

Terrestrial Biological Resources

12.1 Summary Comparison of Proposed Project

A summary comparison of the quantifiable impacts on natural communities and a reference to some of the special-status species that would be affected is provided in Figure 12-0. The incremental values indicate the change in acreage attributable to the proposed project. These incremental values, together with consideration of the severity of the underlying impacts as set forth in the Final EIR/EIS, are the bases for making both NEPA and CEQA impact significance findings. The incremental analysis addresses whether the proposed project, compared with the approved project, will lead to any new significant environmental effects or to any substantial increase in the severity of previously identified significant effects. The incremental difference between the original impacts and the newly anticipated impacts is then considered against the backdrop of the original significance determinations for the original underlying impacts as described in the Final EIR/EIS. The proposed project would result in fewer impacts on terrestrial biological resources than the approved project. Impacts on wetlands and waters of the United States would decrease substantially due to the removal of project-related dredging activities within Clifton Court Forebay and the relocation of reusable tunnel material (RTM) storage areas on Bouldin Island.

Figure 12-0. Comparison of Impacts on Terrestrial Biological Resources

Chapter 12 – Terrestrial Biological Resources	Resource	Approved Project	Proposed Project (Total)	Proposed Project (Increment)
Impacts BIO-1, BIO-9, BIO-12, BIO-21, BIO-32, BIO-44, BIO-46, BIO-49, BIO-69, BIO-83, BIO-87, BIO-162, and BIO-178: Changes in natural communities for tidal perennial aquatic, nontidal perennial aquatic, valley/ foothill riparian, and vernal pool complex; Loss or conversion of habitat for vernal pool crustaceans, California red-legged frog, California tiger salamander, giant garter snake, greater sandhill crane, Swainson’s hawk, tricolored blackbird, San Joaquin kit fox, and waterfowl and shorebirds.	Natural Communities^a			
	Agricultural	4,643	5,136	493
	Alkali Seasonal Wetland Complex	1	0	-1
	Developed	134	123	-11
	Grassland	664	351	-313
	Managed Wetland	43	19	-24
	Nontidal Freshwater Perennial Emergent Wetland	5	4	-1
	Nontidal Perennial Aquatic	64	22	-42
	Tidal Freshwater Emergent Wetland	9	5	-4
	Tidal Perennial Aquatic	2,299	91	-2,209
	Valley/Foothill Riparian	70	34	-36
	Vernal Pool Complex	22	4	-18
	Total	7,956	5,789	-2,167

Chapter 12 – Terrestrial Biological Resources	Resource	Approved Project	Proposed Project (Total)	Proposed Project (Increment)
Impact BIO-176: Effects of Constructing Water Conveyance Facilities on Wetlands and Other Waters of the United States	Waters of the U.S.			
	Agricultural Ditch	55.4	80.1	25
	Alkaline Wetland	10.5	0.3	-10
	Clifton Court Forebay ^b	257.9	0	-258
	Conveyance Channel	10.0	19.4	9
	Depression	35.5	1.8	-34
	Emergent Wetland	71.5	11.3	-60
	Forest	12.4	7.4	-5
	Lake	23.2	0	-23
	Scrub-Shrub	16.3	5.2	-11
	Seasonal Wetland	124.5	58.8	-66
	Tidal Channel	80.8	65.2	-16
	Vernal Pool	0.3	0	-0.3
	Total	698	250	-448
^a Natural Community impacts generally represent effects on species because this data is used in the species models together with the wetland delineation data for some species.				
^b Total does not include temporary impacts on Clifton Court Forebay because these would just be temporary disturbance to open water, which typically do not require compensatory mitigation.				

1

2 As depicted in Figure 12-0, the proposed project would not result in new impacts or a substantial
 3 increase in the severity of previously identified impacts related to terrestrial biological resources.
 4 This chapter contains the information necessary to make the Final EIR/EIS adequate for the
 5 approved project as revised.

6 12.2 Environmental Setting/Affected Environment

7 The Existing Conditions of terrestrial biological resources that would be affected by construction of
 8 the proposed project are generally the same as described in Final EIR/EIS Chapter 12, *Terrestrial*
 9 *Biological Resources*, Section 12.1, *Environmental Setting/Affected Environment*. Changes since
 10 preparation of the Final EIR/EIS include an expansion of the project area to include the existing
 11 Sacramento Municipal Utility District (SMUD) transmission line corridor just outside the former
 12 study area boundary, which was addressed in the January 23, 2018 Addendum to the Final EIR/EIS,
 13 updated wetland delineation data to cover areas not previously mapped within the new conveyance
 14 footprint. A discussion of these changes is provided below.

15 12.2.1 Land Cover Types

16 The land cover types discussed in this chapter are the same as those discussed in Final EIR/EIS
 17 Chapter 12, *Terrestrial Biological Resources*, Section 12.1.2, *Land Cover Types*.

1 **12.2.1.1 Natural Community Mapping Methods**

2 The natural community mapping was updated to include the additional area added to accommodate
3 the inclusion of an existing SMUD transmission line alignment, which will be upgraded to support
4 the construction and operation of the intakes and tunnels. The South Sacramento Habitat
5 Conservation Plan (SSHCP) GIS data was used to define the vegetation cover for this additional area.
6 Agricultural areas were defined based on DWR land cover information. The SSHCP and DWR land
7 cover data were crosswalked to the Bay Delta Conservation Plan (BDCP) natural community types.

8 **12.2.1.2 Wetlands and Other Waters of the United States**

9 Final EIR/EIS Chapter 12, *Terrestrial Biological Resources*, Section 12.3.2.4, *Methods Used to Assess*
10 *Wetlands and Other Waters of the United States*, discussed the methods used to map wetlands and
11 other waters within the study area. The end result of these mapping efforts was a final delineation
12 verified by the U.S. Army Corps of Engineers (USACE) for wetlands and other waters within the
13 Conveyance Planning Area. The Conveyance Planning Area only covered the area that contained all
14 of the infrastructure for the different water conveyance facility alternatives analyzed in the Final
15 EIR/EIS. Elements of the proposed project go outside of the Conveyance Planning Area and
16 therefore the wetland delineation was updated by DWR in early 2018.

17 **12.2.2 Special-Status Species**

18 The information used for the analysis is the same as what was presented in Final EIR/EIS Chapter
19 12, *Terrestrial Biological Resources*, Section 12.1.2.3, *Special-Status Species*.

20 **12.3 Environmental Consequences**

21 The methods used to determine the effects of the proposed project on biological resources are the
22 same methods used for the approved project and are described in Section 12.3.2, *Methods for*
23 *Analysis*, of the Final EIR/EIS. Note that only species/habitat effects that could potentially differ
24 between the proposed project and approved project are discussed below. Overall, impact
25 determinations of the proposed project are the same as those described under the approved project.
26 Mitigation Measures were listed for associated impacts where applicable to the proposed project.
27 Mitigation Measure descriptions can be found in the Final EIR/EIS, Chapter 12, Section 12.3.4.2.

28 Where mitigation measures identified in the Final EIR/EIS remain sufficient, such sufficiency is
29 noted. Where changes to approved mitigation measures are needed, the recommended changes are
30 noted as well, with changes provided in underline/strikeout format to show proposed differences.

1 12.3.1.1 Proposed Project

2 Natural Communities

3 Tidal Perennial Aquatic

4 Impact BIO-1: Changes in Tidal Perennial Aquatic Natural Community as a Result of 5 Implementing the Proposed Project

6 The impacts from the proposed project compared with the approved project t are presented below
7 in Table 12-1. The proposed project would result in 2,208 fewer acres of impacts on tidal perennial
8 aquatic than the approved project. These differences result from changes to construction at Clifton
9 Court Forebay. The forebay would not be dredged or modified as part of the proposed project.

10 The implementation of Avoidance and Minimization Measure (AMM) 1, AMM2, AMM6, AMM7, and
11 AMM10, as described in Final EIR/EIS Appendix 3B, *Environmental Commitments, AMMs, and CMs*,
12 would ensure that effects of construction on tidal perennial aquatic are avoided and minimized.

13 **Table 12-1. Impacts on Tidal Perennial Aquatic Natural Community (acres)**

Project Component	Approved Project ^{a, b}	Proposed Project (Total) ^a	Proposed Project (Increment)
Water Conveyance Facilities	2,299	91	-2,208
Total Impacts	2,299	91	-2,208

^a Includes both permanent and temporary impacts combined.

^b The large acreage of tidal perennial aquatic habitat affected by the approved project is related primarily to dredging of Clifton Court Forebay; the habitat would not be permanently removed, it would be expanded.

14

15 **NEPA Effects:** Construction and land grading activities under the proposed project would result in
16 the removal of 91 acres of tidal perennial aquatic, which is a sensitive natural community. Because
17 of the project's commitment to restoration of tidal natural community, the proposed project would
18 not result in a net long-term reduction in the acreage of a sensitive natural community; the effect
19 would not be adverse.

20 **CEQA Conclusion:** The proposed project would result in the loss, conversion, and temporary
21 disturbance of approximately 91 acres of tidal perennial aquatic natural community due to
22 construction of the water conveyance facilities. The construction losses would occur primarily along
23 the Sacramento River at intake sites, and along various Delta waterways at barge offloading sites.
24 The losses, conversions, and disturbance would be spread across the 14-year water conveyance
25 facilities construction period. These effects would be offset by tidal restoration as outlined in the
26 Final EIR/EIS. AMM1, AMM2, AMM6, AMM7, and AMM10, as described in Final EIR/EIS Appendix
27 3B, *Environmental Commitments, AMMs, and CMs*, would also be implemented to minimize impacts.
28 Because of these offsetting restoration activities and AMMs, there would be no permanent loss of
29 this sensitive natural community.

30 **Incremental Impact:** Changing the footprint of water conveyance facilities would result in
31 2,208 fewer acres of impact on tidal perennial aquatic natural community. The impact on tidal
32 perennial aquatic would remain less than significant. No mitigation is required.

1 **Tidal Freshwater Emergent Wetland**

2 **Impact BIO-6: Changes in Tidal Freshwater Emergent Wetland Natural Community as a Result**
3 **of Implementing the Proposed Project**

4 The impacts from the approved project and the proposed project are presented below in Table 12-2.
5 The proposed project would result in 4 fewer acres of impacts on tidal freshwater emergent wetland
6 than the approved project. These differences result primarily from minor changes in transmission
7 line construction.

8 The implementation of AMM1, AMM2, AMM6, AMM7, and AMM10, as described in Final EIR/EIS
9 Appendix 3B, *Environmental Commitments, AMMs, and CMs*, would ensure that effects of
10 construction on tidal freshwater emergent wetland are avoided and minimized.

11 **Table 12-2. Impacts on Tidal Freshwater Emergent Wetland Natural Community (acres)^a**

Project Component	Approved Project ^a	Proposed Project (Total) ^a	Proposed Project (Increment)
Water Conveyance Facilities	9	5	-4
Total Impacts	9	5	-4

^a Includes both permanent and temporary impacts combined.

12

13 **NEPA Effects:** Construction activities under the proposed project would result in the removal of 5
14 acres of tidal freshwater emergent wetland or 4 acres less than under the approved project. Because
15 of the project's commitment to restoration of tidal natural communities to offset these effects, the
16 proposed project would not result in a net long-term reduction in the acreage of a sensitive natural
17 community; the effect would not be adverse.

18 **CEQA Conclusion:** The proposed project would result in the loss of approximately 5 acres of tidal
19 freshwater emergent wetland natural community (permanent and temporary) due to construction
20 of the water conveyance facilities. The construction losses would occur primarily in the central Delta
21 on the fringes of Venice, Bacon and Victoria Islands. An unknown amount of tidal freshwater
22 emergent wetland could also be lost to channel margin habitat creation (Environmental
23 Commitment 6). The losses would be spread across the proposed project construction timeframe
24 and would be offset by planned restoration of tidal wetland scheduled for the first 14 years of the
25 proposed project implementation (Environmental Commitment 4). AMM1, AMM2, AMM6, AMM7,
26 and AMM10, as described in Final EIR/EIS Appendix 3B, *Environmental Commitments, AMMs, and*
27 *CMs*, would also be implemented to minimize impacts. The restoration would be initiated at the
28 beginning of the proposed project implementation to minimize any time lag in the availability of this
29 habitat to special-status species, and would result in a net gain in acreage of this sensitive natural
30 community.

