogs and 0.270 acre of habitat for foothill yellow-legged frogs (Table 9 and Table 10). Sediment removal could also benefit California red-legged frogs by providing a longer inundation period for frog's life history stages or may create breeding habitat in areas where pond inundation was inadequate. Sediment removal activities may result in impacts to upland habitat potentially used by the California tiger salamander. Loss of subterranean habitat for California tiger salamanders and California red-legged frogs may occur from grading of access roads or staging area construction. Removal of burrows that California tiger salamanders and California red-legged frogs use as refugia could result in increased mortality due to predation or desiccation but the area affected in these parks should be a small proportion of the area and new burrows will continue to be excavated from the surrounding population. Construction-related disturbance to frog foraging areas or rodent burrows will be avoided or minimized (CM3, CM23d).

Effects of District routine maintenance activities on California tiger salamander, California redlegged frog, and foothill yellow-legged frog distributional range, and on these species as a whole, will be relatively low proportionally. Approximately 5.7 acres (0.007 percent) of the 77,552 acres of distributional range in the District for the California tiger salamander, approximately 7.4 acres (0.012 percent) of the 59,539 acres of distributional range in the District for California red-legged frog, and approximately 1.874 acres (0.009 percent) of the 20,303 acres of distributional range in the District for foothill-yellow legged frog would be affected by activities in the five-year period. While this is an overestimation of the proportion of habitat affected (because not all area in the range is habitat and the range acres depicted here may not be suitable habitat-see Table 1), the proportion affected would still be a small percentage, and

should affect salamander and frog populations negligibly. Additionally, most of the proposed activities involve ongoing maintenance of a type that has been performed along these roads and streams, and in these waterbodies, for decades (or longer) and habitat in these areas is already disturbed and marginal and would not likely be used by listed species. Therefore, the number of individuals and the effects of habitat disturbance to their populations that will be adversely affected by District routine maintenance are expected to be low.

Restoration projects will involve sediment and vegetation removal that would affect aquatic and upland habitat for these species. In addition, although approximately 43.75 acres of distributional range in the District for the California tiger salamander and California red-legged frog may be affected by restoration activities in the five-year period, all restoration projects and adaptive management conservation measures are required to have permanent neutral or beneficial effects to all listed-species and so no significant habitat degradation would occur as a result of these activities (CM18). Herbicides that may be used to remove vegetation could have sublethal or lethal effects to these amphibians if runoff occurs into aquatic features or they used at the wrong time or at a dosage harmful to these animals. The application of CM7 that requires that herbicides are applied according to label instructions will minimize these temporary potential adverse effects to individuals. Additionally, all herbicide applications will be reviewed and will require approval by the Service prior to implementation as approval is required for all restoration projects and adaptive management conservation measures. The California red-legged frog, foothill yellow-legged frog, and California tiger salamander directly benefit from District project work involving the construction, maintenance and restoration of stock ponds and spring boxes, which provide breeding habitat, and the enhancement of stream reach conditions and riparian habitat within areas that the species' may utilize. The proposed District spring box and pond construction projects will improve livestock water systems and grazing distribution which can enhance aquatic, grasslands, and upland habitat conditions for these species in over- and underutilized areas. In summary, the routine maintenance projects that will generally enhance or protect habitat from the adverse effects to water quality from sedimentation and erosion while the combined beneficial effects of District preservation of habitat, adaptive management conservation measures, and restoration projects will create or enhance habitat and will contribute to the recovery of these species.

Project Type	Maximum Temporary Effect (acres)	Maximum Permanent Effect (acres)	Maximum Total Effect
Replacing Same Size Culvert	0.318	0.000	0.318
Upgrade Culvert	0.636	0.636	1.272
Install New Culvert	0.191	0.215	0.406
Clearing Culvert	0.760	0.000	0.76
Culvert Head-Tailwalls	0.053	0.053	0.106
Install Energy Dissipaters	0.071	0.071	0.142
Installation of New Armored Fords	0.095	0.095	0.190
Maintenance of Existing Armored Fords	0.035	0.000	0.035
Maintenance and Installation of Bridges	0.035	0.000	0.035
Bank Stabilization	1.272	1.272	2.544

Table 9. Acreage of Anticipated Routine Maintenance Projects (5 years) to California	Red-
legged Frog Potential Range on District lands ^{1,2}	

Project Type	Maximum Temporary Effect (acres)	Maximum Permanent Effect (acres)	Maximum Total Effect	
Replacing Same Size Culvert	0.318	0.000	0.318	
Springbox Maintenance and Installation	0.028	0.177	0.205	
Maintenance Dredging of Waterbodies	1.060	0.00	1.060	
Maintenance Shoreline Facilities	0.141	0.141	0.282	
Removal of Hazardous Structures	0.000	0.000	0.000	
Removal of Vessels	0.000	0.000	0.000	
Subtotal	4.697	2.661	7.358	
Restoration	35.000	8.750	43.750	
Total	39.697	11.411	51.108	
¹ ECCCHPC lands were excluded for calculations ² Land cover types used in the analysis for California red-legged frog includes lentic and lotic waterbodies, springs, and floodplains within				

parks listed in Table 1.

Table 10. Acreage of Anticipated Routine Maintenance Projects (5 years) to Foothill Yellow-legged Frog Potential Range on District lands^{1,2}

Project Type	Maximum Temporary Effect (acres)	Maximum Permanent Effect (acres)	Maximum Total Effect
Replacing Same Size Culvert	0.081	0.000	0.081
Upgrade Culvert	0.162	0.162	0.324
Install New Culvert	0.049	0.055	0.104
Clearing Culvert	0.194	0.000	0.194
Culvert Head-Tailwalls	0.014	0.014	0.027
Install Energy Dissipaters	0.018	0.018	0.036
Installation of New Armored Fords	0.024	0.024	0.049
Maintenance of Existing Armored Fords	0.009	0.000	0.009
Maintenance and Installation of Bridges	0.009	0.000	0.009
Bank Stabilization	0.324	0.324	0.648
Springbox Maintenance and Installation	0.007	0.045	0.052
Maintenance Dredging of Waterbodies	0.270	0.000	0.270
Maintenance Shoreline Facilities	0.036	0.036	0.072
Removal of Hazardous Structures	0.000	0.000	0.000
Removal of Vessels	0.000	0.000	0.000
Total	1.196	0.678	1.874

¹ECCCHPC lands were excluded for calculations ²Land cover types used in the analysis for Foothill yellow-legged frog includes lentic and lotic waterbodies, springs, and riparian woodland within parks listed in Table 1.

Project Type	Maximum Temporary Effect (acres)	Maximum Permanent Effect (acres)	Maximum Total Effect
Replacing Same Size Culvert	0.244	0.000	0.244
Upgrade Culvert	0.488	0.488	0.976
Install New Culvert	0.147	0.165	0.312
Clearing Culvert	0.583	0.000	0.583
Culvert Head-Tailwalls	0.041	0.041	0.082
Install Energy Dissipaters	0.054	0.054	0.108
Installation of New Armored Fords	0.073	0.073	0.146
Maintenance of Existing Armored Fords	0.027	0.000	0.027
Maintenance and Installation of Bridges	0.027	0.000	0.027
Bank Stabilization	0.977	0.977	1.954
Springbox Maintenance and Installation	0.021	0.136	0.157
Maintenance Dredging of Waterbodies	0.814	0.000	0.814
Maintenance Shoreline Facilities	0.108	0.109	0.217
Removal of Hazardous Structures	0.000	0.000	0.000
Removal of Vessels	0.000	0.000	0.000
Subtotal	3.606	2.043	5.649
Restoration	35.000	8.750	43.750
Total	38.606	10.793	49.399

Table 11. Acreage of Anticipated Routine Maintenance Projects (5 years) to California tiger salamander Potential Range on District lands^{1,2}

¹ECCCHPC lands were excluded for calculations

²Land cover types used in the analysis for California tiger salamander includes lentic vernal pools, grasslands, and oak savannahs within parks listed in Table 1.

California Red-legged Frog Critical Habitat

The action area is located within California red-legged frog critical habitat units which contain PCEs as defined in the designation: PCE 1 (aquatic breeding habitat), PCE 2 (aquatic nonbreeding habitat), PCE 3 (upland habitat) and PCE 4 (dispersal habitat). The Service anticipates that the activities associated with the proposed maintenance and restoration projects could negatively affect some of the PCEs of California red-legged frog critical habitat within the action area. However, these activities will only result in minor effects to habitat (only temporary effects for restoration projects) and these activities (implemented with the conservation measures) will not prevent critical habitat from providing essential conservation values for the California redlegged frog. The action area contains aquatic habitat for breeding activities (PCE 1 and 2) in the form of ponds and creeks. This breeding habitat could be affected by construction activities through erosion from project activities. However, conservation measures to prevent erosion from construction activities would prevent this and no direct effects to breeding or non-breeding aquatic habitat would occur as a result of this project during the breeding season. Most of these activities will only result in minor effects to aquatic breeding and non-breeding habitat and minimal effects to upland and dispersal habitat. In addition, these construction activities are mostly maintenance of existing sites, small in scale, and not likely to diminish the quality of

PCEs. While disturbance within critical habitat may prevent some California red-legged frogs from using portions of the critical habitat for essential life functions temporarily, they will still be able to complete their essential ecological and biological functions in the remaining areas of critical habitat. All restoration projects and adaptive management conservation measures proposed would result in either permanent beneficial effects to critical habitat or no effect. The effects of the project on these Primary Constituent Elements for California red-legged frog will be minor based on the small project footprints, the temporary nature of most of the project effects on aquatic and terrestrial habitats, the beneficial effects of restoration activities on ponds and creeks, and the implementation of the proposed Conservation Measures to avoid and minimize adverse effects during construction. Because the PCE's will remain intact and the District will manage and restore California red-legged frog habitat within its parks, the sites will continue to contribute to the high conservation value of the units as a whole, and to sustain the units' role in the conservation and recovery of the species. Because the Primary Constituent Elements at these sites will remain intact and these sites will continue to contribute to the high conservation value of the primary Constituent to the high conservation value of the primary Constituent to the high conservation value of the primary Constituent to the high conservation value of the primary Constituent to the high conservation value of the primary Constituent to contribute to the high conservation value of the primary Constituent to contribute to the high conservation value of the primary Constituent to contribute to the high conservation value of the primary Constituent to contribute to the high conservation value of the enhanced by these projects.

Longhorn Fairy Shrimp, Vernal Pool Fairy Shrimp, and Vernal Pool Tadpole Shrimp

Ground-disturbing activities have the potential to result in direct mortality, life cycle disturbance, and reduced habitat quality for the longhorn vernal pool fairy shrimp, vernal pool fairy shrimp, and vernal pool tadpole shrimp. These mortality-related effects will be minimized through implementation of CM24, which requires work within 250 feet of vernal pool branchiopod habitat to be avoided to the maximum extent possible and, if it does occur, to happen only in the dry season and to have no permanent adverse effects to hydrology of the pools or the pool complex. Although work at locations with vernal pool crustaceans would occur during the dry season when adults would not be present, excavation and soil disturbance associated with sediment and vegetation removal activities could destroy cysts potentially occurring in soil in affected areas, if work occurs directly in pools. According to the District, no work is currently planned to occur within known pools of listed brachiopods (pers. comm. Steve Bobzien, May 11, 2017). However, new occurrences may be found in the future in seasonal ponds or wetlands and may require maintenance and could be temporarily affected by sediment or vegetation removal activities.

Additionally, indirect effects could occur to shrimp cysts that are buried by soil moved into vernal pools, swales, or other habitat during ground-disturbing activities from wind activities; additional soil could also decrease the inundation period and water quality of the pools. CM24 minimizes the risk of effects to pools from nearby activities by avoiding, to the maximum extent possible, work within 250 feet of the pools. The majority of known longhorn vernal pool fairy shrimp occurrences in the northern portion of their range occurs in rock-out crops and several of the occupied pools on District property and are within 250 of existing roads or trails which need to be maintained. Sedimentation into these pools from current and past road maintenance activities, according to the District, is not currently affecting the rock outcrops any pools with listed shrimp populations within them (Steve Bobzien pers. com. 2017- comments on the proposed project description); proposed maintenance activities should have the same effects and would not affect these pools.

Upland habitat and swales around a vernal pool and within a vernal pool complex are essential to the hydrological and biological integrity of the vernal pool and complex. Vernal pool habitat

indirectly affected would include all habitat supported by upland areas and all habitat otherwise damaged by effects to the watershed, introduced species, human intrusion, or pollution caused by a project. Where the reach of these indirect effects cannot be determined definitively, the Service considers all areas within 250 feet of a vernal pool to be indirectly affected. If any habitat within a vernal pool complex is impacted, then all remaining habitat within the complex is considered indirectly affected. Examples of potential indirect effects from proposed activities include possible disruption of hydrological integrity within a vernal pool, sandstone outcropping, or other suitable habitat within the associated upland habitat, or within the vernal pool complex. The known locations of all occurrences of listed vernal pool shrimp species on District lands are in rock pools or sandstone outcroppings; thus, ground disturbing work within 250 feet of rock habitat should not directly affect the hydrology of pools. If new pools are found that are not protected within rock or sandstone outcroppings, the hydrology in these pools could be negatively affected by any ground disturbing activities with a 250-foot radius. If work occurs within 250 feet of known habitat for listed brachiopods, the District will design work to avoid any permanent adverse effects to hydrology and consult with the Service to develop site specific measures to reduce adverse effects to hydrology; the District (CM24e); if adverse effects cannot be avoided, the District will contact the Corps to initiate a separate consultation. This conservation measure is intended to avoid the effect on the species' habitat of the proposed activities' anticipated incidental take, resulting from the permanent loss or modification of habitat from adverse hydrological changes.