31 **Incremental Impact:** Changing the footprint of water conveyance facilities would result in 4
32 fewer acres of impact on tidal freshwater emergent wetland natural community. The impact on
33 tidal freshwater emergent wetland would remain less than significant, as was the case with the
34 approved project. No mitigation is required.

1 **Valley/Foothill Riparian**

2 **Impact BIO-9: Changes in Valley/Foothill Riparian Natural Community as a Result of**
3 **Implementing the Proposed Project**

4 The impacts from the approved project and the proposed project are presented below in Table 12-3.
5 The proposed project would result in 36 fewer acres of impacts on valley/foothill riparian. These
6 differences are due to modifications in RTM storage areas on Zacharias and Bouldin Islands, shaft
7 locations, and the tunnel conveyor facility.

8 The restoration and protection, following the approach in the Final EIR/EIS, would ensure that there
9 would be enough mitigation to sufficiently offset the impacts. The implementation of AMM1, AMM2,
10 AMM6, AMM7, AMM10, and AMM18, as described in Final EIR/EIS Appendix 3B, *Environmental*
11 *Commitments, AMMs, and CMs*, would ensure that effects of construction on valley/foothill riparian
12 are avoided and minimized.

13 **Table 12-3. Impacts on Valley/Foothill Riparian Natural Community (acres)^a**

Project Component	Approved Project ^a	Proposed Project (Total) ^a	Proposed Project (Increment)
Water Conveyance Facilities	70	34	-36
Total Impacts	70	34	-36

^a Includes both permanent and temporary impacts (impacts >1 year in duration) combined.

14

15 **NEPA Effects:** Construction activities under the proposed project would result in the removal of 34
16 acres of valley/foothill riparian, which is a sensitive natural community. Because of the project's
17 commitment to restoration and protection of valley/foothill riparian natural community, the
18 proposed project would not result in a net long-term reduction in the acreage of a sensitive natural
19 community; the effect would not be adverse.

20 **CEQA Conclusion:** The proposed project would result in the loss of approximately 34 acres of
21 valley/foothill riparian natural community due to construction of the water conveyance facilities.
22 The construction losses would occur primarily along the Sacramento River at intake sites; along
23 transmission corridors in the central and south Delta and along Lambert Road; and in geotechnical
24 explorations zones. The construction losses would be spread across the 14-year construction
25 timeframe of the project. These losses would be minimized by planned restoration (Environmental
26 Commitment 7) and protection (including significant enhancement) (Environmental Commitment
27 3) of valley/foothill riparian natural community scheduled for the construction period of the
28 proposed project, which would be guided by Resource Restoration and Protection Principles VFR1-
29 VFR3, as described in the Final EIR/EIS. AMM1, AM2, AMM6, AMM7, AMM10, and AMM18, as
30 described in Final EIR/EIS Appendix 3B, *Environmental Commitments, AMMs, and CMs*, would also be
31 implemented to minimize impacts. The combination of the two approaches (protection and
32 restoration) is designed to avoid a temporal lag in the value of riparian habitat available to special-
33 status species. The restoration would be initiated at the beginning of project implementation to
34 minimize any time lag in the availability of this habitat to special-status species, and would result in
35 a net gain in acreage of this sensitive natural community.

Incremental Impact: Changing the footprint of water conveyance facilities would result in 36 fewer acres of impact on valley/foothill riparian natural community. The impact on valley/foothill riparian would remain less than significant. No mitigation is required.

Nontidal Perennial Aquatic

Impact BIO-12: Changes in Nontidal Perennial Aquatic Natural Community as a Result of Implementing the Proposed Project

The impacts from the approved project and the proposed project are presented below in Table 12-4. The proposed project would result in 42 fewer acres of impacts on nontidal perennial aquatic natural community. These differences are due to modifications in RTM storage areas along Twin Cities Road, east of Interstate 5 (I-5), and on Bouldin Island, and the Byron Tract Forebay versus the expansion of Clifton Court Forebay.

The restoration and protection, however, using the approach in the Final EIR/EIS would be sufficient to offset the impacts. The implementation of AMM1, AMM2, AMM6, AMM7, and AMM10, as described in Final EIR/EIS Appendix 3B, *Environmental Commitments, AMMs, and CMs*, would ensure that effects of construction on nontidal perennial aquatic natural community are avoided and minimized.

Table 12-4. Impacts on Nontidal Perennial Aquatic Natural Community (acres)

Project Component	Approved Project ^a	Proposed Project (Total) ^a	Proposed Project (Increment)
Water Conveyance Facilities	64	22	-42
Total Impacts	64	22	-42

^a Includes both permanent and temporary impacts combined.

NEPA Effects: Construction and land grading under the proposed project would result in the removal of 22 acres of nontidal perennial aquatic natural community, which is a sensitive natural community. Because of the project's commitment to restoration and protection of nontidal marsh, the proposed project would not result in a net long-term reduction in the acreage of a sensitive natural community; the effect would not be adverse.

CEQA Conclusion: The proposed project would result in the loss of approximately 22 acres of nontidal perennial aquatic natural community due to construction of the water conveyance facilities. The construction losses would occur primarily at work areas in the vicinity of Clifton Court Forebay, and along the transmission corridor where it crosses Mandeville Island. The losses would be spread across the proposed project construction period (14 years). These losses would be offset by planned restoration and protection of nontidal marsh during the same time period (Environmental Commitment 10 and Environmental Commitment 3, as described in Section 3.6.3). Also, AMM1, AMM2, AMM6, AMM7, and AMM10, as described in Final EIR/EIS Appendix 3B, *Environmental Commitments, AMMs, and CMs*, would be implemented to minimize impacts. The project includes nontidal marsh restoration and protection which is well in excess of the typical 1:1 restoration and protection acreages, and therefore compensates for all project-related losses. The restoration would be initiated at the beginning of the proposed project implementation to minimize any time lag in the availability of this habitat to special-status species, and would result in a net gain in acreage of this sensitive natural community.

1 **Incremental Impact:** Changing the footprint of water conveyance facilities would result in 42
2 fewer acres of impact on nontidal perennial aquatic natural community. The impact on nontidal
3 perennial aquatic natural community would remain less than significant. No mitigation is
4 required.

5 **Nontidal Freshwater Perennial Emergent Wetland**

6 **Impact BIO-15: Changes in Nontidal Freshwater Perennial Emergent Wetland Natural** 7 **Community as a Result of Implementing the Proposed Project**

8 The impacts from the approved project and the proposed project are presented below in Table 12-5.
9 The proposed project would result in 1 fewer acre of impacts on nontidal freshwater perennial
10 emergent wetland natural community. This difference is due to modifications in RTM storage area
11 on Bouldin Island.

12 . The restoration and protection, however, would be sufficient to offset the impacts. The
13 implementation of AMM1, AMM2, AMM6, AMM7, and AMM10 as described in Final EIR/EIS
14 Appendix 3B, *Environmental Commitments, AMMs, and CMs*, would ensure that effects of
15 construction on nontidal freshwater perennial emergent wetland natural community are avoided
16 and minimized.

17 **Table 12-5. Impacts on Nontidal Freshwater Perennial Emergent Wetland Natural Community**
18 **(acres)**

Project Component	Approved Project ^a	Proposed Project (Total) ^a	Proposed Project (Increment)
Water Conveyance Facilities	5	4	-1
Total Impacts	5	4	-1

^a Includes both permanent and temporary impacts combined.

19
20 **NEPA Effects:** Construction and land grading activities under the proposed project would result in
21 the removal of 4 acres of nontidal freshwater perennial emergent wetland natural community,
22 which is a sensitive natural community. Because of the project's commitment to restoration and
23 protection of nontidal marsh, as described in the Final EIR/EIS, the proposed project would not
24 result in a net long-term reduction in the acreage of a sensitive natural community; the effect would
25 not be adverse.

26 **CEQA Conclusion:** The proposed project would result in the loss of approximately 4 acres of
27 nontidal freshwater perennial emergent wetland natural community due to construction of the
28 water conveyance facilities. The construction losses would occur primarily on Bouldin Island and
29 along transmission line construction areas on Mandeville Island. The losses would occur during the
30 project construction timeframe. These losses would be offset by planned restoration and protection
31 of nontidal marsh (Environmental Commitment 10 and Environmental Commitment 3, as described
32 in Section 3.6.3). AMM1, AMM2, AMM6, AMM7, and AMM10 as described in Final EIR/EIS Appendix
33 3B, *Environmental Commitments, AMMs, and CMs*, would also be implemented to minimize impacts.
34 The project would exceed the typical 1:1 restoration and protection mitigation ratio and therefore
35 compensates for the construction-related losses. The restoration and protection would be initiated
36 at the beginning of the proposed project implementation to minimize any time lag in the availability

1 of this habitat to special-status species, and would result in a net gain in acreage of this sensitive
2 natural community, which would be the same as under the approved project.

3 **Incremental Impact:** Changing the footprint of water conveyance facilities would result in 1
4 acre less of impact on nontidal freshwater perennial emergent wetland natural community
5 compared with what would occur under the approved project. The impact on nontidal
6 freshwater perennial emergent wetland natural community would remain less than significant.
7 No mitigation is required.

8 Alkali Seasonal Wetland Complex

9 Impact BIO-18: Changes in Alkali Seasonal Wetland Complex Natural Community as a Result 10 of Implementing the Proposed Project

11 The impacts from the approved project and the proposed project are presented below in Table 12-6.
12 The proposed project would not result in effects on alkali seasonal wetlands, which is 1 fewer acre
13 of impact on than the approved project. This difference is due to changes in the location of utility
14 construction and work areas northwest of Clifton Court Forebay, near Byron.

15 The implementation of AMM1, AMM2, AMM6, AMM7, and AMM10 as described in Final EIR/EIS
16 Appendix 3B, *Environmental Commitments, AMMs, and CMs*, would ensure that effects of
17 construction on alkali seasonal wetland complex natural community are avoided and minimized.

18 **Table 12-6. Impacts on Alkali Seasonal Wetland Complex Natural Community (acres)**

Project Component	Approved Project ^a	Proposed Project (Total) ^a	Proposed Project (Increment)
Water Conveyance Facilities	1	0	-1
Total Impacts	1	0	-1

^a Includes both permanent and temporary impacts combined.

19
20 **NEPA Effects:** Construction activities under the proposed project would not result in the removal of
21 alkali seasonal wetland complex natural community, which is a sensitive natural community. No
22 effect.

23 **CEQA Conclusion:** The proposed project would not result in the permanent loss of alkali seasonal
24 wetland complex natural community. There would be no impact from water conveyance
25 construction.

26 **Incremental Impact:** Changing the footprint of water conveyance facilities would result in no
27 impacts on alkali seasonal wetland complex, which is 1 acre less of impact than under the
28 approved project. The impact would be reduced from less than significant under the approved
29 project to no impact under the proposed project.

1 **Vernal Pool Complex**

2 **Impact BIO-21: Changes in Vernal Pool Complex Natural Community as a Result of**
 3 **Implementing the Proposed Project**

4 The impacts from the approved project and the proposed project are presented below in Table 12-7.
 5 The proposed project would result in 18 fewer acres of impacts on vernal pool complex natural
 6 community. These differences are due to the project modifications.

7 The protection and restoration would be guided by Resource Restoration and Protection Principles
 8 VP/AW2-VP/AW4, as described in Chapter 3 of the Final EIR/EIS. The implementation of AMM1,
 9 AMM2, AMM6, AMM7, and AMM10 as described in Final EIR/EIS Appendix 3B, *Environmental*
 10 *Commitments, AMMs, and CMs*, would ensure that effects of construction on vernal pool wetland
 11 complex natural community are avoided and minimized.

12 **Table 12-7. Impacts on Vernal Pool Complex Natural Community (acres)**

Project Component	Approved Project ^a	Proposed Project (Total) ^a	Proposed Project (Increment)
Water Conveyance Facilities	22	4	-18
Total Impacts	22	4	-18

^a Includes both permanent and temporary impacts combined.

13

14 **NEPA Effects:** Construction activities under the proposed project would result in the removal of 4
 15 acres of vernal pool complex natural community, which is a sensitive natural community. This
 16 would represent 18 fewer acres than would be affected under the approved project. Because of the
 17 project’s commitment to the restoration and protection of alkali seasonal/vernal pool wetlands, the
 18 proposed project would not result in a net long-term reduction in the acreage of a sensitive natural
 19 community. The wetlands protected and restored would be within a much larger acreage of wetland
 20 complex natural community. The effect would not be adverse.

21 **CEQA Conclusion:** The proposed project would result in 18 fewer acres of vernal pool complex
 22 natural community being adversely affected when compared with the approved project.

23 The loss of four acres of this sensitive natural community under the proposed project would
 24 represent a significant impact if it were not offset by avoidance and minimization measures and
 25 other actions associated with the Environmental Commitments. Loss of vernal pool complex natural
 26 community would be considered both as a loss in acreage of a sensitive natural community and a
 27 loss of wetland as defined by Section 404 of the CWA. The protection of vernal pool/alkali seasonal
 28 wetland as part of Environmental Commitment 3 and the restoration of this community (including a
 29 commitment to have restoration keep pace with losses) as part of Environmental Commitment 9
 30 during the construction of the proposed project facilities would offset this loss. The wetlands
 31 protected and restored would be within a much larger acreage of wetland complex natural
 32 community. The protection and restoration would be guided by the Resource Restoration and
 33 Performance Principles VP/AW1-VP/AW4, as described in Chapter 3, Table 3-6. The proposed
 34 project also includes AMM1, AMM2, AMM3, AMM4, AMM10, AMM12, and AMM30 as described in
 35 Final EIR/EIS in Appendix 3B, *Environmental Commitments, AMMs, and CMs*, to minimize impacts.

1 **Incremental Impact:** Changing the footprint of water conveyance facilities would result in 18
2 acres less of impact on vernal pool complex natural community compared with what would
3 occur under the approved project. The impact on vernal pool complex natural community would
4 remain less than significant

5 **Managed Wetland**

6 **Impact BIO-24: Changes in Managed Wetland Natural Community as a Result of Implementing** 7 **the Proposed Project**

8 The impacts from the approved project and the proposed project are presented below in Table 12-8.
9 The proposed project would result in 24 fewer acres of impacts on managed wetland compared with
10 the approved project. These acreage reductions are due to changes in the concrete batch plant
11 location on Bouldin Island, changes in the transmission route through Mandeville Island, and
12 changes in the locations of various facilities at the northeast corner of Clifton Court Forebay.

13 The creation of similar habitat values from restoring nontidal marsh as part of Environmental
14 Commitment 10 would offset the losses of managed wetland. The net effect would be a decrease in
15 the amount of managed wetland, but an increase in similar habitat value for special-status and
16 common species as cultivated land is converted to nontidal marsh. Refer to Impacts BIO-178
17 through BIO-183 in the Shorebirds and Waterfowl discussion for further consideration of the effects
18 of removing managed wetland natural community.

19 **Table 12-8. Impacts on Managed Wetland Natural Community (acres)**

Project Component	Approved Project ^a	Proposed Project (Total) ^a	Proposed Project (Increment)
Water Conveyance Facilities	43	19	-24
Total Impacts	43	19	-24

^a Includes both permanent and temporary impacts combined.

20
21 **NEPA Effects:** The proposed project would result in a loss of 19 acres of managed wetland within
22 the study area; however, it would also protect and enhance nontidal wetland with similar wildlife
23 values. Therefore, there would not be an adverse effect on managed wetland natural community.

24 **CEQA Conclusion:** During the project's construction timeframe (14 years), the proposed project
25 would remove 19 acres of managed wetland through construction-related losses from water
26 conveyance facilities activities.

27 The loss of this sensitive natural community would represent a significant impact if it were not
28 offset by the Environmental Commitments described in Chapter 3, *Project Description*. Loss of
29 managed wetland natural community would be considered both a loss in acreage of a sensitive
30 natural community and potentially a loss of wetland as defined by Section 404 of the CWA. The
31 restoration and protection and enhancement of nontidal marsh as part of Environmental
32 Commitment 3 and Environmental Commitment 10, as described in Section 3.6.3, during
33 construction of the proposed project would offset the losses in habitat value associated with water
34 conveyance facilities.

1 The project also includes commitments to implement *AMM1 Worker Awareness Training, AMM2*
2 *Construction Best Management Practices and Monitoring, AMM3 Stormwater Pollution Prevention*
3 *Plan, AMM4 Erosion and Sediment Control Plan, and AMM10 Restoration of Temporarily Affected*
4 *Natural Communities*, as described in Final EIR/EIS Appendix 3B, *Environmental Commitments,*
5 *AMMs, and CMs*. All of these AMMs include elements that avoid or minimize the risk of affecting
6 habitats in work areas.

7 In spite of the nontidal marsh protection and restoration contained in the proposed project, there
8 would be a net reduction in the acreage of managed wetland natural community. This would be a
9 significant impact when judged by the significance criteria listed in Final EIR/EIS Section 12.3.1.2,
10 *Significance Criteria for Terrestrial Biological Resources*. However, there are other Environmental
11 Commitments contained in the project (Environmental Commitment 3, Environmental Commitment
12 10, and Environmental Commitment 11, as described in Section 3.6.3) that would improve
13 management and enhance existing habitat values and expand habitat with similar values, further
14 offsetting the impacts of managed wetland loss on special-status terrestrial species and on common
15 species that rely on this natural community.

16 **Incremental Impact:** Changing the footprint of water conveyance facilities would result in 24
17 acres less of impact on managed wetland natural community compared with what would occur
18 under the approved project. The impact on managed wetland natural community would remain
19 less than significant.

20 **Grassland**

21 **Impact BIO-29: Changes in Grassland Natural Community as a Result of Implementing the** 22 **Proposed Project**

23 The impacts from the approved project and the proposed project are presented below in Table 12-9.
24 The proposed project would result in 313 fewer acres of impacts on grassland natural community
25 compared with the approved project. The reduction in acreage affected is due to changes in RTM
26 placement on Bouldin Island and changes in the tunnel work area on Mandeville Island. In addition,
27 changes in the locations of tunnel shafts, as well as forebay placement, would reduce the loss of
28 grassland.

29 **Table 12-9. Impacts on Grassland Natural Community (acres)**

Project Component	Approved Project ^a	Proposed Project (Total) ^a	Proposed Project (Increment)
Water Conveyance Facilities	664	351	-313
Total Impacts	664	351	-313

^a Includes both permanent and temporary impacts combined.

30
31 **NEPA Effects:** Construction and land grading activities under the proposed project would result in
32 the removal of 351 acres of grassland natural community. Because of the project's commitment to
33 the restoration and protection of grassland natural community, the proposed project would not
34 result in a net long-term reduction in the acreage of this natural community; the effect would not be
35 adverse.

1 **CEQA Conclusion:** The proposed project would result in the permanent and temporary loss of
2 approximately 351 acres of grassland natural community due to construction of the water
3 conveyance facilities.

4 The construction losses of this natural community would not represent a significant impact based
5 on the significance criteria used for this section because grassland is not considered a special-status
6 or sensitive natural community. Nonetheless, these losses would be offset by restoration and
7 protection of grassland natural community scheduled for the 14-year construction period of the
8 proposed project, which would be guided by Resource Restoration and Performance Principles G1,
9 G3, G4, and G7-G10, as described in Final EIR/EIS Chapter 3, Table 3-12. Also, AMM1, AMM2, AMM6,
10 and AMM7 as described in Final EIR/EIS Appendix 3B, *Environmental Commitments, AMMs, and CMs*,
11 would be implemented to minimize impacts. The combined protection and restoration of grassland
12 would more than offset the losses from the project. The combination of two approaches (protection
13 and restoration) contained in the project Environmental Commitments and AMMs is designed to
14 avoid a temporal lag in the value of grassland habitat available to special-status species. The
15 protection and restoration would be initiated at the beginning of the proposed project
16 implementation to minimize any time lag in the availability of this habitat to special-status species.

17 **Incremental Impact:** Changing the footprint of water conveyance facilities would result in 313
18 fewer acres of impact on grassland natural community compared with what would occur under
19 the approved project. The impact on grassland natural community would remain less than
20 significant. No mitigation is required.

21 **Cultivated Lands**

22 The cultivated lands cover type dominates the study area (487,106 acres; see Final EIR/EIS Table
23 12-1 in Section 12.1.2, *Land Cover Types*). The proposed project would affect 5,136 acres of
24 cultivated lands, which is 493 more acres than the approved project. Most of this difference is
25 associated with changes in RTM disposal, canal construction, Clifton Court Forebay modifications,
26 and Byron Tract Forebay. Please refer to the cultivated lands cover type analysis under Alternative
27 4A in Final EIR/EIS Section 12.3.4.2 for a further discussion of this land cover type.

28 **Wildlife Species**

29 **Vernal Pool Crustaceans**

30 **Impact BIO-32: Loss or Conversion of Habitat for and Direct Mortality of Vernal Pool** 31 **Crustaceans**

32 The impacts from the approved project and the proposed project on vernal pool crustaceans are
33 presented below in Table 12-10. The proposed project would result in approximately 19 fewer acres
34 of direct impacts and approximately 23 fewer acres of indirect effects on vernal pool crustacean
35 habitat compared with the approved project. The difference in the acreages of direct and indirect
36 impacts is the result of the changes in the location of the forebays, access roads, and transmission
37 lines in the area around Clifton Court Forebay.

38 The proposed project would protect and restore vernal pool crustacean habitat to mitigate for both
39 direct and indirect impacts. The mitigation would be conducted as described in the Final
40 EIR/EIS; however would require slightly less acreage than for the approved project The
41 proposed project also includes commitments to implement *AMM1 Worker Awareness Training*;

1 *AMM2 Construction Best Management Practices and Monitoring; AMM3 Stormwater Pollution*
 2 *Prevention Plan; AMM4 Erosion and Sediment Control Plan; AMM5 Spill Prevention, Containment, and*
 3 *Countermeasure Plan; AMM6 Disposal and Reuse of Spoils; AMM10 Restoration of Temporarily*
 4 *Affected Natural Communities; AMM12 Vernal Pool Crustaceans; and AMM30 Transmission Line*
 5 *Design and Alignment Guidelines. All of these AMMs include elements that avoid or minimize the risk*
 6 *of affecting habitats and species adjacent to work areas.*

7 **Table 12-10. Impacts on Vernal Pool Crustacean Modeled Habitat (acres)**

Project Component	Habitat Type	Approved	Approved	Proposed	Proposed	Proposed
		Project ^a	Project ^a	Project ^a	Project ^a	
		Direct	Indirect	(Total)	(Total)	(Increment) ^b
Water Conveyance Facilities	Vernal Pool Crustacean Modeled Habitat	23	42	4	19	-42
Total Impacts Water Conveyance Facilities		23	42	4	19	-42

^a Includes both permanent and temporary impacts combined.

^b Includes direct and indirect.

8

9 **NEPA Effects:** The loss of vernal pool crustacean habitat under the proposed project would not be
 10 adverse under NEPA because the lead agencies have committed to avoiding and minimizing effects
 11 and to restoring and protecting sufficient habitat to offset the effects. This habitat protection,
 12 restoration, management, and enhancement would be guided by Resource Restoration and
 13 Performance Principles VP/AW1-VP/AW4, and by AMM1-AMM6, AMM10, AMM12, and AMM30,
 14 which would be in place throughout the period of construction and operations. With
 15 implementation of these commitments, the losses and conversion of vernal pool crustacean habitat
 16 under the proposed project would not be an adverse effect.

17 **CEQA Conclusion:** The proposed project would impact on vernal pool crustacean habitat as a result
 18 of habitat modification for a special-status species and potential for direct mortality in the absence
 19 of the protection and restoration of habitat. However, the lead agencies have committed to habitat
 20 protection, restoration, management, and enhancement associated with Environmental
 21 Commitment 3, Environmental Commitment 9, and Environmental Commitment 11. These
 22 conservation activities would be guided by Resource Restoration and Performance Principles
 23 VP/AW1-VP/AW4 and effects would be avoided and minimized by implementation of AMM1-
 24 AMM6, AMM10, AMM12, and AMM30, which would be in place throughout the period of
 25 construction and operations. Considering these commitments, the proposed project would not
 26 result in a substantial adverse effect through habitat modifications and would not substantially
 27 reduce the number or restrict the range of vernal pool crustaceans, as under the approved project.