Water and habitat quality could be reduced by a variety of indirect effects associated with proposed activities. Potential indirect effects to vernal pool habitat, however, could result from dust generated during covered activities and subsequently deposited within vernal pools adjacent to work sites. Sedimentation into pools could reduce inundation periods, reduce water quality, or bury adults or cysts. To reduce effects from airborne sedimentation, CM24c will require implementation of measures to control dust and prevent transport of soil from exposed soil to the shrimp habitat. Proposed activities have the potential to spread invasive weeds that could reduce habitat quality within vernal pools or their associated uplands. Implementation of the Conservation measures to reduce sedimentation effects (CM24a, CM24c, CM6, BMPs in Table 2) and reduce invasive weed transferal (CM7) will reduce the potential for these effects to these species.

Only a small number of potentially occupied pools with longhorn vernal pool fairy shrimp, vernal pool fairy shrimp, and vernal pool tadpole shrimp will be adversely affected. Approximately 0.26 acres (0.009 percent) of the 2,862 acres of the distributional range in the District for the longhorn vernal pool fairy shrimp, vernal pool fairy shrimp, and vernal pool tadpole shrimp would be affected by activities in the five-year period. This is likely an overestimation of the proportion of habitat affected (because not all area in the range is habitat and the range acres depicted here may not be suitable habitat- see Table 1). The proportion of habitat affected would still be a small percentage and should affect these listed vernal pool shrimp populations negligibly. Additionally, most of the proposed effects are temporary and involve ongoing maintenance of a type that has been performed along these roads and streams, and in these waterbodies, for decades (or longer). Therefore, the effects of habitat disturbance to pools and their populations that will be impacted by District routine maintenance are expected to be low (Table 12). The long-term effects of proposed restoration projects in vernal pools and seasonal wetlands will be beneficial for shrimp habitat as the activities will enhance or create
habitat; it is not anticipated that restoration projects will have permanent adverse effects to listed species habitat as required by CM18.

Proposed restoration projects that may be beneficial for the listed brachiopods may be the creation or restoration of seasonal waterbodies and the implementation of invasive plant removal. Some lentic waterbodies proposed for restoration or creation will be designed to be seasonal and could provide habitat for these listed brachiopods. Herbicides that may be used to remove vegetation could have sublethal or lethal effects to these species if runoff occurs into aquatic features. The application of CM7 that requires that herbicides are applied according to label instructions will minimize these temporary potential adverse effects to individuals. Additionally, all herbicide applications will be reviewed and will require approval by the Service prior to implementation as approval is required for all restoration projects and adaptive management conservation measures. The proposed District spring box and pond construction projects will improve livestock water systems and grazing distribution which can enhance aquatic habitat, grasslands, and upland habitat conditions for these species in over-utilized areas by allowing more growth of vegetation in seasonal wetlands which provide debris and detritus forage for these brachiopods.

In summary, the routine maintenance projects will generally enhance or protect habitat from the adverse effects to water quality from sedimentation and erosion while the combined beneficial effects of District preservation of habitat, adaptive management conservation measures, and restoration projects will create or enhance habitat and will contribute to the recovery of this species.

Project Type	Maximum Temporary	Maximum Permanent	Maximum Total Effect
	Effect (acres)	Effect (acres)	
Replacing Same Size Culvert	0.012	0.000	0.018
Upgrade Culvert	0.024	0.024	0.047
Install New Culvert	0.007	0.008	0.015
Clearing Culvert	0.028	0.000	0.028
Culvert Head-Tailwalls	0.002	0.002	0.004
Install Energy Dissipaters	0.003	0.003	0.005
Installation of New Armored Fords	0.004	0.004	0.007
Maintenance of Existing Armored Fords	0.001	0.000	0.001
Maintenance and Installation of Bridges	0.001	0.000	0.001
Bank Stabilization	0.047	0.047	0.094
Springbox Maintenance and Installation	0.001	0.007	0.008
Maintenance Dredging of Waterbodies	0.039	0.000	0.039
Maintenance Shoreline Facilities	0.000	0.000	0.000
Removal of Hazardous Structures	0.000	0.000	0.000
Removal of Vessels	0.000	0.000	0.000

Table 12. Acreage of Anticipated Routine Maintenance Projects (5 years) to Longhorn Fairy Shrimp, Vernal Pool Fairy Shrimp, and Vernal Pool Tadpole Shrimp Potential Range on District lands^{1,2}

Project Type	Maximum Temporary	Maximum Permanent	Maximum Total Effect	
	Effect (acres)	Effect (acres)		
Total	0.1679	0.0929	0.2608	
¹ ECCCHPC lands were excluded for calculations				
² Land cover types used in the analysis for vernal pool fairy shrimp and longhorn fairy shrimp include rock outcrop depressions and vernal				
pools within parks listed in Table 1. Land cover types used in the analysis for vernal pool tadpole shrimp include vernal pools and seasonal				
ponds within parks listed in Table 1.				

Longhorn Fairy Shrimp and Vernal Pool Fairy Shrimp Critical Habitat

The Service anticipates that the activities associated with the proposed project would not negatively affect PCEs 1 (vernal pool complexes), PCE 2 (vernal pools holding water for 18 days), PCE3 (adequate food sources in pools) and PCE 4 (structure within pools) of known occupied longhorn fairy shrimp and vernal pool fairy shrimp critical habitat within the action area due the expected location of projects and implementation of conservation measures. Construction activities are not anticipated to directly affect known locations in rock outcrops in which all known populations of these species exist in the action area. However, currently unknown features outside of rock pools could be affected by project activities. If these features are present at project sites, activities implemented with the conservation measures will only result in minor effects to habitat (see previous analysis for species above) and will not prevent critical habitat from providing essential conservation values for the longhorn fairy shrimp and vernal pool fairy shrimp. As per Conservation Measures 24e, if work occurs within 250 feet of known habitat for listed brachiopods, the District will design work to avoid any permanent adverse effects to hydrology and consult with the Service to develop site specific measures to eliminate permanent adverse effects to hydrology; if adverse effects cannot be avoided, the District will contact the Corps to initiate a separate consultation. The effects of the project on these Primary Constituent Elements for longhorn fairy shrimp and vernal pool fairy shrimp will be minor. Because the Primary Constituent Elements at these sites will remain intact, the District will continue to manage and restore vernal pool species habitat for these species, and these sites will continue to contribute to the high conservation value of the critical habitat unit as a whole and be enhanced by these projects.

San Joaquin Kit Fox

While this species is rare in Alameda and Contra Costa Counties, San Joaquin kit fox adults and pups, if they are present, could be adversely affected by some proposed activities through site access or road maintenance; construction in open, upland habitat areas during project activities may have adverse effects to kit fox adults or pups by burying them in their diurnal burrows. Construction-related noise and vibration could indirectly affect individuals as described above as effects common to all species. Disturbance to denning areas will be avoided by measures that require preconstruction surveys for dens, seasonal limitations, and/or buffer zones around occupied dens (CM23).

Most activities will occur in or near waterbodies with some in the middle of open areas. In these areas, ground disturbance and vegetation removal associated with road maintenance, pond construction, staging areas, and site access could remove foraging, cover, or denning habitat; in these instances, most habitat removal or disturbance would be temporary and most of these areas only provide marginal habitat because of previous disturbance from routine maintenance

activities. Construction-related disturbance to foraging areas of rodent burrows will be avoided or minimized (CM3, CM23d).

Effects of District routine maintenance activities on San Joaquin kit fox populations, and on this species as a whole, will be relatively low proportionally – only 1.11 acres (0.009 percent) of 11,736 acres of potential habitat in the District for the San Joaquin kit fox would be affected by activities in the five-year period. While this is an overestimation of the proportion of habitat affected (because not all of this area is considered habitat - see Table 1), the proportion of habitat affected would be a small percentage, and would affect kit fox populations negligibly. Additionally, most of the proposed effects are temporary and involve ongoing maintenance of a type that has been performed along these roads and streams, and in these waterbodies, for decades (or longer). Therefore, the number of individuals and the effects of habitat disturbance to its populations that will be affected by District routine maintenance are expected to be low (Table 13). District spring and pond construction and maintenance projects will improve livestock water systems and grazing distribution. Managed grazing and proper distribution of livestock can enhance grassland habitat conditions for the species, resulting in reduced weed species and improved foraging habitat in grasslands for the San Joaquin kit fox by rodent populations. The long-term effects of construction and continuing maintenance projects on the San Joaquin kit fox and its habitat are likely to be negligible, neutral, or beneficial.

All proposed restoration projects and adaptive management conservation measures are required to have permanent neutral or beneficial effects to all listed-species and so no significant habitat degradation would occur as a result of these activities (CM18). It is unlikely that proposed restoration projects in lentic, lotic, or tidal areas would directly benefit the San Joaquin kit fox. The kit fox would indirectly benefit from District project work involving the construction, maintenance and restoration of stock ponds and spring boxes and the enhancement of stream reach conditions and riparian habitat that prey species may utilize. The proposed District spring boxes and pond construction projects will also improve livestock water systems and grazing distribution which can enhance aquatic, grasslands, and upland habitat conditions for prey species in over-utilized areas. It would also improve foraging opportunities and decrease predation on individuals by keep grasslands open and short and increasing visual ability of individuals. The proposed restoration or creation of riparian habitat along stream reaches would enhance or restore prey habitat. In summary, the combined beneficial effects of District preservation of habitat, adaptive management conservation measures, and restoration projects will create or enhance habitat and will contribute to the recovery of this species.

Project Type	Maximum Temporary Effect (acres)	Maximum Permanent Effect (acres)	Maximum Total Effect
Replacing Same Size Culvert	0.048	0.000	0.048
Upgrade Culvert	0.096	0.096	0.193
Install New Culvert	0.029	0.033	0.062
Clearing Culvert	0.115	0.000	0.115
Culvert Head-Tailwalls	0.008	0.008	0.016
Install Energy Dissipaters	0.011	0.011	0.021
Installation of New Armored Fords	0.014	0.014	0.029

Table 13. Acreage of Anticipated Routine Maintenance Projects (5 years) to San Joaquin Kit Fox Potential Range on District lands^{1,2}

Project Type	Maximum Temporary Effect (acres)	Maximum Permanent Effect (acres)	Maximum Total Effect	
Maintenance of Existing Armored Fords	0.005	0.000	0.005	
Maintenance and Installation of Bridges	0.005	0.000	0.005	
Bank Stabilization	0.192	0.192	0.385	
Springbox Maintenance and Installation	0.004	0.027	0.031	
Maintenance Dredging of Waterbodies	0.160	0	0.160	
Maintenance Shoreline Facilities	0.021	0.021	0.043	
Removal of Hazardous Structures	0.000	0.000	0.000	
Removal of Vessels	0.000	0.000	0.000	
Total	0.711	0.403	1.113	
¹ ECCCHPC lands were excluded for calculations				

²Land cover types used in the analysis for San Joaquin kit fox include grasslands and oak savannahs within parks listed in Table 1.

Pallid Manzanita

Adverse effects of pallid manzanita plants could occur as a result of construction and routine maintenance activities – mainly from road maintenance or culvert replacement adjacent to known populations or future new occurrences. The use of heavy construction equipment in transitional ecotone upland habitat areas may adversely affect plants by hitting, removing, or crushing them. Known occupied areas are not expected to be affected, but new occurrences or expansion of known areas may occur in the future and plants and those currently unknown areas may be impacted. Mapping and flagging the location of known populations (CM32a), preconstruction surveys (CM12), using only hand removal near manzanita populations (CM32b), and educational training (CM32d) will help to avoid and minimize these direct adverse effects to pallid manzanita plants.

A non-native pathogen that infects and kills pallid manzanita plants, *Phytophthora cinnamomi*, could decimate populations by being brought in on vehicles. A wash station for all vehicles and equipment will be required and should minimize potential transmission of *Phytopthora* (CM32c).

Effects of District routine maintenance activities on pallid manzanita populations, and on this species as a whole, will be relatively low proportionally (if at all) – only 0.490 acres (0.009 percent) of the 5,356 acres of the distributional range in the District for the pallid manzanita that would be affected by activities in the five-year period. While this is an overestimation of the proportion of habitat affected (because not all the distributional range is habitat - see Table 1), the proportion of habitat affected would still be a small percentage, and would affect pallid manzanita populations negligibly because of the conservation measures described above and because most projects are not likely to affect individual manzanita plants. Additionally, most of the proposed effects are temporary and involve ongoing maintenance of a type that has been performed along these roads and streams, and in these waterbodies, for decades (or longer). Therefore, the number of individuals and the effects of habitat disturbance to their populations that will be affected by District routine maintenance are expected to be low (Table 14).

All proposed restoration projects and adaptive management conservation measures are required to have permanent neutral or beneficial effects to all listed-species and so no significant habitat degradation would occur as a result of these activities (CM18). Herbicides that may be used to remove vegetation in adaptive management conservation measures could have sublethal or lethal effects to this species if runoff occurs into occupied habitat. The application of CM7 that requires that herbicides are applied according to label instructions will minimize these temporary potential adverse effects to individuals. Additionally, all herbicide applications will be reviewed and will require approval by the Service prior to implementation as approval is required for all restoration projects and adaptive management conservation measures. No restoration projects covered under this biological opinion are likely to occur in pallid manzanita habitat. It is also unlikely that proposed restoration projects in lentic, lotic, or tidal areas would directly benefit pallid manzanita. The District has developed a Service-approved long-term adaptive management plan for all pallid manzanita populations that occur on District lands (nearly 75 percent of the total range-wide population of the pallid manzanita) which will contribute to the recovery of the pallid manzanita (Service File No. 81420-2010-F0849-3). Long-term management for the health of listed species populations and their habitats is part of the District's mission and will continue to provide essential conservation for this species and its populations despite some temporary and permanent effects from these routine maintenance and restoration projects.

Project Type	Maximum Temporary Effect (acres)	Maximum Permanent Effect (acres)	Maximum Total Effect
Replacing Same Size Culvert	0.022	0.000	0.022
Upgrade Culvert	0.044	0.044	0.088
Install New Culvert	0.013	0.015	0.028
Clearing Culvert	0.053	0.000	0.053
Culvert Head-Tailwalls	0.004	0.004	0.008
Install Energy Dissipaters	0.005	0.005	0.010
Installation of New Armored Fords	0.007	0.007	0.010
Maintenance of Existing Armored Fords	0.002	0.000	0.002
Maintenance and Installation of Bridges	0.002	0.000	0.002
Bank Stabilization	0.088	0.088	0.176
Springbox Maintenance and Installation	0.002	0.012	0.014
Maintenance Dredging of Waterbodies	0.073	0.000	0.073
Maintenance Shoreline Facilities	0.000	0.000	0.000
Removal of Hazardous Structures	0.000	0.000	0.000
Removal of Vessels	0.000	0.000	0.000
Total	0.315	0.175	0.490
¹ ECCCHPC lands were excluded f	for calculations		

Table 14. Acreage of Anticipated Ro	utine Maintenance Project	s (5 years) to	Pallid Manzanita
Potential Range on District lands ^{1,2}		,	

²Land cover types used in the analysis for San Joaquin kit fox include chaparral and montane hardwood within parks listed in Table 1.

Giant Garter Snake

Giant garter snakes likely inhabit aquatic habitats at only a handful of District parks in and along the Delta (see environmental baseline description). Marshes, sloughs, drainage canals, irrigation ditches and other managed wetlands that are periodically flooded in and around these parks can be used by garter snake during their active period in the spring and summer. The adjacent terrestrial habitat is used by garter snakes more than half the time during the summer and all the time during their fall/winter brumation period; garter snakes are found in their terrestrial habitats or underground, mainly within 30 feet of water (Halstead et al. 2015b). Ground disturbance work, vegetation removal, or in water work within and adjacent to these areas could adversely affect giant garter snakes from routine maintenance activities. The noise and vibration associated with construction work and continuing maintenance activities may affect this species at the project site and adversely alter behavior as described above for effects common to all species. The indirect effects of District projects may also result in adverse effects to giant garter snake. Giant garter snakes that move or are translocated away from a construction area may move away from shelter and be more susceptible to injury and mortality from predation and vehicular or foot traffic.

Displaced snakes may experience increased competition from animals in adjacent areas. The implementation of an approved relocation plan (CM14) and the requirement of a Service-approved biologist for relocation (CM11, CM14) should minimize any adverse effects from relocation because snakes should be places in environments that will ensure their survival and safety.

Avoidance and minimization measures will be utilized to reduce potential adverse effects to individual giant garter snakes. These measures include: the use of work windows during the active summer season to avoid times giant garter snake are primarily underground (CM30); the use of biological monitors (CM11); avoidance of areas with high numbers of small mammal burrows (CM3); pre-construction surveys (CM12); environmental awareness training (CM10); covering all holes and trenches deeper than 12 inches at the end of each day (CM12); removal of vegetation by hand in known or potential giant garter snake habitat to prevent mortality by mowers and other equipment (CM30); and all handling of giant garter snake will be by a Service-approved biologist (CM11, CM14).

Temporary dewatering of creeks, ponds, or wetlands may harm or kill giant garter snakes adults or young if they are not translocated to suitable habitat. Measures to avoid disruption of aquatic life, avoiding use of heavy mechanical equipment in waterbodies, avoiding disturbance of water flow, and the isolation of cement pouring from waterbodies during dewatering will minimize any harm to giant garter snakes (CM16).

Erosion control materials that use plastic or synthetic monofilament netting could entrap smaller individuals. To prevent injury or mortality from entrapment, these erosion control materials are prohibited from project sites and only acceptable materials with natural fibers will be used (CM6).

Sediment removal activities (e.g., sediment removal in channels; access road construction; road maintenance; and staging area construction) may result in the removal of emergent vegetation and riparian vegetation along banks or in the channel or wetland, resulting in the loss of terrestrial habitat cover needed for basking, foraging, or shelter during the five-year time period.

Loss of subterranean habitat for giant garter snakes may occur from grading of access roads or staging area construction. Removal of burrows that these snakes could use as refugia could result in increased mortality due to predation but the area affected in these parks should be a small proportion of the area and new burrows will continue to be excavated from the surrounding population. Construction-related disturbance to rodent burrows will be avoided or minimized (CM3).

Restoration projects that will involve sediment and vegetation removal would affect aquatic and upland habitat for these species. However, all restoration projects are required to have permanent neutral or beneficial effects to all listed-species and so no permanent habitat degradation or removal would occur as a result of these activities (CM18).

Effects of District routine maintenance activities on giant garter snake, and on this species as a whole, will be relatively low proportionally– approximately 0.250 acres (0.010 percent) of the 2,637 acres of potential habitat in the District for the giant garter snake would be affected by activities in the five-year period. While this is an overestimation of the proportion of habitat affected (because not all of the action area is habitat - see Table 1), the proportion of habitat affected would still be a very small percentage and would affect giant garter snake populations negligibly. Additionally, most of the proposed effects are temporary and involve ongoing maintenance of a type that has been performed along these roads and streams, and in these waterbodies, for decades (or longer). Therefore, the number of individuals and the effects of habitat disturbance to its populations that will be impacted by District routine maintenance are expected to be low (Table 15). The long-term effects of proposed restoration projects in tidal emergent wetlands will be beneficial for giant garter snake as they will enhance or create habitat; no proposed restoration activities will have permanent adverse effects to giant garter snake habitat as required by CM18.

All proposed restoration projects and adaptive management conservation measures are required to have permanent neutral or beneficial effects to all listed-species and so no significant habitat degradation would occur as a result of these activities (CM18). Tidal marsh restoration on District lands will provide suitable habitat commensurate with or better than habitat lost as a result of the proposed project. Proposed restoration of levees and tidal channel creation will help provide and enhance foraging and basking habitat. Long-term management for the health of listed species populations and their habitats is part of the District's mission and will continue to provide essential conservation for this species and its populations despite some temporary and permanent effects from these routine maintenance and restoration projects In summary, the routine maintenance projects will enhance or protect habitat from the adverse effects to water quality from sedimentation and erosion while the combined beneficial effects of District preservation of habitat, adaptive management conservation measures, and restoration projects will create or enhance habitat and will contribute to the recovery of this species.

Potential Range on District lands					
Project Type	Maximum Temporary Effect (acres)	Maximum Permanent Effect (acres)	Maximum Total Effect		
Replacing Same Size Culvert	0.011	0.000	0.011		
Upgrade Culvert	0.027	0.022	0.049		
Install New Culvert	0.007	0.007	0.014		

Table 15. Acreage of Anticipated Rour	ine Maintenance	Projects (5 ye	ears) to Giant	Garter	Snake
Potential Range on District lands ^{1,2}					

Project Type	Maximum Temporary	Maximum Permanent	Maximum Total Effect	
	Effect (acres)	Effect (acres)		
Clearing Culvert	0.026	0.000	0.026	
Culvert Head-Tailwalls	0.002	0.002	0.004	
Install Energy Dissipaters	0.002	0.002	0.004	
Installation of New	0.003	0.003	0.006	
Armored Fords		01002	0.000	
Maintenance of Existing	0.001	0.000	0.001	
Armored Fords	0.001	0.000	0.001	
Maintenance and	0.001	0.000	0.001	
Installation of Bridges	0.001	0.000	0.001	
Bank Stabilization	0.043	0.043	0.086	
Springbox Maintenance	0.001	0.006	0.007	
and Installation	0.001	0.000	0.007	
Maintenance Dredging of	0.026	0.000	0.026	
Waterbodies	0.030	0.000	0.050	
Maintenance Shoreline	0.005	0.005	0.010	
Facilities	0.003	0.005	0.010	
Removal of Hazardous	0.000	0.000	0.000	
Structures	0.000	0.000	0.000	
Removal of Vessels	0.000	0.000	0.000	
Total	0.160	0.090	0.250	
ECCCHPC lands were evaluated for calculations				

²Land cover types used in the analysis for giant garter snake include riverine and freshwater emergent wetlands within parks listed in Table 1.

California Ridgway's Rail

California Ridgway's rails could be disturbed by human activity and movement of equipment as a result of bank stabilization, sediment removal (or reuse), manual vegetation management, management of animal conflicts, or minor maintenance. Disturbance such as loud noise or the presence and movement of people and heavy equipment in or near Ridgway's rail habitat may alter bird behavior in ways that result in adverse effects to individuals or reduced nesting success. Such disturbance could result in temporary habitat loss due to the following: California Ridgway's rail avoidance of areas that have suitable habitat but intolerable levels of disturbance; abandonment of nests, eggs, or young by nesting pairs; a reduction in foraging efficiency if high quality foraging areas are impacted; and increased movement or flushing from cover, or altered activity patterns, that reduce energy reserves and increase predation risk. Implementation of CM26, ensuring that all District activities immediately within 700 feet of vegetated tidal marsh will occur only during the non-breeding season, would likely prevent any disturbance of breeding rails.

Disturbance during the non-breeding season could also result in adverse effects to Ridgway's rails. Ridgway's rails could be forced to adjust the boundaries of their territories or to disperse to other habitat areas. Work in or adjacent to Ridgway's rail habitat during very high tides could cause flushing of rails from the edges of levees during maintenance/access activities. Ridgway's rails disturbed by work activities also could be subjected to predation if they increase their movements within their home range or disperse to other nearby or distant tidal wetlands.

Maintenance activities, such as repair or maintenance of tide gates (or other water control structures), levee stabilization, or culvert replacement could potentially occur nearer to saltmarsh habitat, but such activities will occur very infrequently (not annually). Implementation of CM26,

which indicates that all District activities immediately within 700 feet of vegetated tidal marsh will occur only during the non-breeding season, would likely prevent any disturbance of breeding rails.

Even with the implementation of conservation measures to minimize disturbance near Ridgway's rail nesting areas during the breeding season, birds that disperse away from disturbance may not successfully establish new breeding territories and successfully breed. Ridgway's rails forced to disperse would need to either maintain existing pair bonds or develop new pair bonds and establish new breeding territories in other suitable habitat areas. The ability of displaced Ridgway's rails to reestablish new breeding territories would be hampered by the fact that Ridgway's rails maintain year-round home ranges and defend established breeding territories from intrusions by other Ridgway's rails. Loss of any female Ridgway's rails would be compounded by the loss of potential future progeny.

To minimize effects to Ridgway's rails from an increase in raptor and corvid (eggs/young) predation through the installation of poles, fencing, or other structures related to recreational uses in tidal marsh habitat, CM25 requires installation of anti-perching devices in areas that are appropriate.

Within tidal salt or brackish marshes, any replacement of natural bank with hard armoring (e.g., concrete crib walls or sacked concrete) could result in the loss of breeding and/or foraging habitat for the California Ridgway's rail. Replacement of natural banks with armoring would preclude the re-establishment of vegetation that provides cover and foraging habitat. However, the extent of bank stabilization work that is expected to occur in California Ridgway's rail habitat will be very low, judging from proposed activities in Table 16. The District expects that no more than 0.269 acre of Ridgway's rail habitat, and likely much less, will be disturbed as a result of bank stabilization activities and no population level effects are expected.

Effects of District routine maintenance activities on California Ridgway's rail populations, and on this species as a whole, will be relatively low proportionally– only 0.732 acre (0.009 percent) of the 8,191 acres of potential habitat in the District for the California Ridgway's rail would be affected by activities in the five-year period. While this is an overestimation of the proportion of habitat affected (because not all of the action area is habitat - see Table 1), the proportion of habitat affected would still be a small percentage, and would affect Ridgway's rail populations negligibly. Additionally, most of the proposed effects are temporary and involve ongoing maintenance of a type that has been performed along these roads and streams, and in these waterbodies, for decades (or longer). Therefore, the number of individuals and the effects of habitat disturbance to its populations that will be impacted by District routine maintenance are expected to be low (Table 16). The long-term effects of proposed restoration projects in tidal emergent wetlands will be beneficial for California Ridgway's rail as the activities will enhance or create habitat; restoration projects will not have permanent adverse effects to California Ridgway's rail habitat as required by CM18.