28 **Incremental Impact:** Changing the footprint of the water conveyance facilities would result in
 29 42 fewer acres of impact on vernal pool crustacean habitat. The impact on vernal pool
 30 crustaceans would remain less than significant, as was the case with the approved project. No
 31 mitigation is required.

1 **Valley Elderberry Longhorn Beetle**

2 **Impact BIO-35: Loss of Valley Elderberry Longhorn Beetle Habitat**

3 The impacts from the approved project and the proposed project on valley elderberry longhorn
 4 beetle modeled habitat are presented below in Table 12-11. The proposed project would result in
 5 191 fewer acres of impacts on valley elderberry longhorn beetle modeled habitat but would result in
 6 the same number of impacts on shrubs mapped within the conveyance planning area; however as
 7 noted in the Final EIR/EIS this survey was limited to those areas along canals within the project
 8 footprint. These differences are due to modifications in the RTM storage areas on Zacharias and
 9 Bouldin Islands, shaft locations, and the removal of the tunnel conveyor going from the main shaft at
 10 Clifton Court Forebay to the RTM area to the west.

11 The restoration of habitat for valley elderberry longhorn beetle under the proposed project, which
 12 would be guided by Resource Restoration and Performance Principles VELB1 and VELB2, would be
 13 less than proposed under the approved project because there would be fewer impacts on habitat for
 14 this species. As in the Final EIR/EIS, the proposed project would result in the protection and
 15 restoration of riparian habitat as part of *Environmental Commitment 3 Natural Communities*
 16 *Protection and Restoration* and *Environmental Commitment 7 Riparian Natural Community*
 17 *Restoration*, respectively. In addition, implementation of AMM1–AMM6, AMM10, and AMM15 would
 18 ensure that the effects of construction on valley elderberry longhorn beetle are avoided and
 19 minimized.

20 **Table 12-11. Impacts on Valley Elderberry Longhorn Beetle Modeled Habitat (acres)**

Project Component	Habitat Type	Approved Project ^a	Proposed Project (Total) ^a	Proposed Project (Increment)
Water Conveyance Facilities	Riparian	70	34	-36
	Nonriparian	315	160	-155
Total Impacts Water Conveyance Facilities		385	194	-191
Estimated Shrub Impacts		14	14	0

^a Includes both permanent and temporary impacts combined.

21
 22 **NEPA Effects:** In the absence of actions to compensate for and avoid and minimize effects, the losses
 23 of valley elderberry longhorn beetle habitat and potential for direct mortality of a special-status
 24 species associated with the proposed project would represent an adverse effect. However, with
 25 habitat protection and restoration associated with Environmental Commitments 3 and 7, Resource
 26 Restoration and Performance Principles VELB1 and VELB2, and implementation of AMM1–AMM6,
 27 AMM10, and AMM15, the overall effects of the proposed project on valley elderberry longhorn
 28 beetle would not be adverse under NEPA.

29 **CEQA Conclusion:** Considering the protection and restoration provisions, which would provide
 30 acreages of new or enhanced habitat in amounts greater than necessary to compensate for habitats
 31 lost to construction, together with Resource Restoration and Performance Principles VELB1 and
 32 VELB2, the implementation of the proposed project as a whole would not result in a substantial
 33 adverse effect through habitat modifications and would not substantially reduce the number or
 34 restrict the range of the species, which would be the same as under the approved project.

Incremental Impact: Changing the footprint of the water conveyance facilities would result in 191 fewer acres of impact on valley elderberry longhorn beetle habitat. The impact on valley elderberry longhorn beetle would remain less than significant.

Nonlisted Vernal Pool Invertebrates

Impact BIO-38: Loss or Conversion of Habitat for and Direct Mortality of Nonlisted Vernal Pool Invertebrates

The impacts from the approved project and the proposed project on nonlisted vernal pool invertebrates are presented below in Table 12-12. The proposed project would result in approximately 19 fewer acres of direct impacts and approximately 23 fewer acres of indirect impacts on nonlisted vernal pool invertebrate habitat. The difference in the acreages of direct and indirect impacts is the result of the changes in the location of the forebays, access roads, and transmission lines in the area around Clifton Court Forebay between the two projects

The proposed project would protect and restore vernal pool crustacean habitat to mitigate for both direct and indirect impacts, as addressed in the Final EIR/EIS but would require less mitigation acreage than under the approved project. These conservation actions would also benefit nonlisted vernal pool invertebrates. The proposed project also includes commitments to implement *AMM1 Worker Awareness Training; AMM2 Construction Best Management Practices and Monitoring; AMM3 Stormwater Pollution Prevention Plan; AMM4 Erosion and Sediment Control Plan; AMM5 Spill Prevention, Containment, and Countermeasure Plan; AMM6 Disposal and Reuse of Spoils; AMM10 Restoration of Temporarily Affected Natural Communities; AMM12 Vernal Pool Crustaceans; and AMM30 Transmission Line Design and Alignment Guidelines*. All of these AMMs include elements that avoid or minimize the risk of affecting habitats and species adjacent to work areas.

Table 12-12. Impacts on Nonlisted Vernal Pool Invertebrate Habitat (acres)

Project Component	Habitat Type	Approved Project ^a	Approved Project ^a Indirect	Proposed Project (Total) ^a	Proposed Project ^a Indirect (Total)	Proposed Project (Increment)
Water Conveyance Facilities	Vernal Pools/Alkali Seasonal Wetland/ Seasonal Wetlands (playa like)	23	42	4	19	-42
Total Impacts Water Conveyance Facilities		23	42	4	19	-42

^a Includes both permanent and temporary impacts combined.

NEPA Effects: The loss of vernal pool habitat under the proposed project would not be adverse under NEPA because the lead agencies would commit to avoiding and minimizing effects from and to restoring and protecting sufficient habitat to offset the effects. This habitat protection, restoration, management, and enhancement would be guided by Resource Restoration and Performance Principles VP/AW1-VP/AW4 and by implementation of AMM1-AMM6, AMM10, AMM12, and AMM30, which would be in place throughout the time period of construction and operations. Considering these commitments, the losses and conversions of nonlisted vernal pool invertebrate habitat under the proposed project would not be adverse.

1 **CEQA Conclusion:** The effects on nonlisted vernal pool invertebrate habitat from the proposed
 2 project would represent an adverse effect as a result of habitat modification for a special-status
 3 species and the potential for direct mortality in the absence of actions to compensate, avoid, and
 4 minimize impacts, which is the same as under the approved project. However, the lead agencies
 5 have committed to habitat protection, restoration, management, and enhancement associated with
 6 Environmental Commitment 3, Environmental Commitment 9, and Environmental Commitment 11.
 7 These conservation activities would be guided by Resource Restoration and Performance Principles
 8 VP/AW1-VP/AW4, and by implementation of AMM1-AMM6, AMM10, AMM12, and AMM30, which
 9 would be in place throughout the period of construction and operations. Considering these
 10 commitments, the proposed project would not result in a substantial adverse effect through habitat
 11 modifications and would not substantially reduce the number or restrict the range of nonlisted
 12 vernal pool invertebrates, which would be the same as under the approved project.

13 **Incremental Impact:** Changing the footprint of the water conveyance facilities would result in
 14 42 fewer acres of impact on nonlisted vernal pool invertebrate habitat. The impact on nonlisted
 15 vernal pool invertebrates would remain less than significant. No mitigation is required.

16 **California Red-Legged Frog**

17 **Impact BIO-44: Loss or Conversion of Habitat for and Direct Mortality of California Red-**
 18 **Legged Frog**

19 The impacts from the approved project and the proposed project on California red-legged frog
 20 modeled habitat are presented in Table 12-13. The proposed project would result in 1 fewer acre of
 21 impacts on aquatic habitat and 3 fewer acres of impact on upland habitat than the approved project.
 22 The differences are due to the different forebays and associated infrastructure around Clifton Court
 23 Forebay.

24 The proposed project would protect grassland in the Byron Hills area and protect aquatic habitat to
 25 mitigate for both direct and indirect impacts which would be guided by Resource Restoration and
 26 Protection Principles L2, L3, VP/AW1, VP/AW3, VP/AW6, G2, G5, G7, and G10, as described in
 27 Chapter 3, Table 3-6. The implementation of AMM1-AMM6, AMM10, and AMM14, as described in
 28 Final EIR/EIS Appendix 3B, *Environmental Commitments, AMMs, and CMs*, would ensure that effects
 29 of construction on California red-legged frog are avoided and minimized.

30 **Table 12-13. Impacts on California Red-Legged Frog Modeled Habitat (acres)**

Project Component	Habitat Type	Approved Project ^a	Proposed Project (Total) ^a	Proposed Project (Increment)
Water Conveyance Facilities	Aquatic	1	0	-1
	Upland	53	50	-3
Total Impacts Water Conveyance Facilities		54	50	-4

^a Includes both permanent and temporary impacts combined.

31
 32 **NEPA Effects:** In the absence of actions to restore and protect habitat, the effects on California red-
 33 legged frog habitat from the proposed project would represent an adverse effect as a result of
 34 habitat modification and potential direct mortality of special-status species. However, with habitat
 35 protection, restoration, management, and enhancement guided by Resource Restoration and

1 Protection Principles L2, L3, VP/AW1, VP/AW3, VP/AW6, G2, G5, G7, and G10, and guided by
 2 AMM1–AMM6, AMM10, and AMM14, which would be in place throughout the construction period,
 3 the effects of the proposed project as a whole on California red-legged frog would not be adverse
 4 effect.

5 **CEQA Conclusion:** In the absence of actions to restore and protect habitat, the effects on California
 6 red-legged frog habitat from the proposed project would represent a significant impact as a result of
 7 habitat modification and potential direct mortality of a special-status species. Habitat protection,
 8 restoration, management, and enhancement guided by Resource Restoration and Protection
 9 Principles L2, L3, VP/AW1, VP/AW3, VP/AW6, G2, G5, G7, and G10, and guided by AMM1–AMM6,
 10 AMM10, and AMM14 would be in place throughout the construction period and operations

11 **Incremental Impact:** Changing the footprint of the water conveyance facilities would result in 4
 12 fewer acres of impact on California red-legged frog. The impact on California red-legged frog
 13 would remain less than significant. No mitigation is required.

14 **California Tiger Salamander**

15 **Impact BIO-46: Loss or Conversion of Habitat for and Direct Mortality of California Tiger**
 16 **Salamander**

17 The impacts from the approved project and the proposed project on California tiger salamander
 18 modeled habitat are presented in Table 12-14. The proposed project would result in 3 fewer acres of
 19 impact on upland habitat than the approved project. The differences are due to the different
 20 forebays and associated infrastructure around Clifton Court Forebay and the different amounts of
 21 tidal restoration.

22 The protection and restoration of California tiger salamander habitat would occur for the proposed
 23 project under *Environmental Commitment 3 Natural Communities Protection and Restoration* and
 24 *Environmental Commitment 9 Vernal Pool and Alkali Seasonal Wetlands Restoration*. The proposed
 25 project would protect grassland in the Byron Hills, protect ponds, and restore vernal pool complex
 26 to mitigate for both direct and indirect impacts which would be guided by Resource Restoration and
 27 Protection Principles L2, L3, VP/AW1, VP/AW3, VP/AW6, G2, G5, G7, and G10, as described in Final
 28 EIR/EIS Chapter 3, Table 3-12. The implementation of AMM1–AMM6, AMM10, and AMM13, as
 29 described in Final EIR/EIS, Appendix 3B, *Environmental Commitments, AMMs, and CMs*, would
 30 ensure that effects of construction on California red-legged frog are avoided and minimized.

31 **Table 12-14. Impacts on California Tiger Salamander Modeled Habitat (acres)**

Project Component	Habitat Type	Approved Project ^a	Proposed Project (Total) ^a	Proposed Project (Increment)
Water Conveyance Facilities	Aquatic	0	0	0
	Upland	52	49	-3
Total Impacts Water Conveyance Facilities		52	49	-3

^a Includes both permanent and temporary impacts combined.

32
 33 **NEPA Effects:** In the absence of actions to restore and protect habitat, the effects on California tiger
 34 salamander habitat from the proposed project would represent an adverse effect as a result of
 35 habitat modification and potential direct mortality of special-status species. However, with habitat

1 protection, restoration, management, and enhancement guided by Resource Restoration and
 2 Performance Principles L2, L3, VP/AW1, VP/AW3, VP/AW6, G2, G5, G7, and G10, and guided by
 3 AMM1–AMM6, AMM10, and AMM13, which would be in place throughout the construction period
 4 and operations, the effects of the proposed project as a whole on California tiger salamander would
 5 not be an adverse effect.