All proposed restoration projects and adaptive management conservation measures are required to have permanent neutral or beneficial effects to all listed-species and so no significant habitat degradation would occur as a result of these activities (CM18). Tidal marsh restoration on District lands will provide suitable habitat commensurate with or better than habitat lost as a result of the proposed project. Proposed restoration of levees and tidal channel creation will help provide and enhance foraging, breeding, and transitional habitat for California Ridgway's rail.

Long-term management for the health of listed species populations and their habitats is part of the District's mission and will continue to provide essential conservation for this species and its populations despite some temporary and permanent effects from these routine maintenance and restoration projects. In summary, the routine maintenance projects will enhance or protect habitat from the adverse effects to water quality from sedimentation and erosion while the combined beneficial effects of District preservation of habitat, adaptive management conservation measures, and restoration projects will create or enhance habitat and will contribute to the recovery of this species.

Project Type	Maximum Temporary Effect (acres)	Maximum Permanent Effect (acres)	Maximum Total Effect	
Replacing Same Size Culvert	0.034	0.000	0.034	
Upgrade Culvert	0.067	0.067	0.134	
Install New Culvert	0.020	0.023	0.043	
Clearing Culvert	0.080	0.000	0.080	
Culvert Head-Tailwalls	0.006	0.006	0.011	
Install Energy Dissipaters	0.008	0.008	0.015	
Installation of New Armored Fords	0.000	0.000	0.000	
Maintenance of Existing Armored Fords	0.000	0.000	0.000	
Maintenance and Installation of Bridges	0.004	0.000	0.004	
Bank Stabilization	0.134	0.134	0.269	
Springbox Maintenance and Installation	0.000	0.000	0.000	
Maintenance Dredging of Waterbodies	0.112	0.000	0.112	
Maintenance Shoreline Facilities	0.015	0.015	0.030	
Removal of Hazardous Structures	0.000	0.000	0.000	
Removal of Vessels	0.000	0.000	0.000	
Total	0.479	0.252	0.732	
¹ ECCCHPC lands were excluded for calculations				

Table 16. Acreage of Anticipated Routine Maintenance Projects (5 years) to California
Ridgway's Rail Potential Range on District lands ^{1,2}

²Land cover types used in the analysis for California Ridgway's rail include saline-brackish emergent wetlands within parks listed in Table 1.

Salt Marsh Harvest Mouse

The use of heavy construction equipment in tidal marsh and adjacent transitional ecotone upland habitat areas may have adverse effects to salt marsh harvest mouse individuals by approaching, hitting, or crushing them while they seek cover. The noise and vibration associated with construction work and continuing maintenance activities may adversely affect this species and by disrupting normal behavioral patterns of breeding, foraging, sheltering, and dispersal as described above in the effects common to all species. Implementation of CM27 will avoid and minimize effects to salt marsh harvest mouse by avoiding pickleweed areas, where feasible, using non-mechanized hand tools in areas within 50 feet of pickleweed habitat in all areas except outboard wave exposed levees, mowing from the top to the bottom along levees to allow mice to

move downslope, and the presence of a Service-approved biologist during all ground disturbing activities and within 50 feet of pickleweed habitat during mowing.

To minimize adverse effects to salt marsh harvest mouse from an increase in raptor predation through the installation of poles, fencing, or other structures related to recreational uses in tidal marsh habitat, CM25 requires the installation of anti-perching devices in area that are appropriate.

Any replacement of natural bank with hardscape (e.g. concrete crib walls or sacked concrete) could result in the loss of breeding and foraging habitat for the salt marsh harvest mouse. Replacement of natural banks with armoring would preclude the re-establishment of vegetation that provides cover and foraging habitat. The extent of bank stabilization work that is expected to occur in salt marsh harvest mouse habitat will be low, according to the maximum proposed acreages shown in Table 17. The District expects that no more than 0.38 acre of salt marsh harvest mouse habitat, and likely much less, will be impacted as a result of 2024-2029 bank stabilization activities.

It is possible that sediment removal could be required. If sediment removal were necessary in salt marsh harvest mouse habitat, then given the time that would be required for sediment to build up and become colonized by vegetation adequate to support harvest mice (likely five years or more), this sediment removal would thus result in a long-term loss of habitat for this species.

Vegetation management activities such as mowing on levees could remove suitable harvest mouse habitat, including protective vegetation that provides cover in upland transitional areas during high tides. Some of this vegetation management, such as control of perennial pepperweed, is actually beneficial to the salt marsh harvest mouse because it inhibits the invasion of suitable habitat by non-native pepperweed. However, some vegetation management will remove suitable habitat for the mouse. Although the loss of habitat resulting from vegetation management would be temporary in any given area, the frequency with which most vegetation management in potential harvest mouse habitat will occur will preclude the recovery of high-quality habitat. Therefore, vegetation management may result in long-term adverse effects on salt marsh harvest mouse habitat; however most areas with proposed routing maintenance activities are likely poor quality or marginal habitat because of continuing maintenance activities.

Effects of District routine maintenance activities on salt marsh harvest mouse, and on this species as a whole, will be relatively low proportionally– only 1.038 acres (0.009 percent) of the 11,605 acres of potential habitat in the District for the salt marsh harvest mouse would be affected by activities in the five-year period. While this is an overestimation of the proportion of habitat affected (because not all of the action area is habitat - see Table 1), the proportion of habitat affected would still be a very small percentage and should affect salt marsh harvest mouse populations negligibly. Additionally, most of the proposed effects are temporary and involve ongoing maintenance of a type that has been performed along these roads and streams, and in these waterbodies, for decades (or longer). Therefore, the number of individuals and the effects of habitat disturbance to its populations that will be impacted by District routine maintenance are expected to be low (Table 17). The long-term effects of proposed restoration projects in tidal emergent wetlands will be beneficial for salt marsh harvest mouse as they will enhance or create habitat; no proposed restoration projects will have permanent adverse effects to salt marsh harvest mouse habitat as required by CM18.

All proposed restoration projects and adaptive management conservation measures are required to have permanent neutral or beneficial effects to all listed-species and so no significant habitat degradation would occur as a result of these activities (CM18). Tidal marsh restoration on District lands will provide suitable habitat commensurate with or better than habitat lost as a result of the proposed project. Proposed restoration of levees and tidal channel creation will help provide and enhance foraging, breeding, and transitional habitat for Salt marsh harvest mouse. Long-term management for the health of listed species populations and their habitats is part of the District's mission and will continue to provide essential conservation for this species and its populations despite some temporary and permanent effects from these routine maintenance and restoration projects. In summary, the routine maintenance projects will enhance or protect habitat from the adverse effects to water quality from sedimentation and erosion while the combined beneficial effects of District preservation of habitat, adaptive management conservation measures, and restoration projects will create or enhance habitat and will contribute to the recovery of this species.

Project Type	Maximum Temporary Effect (acres)	Maximum Permanent Effect (acres)	Maximum Total Effect
Replacing Same Size Culvert	0.048	0.000	0.048
Upgrade Culvert	0.095	0.095	0.191
Install New Culvert	0.029	0.032	0.061
Clearing Culvert	0.114	0.000	0.114
Culvert Head-Tailwalls	0.008	0.008	0.016
Install Energy Dissipaters	0.011	0.011	0.021
Installation of New Armored Fords	0.000	0.000	0.000
Maintenance of Existing Armored Fords	0.000	0.000	0.000
Maintenance and Installation of Bridges	0.005	0.000	0.005
Bank Stabilization	0.190	0.190	0.381
Springbox Maintenance and Installation	0.000	0.000	0.000
Maintenance Dredging of Waterbodies	0.159	0.000	0.159
Maintenance Shoreline Facilities	0.021	0.021	0.042
Removal of Hazardous	0.000	0.000	0.000
Structures	0.000	0.000	0.000
Removal of Vessels	0.000	0.000	0.000
Total	0.679	0.358	1.038

Table 17. Acreage of Anticipated Routine Maintenance Projects (5 years) to Salt Marsh Harvest Mouse Potential Range on District lands^{1,2}

²Land cover types used in the analysis for salt marsh harvest mouse include saline-brackish emergent wetlands within parks listed in Table 1.

California Least Tern

Most California least terns do not breed in or adjacent to the action area (except at Hayward Regional Shoreline), and so the parks within the action area are mainly important post-breeding staging areas. California least terns forage in late summer and early fall over the open waters of

the Bay and in saline managed ponds within and adjacent to the Bay; both adult and juvenile least terns roost on saline managed pond levees and boardwalks. Thus, the proposed activities mainly have potential to affect foraging habitats and/or individuals of this species if maintenance activities occur near occupied foraging habitat. For example, maintenance activities near foraging habitat could adversely affect least tern(s) through the alteration of foraging patterns by avoidance of activity areas due to increased noise and activity levels during maintenance activities. Direct mortality or injury of individuals is not likely or expected from proposed activities, but adverse effects could lead indirect injury or mortality through behavioral disruption of foraging activities. On Hayward Regional Shoreline, proposed activities could adversely affect nesting terns and could cause direct morality or injury as well as indirect adverse effects through noise and visual disturbance. Implementation of CM27 will avoid and minimize indirect and direct take of California least terns by limiting activities within 600 feet of known or potential nesting areas to the non-nesting season and suspending work if a bird with within 50 feet of a project site.

Dredging activities in open water near California least tern breeding areas would cause turbidity in the waters, making it harder for terns to forage; thus, dredging could decrease available foraging area near nesting colonies and adversely affect reproductive success by making adult forage farther away, using more energy to forage, and increasing their probability of predation. CM29c would minimize this effect by limiting activities to the non-nesting season in open water foraging habitat.

An increase in raptor or corvid (eggs/young) predation through the installation of poles, fencing, or other structures related to recreational uses on shoreline habitat at Hayward Regional Shoreline or other future nesting areas could adversely affect reproductive success of this population. Thus, long-term adverse effects will occur because of increased predation from the installation of structures in areas of tern nesting.

Sediment that is removed from other locations potentially could be deposited in areas close to least tern foraging and roosting areas (e.g., to provide upland transition zone habitat for future marsh restoration); in particular sediment could be deposited on levees used for roosting. However, sediment depositional work would not occur during the season that terns would be roosting or foraging in these areas (CM26). Additionally, some levee maintenance work would enhance roosting habitat for terns; sediment deposition sites will be selected to enhance marsh/island complexes for nesting or roosting California least terns (pers. com. Steve Bobzien, May 11, 2017)

Effects of District routine maintenance activities on California least terns, and on this species as a whole, will be relatively low proportionally– only 0.318 acre (0.01 percent) of the 2,188 acres of the distributional range in the District for the California least terns would be affected by activities in the five-year period. While this is an overestimation of the proportion of habitat affected (because not all of the action area is habitat - see Table 1), the proportion of habitat affected would still be a very small percentage and would affect tern populations negligibly. Additionally, most of the proposed effects are temporary and involve ongoing maintenance of a type that has been performed along these roads and streams, and in these waterbodies, for decades (or longer). Therefore, the number of individuals and the effects of habitat disturbance to its populations that will be impacted by District routine maintenance are expected to be low (Table 18). The long-term effects of proposed restoration projects in tidal emergent wetlands will

be beneficial for California least tern as they will enhance or create habitat; no proposed restoration projects or adaptive management conservation measures will have permanent adverse effects to California least tern habitat as required by CM18.

All proposed restoration projects are required to have permanent neutral or beneficial effects to all listed-species and so no significant habitat degradation would occur as a result of these activities (CM18). Tidal marsh restoration on District lands will provide suitable habitat commensurate with or better than habitat lost as a result of the proposed project. Restoration to tidal habitats and species via proposed restoration projects is expected to benefit the least tern both by providing foraging habitat during high tides, in the short-term (until these marshes become well vegetated), and in the long-term by serving as nurseries for fish that provide prey for least terns. Long-term management for the health of listed species populations and their habitats is part of the District's mission and will continue to provide essential conservation for this species and its populations despite some temporary and permanent effects from these routine maintenance and restoration projects.

In summary, the routine maintenance projects will enhance or protect habitat from the adverse effects to water quality from sedimentation and erosion while the combined beneficial effects of District preservation of habitat, adaptive management conservation measures, and restoration projects will create or enhance habitat and will contribute to the recovery of this species.