6 **CEQA Conclusion:** In the absence of actions to restore and protect habitat, the effects on California
 7 tiger salamander habitat from the proposed project would represent a significant impact as a result
 8 of habitat modification and potential direct mortality of a special-status species, which would be the
 9 same as under the approved project. Habitat protection, restoration, management, and
 10 enhancement guided by Resource Restoration and Protection Principles L2, L3, VP/AW1, VP/AW3,
 11 VP/AW6, G2, G5, G7, and G10, and by AMM1–AMM6, AMM10, and AMM13 would be in place
 12 throughout the construction period and operations

13 **Incremental Impact:** Changing the footprint of the water conveyance facilities under the
 14 proposed project would result in 3 fewer acres of impact on California tiger salamander. The
 15 impact on California tiger salamander would remain less than significant. No mitigation is
 16 required.

17 **Giant Garter Snake**

18 **Impact BIO-49: Loss or Conversion of Habitat for and Direct Mortality of Giant Garter Snake**

19 The impacts from the approved project and the proposed project on giant garter snake modeled
 20 habitat are presented in Table 12-15. The proposed project would result in 144 fewer acres of
 21 impacts on aquatic habitat and 361 fewer acres of impact on upland habitat than the approved
 22 project. The differences are due to a number of different project features that occur along the length
 23 of the water conveyance alignment.

24 The protection and restoration of giant garter snake habitat would occur for the proposed project
 25 under *Environmental Commitment 3 Natural Communities Protection and Restoration*, *Environmental*
 26 *Commitment 4 Tidal Marsh Restoration*, *Environmental Commitment 8 Grassland Natural Community*
 27 *Restoration*, and *Environmental Commitment 10 Nontidal Marsh Restoration*. The proposed project
 28 would result in restoration of grassland, and of nontidal marsh, which would be guided by Resource
 29 Restoration and Protection Principles L2, L3, CL1, CL2, GGS1-GGS-5 as described in Final EIR/EIS
 30 Chapter 3, Table 3-12. The implementation of AMM1–AMM7, AMM10, and AMM16, as described in
 31 Final EIR/EIS Appendix 3B, *Environmental Commitments, AMMs, and CMs*, would ensure that effects
 32 of construction on giant garter snake are avoided and minimized.

33 **Table 12-15. Impacts on Giant Garter Snake Modeled Habitat (acres)**

Project Component	Habitat Type ^a	Approved Project ^b	Proposed Project (Total) ^b	Proposed Project (Increment)
Water Conveyance Facilities	Aquatic	200	56	-144
	Upland	681	320	-361
Total Impacts Water Conveyance Facilities		881	376	-505

^a Aquatic acres represent tidal and nontidal habitat combined, and upland acres represent low-, moderate-, and high-value acreages combined.

^b Includes both permanent and temporary impacts combined.

34

1 **NEPA Effects:** In the absence of actions to restore and protect habitat, the effects on giant garter
2 snake habitat from the proposed project would represent an adverse effect as a result of habitat
3 modification and potential direct mortality of special-status species. However, with habitat
4 protection, restoration, management, and enhancement guided by Resource Restoration and
5 Performance Principles GGS1-GGS5, L2, L3, CL1, and CL2, and guided by AMM1-AMM7, AMM10, and
6 AMM16, which would be in place throughout the construction period and operations, the effects of
7 the proposed project as a whole on giant garter snake would not be an adverse effect.

8 **CEQA Conclusion:** In the absence of actions to restore and protect habitat, the effects on giant garter
9 snake habitat from the proposed project would represent a significant impact as a result of habitat
10 modification and potential direct mortality of a special-status species. However, with habitat
11 protection, restoration, management, and enhancement guided by Resource Restoration and
12 Protection Principles GGS1-GGS5, L2, L3, CL1, and CL2, and guided by AMM1-AMM7, AMM10, and
13 AMM16, which would be in place throughout the construction period and operations, the impact of
14 the proposed project as a whole on giant garter snake would not result in a substantial reduction in
15 numbers or a restriction in the range of giant garter snakes.

16 **Incremental Impact:** Changing the footprint of the water conveyance facilities would result in
17 505 fewer acres of impact on giant garter snake habitat. The impact on giant garter snake would
18 remain less than significant. No mitigation is required.

19 **Western Pond Turtle**

20 **Impact BIO-52: Loss or Conversion of Habitat for and Direct Mortality of Western Pond Turtle**

21 The impacts from the approved project and the proposed project on western pond turtle modeled
22 habitat are presented in Table 12-16. The proposed project would result in 2,257 fewer acres of
23 aquatic habitat impacts and 302 fewer acres of upland habitat impacts than the approved project.
24 The differences are due to a number of different project features along the length of the water
25 conveyance alignment.

26 The protection and restoration of western pond turtle habitat would occur for the proposed project
27 under *Environmental Commitment 3 Natural Communities Protection and Restoration*, *Environmental*
28 *Commitment 7 Riparian Natural Community Restoration*, *Environmental Commitment 8 Grassland*
29 *Natural Community Restoration*, and *Environmental Commitment 10 Nontidal Marsh Restoration*. The
30 proposed project would result in the protection and restoration of riparian natural community, of
31 grassland, and of nontidal marsh which would be guided by Resource Restoration and Protection
32 Principles WPT1, G2, and CL1as described in Chapter 3, Table 3-6. The implementation of AMM1-
33 AMM7, AMM10, and AMM17, as described in Appendix 3B, *Environmental Commitments, AMMs, and*
34 *CMs*, would ensure that effects of construction on western pond turtle are avoided and minimized.

1 **Table 12-16. Impacts on Western Pond Turtle Modeled Habitat (acres)**

Project Component	Habitat Type	Approved Project ^a	Proposed Project (Total) ^a	Proposed Project (Increment)
Water Conveyance Facilities	Aquatic	2,339	82	-2,257
	Upland ^b	581	279	-302
Total Impacts Water Conveyance Facilities		1,758	361	-2,559

^a Includes both permanent and temporary impacts combined.
^b Upland acres represent upland nesting and overwintering habitat acreages combined for both natural communities and agricultural lands adjacent to aquatic habitats.

2
3 **NEPA Effects:** In the absence of actions to restore and protect habitat, the effects on western pond
4 turtle would represent an adverse effect as a result of habitat modification and potential direct
5 mortality of a special-status species. However, with habitat protection, restoration, management,
6 and enhancement guided by Resource Restoration and Performance Principles WPT1, G2, and CL1,
7 and guided by AMM1–AMM6, AMM10, and AMM17, the effects of the proposed project as a whole on
8 western pond turtle would not be an adverse effect.

9 **CEQA Conclusion:** In the absence of actions to restore and protect habitat, the effects on western
10 pond turtle habitat from the proposed project would represent a significant impact as a result of
11 habitat modification and potential direct mortality of a special-status species. Habitat protection,
12 restoration, management, and enhancement would be guided by Resource Restoration and
13 Protection Principles WPT1, G2, and CL1, and guided by AMM1–AMM6, AMM10, and AMM17.

14 **Incremental Impact:** Changing the footprint of the water conveyance facilities would result in
15 2,559 fewer acres of impact on western pond turtle habitat. The impact on western pond turtle
16 would remain less than significant. No mitigation is required.

17 **Silvery Legless Lizard, San Joaquin Coachwhip, and Blainville’s Horned Lizard**

18 This section describes the effects of the proposed project on the silvery legless lizard, San Joaquin
19 coachwhip and Blainville’s horned lizard (special-status reptiles). The habitat types used to assess
20 effects on silvery legless lizard are limited to inland sand dunes near Antioch (Figure 12-17). There
21 are isolated patches of sandy habitat in the vicinity of Oakley and along the railroad in the East Bay
22 Regional Park Legless Lizard Preserve that are not shown in Figure 12-17 because project mapping
23 was not available at this level of detail. Furthermore, none of these areas would be affected by
24 construction activities and this species is not discussed any further.

25 **Impact BIO-55: Loss or Conversion of Habitat for and Direct Mortality of Special-Status**
26 **Reptiles**

27 The impacts from the approved project and the proposed project on special-status reptile modeled
28 habitat are presented in Table 12-17. The proposed project would result in 224 fewer acres of
29 grassland habitat than the approved project. These differences are due to the construction of the
30 canal between the Byron Tract Forebay and the California Aqueduct.

31 The protection and restoration of special-status reptile habitat would occur for the proposed project
32 under *Environmental Commitment 3 Natural Communities Protection and Restoration* and
33 *Environmental Commitment 8 Grassland Natural Community Restoration*. The proposed project

1 would result in the restoration and protection of grassland which would be guided by Resource
 2 Restoration and Protection Principles L1, L2, L3, G4, G5, and G6 as described in Chapter 3, Table 3-6.
 3 The implementation of Mitigation Measure BIO-55 would ensure that effects of construction on
 4 special-status reptiles are avoided and minimized.

5 **Table 12-17. Impacts on Special-Status Reptile Habitat (acres)**

Project Component	Habitat Type ^a	Approved Project ^b	Proposed Project (Total) ^b	Proposed Project (Increment)
Water Conveyance Facilities	Grassland	373	149	-224
Total Impacts Water Conveyance Facilities		373	149	-224

^a Grassland impacts include alkali seasonal wetland complex, grassland, and inland dune scrub natural communities.

^b Includes both permanent and temporary impacts combined.

6
 7 **NEPA Effects:** In the absence of actions to restore and protect habitat, the effects on special-status
 8 reptile habitat from the proposed project would represent an adverse effect as a result of habitat
 9 modification and potential direct mortality of special-status species. However, with habitat
 10 protection, restoration, management, and enhancement guided by Resource Restoration and
 11 Protection Principles L1-L3, GS4-GS6, and by Mitigation Measure BIO-55, which would be in place
 12 throughout the construction period and operations, the effects of the proposed project as a whole on
 13 special-status reptiles would not be an adverse effect.

14 **CEQA Conclusion:** In the absence of other actions to restore and protect habitat, the effects on
 15 special-status reptile habitat from the proposed project would represent a significant impact as a
 16 result of habitat modification and potential direct mortality of a special-status species. However,
 17 habitat protection, restoration, management, and enhancement guided by Resource Restoration and
 18 Protection Principles L1-L3, GS4-GS6, and by Mitigation Measure BIO-55, would be in place
 19 throughout the construction period and operations.

20 **Incremental Impact:** Changing the footprint of the water conveyance facilities would result in
 21 224 fewer acres of impact on special-status reptile habitat. The impact on special-status reptiles
 22 would remain less than significant. No additional mitigation is required.

23 **Mitigation Measure BIO-55: Conduct Preconstruction Surveys for Noncovered Special-**
 24 **Status Reptiles and Implement Applicable AMMs**

25 Refer to the Final EIR/EIS for a description of Mitigation Measure BIO-55.

26 **California Black Rail**

27 **Impact BIO-57: Loss or Conversion of Habitat for and Direct Mortality of California Black Rail**

28 The impacts from the approved project and the proposed project on California black rail are
 29 presented in Table 12-18. The proposed project would result in 7 fewer acres of impacts on
 30 California black rail compared with the approved project. This difference is largely due to the
 31 proposed project avoiding wetland habitat by moving transmission line alignments between Bacon
 32 and Bouldin Islands.

1 Tidal restoration would be guided by Resource Restoration and Performance Principles
 2 CBR1 and CBR2. The implementation of AMM1–AMM7 and *AMM38 California Black Rail* would
 3 ensure that effects of construction on California black rail are avoided and minimized.

4 **Table 12-18. Impacts on California Black Rail Modeled Habitat (acres)**

Project Component	Habitat Type	Approved Project ^a	Proposed Project (Total) ^a	Proposed Project (Increment)
Water Conveyance Facilities	Primary	13	6	-7
	Secondary	0	0	0
Total Impacts Water Conveyance Facilities		13	6	-7

^a Includes both permanent and temporary impacts combined.

5
 6 **NEPA Effects:** In the absence of Environmental Commitments and AMMs, the losses of California
 7 black rail habitat and potential for take of a special-status species associated with proposed project
 8 would represent an adverse effect. However, with habitat protection and restoration associated with
 9 Environmental Commitment 4, guided by Resource Restoration and Performance Principles CBR1
 10 and CBR2, and AMM1–AMM7 and *AMM38 California Black Rail*, the effects of the proposed project as
 11 a whole on California black rail would not be adverse under NEPA.

12 **CEQA Conclusion:** In the absence of Environmental Commitments and AMMs, the losses of California
 13 black rail habitat and potential for take of a special-status species associated with the proposed
 14 project would represent a significant impact, which would be the same as under the approved
 15 project. Considering the restoration provisions, which would provide acreages of new tidal marsh
 16 habitat in amounts necessary to compensate for habitats lost to construction activities guided by
 17 Resource Restoration and Performance Principles CBR1 and CBR2, and the implementation of
 18 AMM1–AMM7 and *AMM38 California Black Rail*, implementation of the proposed project as a whole
 19 would not result in a substantial adverse effect through habitat modifications and would avoid take
 20 of California black rail individuals.

21 **Incremental Impact:** Changing the footprint of the water conveyance facilities would result in 7
 22 fewer acres of impact on California black rail habitat. The impact on California black rail would
 23 remain less than significant. No mitigation is required.

24 **Impact BIO-58: Effects on California Black Rail Associated with Electrical Transmission**
 25 **Facilities**

26 The risk of California black rail’s colliding with transmission lines was determined to be minimal
 27 under the approved project. The proposed project reduces the risk of electrical transmission line
 28 collisions relative to the approved project because the approved project transmission alignment
 29 would cross over wetland habitat on two small islands in the central Delta between Mandeville and
 30 Bouldin Islands, which the proposed project would avoid. As described in *AMM20 Greater Sandhill*
 31 *Crane*, all new project transmission lines would be fitted with flight diverters, which would greatly
 32 reduce the risk of California black rails colliding with project powerlines. There would be no take of
 33 California black rail from the project as defined under Section 86 of the California Fish and Game
 34 Code.

1 The risk of increased predation on California black rails by raptors perching on new transmission
2 line poles was determined to be negligible under the approved project and remains negligible under
3 the proposed project.

4 **NEPA Effects:** The construction and presence of new transmission lines would not represent an
5 adverse effect because the risk of bird strike is considered to be minimal based on the species' flight
6 behaviors. In addition, *AMM20 Greater Sandhill Crane* contains the commitment to place bird strike
7 diverters on all new powerlines, which would further reduce the risk of bird strike for California
8 black rails from the project. The increased risk of predation on California black rail from an increase
9 in raptor perching opportunities would be negligible because of the limited area over which poles
10 would be installed relative to the amount of California black rail habitat in the Delta. Therefore, the
11 construction and operation of new transmission lines would not result in an adverse effect on
12 California black rail.

13 **CEQA Conclusion:** The construction and presence of new transmission lines would not result in
14 "take" of California black rail pursuant to California Fish and Game Code Section 86 because the risk
15 of bird strike is considered to be minimal based on the species' flight behaviors, which would be the
16 same as under the approved project. In addition, *AMM20 Greater Sandhill Crane* contains the
17 commitment to place bird strike diverters on all new powerlines, which would further reduce the
18 risk of bird strike for California black rails from the project. The increased risk of predation on
19 California black rail from an increase in raptor perching opportunities would be negligible when
20 considering the limited area over which poles would be installed relative to the amount of California
21 black rail habitat in the Delta, which would be the same as under the approved project.

22 **Incremental Impact:** The impact of the construction and presence of new transmission lines on
23 California black rail under the proposed project would be reduced relative to the approved
24 project. The impact under the proposed project would remain less than significant. No
25 mitigation is required.

26 **California Clapper Rail¹**

27 **California Least Tern**

28 **Impact BIO-66: Loss or Conversion of Habitat for and Direct Mortality of California Least Tern**

29 The impacts from the approved project and the proposed project on California least tern are
30 presented below in Table 12-19. The proposed project would result in 2,208 fewer acres of impacts
31 on California least tern habitat compared with the approved project. This difference is largely due to
32 the proposed project not having dredging activities in Clifton Court Forebay, which account for
33 1,930 acres of the temporary impacts under the approved project, and from the improvements to
34 the forebay embankments.

¹ Based on recent genetic studies by Maley and Brumfield (2013) and Chesser et al. (2014), the "California" (*Rallus longirostris obsoletus*), "Yuma" (*R. l. yumanensis*), and "light-footed" (*R. l. levipes*) subspecies of clapper rail are now recognized by the American Ornithologists' Union (AOU) as a separate species: Ridgway's rail (*Rallus obsoletus*). Consequently, the taxon formerly known as California clapper rail (*R. l. obsoletus*) is now California Ridgway's rail (*R. o. obsoletus*). For the purposes of this document, the "California clapper rail" common name has been retained due to its use in previous BDCP documents.

1 The restoration of tidal natural communities for fish under Environmental Commitment 4 would
 2 reduce the effect of the loss of habitat for California least tern. The proposed project would also
 3 implement AMM1–AMM7, which avoid and minimize effects on California least tern.

4 Although nesting by California least tern is not expected to occur, restoration sites could attract
 5 individuals wherever disturbed or artificial sites mimic habitat conditions sought for nesting (i.e.,
 6 sandy or gravelly substrates with sparse vegetation). If nesting were to occur, construction activities
 7 could have an adverse effect on California least tern. Mitigation Measure BIO-66, *California Least*
 8 *Tern Nesting Colonies Shall be Avoided and Indirect Effects on Colonies Will be Minimized*, would be
 9 adopted to address this adverse effect on nesting California least terns.

10 **Table 12-19. Impacts on California Least Tern Modeled Habitat (acres)**

Project Component	Habitat Type	Approved Project ^a	Proposed Project (Total) ^a	Proposed Project (Increment)
Water Conveyance Facilities	Foraging	2,299	91	-2,208
Total Impacts Water Conveyance Facilities		2,299	91	-2,208

^a Includes both permanent and temporary impacts combined.

11

12 **NEPA Effects:** The potential for effects on California least tern associated with the proposed project
 13 would represent an adverse effect in the absence of the mitigation measure and AMMs described
 14 below. Although nesting by California least tern is not expected to occur in the study area,
 15 restoration sites could attract individuals wherever disturbed or artificial sites mimic habitat
 16 conditions sought for nesting (i.e., sandy or gravelly substrates with sparse vegetation). If nesting
 17 were to occur, construction activities could have an adverse effect on California least tern. Mitigation
 18 Measure BIO-66, *California Least Tern Nesting Colonies Shall be Avoided and Indirect Effects on*
 19 *Colonies will be Minimized*, would be adopted to address this effect on nesting California least terns.
 20 The restoration of aquatic habitat associated with Environmental Commitment 4 (tidal restoration)
 21 would be sufficient to compensate for permanent impacts on California least tern foraging habitat.
 22 With these acres of restoration, in addition to the implementation of *AMM1 Worker Awareness*
 23 *Training, AMM2 Construction Best Management Practices and Monitoring, AMM3 Stormwater*
 24 *Pollution Prevention Plan, AMM4 Erosion and Sediment Control Plan, AMM5 Spill Prevention,*
 25 *Containment, and Countermeasure Plan, AMM6 Disposal and Reuse of Spoils, and AMM7 Barge*
 26 *Operations Plan*, which would be in place during all project activities, the effects of the proposed
 27 project as a whole on California least tern would not be adverse.

28 **CEQA Conclusion:** The potential effects on California least tern associated with the proposed project
 29 would represent an adverse effect in the absence of the Mitigation Measure and AMMs described
 30 below as a result of potential for take of a special-status species, which would be the same as under
 31 the approved project. Although nesting by California least tern is not expected to occur in the study
 32 area, restoration sites could attract individuals wherever disturbed or artificial sites mimic habitat
 33 conditions sought for nesting (i.e., sandy or gravelly substrates with sparse vegetation). Mitigation
 34 Measure BIO-66, *California Least Tern Nesting Colonies Shall be Avoided and Indirect Effects on*
 35 *Colonies will be Minimized*, would avoid the potential for take of California least tern individuals and
 36 reduce this effect to a less-than-significant impact, which would be the same as under the approved
 37 project

1 The restoration of aquatic habitat associated with *Environmental Commitment 4 Tidal Natural*
2 *Communities Restoration* would be sufficient to compensate for permanent impacts on California
3 least tern foraging habitat. With these acres of restoration, in addition to the implementation of
4 *AMM1 Worker Awareness Training, AMM2 Construction Best Management Practices and Monitoring,*
5 *AMM3 Stormwater Pollution Prevention Plan, AMM4 Erosion and Sediment Control Plan, AMM5 Spill*
6 *Prevention, Containment, and Countermeasure Plan, AMM6 Disposal and Reuse of Spoils, and AMM7*
7 *Barge Operations Plan,* which would be in place during all project activities, the effects of the
8 proposed project as a whole on California least tern would not result in a substantial adverse effect
9 through habitat modifications and would avoid take of individuals.

10 **Incremental Impact:** Changing the footprint of the water conveyance facilities would result in
11 2,208 fewer acres of impact on California least tern foraging habitat. Although the incremental
12 impact on California least tern would be less under the proposed project when compared with
13 the approved project, the overall impact would still remain significant. Implementation of
14 Mitigation Measure BIO-66, California Least Tern Nesting Colonies Shall Be Avoided and Indirect
15 Effects on Colonies Will Be Minimized, would be needed to reduce potential impacts on California
16 least tern to a less-than-significant level, as it was under the approved project.

17 **Mitigation Measure BIO-66: California Least Tern Nesting Colonies Shall Be Avoided and**
18 **Indirect Effects on Colonies Will Be Minimized**

19 Refer to the Final EIR/EIS for a description of Mitigation Measure BIO-66.

20 **Mitigation Measure BIO-66, California Least Tern Nesting Colonies Shall Be Avoided and**
21 **Indirect Effects on Colonies Will Be Minimized**

22 See Mitigation Measure BIO-66 under Impact BIO-66.

23 **Greater Sandhill Crane**

24 **Impact BIO-69: Loss or Conversion of Habitat for and Direct Mortality of Greater Sandhill**
25 **Crane**

26 The impacts from the approved project and the proposed project on greater sandhill crane are
27 presented in Table 12-20 and the values of foraging habitat are presented in Table 12-21. The
28 proposed project would result in 97 additional acres of impacts on greater sandhill crane habitat
29 compared with the approved project. This difference is largely due to the movement of the RTM
30 storage area on Bouldin Island further to the north under the proposed project and would result in a
31 640-acre increase in impacts on temporary roosting and foraging habitat (approximately 4% of the
32 temporary roosting habitat in the study area; temporary roosting and foraging habitat is flooding
33 agricultural fields). Of the 719 acres of temporary roosting and foraging habitat that would be
34 affected by the water conveyance facilities under the proposed project, 678 acres are corn. The
35 proposed project would also result in a 543 acre decrease in foraging habitat impacts relative to the
36 approved project.

1 **Table 12-20. Impacts on Greater Sandhill Crane Modeled Habitat (acres)**

Project Component	Habitat Type	Approved Project ^a	Proposed Project (Total) ^a	Proposed Project (Increment)
Water Conveyance Facilities	Roosting and Foraging – Permanent	4	4	0
	Roosting and Foraging – Temporary	79	719	+640
	Foraging	2,441	1,898	-543
Total Impacts Water Conveyance Facilities		2,524	2,621	+97

^a Includes both permanent and temporary impacts combined.