Project Type	Maximum Temporary	Maximum Permanent	Maximum Total Effect	
	Effect (acres)	Effect (acres)		
Replacing Same Size	0.009	0.000	0.009	
Culvert				
Upgrade Culvert	0.018	0.0179	0.036	
Install New Culvert	0.005	0.0061	0.011	
Clearing Culvert	0.021	0.000	0.021	
Culvert Head-Tailwalls	0.002	0.0015	0.004	
Install Energy Dissipaters	0.002	0.002	0.004	
Installation of New	0.000	0.000	0.000	
Armored Fords	0.000	0.000	0.000	
Maintenance of Existing	0.000	0.000	0.000	
Armored Fords	0.000	0.000	0.000	
Maintenance and	0.001	0.000	0.001	
Installation of Bridges	0.001	0.000	0.001	
Bank Stabilization	0.036	0.036	0.072	
Springbox Maintenance	0.000	0.000	0.000	
and Installation	0.000	0.000	0.000	
Maintenance Dredging of	0.020	0.000	0.020	
Waterbodies	0.030	0.000	0.030	
Maintenance Shoreline	0.126	0.004	0.120	
Facilities	0.126	0.004	0.130	
Removal of Hazardous	0.000	0.000	0.000	
Structures	0.000	0.000	0.000	
Removal of Vessels	0.000	0.000	0.000	
Total	0.250	0.067	0.318	
¹ ECCCHPC lands were excluded for calculations				

Table 18. Acreage of Anticipated Routine Maintenance Projects (5 years) to California Least Tern Potential Range on District lands^{1,2}

²Land cover types used in the analysis for California least tern include estuarine, open shoreline beaches, plains, and islands within parks listed in Table 1.

Western Snowy Plover

Western snowy plover forage and nest within parks within the action area (see species baseline above). This species can select breeding areas opportunistically, and it is possible that changes in habitat during the five-year period could result in use of new areas by breeding plovers. For example, if management of ponds adjacent to District activities changes so that these ponds become suitable for nesting, then plovers may nest in areas adjacent to District activities. Likewise, it is possible that activities such as vegetation management or sediment removal may need to occur in areas adjacent to western snowy plover nesting and foraging. Non-breeding individuals may occasionally forage in ponds or around islands near proposed activities. Conservation measures which entail pre-activity surveys for nesting birds (CM12) and maintenance of a buffers around actively nesting and foraging plovers (CM28) (limits work within 600 feet of potential nesting areas to the non-nesting season and suspends work within a 50-foot radius of the bird) are expected to avoid adverse effects to snowy plover eggs, young, or adults.

An increase in raptor or corvid (eggs/young) predation through the installation of poles, fencing, or other structures related to recreational uses on shoreline habitat at current or future nesting areas could adversely affect reproductive success of this population. Thus, long-term adverse effects could occur because of increased predation from the installation of structures in areas of western snowy plover nesting.

Effects of District routine maintenance activities on western snowy plover, and on this species as a whole, will be relatively low proportionally– only 0.328 acre (0.01 percent) of the 3,323 acres of potential habitat in the District for the western snowy plover would be affected by activities in the five-year period. While this is an overestimation of the proportion of habitat affected (because not all of the action area is habitat - see Table 1), the proportion of habitat affected would still be a very small percentage and would affect western snowy plover populations negligibly. Additionally, most of the proposed effects are temporary and involve ongoing maintenance of a type that has been performed along these roads and streams, and in these waterbodies, for decades (or longer). Therefore, the number of individuals and the effects of habitat disturbance to its populations that will be impacted by District routine maintenance are expected to be low (Table 19). The long-term effects of proposed restoration projects in tidal emergent wetlands will be beneficial for western snowy plover as they will enhance or create habitat; no proposed restoration projects will have permanent adverse effects to western snowy plover habitat as required by CM18.

All proposed restoration projects or adaptive management conservation measures are required to have permanent neutral or beneficial effects to all listed-species and so no significant habitat degradation would occur as a result of these activities (CM18). Tidal marsh restoration on District lands will provide suitable habitat commensurate with or better than habitat lost as a result of the proposed project. Long-term management for the health of listed species populations and their habitats is part of the District's mission and will continue to provide essential conservation for this species and its populations despite some temporary and permanent effects from these routine maintenance and restoration projects.

In summary, the routine maintenance projects will enhance or protect habitat from the adverse effects to water quality from sedimentation and erosion while the combined beneficial effects of District preservation of habitat, adaptive management conservation measures, and restoration projects will create or enhance habitat and will contribute to the recovery of this species.

Project Type	Maximum Temporary	Maximum Permanent	Maximum Total Effect	
	Effect (acres)	Effect (acres)		
Replacing Same Size Culvert	0.011	0.000	0.011	
Upgrade Culvert	rade Culvert 0.021 0.0		0.042	
Install New Culvert	0.006	0.007	0.013	
Clearing Culvert	0.025	0.000	0.025	
Culvert Head-Tailwalls	0.002	0.002	0.004	
Install Energy Dissipaters	0.002	0.002	0.004	
Installation of New Armored Fords	0.000	0.000	0.000	
Maintenance of Existing Armored Fords	0.000	0.000	0.000	
Maintenance and Installation of Bridges	0.001	0.000	0.001	
Bank Stabilization	0.042	0.042	0.084	
Springbox Maintenance and Installation	0.000	0.000	0.000	
Maintenance Dredging of Waterbodies	0.035	0.000	0.035	
Maintenance Shoreline Facilities	0.104	0.005	0.114	
Removal of Hazardous Structures	0.000	0.000	0.000	
Removal of Vessels	0.000	0.000	0.000	
Total	0.250	0.079	0.328	

Table 19. Acreage of Anticipated Routine Maintenance Projects (5 years) to V	Western	Snowy
Plover Potential Range on District lands ^{1,2}		-

ECCCHPC lands were excluded for calculations

²Land cover types used in the analysis for western snowy plover include estuarine, open shoreline beaches, plains, and islands within parks listed in Table 1.

Western Snowy Plover Critical Habitat

The designated critical habitat for Western snowy plover is limited to a small geographical area within Hayward Regional Shoreline and the anticipated adverse effects of the routine maintenance activities on the primary constituent elements are minimal. The Service anticipates that the activities associated with the proposed project could negatively affect PCE 1 (Areas above high tide but below vegetated areas), PCE 2 (shoreline habitat areas for feeding, and PCE 3 (organic debris or driftwood), and PCE 4 (minimal disturbance) of western snowy plover critical habitat within the action area temporarily but most effects are likely to be neutral or beneficial because of the seasonal conservation measures associated with the project and the results of the proposed actions that will likely enhance or create habitat for this species. Specifically, the maintenance of the District shoreline levees, tide gate structures, and tidal regimes at Hayward Shoreline protects the interior basins and a complex of islands. One particular island contains all the physical and biological features identified in the primary

constituent elements and supports Western snowy plover nesting activity. The proposed activities will only result in minor effects to habitat and these activities (implemented with the conservation measures) will not prevent critical habitat from providing essential conservation values for the plover.

While temporary disturbance within critical habitat may prevent some snowy plover from using portions of the critical habitat for essential life functions whether temporarily or permanently (e.g., disturbance that cannot be restored to pre-project condition within more than two calendar years), they will still be able to complete their essential ecological and biological functions in the remaining areas of critical habitat. All restoration projects and adaptive management conservation measures proposed would result in either beneficial or negligible effects to critical habitat. Therefore, all critical habitat units will retain their PCEs and the PCEs within each critical habitat unit will still remain functional. Consequently, the designated critical habitat for the snowy plover will still be able to perform its intended functions and conservation role.

Delta Smelt and Longfin Smelt

Incidental take of delta smelt and longfin smelt could occur as a result of construction and project operations. The use of heavy construction equipment in open water, estuarine, and ecotone tidal marsh habitat areas may adversely affect smelt by approaching, injuring, or killing them while they seek cover. The noise and vibration associated with construction work and continuing maintenance activities may adversely affect these species at the project site. The indirect effects of District projects may also adversely affect delta smelt and longfin smelt. Delta smelt that move away from a construction area may be more susceptible to mortality from predation. The use of the work window will reduce these potential adverse effects.

Effects of District routine maintenance activities on delta smelt and longfin smelt, and on these species as a whole, will be relatively low proportionally– approximately 0.392 acre (0.009 percent) of the 4,394 acres of the potential habitat in the District for the delta smelt and approximately 2.842 ac (0.02 percent) of the 12,864 acres of the potential habitat in the District for the longfin smelt would be affected by activities in the five-year period. While this is an overestimation of the proportion of habitat affected (because not all of the action area in the range is habitat - see Table 1), the proportion of habitat affected would still be a very small percentage. Additionally, most of the proposed effects are temporary and involve ongoing maintenance of a type that has been performed along these roads and streams, and in these waterbodies, for decades (or longer). Therefore, the number of individuals and the effects of habitat disturbance impacted by District routine maintenance are expected to be low (Table 20 and Table 21).

All proposed restoration projects and adaptive management conservation measures are required to have permanent neutral or beneficial effects to all listed-species and so no significant habitat degradation would occur as a result of these activities (CM18). Herbicides that may be used to remove vegetation could have sublethal or lethal effects to this species if runoff occurs into aquatic features. The application of CM7 that requires that herbicides are applied according to label instructions will minimize these temporary potential adverse effects to individuals. Additionally, all herbicide applications will be reviewed and will require approval by the Service prior to implementation as approval is required for all restoration projects and adaptive management conservation measures. Tidal marsh restoration on District lands will provide suitable habitat commensurate with or better than habitat lost as a result of the proposed project.

Proposed restoration projects associated with levees and tidal channel creation will help provide and enhance shallow water habitat for delta smelt. Long-term management for the health of listed species populations and their habitats is part of the District's mission and will continue to provide essential conservation for this species and its populations despite some temporary and permanent effects from these routine maintenance and restoration projects.

In summary, the routine maintenance projects that enhance or protect habitat from the adverse effects to water quality from sedimentation and erosion while the combined beneficial effects of District preservation of habitat, adaptive management conservation measures, and restoration projects will create or enhance habitat and will contribute to the recovery of this species.

Project Type	Maximum Temporary	Maximum Permanent	Maximum Total Effect
	Effect (acres)	Effect (acres)	
Replacing Same Size Culvert	0.018	0.000	0.018
Upgrade Culvert	0.036	0.036	0.072
Install New Culvert	0.011	0.012	0.023
Clearing Culvert	0.043	0.000	0.043
Culvert Head-Tailwalls	0.003	0.003	0.006
Install Energy Dissipaters	0.004	0.004	0.008
Installation of New Armored Fords	0.000	0.000	0.000
Maintenance of Existing Armored Fords	0.000	0.000	0.000
Maintenance and Installation of Bridges	0.002	0.000	0.002
Bank Stabilization	0.072	0.072	0.144
Springbox Maintenance and Installation	0.000	0.000	0.000
Maintenance Dredging of Waterbodies	0.060	0.000	0.060
Maintenance Shoreline Facilities	0.008	0.008	0.016
Removal of Hazardous Structures	0.000	0.000	0.000
Removal of Vessels	0.000	0.000	0.000
Total	0.257	0.135	0.392
¹ ECCCHPC lands were excluded for calculations ² Land cover types used in the analysis for delta smelt include estuarine habitat adjacent or within parks listed in Table 1			

Table 20. Acreage of Anticipated Routine Maintenance Projects (5 years) to Delta Smelt Potential Range on District lands^{1,2}

Table 21. Acreage of Anticipated Routine Maintenance Projects (5 years) to Longfin Smelt Potential Range on District lands^{1,2}

Project Type	Project Type Maximum Temporary		Maximum Total Effect	
	Effect (acres)	Effect (acres)		
Replacing Same Size	0.131	0.000	0.131	
Culvert				
Upgrade Culvert	0.261	0.261	0.522	
Install New Culvert	0.078	0.088	0.167	
Clearing Culvert	0.312	0.000	0.312	
Culvert Head-Tailwalls	0.022	0.022	0.044	

Project Type	Maximum Temporary Effect (acres)	Maximum Permanent Effect (acres)	Maximum Total Effect
Install Energy Dissipaters	0.029	0.029	0.058
Installation of New Armored Fords	0.000	0.000	0.000
Maintenance of Existing Armored Fords	0.000	0.000	0.000
Maintenance and Installation of Bridges	0.015	0.000	0.015
Bank Stabilization	0.522	0.522	1.044
Springbox Maintenance and Installation	0.000	0.000	0.000
Maintenance Dredging of Waterbodies	0.435	0.000	0.435
Maintenance Shoreline Facilities	0.058	0.058	0.116
Removal of Hazardous Structures	0.000	0.000	0.000
Removal of Vessels	0.000	0.000	0.000
Total	1.862	0.980	2.842

¹ECCCHPC lands were excluded for calculations

²Land cover types used in the analysis for longfin smelt include estuarine and open water habitat adjacent or within parks listed in Table 1.

Delta Smelt Critical Habitat

The Service anticipates that the activities associated with the proposed activities could negatively affect some of the PCEs (physical habitat (PCE 1), water (PCE 2), and river flow (PCE 3) essential for all life stages of delta smelt) of delta smelt critical habitat within the action area. Activities proposed by the District would not negatively affect water quality, flow, or larval/juvenile transport; thus PCEs 2 and 3 would not be affected. However, these activities will only result in minor effects to habitat and these activities (implemented with the conservation measures) will not prevent critical habitat from providing essential conservation values for the delta smelt. Most of the covered activities will only result in minor effects limited to narrow areas of District shoreline habitats. These activities are mostly maintenance of existing sites or facilities, small in scale, and no likely to diminish the quality of PCEs in a unit. While disturbance within critical habitat may prevent some delta smelt from using portions of the critical habitat for essential life functions whether temporarily or permanently (e.g., disturbance that cannot be restored to pre-project condition within more than two calendar years), they will still be able to complete their essential ecological and biological functions in the remaining areas of critical habitat. All restoration projects proposed would result in either beneficial effects to critical habitat or no effect. Therefore, all critical habitat units will retain their PCEs and the PCEs within each critical habitat unit will still remain functional. Consequently, the designated critical habitat for the delta smelt will still be able to perform its intended functions and conservation role.

Proposed Restoration Projects, Conservation Measures, and Adaptive Management Conservation Measures

As noted previously in the Description of the Proposed Action section and in the Effects of the Action section, the District has also proposed a set of conservation measures as a condition of the

action and proposed restoration projects. The proposed restoration projects and adaptive management conservation measures within lotic, lentic, and tidal waterbodies will remove and control non-native vegetation, improve water quality, reduce erosion and sedimentation, and restore or create natural stream, pond, and tidal marsh conditions. Habitat restoration projects will enhance or create habitat for the listed species discussed in this biological opinion while adaptive management conservation measures that restore habitat after maintenance activities. While these restoration projects and adaptive management conservation measures are not intended to minimize the effect on the species of the proposed project's anticipated incidental take, they will improve habitat for most of the listed species and will contribute to the recovery of these species by doing so. While not certain, it is likely that the sum of these improvements will be equal to or exceed the acreage of impacts from the proposed activities over the 5-year period of the biological opinion.

These actions will enhance already protected lands for the species in perpetuity and will provide suitable habitat for breeding, feeding, or sheltering likely commensurate with or better than habitat lost as a result of the proposed maintenance activities. Providing habitat restoration projects that enhance or create habitat and adaptive management conservation measures that reestablish habitat after proposed activities in an already relatively large, contiguous block of conserved land, such as the District, should help contribute to other recovery efforts for the species on District lands.

Cumulative Effects

Cumulative effects include the effects of future State, Tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. 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. During this consultation, the Service did not identify any future non-federal actions that are reasonably certain to occur in the action area of the proposed project.

Conclusion

After reviewing the current status of California Ridgway's rail, California least tern, salt marsh harvest mouse, San Joaquin kit fox, longhorn fairy shrimp, vernal pool fairy shrimp, vernal pool tadpole shrimp, Alameda whipsnake, California red-legged frog, California tiger salamander, delta smelt, foothill yellow-legged frog, giant garter snake, western snowy plover, pallid manzanita, and longfin smelt the environmental baseline for the action area, the effects of the proposed the District Routine Maintenance Activities, and the cumulative effects, it is the Service's biological opinion and conference opinion that the District Routine Maintenance Activities, as proposed, are not likely to jeopardize the continued existence of the California Ridgway's rail, California least tern, salt marsh harvest mouse, San Joaquin kit fox, longhorn fairy shrimp, vernal pool fairy shrimp, vernal pool tadpole shrimp, Alameda whipsnake, California red-legged frog, California tiger salamander, delta smelt, foothill yellow-legged frog, giant garter snake, western snowy plover, pallid manzanita, and longfin smelt. The Service reached this conclusion because the project-related effects to the species (Table 22), when added to the environmental baseline and analyzed in consideration of all potential cumulative effects, will not rise to the level of precluding recovery or reducing the likelihood of survival of the species. This conclusion is based on the very minimal proposed impact on habitat and range in the District over the five-year period (Table 22), project-level BMPs, the beneficial effects on

water quality from routine maintenance activities through reduced erosion and sedimentation, the proposed lentic, lotic, and tidal restoration projects, the preservation and enhancement of listed species habitat into perpetuity by the District, and conservation measures to avoid and minimize adverse effects for each species, and the adaptive management conservation measures that will reestablish habitat.

After reviewing the current status of designated critical habitat for the longhorn fairy shrimp, vernal pool fairy shrimp, Alameda whipsnake, California red-legged frog, delta smelt, and western snowy plover, the environmental baseline for the action area, the effects of the proposed District's Routine Maintenance Activities, and the cumulative effects, it is the Service's biological opinion that the District Routine Maintenance Activities, as proposed, are not likely to destroy or adversely modify designated critical habitat. The Service reached this conclusion because the project-related effects to the designated critical habitat, when added to the environmental baseline and analyzed in consideration of all potential cumulative effects, will not rise to the level of precluding the function of the longhorn fairy shrimp, vernal pool fairy shrimp, Alameda whipsnake, California red-legged frog, delta smelt, and western snowy plover critical habitat to serve its intended conservation role for the species based on the following: although critical habitat for the longhorn fairy shrimp, vernal pool fairy shrimp, Alameda whipsnake, California red-legged frog, delta smelt, and western snowy plover will be affected, none will be destroyed or adversely modified by the projects that meet the qualifications of this biological opinion. The effects to longhorn fairy shrimp, vernal pool fairy shrimp, Alameda whipsnake, California red-legged frog, delta smelt, and western snowy plover critical habitat are small and discrete, relative to the entire area designated, and are not expected to appreciably diminish the value of the critical habitat or prevent it from sustaining its role in the conservation of the longhorn fairy shrimp, vernal pool fairy shrimp, Alameda whipsnake, California red-legged frog, delta smelt, and western snowy plover.

These determinations are based on the *Description of the Proposed Action* that provides a maximum number of acres for the proposed projects in the listed species distributional range in the District Parks as well as numerous conservation measures that would be implemented to avoid or minimize adverse effects of the future proposed projects on listed species and their critical habitats. Implementing the proposed maintenance projects that should help maintain ecological integrity in aquatic features and along roads and trails, the proposed lotic, lentic, and tidal restoration projects, the preservation measures to avoid and minimize adverse effects for each species, ensure that habitat for these species will be enhanced and conserved in the long-term.

Species	Maximum Proposed Range Disturbance (Acres)	Percentage of Proposed Range Disturbance on the Species' Distributional Range on Non-HCP lands	Distributional Range on East Bay Regional Parks Non-HCP lands	General Habitat Types
Alameda whipsnake	8.50	0.010%	89,471	Chaparral, Montane Hardwood, Riparian Woodlands
California red-legged frog	7.36	0.010%	77,552	Lentic and Lotic Waterbodies, Springs, Floodplains
California tiger salamander	5.65	0.010%	59,539	Lentic and Vernal Pools, Grasslands, Oak Savannahs
Foothill yellow-legged frog	1.87	0.009%	20,303	Lentic and Lotic Waterbodies, Springs, Riparian Woodlands
Longhorn fairy shrimp	0.26	0.009%	2,862	Rock Outcrop Depressions and Vernal Pools
Vernal pool fairy shrimp	0.26	0.009%	2,862	Rock Outcrop Depressions and Vernal Pools
Vernal pool tadpole shrimp	0.26	0.009%	2,862	Vernal Pools and Seasonal Ponds
San Joaquin kit fox	1.11	0.010%	11,736	Grasslands, Oak Savannahs
Pallid manzanita	0.49	0.009%	5,356	Chaparral, Montane Hardwood
Giant garter snake	0.25	0.010%	2,637	Riverine and Freshwater Emergent Wetlands
California Ridgway's rail	0.73	0.009%	8,192	Saline - Brackish Emergent Wetlands
Salt marsh harvest mouse	1.04	0.009%	11,605	Saline - Brackish Emergent Wetlands
California least tern	0.20	0.009%	2,188	Estuarine, Open Shoreline Beaches, Plains, and Islands
Western snowy plover	0.30	0.009%	3,323	Estuarine, Open Shoreline Beaches, Plains, and Islands
Delta smelt	0.39	0.009%	4,394	Estuarine
Longfin smelt	2.84	0.020%	12,864	Estuarine, Open Water

Table 22. Percentage of Listed Species Range with Maximum Disturbance Estimated from Proposed Activities over Five Years

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened 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. Harass is defined by Service regulations at 50 CFR 17.3 as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Harm is defined by the same regulations as an act which actually kills or injures wildlife. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavior patterns, including breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

This incidental take statement is based upon the proposed action occurring as described in the accompanying biological opinion. Take of listed species in accordance with this incidental take statement is exempted under section 7(o)(2) of the Act. The Corps must ensure that the applicant implements the proposed action as described in this biological opinion and undertake the non-discretionary measures described below; otherwise, the exemption provided under section 7(o)(2) of the Act may lapse. 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 applicant 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 District 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)].

Sections 7(b)(4) and 7(o)(2) of the Act generally 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 and reduction to possession of federally listed endangered plants or the malicious damage of such plants on areas under federal jurisdiction, or the destruction of endangered plants on non-federal areas in violation of State law or regulation or in the course of any violation of a State criminal trespass law.

Amount or Extent of Take

Alameda Whipsnake

The Service anticipates that incidental take of the Alameda whipsnake will be difficult to detect because most will likely be in dense riparian vegetation at project sites where, due to their small size and cryptic coloring, they may be hard to detect. It may be difficult to locate these species due to their cryptic appearance and small size. The finding of an injured or dead individual is unlikely because of their relatively small body size; losses of this species also may be difficult to quantify as a result. In instances when take is difficult to detect, the Service may estimate take in

numbers of species per acre of habitat lost or degraded as a result of the action as a surrogate measure for quantifying individuals. Therefore, the Service anticipates that all Alameda whipsnakes inhabiting approximately 8.50 acres will be subject to incidental take in the form of non-lethal harm and harassment over five years (2024-2029); restoration projects over the five-years may also cause incidental take through non-lethal harm and harassment in additional acres. The Service anticipates that no more than one Alameda whipsnake individual per year over five years, and a maximum of five individuals over five years, would be captured, killed, or injured as a result of project-related activities and would be detected by biological monitors. Reinitiation will be triggered if the amount of incidental take is exceeded by the District. Upon implementation of the Reasonable and Prudent Measures, incidental take associated with the proposed action in the form of harm, harassment, capture, injury, and death of the Alameda whipsnake caused by District routine maintenance activities, conservation measures, and restoration projects will become exempt from the prohibitions described under section 9 of the Act.

California Red-legged Frog

The Service anticipates that incidental take of the California red-legged frog will be difficult to detect because of their life history, biology, and ecology. Specifically, California red-legged frogs are difficult to locate due to their cryptic appearance and behavior; they may be located a distance from aquatic features; and the finding of an injured or dead individual is unlikely because of their relatively small body size, the large amount of Project ground disturbance expected, the limited ability of Service approved biologists to effectively monitor Project activities, and the possibility of carcasses being eaten by scavengers. Therefore, the Service anticipates that all California red-legged frogs inhabiting the approximately 7.36 acres of habitat within the routine maintenance projects, and all California red-legged frogs inhabiting the approximately 43.75 acres of habitat within the restoration projects will be subject to incidental take in the form of non-lethal harm, harassment, and capture over the five-year period (2024-2029). The Service anticipates that a maximum of one (1) California red-legged frog individual per year and a maximum of five (5) California red-legged frog individuals over five years would be killed or injured as a result of routine maintenance project-related activities, and that a maximum of three (3) California red-legged frog individuals per year and a maximum of fifteen (15) California red-legged frog individuals over five years would be killed or injured as a result of restoration project-related activities. Reinitiation will be triggered if the amount of incidental take is exceeded by the District. Upon implementation of the Reasonable and Prudent Measures, incidental take associated with the proposed action in the form of harm, harassment, capture, injury, and death of the California red-legged frogs caused by District routine maintenance activities, conservation measures, and restoration projects will become exempt from the prohibitions described under section 9 of the Act.

Foothill Yellow-legged Frog

The Service anticipates that incidental take of the foothill yellow-legged frog will be difficult to detect because of their life history, biology, and ecology. Specifically, foothill yellow -legged frogs are difficult to locate due to their cryptic appearance and behavior; they may be located a distance from aquatic features; and the finding of an injured or dead individual is unlikely because of their relatively small body size, the large amount of Project ground disturbance expected, the limited ability of Service approved biologists to effectively monitor Project

activities, and the possibility of carcasses being eaten by scavengers. Therefore, the Service anticipates that all foothill yellow-legged frogs inhabiting the approximately 1.87 acres of habitat will be subject to incidental take in the form of non-lethal harm, harassment, and capture over the five-year period (2024-2029); restoration projects over the five-years may also cause incidental take through non-lethal harm and harassment in additional acres. The Service anticipates that a maximum of one (1) foothill yellow-legged frog individual per year and a maximum of five (5) foothill yellow-legged frog individuals over five years would be killed or injured as a result of project-related activities. Reinitiation will be triggered if the amount of incidental take is exceeded by the District. Upon implementation of the Reasonable and Prudent Measures, incidental take associated with the proposed action in the form of harm, harassment, capture, injury, and death of the California red-legged frogs caused by District routine maintenance activities, conservation measures, and restoration projects will become exempt from the prohibitions described under section 9 of the Act.