2

3 **Table 12-21. Value of Greater Sandhill Crane Foraging Habitat affected by Approved Project and**
 4 **Proposed Project**

Foraging Habitat Value Class	Land Cover Type	Amount Affected by Water Conveyance Facilities (permanent and temporary)		
		Approved Project	Proposed Project (Total)	Proposed Project (Increment)
Very high	Corn, rice	1,137	781	-356
High	Wheat, managed wetlands,	22	17	-5
Medium	Alfalfa and alfalfa mixtures, irrigated mixed pasture, irrigated native pasture, irrigated pasture, irrigated other pasture, grain and hay crops, miscellaneous grain and hay, mixed grain and hay, nonirrigated mixed grain and hay, other grain crops, sudan, miscellaneous grasses, grassland, alkali seasonal wetlands, vernal pool complex	870	722	-138
Low	Other irrigated crops, idle cropland, blueberries, asparagus, clover, cropped within the last 3 years, grain sorghum, green beans, miscellaneous truck, miscellaneous field, new lands being prepped for crop production, nonirrigated mixed pasture, nonirrigated native pasture, onions, garlic, peppers, potatoes, safflower, sugar beets, tomatoes (processing), melons squash and cucumbers all types, artichokes, beans (dry), native vegetation	412	378	-34
Total		2,441	1,898	-543

5

6 The implementation of *AMM20 Greater Sandhill Crane* would requires no loss of greater sandhill
 7 crane roost sites by project activities related to water conveyance facilities, including transmission
 8 lines and their associated footprints (see Final EIR/EIS Appendix 3B, *Environmental Commitments,*
 9 *AMMs, and CMs*). Avoidance of crane roost sites would be accomplished either by siting activities
 10 outside of identified roost sites or by relocating the roost site if it consisted of cultivated lands (roost
 11 sites consisting of wetlands would not be subject to re-location). Relocated roost sites would be
 12 established prior to construction activities affecting the original roost site, as described in *AMM20*
 13 *Greater Sandhill Crane*. Under the proposed project, roosting habitat for greater sandhill crane will

1 be created, which consist of both nontidal marsh and flooded corn fields guided by Resource
2 Restoration and Performance Principle GSC2, GSC3, and GSC4.

3 As directed by Resource Restoration and Protection Principle GSC1, cultivated lands that provide
4 high- to very high-value foraging habitat would be protected. This habitat would occur within 2
5 miles of known roost sites and at least 80% would be maintained in very high-value habitat types in
6 any given year (see Table 12-21 for greater sandhill crane foraging habitat values).

7 The project also includes commitments to implement the following avoidance and minimization
8 measures that will help to avoid and minimize adverse effects on greater sandhill crane: *AMM1*
9 *Worker Awareness Training*, *AMM2 Construction Best Management Practices and Monitoring*, *AMM3*
10 *Stormwater Pollution Prevention Plan*, *AMM4 Erosion and Sediment Control Plan*, *AMM5 Spill*
11 *Prevention, Containment, and Countermeasure Plan*, *AMM6 Disposal and Reuse of Spoils*, and *AMM30*
12 *Transmission Line Design and Alignment Guidelines*. All of these AMMs include elements that would
13 avoid or minimize the risk of affecting greater sandhill crane habitats adjacent to work areas. Final
14 EIR/EIS Appendix 3B, *Environmental Commitments, AMMs, and CMs*, describes the AMMs.

15 **NEPA Effects:** The loss of greater sandhill crane habitat under the proposed project would not be
16 adverse under NEPA because the proposed project has committed the lead agencies to avoiding and
17 minimizing effects and to restoring and protecting acreages that are greater than the typical
18 mitigation ratios. This habitat protection, restoration, management, and enhancement would be
19 guided by Resource Restoration and Performance Principles GSC1-GSC4, and by AMM1-AMM6,
20 *AMM20 Greater Sandhill Crane*, and *AMM30 Transmission Line Design and Alignment Guidelines*,
21 which would be in place during all project activities. Construction activities would not be expected
22 to result in greater sandhill crane take because foraging and roosting individuals would be expected
23 to temporarily avoid the increased noise and activity associated with construction areas.
24 Considering these commitments, the implementation of the proposed project would not result in an
25 adverse effect on greater sandhill crane.

26 **CEQA Conclusion:** The effects on greater sandhill crane habitat under the proposed project would
27 represent an adverse effect as a result of habitat modification of a special-status species in the
28 absence of other Environmental Commitments, Resource Restoration and Performance Principles
29 GSC1-GSC4, and AMMs, which would be the same as under the approved project. However, the lead
30 agencies have committed to habitat protection, restoration, management, and enhancement
31 associated with Environmental Commitment 3 and Environmental Commitment 10 that are greater
32 than the mitigation ratios. These conservation actions would be guided by AMM1-AMM6, *AMM20*
33 *Greater Sandhill Crane*, and *AMM30 Transmission Line Design and Alignment Guidelines*, which would
34 be in place during all project activities. Construction activities would not be expected to result in
35 greater sandhill crane take because foraging and roosting individuals would be expected to
36 temporarily avoid the increased noise and activity associated with construction areas. Considering
37 these commitments, the proposed project would not result in a substantial adverse effect through
38 habitat modifications.

39 **Incremental Impact:** Changing the footprint of the water conveyance facilities would result in
40 97 additional acres of impact on greater sandhill crane habitat (consisting of a 543-acre
41 decrease in impacts on foraging habitat and a 640-acre increase in impacts on temporary
42 roosting habitat). Greater sandhill crane roosting and foraging habitat would be protected and
43 restored under Environmental Commitment 3 and Environmental Commitment 10 and guided

1 by Resource Restoration and Performance Principles GSC1-GSC4. The impact on greater sandhill
2 crane would remain less than significant. No mitigation is required.

3 **Impact BIO-70: Effects on Greater Sandhill Crane Associated with Electrical Transmission**
4 **Facilities**

5 The proposed project has the same risk of greater sandhill cranes colliding with transmission lines
6 as the approved project, by. As described in *AMM20 Greater Sandhill Crane*, all new project
7 transmission lines would be fitted with flight diverters, which would greatly reduce the risk of
8 greater sandhill crane colliding with project powerlines. There would be no take of greater sandhill
9 crane from the project as defined under Section 86 of the California Fish and Game Code.

10 **NEPA Effects:** Sandhill cranes are known to be susceptible to collision with overhead wires. The
11 existing network of power lines in the study area currently poses a risk for sandhill cranes. Under
12 the proposed project, proposed transmission lines have been designed to substantially reduce the
13 likelihood of a crane collision with transmission lines, new and existing. New transmission lines
14 constructed as part of the project would be limited to temporary lines which would be removed
15 within the first 10–14 years of the project. In addition, no new transmission lines would be sited in
16 the vicinity of Staten Island, which has the highest crane-use in the sandhill crane winter use area.
17 *AMM30 Transmission Line Design and Alignment Guidelines* would require design features for the
18 transmission line alignment, such as placing new lines immediately adjacent to existing
19 transmission lines when it would minimize effects on sandhill cranes, to avoid impacts on sensitive
20 habitats to the maximum extent feasible. Limiting the proposed transmission line footprint to
21 temporary lines and siting these lines away from the highest use areas by greater sandhill cranes
22 would substantially reduce the potential for sandhill crane bird strike. *AMM20* would also require
23 permanently installing flight diverters on existing lines over lengths equal to or greater than the
24 length of the new temporary transmission lines in the crane winter use area. All new transmission
25 lines constructed as a result of the project would be fitted with bird diverters, which have been
26 shown to reduce avian mortality by 60%. By incorporating *AMM30 Transmission Line Design and*
27 *Alignment Guidelines* and one or a combination of the measures to greatly reduce the risk of bird
28 strike described in *AMM20 Greater Sandhill Crane*, the construction and operation of transmission
29 lines under the proposed project would not result in an adverse effect on greater sandhill crane.

30 **CEQA Conclusion:** Sandhill cranes are known to be susceptible to collision with overhead wires. The
31 existing network of power lines in the study area currently poses a risk for sandhill cranes. Under
32 the proposed project, as with the approved project, proposed transmission lines have been designed
33 to substantially reduce the likelihood of a crane collision with transmission lines, new and existing.
34 New transmission lines constructed as part of the project would be limited to temporary lines which
35 would be removed within the first 10–14 years of proposed project implementation. In addition, no
36 new transmission lines would be sited in the vicinity of Staten Island, which has the highest crane-
37 use in the sandhill crane winter use area. *AMM30 Transmission Line Design and Alignment Guidelines*
38 would require design features for the transmission line alignment, such as placing new lines
39 immediately adjacent to existing transmission lines when it would minimize effects on sandhill
40 cranes, to avoid impacts on sensitive habitats to the maximum extent feasible. Limiting the proposed
41 transmission line footprint to temporary lines and siting these lines away from the highest use areas
42 by greater sandhill cranes, substantially reduces the potential for sandhill crane bird strike. *AMM 20*
43 would also permanently installing flight diverters on existing lines over lengths equal to or greater
44 than the length of the new temporary transmission lines in the crane winter use area. All new
45 transmission lines constructed as a result of the project would be fitted with bird diverters, which

1 have been shown to reduce avian mortality by 60%. By incorporating *AMM30 Transmission Line*
 2 *Design and Alignment Guidelines* and one or a combination of the measures to greatly reduce the risk
 3 of bird strike described in *AMM20 Greater Sandhill Crane*, there would be no take of greater sandhill
 4 crane from the project pursuant to California Fish and Game Code Section 86.

5 **Incremental Impact:** The impact of the construction and presence of new transmission lines on
 6 greater sandhill crane would be the same as under the proposed project as the approved project.
 7 The impact under the proposed project would remain less than significant. No mitigation is
 8 required.

9 **Impact BIO-71: Indirect Effects of the Project on Greater Sandhill Crane**

10 The proposed project would generally have the same potential for construction activities to
 11 indirectly affect greater sandhill crane as the approved project. See the discussion of Impact BIO-71
 12 under Alternative 4A in Final EIR/EIS Section 12.3.4.2. However, as shown in Table 12-22, the
 13 amount of habitat indirectly affected by noise under the proposed project would be less than under
 14 the approved project. This difference is mostly due to the relocation of the RTM storage areas on
 15 Bouldin Island and the RTM storage areas near the intakes.

16 **Table 12-22. Impacts on Greater Sandhill Crane Habitat Resulting from General Construction and**
 17 **Pile Driving Noise (acres)**

Habitat Type	General Construction					
	Approved Project		Proposed Project (Total)		Proposed Project (Increment)	
	Above 60 dBA	Above 50 dBA	Above 60 dBA	Above 50 dBA	Above 60 dBA	Above 50 dBA
Permanent Roosting	128	961	100	790	-28	-171
Temporary Roosting	644	1,908	512	1,575	-132	-333
Foraging	4,752	16,768	4,872	16,144	+120	-624
Total Habitat	5,524	19,637	5,484	18,509	-40	-1,128

dBA = A-weighted decibels.

18
 19 **NEPA Effects:** Crane habitat could potentially be affected by general construction noise above
 20 baseline level (50–60 A-weighted decibels [dBA]). Construction in certain areas would take place 7
 21 days a week and 24 hours a day and evening and nighttime construction activities would require the
 22 use of extremely bright lights, which could adversely affect roosting cranes by impacting their sense
 23 of photo-period and by exposing them to predators. Effects of noise and visual disturbance could
 24 substantially alter the suitability of habitat for greater sandhill crane. *AMM20 Greater Sandhill Crane*
 25 would include requirements to minimize the effects of noise and visual disturbance on greater
 26 sandhill cranes and to compensate for affected habitat.

27 With the measures described above in place in place, the indirect effects of proposed project
 28 implementation would not substantially reduce the number or restrict the range of greater sandhill
 29 cranes. Therefore, the indirect effects of proposed project implementation on greater sandhill crane
 30 would not be adverse under NEPA.

31 **CEQA Conclusion:** Crane habitat could potentially be affected by general construction noise above
 32 baseline level (50–60 dBA), which would also occur under the approved project. Construction in

1 certain areas would take place 7 days a week and 24 hours a day and evening and nighttime
 2 construction activities would require the use of extremely bright lights, which could adversely affect
 3 roosting cranes by impacting their sense of photo-period and by exposing them to predators. Effects
 4 of noise and visual disturbance could alter the suitability of habitat for greater sandhill crane. This
 5 would be a significant impact. *AMM20 Greater Sandhill Crane* would include requirements to
 6 minimize the effects of noise and visual disturbance on greater sandhill cranes and to mitigate
 7 impacts on affected habitat.

8 With implementation of the measures described above in place, the indirect effects of proposed
 9 project implementation would not substantially reduce the number or restrict the range of greater
 10 sandhill cranes.

11 **Incremental Impact:** The proposed project would affect 1,128 fewer acres of greater sandhill
 12 crane habitat by noise relative to the approved project. Other indirect effects on greater sandhill
 13 crane under the proposed project would be the same as under the approved project. The impact
 14 under the proposed project would remain less than significant. No mitigation is required.