California Tiger Salamander

The Service anticipates that incidental take of the California tiger salamander will be difficult to detect because when these amphibians are not located in breeding habitat, they inhabit the burrows of ground squirrels, other rodents, or other microhabitat features. It may be difficult to locate these species due to their cryptic appearance and behavior; the sub-adult and adult animals may be located a distance from breeding habitat; dispersal and migration occurs during rainy nights in the fall, winter, or spring; and the finding of an injured or dead individual is unlikely because of their relatively small body size. Losses of these species also may be difficult to quantify due to seasonal fluctuations in numbers, random environmental events, changes in water regimes at breeding sites, or other environmental disturbances. In instances when take is difficult to detect, the Service may estimate take in numbers of species per acre of habitat lost or degraded as a result of the action as a surrogate measure for quantifying individuals. Therefore, the Service anticipates that all California tiger salamanders inhabiting the approximately 5.65 acres of habitat within the routine maintenance projects, and all California tiger salamanders inhabiting the approximately 43.75 acres of habitat within the restoration projects will be subject to incidental take in the form of non-lethal harm, harassment, and capture over the five-year period (2024-2029). The Service anticipates that a maximum of one (1) California tiger salamander individual per year and a maximum of five (5) California tiger salamander individuals over five years would be killed or injured as a result of routine maintenance project-related activities, and that a maximum of three (3) California tiger salamander individuals per year and a maximum of fifteen (15) California tiger salamander individuals over five years would be killed or injured as a result of restoration project-related activities. Reinitiation will be triggered if the amount of incidental take is exceeded by the District. Upon implementation of the Reasonable and Prudent Measures, incidental take associated with the proposed action in the form of harm, harassment, capture, injury, and death of the California tiger salamanders caused by District routine maintenance activities, conservation measures, and restoration projects will become exempt from the prohibitions described under section 9 of the Act.

Longhorn Fairy Shrimp, Vernal Pool Fairy Shrimp, Vernal Pool Tadpole Shrimp

The incidental take of longhorn fairy shrimp, vernal pool fairy shrimp, and tadpole fairy shrimp anticipated for the proposed activities could result from the destruction of the cysts from the ground disturbance within pools. The life stage affected by this action will be the listed shrimp's

cysts, which are embedded in the soil of the pools they occupy. Due to the fact that it is not possible to know how many cysts are in the soil of any storm drain feature, or how many cysts will occupy any storm drain feature later in time, the Service cannot quantify the total number of listed fairy shrimp cysts that we anticipate will be taken as a result of the proposed action. In instances in which the total number of cysts anticipated to be taken cannot be determined, the Service may use the acreage of habitat impacted as a surrogate; since the take of cysts anticipated will result from the destruction or temporary alteration of the listed shrimp habitat, the quantification of habitat acreage serves as a direct surrogate for the listed shrimp that will be lost. Therefore, the Service anticipates take incidental to this project as the 0.26 acre of longhorn fairy shrimp, vernal pool fairy shrimp, and tadpole fairy shrimp habitat that will be disturbed by District routine maintenance activities as well as the additional acres of approved-restoration projects. Reinitiation will be triggered if the amount of incidental take is exceeded by the District. Upon implementation of the Reasonable and Prudent Measures, incidental take associated with the proposed activities in the form of harm, harassment, capture, injury, and death of longhorn fairy shrimp, vernal pool fairy shrimp, and tadpole fairy shrimp caused by District routine maintenance activities, conservation measures, and restoration projects will become exempt from the prohibitions described under section 9 of the Act.

San Joaquin Kit Fox

The Service anticipates that incidental take of the San Joaquin kit fox may occur in the form of harassment to an unknown number of individuals that may attempt to den in or near project sites. Foraging or denning kit fox may be harassed by District restoration and routine maintenance activities. Implementation of CM23, which includes preconstruction surveys for dens and individuals, is expected to avoid harassment of denning individuals. Use of the project site may be avoided by San Joaquin kit fox for denning or foraging and thus incidental take for San Joaquin kit fox is expected in the form of harassment of all San Joaquin kit fox in approximately 1.11 acres over five years due to District routine maintenance activities; restoration projects over the five-years may result in incidental take by harassment in additional acres. Up to two San Joaquin kit fox could be taken by harassment over the five-year period (2024-2029) due to District restoration projects and routine maintenance activities. Reinitiation will be triggered if the amount of incidental take is exceeded by the District. Upon implementation of the Reasonable and Prudent Measures, incidental take associated with the proposed action in the form of harassment of the San Joaquin kit fox caused by District routine maintenance activities, conservation measures, and restoration projects will become exempt from the prohibitions described under section 9 of the Act.

California Ridgway's Rail

The Service anticipates that incidental take of the California Ridgway's rail will be difficult to detect or quantify because of the reclusive nature of this species. In instances when take is difficult to detect, the Service may estimate take in numbers of species per acre of habitat lost or degraded as a result of the action as a surrogate measure for quantifying individuals. Incidental take for California Ridgway's rails is expected in the form of non-lethal harassment of all California Ridgway's rails in approximately 0.73 acre of existing California Ridgway's rail habitat due to District routine maintenance activities; restoration projects over the five-years may result in incidental take by harassment in additional acres. The Service does not anticipate any lethal injury or mortality as a result of project activities. Reinitiation will be triggered if the

amount of incidental take is exceeded by the District. Upon implementation of the Reasonable and Prudent Measures, incidental take associated with the proposed action in the form of harassment of the California Ridgway's rail caused by District routine maintenance activities, conservation measures, and restoration projects will become exempt from the prohibitions described under section 9 of the Act.

Salt Marsh Harvest Mouse

The Service anticipates that incidental take of the salt marsh harvest mouse will be difficult to detect or quantify because of the variable, unknown size of any resident population over time, and the difficulty of finding killed or injured small mammals. In instances when take is difficult to detect, the Service may estimate take in numbers of species per acre of habitat lost or degraded as a result of the action as a surrogate measure for quantifying individuals. Therefore, the Service anticipates that all salt marsh harvest mouse inhabiting the approximately 1.04 acres of habitat will be subject to incidental take in the form of non-lethal harm and harassment over the fiveyear period (2024-2029); restoration projects over the five-years may also cause incidental take through non-lethal harm and harassment in additional acreages. The Service anticipates that a maximum of one salt marsh harvest mouse annually, with up to five individuals over the fiveyear period, would be captured, killed, or injured as a result of project-related activities and would be detected by biological monitors. Reinitiation will be triggered if the amount of incidental take is exceeded by the District. Upon implementation of the Reasonable and Prudent Measures, incidental take associated with the proposed action in the form of harm, harassment, capture, injury, and death of the salt marsh harvest mouse caused by District routine maintenance activities, conservation measures, and restoration projects will become exempt from the prohibitions described under section 9 of the Act.

Giant Garter Snake

The Service anticipates that incidental take of the giant garter snake will be difficult to detect or quantify because; (1) the snakes are secretive and notoriously sensitive to human activities, and (2) individual snakes are difficult to detect unless they are observed, undisturbed, at a distance. Giant garter snake habitat is present in the action area; however, the number of giant garter snakes using the action area is expected to be small. While activities in terrestrial habitats are limited during the bromation, giant garter snakes still use terrestrial areas during their active period and could be injured or killed from disturbance associated with sediment removal or vegetation management (terrestrial and aquatic) and dewatering activities in the delta near District lands listed in Table 2. In instances when take is difficult to detect, the Service may estimate take in numbers of species per acre of habitat lost or degraded as a result of the action as a surrogate measure for quantifying individuals. Therefore, the Service anticipates that all giant garter snake inhabiting the approximately 0.25 acres of habitat will be subject to incidental take in the form of non-lethal harm and harassment over the five-year period (2024-2029); restoration projects over the five-years may also cause incidental take through non-lethal harm and harassment in additional acreages. The Service anticipates that a maximum up to two giant garter snake individuals over the five-year period, would be captured, killed, or injured as a result of project-related activities and would be detected by biological monitors. Reinitiation will be triggered if the amount of incidental take is exceeded by the District. Upon implementation of the Reasonable and Prudent Measures, incidental take associated with the proposed action in the form of harm, harassment, capture, injury, and death of the giant garter snake caused by District

routine maintenance activities, conservation measures, and restoration projects will become exempt from the prohibitions described under section 9 of the Act.

Western Snowv Plover

The Service anticipates that incidental take of the snowy plover may occur in the form of harassment to an unknown number of individuals of snowy plovers that may attempt to nest parks within the District. Foraging or nesting snowy plovers may be harassed by District routine maintenance activities at the parks listed in Table 1. Implementation of CM28, which entails preactivity surveys for nesting birds and maintenance of a buffer around actively nesting snowy plovers, is expected to avoid injury or mortality of western snowy plover eggs or young. Incidental take for western snowy plover is expected in the form of non-lethal harassment of all western snowy plovers in approximately 0.33 acre of existing western snowy plover habitat due to routine maintenance activities; restoration projects over the five-years may result in incidental take by harassment in additional acres. The Service does not anticipate lethal injury or mortality due to project activities. Reinitiation will be triggered if the amount of incidental take is exceeded by the District. Upon implementation of the Reasonable and Prudent Measures, incidental take associated with the proposed action in the form of harassment of the snowy plover caused by District routine maintenance activities, conservation measures, and restoration projects will become exempt from the prohibitions described under section 9 of the Act.

California Least Tern

The Service anticipates that incidental take of the California least tern may occur in the form of harassment to an unknown number of individuals that may attempt to nest parks within the District. Foraging or nesting California least terns may be harassed by District routine maintenance activities at the parks listed in Table 1. Implementation of CM29, which entails preactivity surveys for nesting birds and maintenance of a buffer around actively nesting snowy plovers, is expected to avoid injury or mortality of California least tern eggs or young. Incidental take for California least tern is expected in the form of non-lethal harassment of all California least terns in approximately 0.32 acre of existing California least tern habitat due to District routine maintenance activities; restoration projects over the five-years may result in incidental take by harassment in additional acres. The Service does not anticipate lethal injury or mortality due to project activities. Reinitiation will be triggered if the amount of incidental take is exceeded by the District. Upon implementation of the Reasonable and Prudent Measures, incidental take associated with the proposed action in the form of harassment of the California least tern caused by District routine maintenance activities, conservation measures, and restoration projects will become exempt from the prohibitions described under section 9 of the Act.

Delta Smelt

The Service expects that incidental take of delta smelt will be difficult to detect or quantify for the following reasons: the small size of adults and larvae, the difficulty of detecting delta smelt in their turbid aquatic habitat, and the low likelihood of finding dead or impaired specimens. The Service anticipates that the extent of incidental take will be minimized due to the proposed conservation measures and low relative abundance. Due to the difficulty in quantifying the number of delta smelt that will be taken as a result of the proposed action, the number of acres of affected habitat becomes a surrogate for the species that will be taken. The Service anticipates

that all individual adult delta smelt in 0.39 acre of the proposed activities and the additional restoration areas may be subject to incidental take in the form of harm as described in this biological opinion. Reinitiation will be triggered if the amount of incidental take is exceeded by the District. Upon implementation of the Reasonable and Prudent Measures, incidental take associated with the proposed action in the form of harassment of the delta smelt caused by District restoration projects and routine maintenance activities will become exempt from the prohibitions described under section 9 of the Act.

Longfin Smelt

The Service expects that incidental take of longfin smelt will be difficult to detect or quantify for the following reasons: the small size of adults and larvae, the difficulty of detecting longfin smelt in their turbid aquatic habitat, and the low likelihood of finding dead or impaired specimens. The Service anticipates that the extent of incidental take will be minimized due to the proposed conservation measures and low relative abundance. Due to the difficulty in quantifying the number of longfin smelt that will be taken as a result of the proposed action, the number of acres of affected habitat becomes a surrogate for the species that will be taken. The Service anticipates that all individual adult longfin smelt in 2.84 acre of the proposed activities and the additional restoration areas may be subject to incidental take in the form of harm as described in this biological opinion. Reinitiation will be triggered if the amount of incidental take is exceeded by the District.

Effect of the Take

In the accompanying biological opinion and conference opinion, the Service determined that the level of anticipated take is not likely to result in jeopardy to the Alameda whipsnake, California red-legged frog, foothill yellow-legged frog, California tiger salamander, longhorn fairy shrimp, vernal pool fairy shrimp, tadpole fairy shrimp, San Joaquin kit fox, California Ridgway's rail, salt marsh harvest mouse, giant garter snake, western snowy plover, California least tern, delta smelt, and longfin smelt. In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat.

Reasonable and Prudent Measures

All necessary and appropriate measures to avoid or minimize effects on the Alameda whipsnake, California red-legged frog, foothill yellow-legged frog, Central California tiger salamander, longhorn fairy shrimp, vernal pool fairy shrimp, tadpole fairy shrimp, San Joaquin kit fox, pallid manzanita, California Ridgway's rail, salt marsh harvest mouse, giant garter snake, western snowy plover, California least tern, delta smelt, and longfin smelt resulting from implementation of this project have been incorporated into the project's proposed conservation measures. Therefore, the Service believes the following reasonable and prudent measures are necessary and appropriate to minimize incidental take of the Alameda whipsnake, California red-legged frog, foothill yellow-legged frog, Central California tiger salamander, longhorn fairy shrimp, vernal pool fairy shrimp, tadpole fairy shrimp, San Joaquin kit fox, pallid manzanita, California Ridgway's rail, salt marsh harvest mouse, giant garter snake, western snowy plover, California least tern, delta smelt, and longfin smelt:

- 1) The applicant shall minimize the potential for harm, harassment, injury, and mortality to the Alameda whipsnake, California red-legged frog, foothill yellow-legged frog, Central California tiger salamander, longhorn fairy shrimp, vernal pool fairy shrimp, tadpole fairy shrimp, San Joaquin kit fox, pallid manzanita, California Ridgway's rail, salt marsh harvest mouse, giant garter snake, western snowy plover, California least tern, delta smelt, and longfin smelt resulting from project related activities.
- 2) The applicant shall ensure their compliance with this biological opinion. All conservation measures, as described in the biological assessment and restated here in the *Description of the Proposed Action* section of this biological opinion, shall be fully implemented and adhered to in order to minimize adverse effects to the listed species discussed in this biological opinion. Further, this reasonable and prudent measure shall be supplemented by the terms and conditions below.
- 3) To ensure that activities do not cause high levels of sedimentation downstream of project sites, all BMPs associated with Section 404 and 401 permitting as well as State Regional Water Quality permitting will be followed and implemented.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, the Corps must ensure compliance with the following terms and conditions, which implement the reasonable and prudent measure described above. These terms and conditions are nondiscretionary.

- 1. The Corps shall include full implementation and adherence to the conservation measures as a condition of any permit or contract issued for the projects permitted under this biological opinion.
- 2. No activities will occur until the Corps' approval of the routine maintenance activities.
- 3. No restoration projects or adaptive management conservation measures will occur until they are approved by the Corps, Service, and CDFW.
- 4. All parks within the distributional range of the species listed in Table 1 will have the species-specific conservation measures required unless specifically requested at the time of the June 1st project list. Any deviations from the Table 1 will need to be approved by the Service.
- 5. The District shall require that all personnel associated with this project are made aware of the conservation measures and the responsibility to implement them fully.
- 6. In addition to the terms and conditions specified in the biological opinion, the applicant will implement the following conservation measures to further reduce potential for take to the 15 listed species:
 - a. All night-time emergency construction per Conservation Measure 9 must be approved by the Service prior to implementation to minimize take of listed species such as Central California tiger salamander and California red-legged frog.

- b. To reduce predation on listed tidal species, recreational structures (i.e., tall light poles, utility poles, fencing, signage, etc.) near habitat for the salt marsh harvest mouse, California Ridgway's rail, California least tern, or western snowy plover will be minimized or designed in such a way as to be appropriate for recreational use and deter perching by avian predators.
- c. Any potential take of pallid manzanita plants will be detailed in the June 1st project list in terms of number and age (seedling, mature), acreage, and any additional conservation measures to minimize take may be required by the Service at that time. No associated activities will occur until projects that could remove or damage pallid manzanita plants are approved by the Service. Herbicides will not be used in pallid manzanita habitat unless approved for use by the Service.
- d. Restoration planting locations will be approved by a California red-legged frog and Central California tiger salamander Service-approved biologist who will ensure that plantings of trees and wetland plants do not degrade pools that may be potential breeding habitat (i.e., providing too much shading over pools or too much emergent vegetation in pools).
- e. To reduce take of listed species from herbicide and pesticide use:
 - Chemical treatment will be conducted in accordance with a Serviceapproved treatment plan. The plan will include a Pesticide Use Spill Plan. The treatment plan must be submitted to the Service 60-days prior to planned implementation.
 - Contractors will have all necessary licensing by the California Department of Pesticide Regulation (CDPR) for herbicide application. Use of herbicides will be consistent with label instructions, and Material Safety Data Sheets documents will be maintained.
 - Integrated Pest Management Approaches: Applicators will also use nonchemical methods such as hand pulling or chip deposition on seed stock to prevent seedling germination, thus reducing the need for herbicides.
 - Herbicides will not be applied to or near open water. A 60-foot buffer zone adjacent to the wetted channel will be established in the action area. No foliar application of herbicides will occur within the buffer. Within the buffer, only aquatic-safe formulations of herbicides would be used (e.g., Garlon 3A). Herbicide formulations that are not safe for aquatic application or that may be harmful to California red-legged frogs such as Garlon 4 Ultra would not be used within the buffer.
 - Herbicide will not be applied during the wet season (November 1 April 15) to minimize herbicide transport in the environment.
 - Spray nozzles would be kept within a vertical distance of 24 inches of vegetation being sprayed.

- The lowest effective concentration needed for effectiveness will be used, typically specified as a range on the product label. However, the concentration is dependent on method of application.
- No herbicide will be applied within suitable amphibian habitat if there is a > 30% chance of more than 0.1 inches of precipitation predicted within the next 48 hours. No herbicide will be applied outside suitable amphibian habitat if there is a > 50% chance of more than 0.1 inches of precipitation predicted within the next 48 hours. 0.1 inch is based on following "measurable" precipitation prediction data provided by National Weather Service.
- Herbicide applications will treat the minimum area necessary to meet site objectives.
- All mixing and/ or loading of herbicides will take place at least 500 feet from occupied streams and associated riparian areas, lakes, ponds or wetlands and at least 150 feet from all non-occupied sites. Precautions will be issued to and care will be taken by workers to avoid crushing or trampling amphibians.
- Any herbicides applied to project sites with suitable habitat for California red-legged frogs and California tiger salamanders will adhere to the requirements and restrictions for use as outlined in the October 20, 2006, Northern District of California U.S. District Court Stipulated Injunction and Order.
- To reduce take of vernal pool brachiopods, no herbicide use will be allowed within 100 feet of areas with suitable habitat for vernal pool brachiopods unless approved by the Service.
- 7. At the time of the June 1st project list, the Service can require species-specific conservation measures in the future in any parks covered under this biological opinion, if the species is found to inhabit parks or are reasonably certain to occur due to close proximity of future occurrences.
- 8. The project description requires the District to submit a detailed list or spreadsheet with the proposed maintenance and restoration projects for the upcoming year to the Corps and the Service prior to June 1 each year. A more detailed description of what the Service requires in the submittal is explained below. At a minimum, the preconstruction project list will include the following information:
 - a. A description of activities/projects proposed and their location shall include:
 - What routine maintenance activity type (as listed in Table 2) or restoration project type are associated with each project site.
 - A full description of habitat restoration projects and adaptive management conservation measures.

- Any additional conservation measures to ensure adequate avoidance and minimization to the take of listed species.
- b. Location and extent of habitat disturbance (temporary and permanent) shall include:
 - Locational maps for each project and a table documenting projected acreages of temporary and permanent habitat disturbance.
- c. Anticipated effects to listed species shall include:
 - For Routine Maintenance Projects: Acreage of affected species habitat at each project site (if species affected at the project site differ from that listed in Table 1 associated with that park).
 - This biological opinion assumes that projects in a specific District Park will be affecting the species habitat located in that park as determined by Table 1. If a project is not affecting species habitat as identified in Table 1, then the nonimpact to that species habitat would need to be identified in the preconstruction project list. Otherwise, the Service will assume that all projects affect species habitat associated with the District Parks as listed in Table 1.
 - Description of any additional adverse effects not already mentioned in the biological opinion.
 - For Restoration Projects and Adaptive Management Conservation Measures only:
 - Potential for species to be at the project site (if different from that listed in Table 1).
 - Listed species suitable habitat associated with each site (breeding, foraging, dispersal, etc.) by the project.
 - Determination of beneficial or neutral effects to listed species (can be in spreadsheet/ table form).
 - Description of any additional adverse temporary effects not already mentioned in the biological opinion.
 - Any additional conservation measures to ensure adequate avoidance and minimization to the take of listed species.

Monitoring:

1. For those components of the action that will result in habitat degradation or modification whereby incidental take in the form of harm is anticipated, the District shall provide a precise accounting of the total acreage of habitat impacted to the Service after completion of construction as detailed in the *Description of the Proposed Action* and CM19.

- 2. In the February 15th annual report, if the species habitat that is affected by the proposed activity differs from those species associated with the Park of the project site in Table 1, then the Service must approve that the species' habitat is not being impacted.
- 3. Results of preconstruction surveys for listed species (positive and negative observations, dates, method, etc.) will be included in the February 15th annual report of project activities.
- 4. A monthly construction monitoring report will be due to the Service a week after month's end that lists the year's project sites, listed species observed/captured/handled/relocated (and any associated details), and reports compliance status with conservation measures at each project site.
- 5. The Corps or Applicant shall immediately contact the Coast Bay Division Supervisor, Ryan Olah (ryan_olah@fws.gov) or (916) 414-6623, to report direct encounters between listed species and project workers and their equipment whereby incidental take in the form of harassment, harm, injury, or death occurs. If the encounter occurs after normal working hours, the Corps shall contact the SFWO at the earliest possible opportunity the next working day. When injured or killed individuals of the listed species are found, the Corps shall follow the steps outlined in the *Salvage and Disposition of Individuals* section below.
- 6. For those components of the action that will require the capture and relocation of any listed species, the Corps or Applicant shall immediately contact the Coast Bay Division Supervisor, Ryan Olah (ryan_olah@fws.gov) or (916) 414-6623, to report the action. If capture and relocation need to occur after normal working hours, the Corps shall contact the SFWO at the earliest possible opportunity the next working day.

Salvage and Disposition of Individuals

Injured listed species must be cared for by a licensed veterinarian or other qualified person(s), such as the Service-approved biologist. Dead individuals must be sealed in a resealable plastic bag containing a paper with the date and time when the animal was found, the location where it was found, and the name of the person who found it, and the bag containing the specimen frozen in a freezer located in a secure site, until instructions are received from the Service regarding the disposition of the dead specimen. The Service contact person is the Coast Bay Division Supervisor at the Sacramento Office at (916) 414-6623.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations 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. The Service recommends the following actions:

1) The District should identify California red-legged frog, California Ridgway's rail, salt marsh harvest mouse, and California least tern breeding habitat that is at risk to

significant change (i.e. salinization, erosion etc.) due to climate change, tidal action, and sea level rise. Should a site be at significant risk, corrective actions should be identified and taken to protect the habitat.

- 2) The District should acquire, preserve, and manage lands containing the pallid manzanita, longhorn fairy shrimp, San Joaquin kit fox, and Alameda whipsnake that are currently unprotected on private lands. The District should educate and work with adjacent landowners to minimize the potential for the introduction and spread of *P. cinnamomi* into areas containing the pallid manzanita.
- 3) The District should manage scrub, grassland, and oak woodland habitats for the benefit of the Alameda whipsnake. The District should re-route trails and roads away from suitable Alameda whipsnake and pallid manzanita habitat.
- 4) The District should promote the eradication of non-native eucalyptus, Monterey pine, Monterey cypress, and French broom within and near suitable habitat for the Alameda whipsnake.
- 5) The District should avoid the use of rodenticides in suitable habitat for the California redlegged frog and Alameda whipsnake and other listed species that rely on small mammals for creating burrows or as a prey source.
- 6) All listed species detections associated with this project should be reported to the CNDDB within sixty calendar days. A copy of the submission should be sent to the Service for confirmation.
- 7) To reduce predation by predation on listed tidal species, recreational structures (i.e. tall light poles, utility poles, fencing, signage, etc.) within 700 feet of habitat for the salt marsh harvest mouse, California Ridgway's rail (nesting), California least tern (nesting), or western snowy plover (nesting) should be restricted to only those structures which can be designed to deter perching by avian predators.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

REINITIATION—CLOSING STATEMENT

This concludes reinitiation of formal consultation on the District's Routine Maintenance Activities. As provided in 50 CFR §402.16(a), reinitiation of consultation is required and shall 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 the biological opinion; or written concurrence, or
- 4) If a new species is listed or critical habitat designated that may be affected by the identified action.

This concludes the conference for the longfin smelt. You may ask the Service to confirm the conference opinion as a biological opinion issued through formal consultation if the longfin smelt is listed. The request must be in writing. If the Service reviews the proposed action and finds that there have been no significant changes in the action as planned or in the information used during the conference, the Service will confirm the conference opinion as the biological opinion on the project and no further section 7 consultation will be necessary.

After listing of the longfin smelt as threatened and any subsequent adoption of this conference opinion, the Federal agency shall request reinitiation of consultation if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect the species or critical habitat in a manner or to an extent not considered in this conference opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the species or critical habitat that was not considered in this conference opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action.

The incidental take statement provided in this conference opinion does not become effective until the longfin smelt is listed and the conference opinion is adopted as the biological opinion issued through formal consultation. At that time, the project will be reviewed to determine whether any take of the longfin smelt has occurred. Modifications of the opinion and incidental take statement may be appropriate to reflect that take. No take of the longfin smelt may occur between the listing of longfin smelt and the adoption of the conference opinion through formal consultation, or the completion of a subsequent formal consultation.

If you have any questions regarding this biological opinion and conference opinion, please contact Stephanie Levins, Senior Fish and Wildlife Biologist (stephanie_levins@fws.gov) or Ryan Olah, Coast Bay Division Supervisor (ryan_olah@fws.gov), at the letterhead address or at (916) 414-6623.

Sincerely,

Michael Fris Field Supervisor

Enclosure

cc: U.S. Army Corps of Engineers, San Francisco, California Josh Phillips, East Bay Regional Park District, Oakland, California
Becky Tuden, East Bay Regional Park District, Oakland, California Brook Vinnedge, East Bay Regional Park District, Oakland, California Desiree Dela Vega, California Department of Fish and Wildlife, Bay Delta Region, California

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