15 **Lesser Sandhill Crane**

16 **Impact BIO-72: Loss or Conversion of Habitat for and Direct Mortality of Lesser Sandhill**
 17 **Crane**

18 The impacts from the approved project and the proposed project on lesser sandhill crane are
 19 presented in Table 12-23. The proposed project would result in 197 fewer acres of impact on lesser
 20 sandhill crane habitat relative to the approved project. This difference is largely due to the
 21 movement of the RTM storage area on Bouldin Island further to the north and would result in a 640-
 22 acres increase in impacts on temporary roosting and foraging habitat despite a 837-acre decrease in
 23 foraging habitat impacts. Table 12-24 presents the impacts from the water conveyance construction
 24 on foraging habitat by foraging value.

25 The proposed project’s mitigation for greater sandhill cranes would also offset the effects on
 26 roosting and foraging habitat for lesser sandhill cranes (see Impact BIO-69), in addition to the
 27 protection of foraging habitat for Swainson’s hawk (guided by Resource Restoration and
 28 Performance Principle SH1 and SH2), which partially overlaps with the foraging requirements of
 29 lesser sandhill crane.

30 **Table 12-23. Impacts on Lesser Sandhill Crane Modeled Habitat (acres)**

Project Component	Habitat Type	Approved Project ^a	Proposed Project (Total) ^a	Proposed Project (Increment)
Water	Roosting and Foraging – Permanent	4	4	0
Conveyance Facilities	Roosting and Foraging – Temporary	79	719	+640
	Foraging	2,567	1,730	-837
Total Impacts Water Conveyance Facilities		2,650	2,453	-197

^a Includes both permanent and temporary impacts combined.

31

1 **Table 12-24. Value of Lesser Sandhill Crane Foraging Habitat Affected By Approved Project and**
 2 **Proposed Project**

Foraging Habitat Value Class	Land Cover Type	Amount Affected by Water Conveyance Facilities (permanent and temporary)		
		Approved Project	Proposed Project (Total)	Proposed Project (Increment)
Very high	Corn, alfalfa and alfalfa mixtures	1,317	1,246	-71
High	Mixed pasture, native pasture, other pasture, irrigated pasture, native vegetation, rice	135	153	+18
Medium	Grain and hay crops, miscellaneous grain and hay, mixed grain and hay, unirrigated mixed grain and hay, other grain crops, miscellaneous grasses, grassland, wheat, other grain crops, managed wetlands	626	247	-379
Low	Other irrigated crops, idle cropland, blueberries, asparagus, clover, cropped within the last 3 years, grain sorghum, green beans, miscellaneous truck, miscellaneous field, new lands being prepped for crop production, nonirrigated mixed pasture, nonirrigated native pasture, onions, garlic, peppers, potatoes, safflower, sudan, sugar beets, tomatoes (processing), melons squash and cucumbers all types, artichokes, beans (dry)	489	84	-405
Total		2,567	1,730	-837

3

4 **NEPA Effects:** The loss of lesser sandhill crane habitat under the proposed project would not be
 5 adverse under NEPA because the proposed project has committed the lead agencies to avoiding and
 6 minimizing effects and to restoring and protecting acreages that meet the typical mitigation ratios.
 7 This habitat protection, restoration, management, and enhancement would be guided by Resource
 8 Restoration and Performance Principles GSC1-GSC4, and by AMM1-AMM6, *AMM20 Greater Sandhill*
 9 *Crane*, and *AMM30 Transmission Line Design and Alignment Guidelines*, which would be in place
 10 during all project activities. Considering these commitments, the implementation of the proposed
 11 project would not result in an adverse effect on lesser sandhill crane.

12 **CEQA Conclusion:** The effects on lesser sandhill crane habitat under the proposed project would
 13 represent an adverse effect as a result of habitat modification of a special-status species in the
 14 absence of Environmental Commitments, Resource Restoration and Performance Principles GSC1-
 15 GSC4 for greater sandhill crane (which would also benefit lesser sandhill crane), and AMMs.
 16 However, the lead agencies have committed to habitat protection, restoration, management, and
 17 enhancement associated with Environmental Commitment 3 and Environmental Commitment 10
 18 that are greater than the mitigation ratios. These conservation actions would be guided by AMM1-
 19 AMM6, *AMM20 Greater Sandhill Crane*, and *AMM30 Transmission Line Design and Alignment*
 20 *Guidelines*, which would be in place during all project activities. Considering these commitments, the
 21 proposed project would not result in a substantial adverse effect through habitat modifications and
 22 would not substantially reduce the number or restrict the range of lesser sandhill cranes.

1 **Incremental Impact:** Changing the footprint of the water conveyance facilities would result in
2 197 fewer acres of impact on lesser sandhill crane habitat (consisting of an 837-acre decrease in
3 impacts on foraging habitat and a 640-acre increase in impacts on temporary roosting habitat).
4 The impact on lesser sandhill crane would remain less than significant. No mitigation is
5 required.

6 **Impact BIO-73: Effects on Lesser Sandhill Crane Associated with Electrical Transmission**
7 **Facilities**

8 The proposed project has the same risk of electrical transmission line collisions as the approved
9 project.

10 **NEPA Effects:** Sandhill cranes are known to be susceptible to collision with overhead wires. The
11 existing network of power lines in the study area currently poses a risk for lesser sandhill cranes.
12 Under the proposed project, proposed transmission lines have been designed to substantially
13 reduce the likelihood of a crane collision with transmission lines. New transmission lines
14 constructed as part of the project would be limited to temporary lines which would be removed
15 within the first 10–14 years of proposed project implementation. In addition, no new transmission
16 lines would be sited in the vicinity of Staten Island, which has high use by wintering lesser sandhill
17 cranes. *AMM30 Transmission Line Design and Alignment Guidelines* would require design features for
18 the transmission line alignment, such as placing new lines immediately adjacent to existing
19 transmission lines when it would minimize effects on sandhill cranes, to avoid impacts on sensitive
20 habitats to the maximum extent feasible. All new transmission lines constructed for the project
21 would be fitted with bird diverters, which have been shown to reduce avian mortality by 60%. By
22 incorporating *AMM30 Transmission Line Design and Alignment Guidelines* and one or a combination
23 of the measures to greatly reduce the risk of bird strike described in *AMM20 Greater Sandhill Crane*,
24 the construction and operation of transmission lines under the proposed project would not result in
25 an adverse effect on lesser sandhill crane.

26 **CEQA Conclusion:** Sandhill cranes are known to be susceptible to collision with overhead wires. The
27 existing network of power lines in the study area currently poses a risk for lesser sandhill cranes.
28 Under the proposed project, proposed transmission lines have been designed to substantially
29 reduce the likelihood of a crane collision with transmission lines. New transmission lines
30 constructed as part of the project would be limited to temporary lines which would be removed
31 within the first 10–14 years of the proposed project. In addition, no new transmission lines would
32 be sited in the vicinity of Staten Island, which has high use by wintering lesser sandhill cranes.
33 *AMM30 Transmission Line Design and Alignment Guidelines* would require design features for the
34 transmission line alignment, such as placing new lines immediately adjacent to existing
35 transmission lines when it would minimize effects on sandhill cranes, to avoid impacts on sensitive
36 habitats to the maximum extent feasible. All new transmission lines constructed for the project
37 would be fitted with bird diverters, which have been shown to reduce avian mortality by 60%. By
38 incorporating *AMM30 Transmission Line Design and Alignment Guidelines* and one or a combination
39 of the measures to greatly reduce the risk of bird strike described in *AMM20 Greater Sandhill Crane*,
40 the construction and operation of transmission lines under the proposed project would reduce the
41 impact.

1 **Incremental Impact:** The impact of the construction and presence of new transmission lines on
2 lesser sandhill crane would be the same as under the proposed project as the approved project.
3 The impact under the proposed project would remain less than significant. No mitigation is
4 required.

5 **Impact BIO-74: Indirect Effects of the Project on Lesser Sandhill Crane**

6 The proposed project would have the same potential for construction activities to indirectly affect
7 lesser sandhill crane as the approved project. See the discussion of Impact BIO-74 under Alternative
8 4A in Final EIR/EIS Section 12.3.4.2. However, as shown in Table 12-22 above, which would also
9 apply to lesser sandhill crane, the amount of habitat indirectly affected by noise under the proposed
10 project would be less than under the approved project. This difference is mostly due to the
11 relocation of the RTM storage areas on Bouldin Island and the RTM storage areas near the intakes.

12 **NEPA Effects:** Crane habitat could potentially be affected by general construction noise above
13 baseline level (50–60 dBA). However, lesser sandhill cranes are less traditional in their winter roost
14 sites than greater sandhill cranes and may be more likely to travel away from disturbed areas to
15 roost in more suitable habitat. Construction in certain areas would take place 7 days a week and 24
16 hours a day and evening and nighttime construction activities would require the use of extremely
17 bright lights, which could adversely affect roosting cranes by impacting their sense of photo-period
18 and by exposing them to predators. Effects of noise and visual disturbance could substantially alter
19 the suitability of habitat for lesser sandhill crane. *AMM20 Greater Sandhill Crane* would include
20 requirements to minimize the effects of noise and visual disturbance on sandhill cranes and to
21 compensate for effects on habitat.

22 With implementation of the measures described above in place, the indirect effects of proposed
23 project implementation would not substantially reduce the number or restrict the range of lesser
24 sandhill crane. Therefore, the indirect effects of the proposed project on lesser sandhill crane would
25 not be adverse under NEPA.

26 **CEQA Conclusion:** Crane habitat could potentially be affected by general construction noise above
27 baseline level (50–60 dBA), as would the approved project. However, lesser sandhill cranes are less
28 traditional in their winter roost sites and may be more likely to travel away from disturbed areas to
29 roost in more suitable habitat. Construction in certain areas would take place 7 days a week and 24
30 hours a day and evening and nighttime construction activities would require the use of extremely
31 bright lights, which could adversely affect roosting cranes by impacting their sense of photo-period
32 and by exposing them to predators. Effects of noise and visual disturbance could substantially alter
33 the suitability of habitat for lesser sandhill crane. This would be a significant impact. With *AMM20*
34 *Greater Sandhill Crane* in place, which would include requirements to minimize the effects of noise
35 and visual disturbance on sandhill cranes and to mitigate for affected habitat, there would not be an
36 adverse effect on lesser sandhill crane.

37 With implementation of the measures described above in place, the indirect effects of proposed
38 project implementation would not substantially reduce the number or restrict the range of lesser
39 sandhill cranes.

40 **Incremental Impact:** The indirect impacts on lesser sandhill crane under the proposed project
41 would be the same as under the approved project. The impact under the proposed project would
42 remain less than significant. No mitigation is required.

1 **Least Bell's Vireo and Yellow Warbler**

2 **Impact BIO-75: Loss or Conversion of Habitat for and Direct Mortality of Least Bell's Vireo**
3 **and Yellow Warbler**

4 The impacts from the approved project and the proposed project on least Bell's vireo and yellow
5 warbler are presented in Table 12-25. The proposed project would result in 33 fewer acres of
6 impacts on these species compared with the approved project. This difference is largely due to the
7 approved project's greater impacts associated with RTM areas on Zacharias and Bouldin islands,
8 shaft locations, and the tunnel conveyor facility.

9 The proposed project would result in the protection of valley/foothill riparian natural community,
10 guided by Resource Restoration and Protection Principle s VFR1, VFR2, and VFR3. The
11 implementation of AMMs 1-7, and AMM22 *Suisun Song Sparrow, Yellow-Breasted Chat, Least Bell's*
12 *Vireo, Western Yellow-Billed Cuckoo* would avoid or minimize the risk of affecting individuals and
13 species habitats adjacent to work areas and storage sites.

14 **Table 12-25. Impacts on Least Bell's Vireo and Yellow Warbler Modeled Habitat (acres)**

Project Component	Habitat Type	Approved Project ^a	Proposed Project (Total) ^a	Proposed Project (Increment)
Water Conveyance Facilities	Migratory	57	24	-33
Total Impacts Water Conveyance Facilities		57	24	-33

^a Includes both permanent and temporary impacts combined.

15

16 **NEPA Effects:** The loss of least Bell's vireo and yellow warbler habitat from the proposed project
17 would not be adverse under NEPA because the lead agencies have committed to avoiding and
18 minimizing effects from the project and to restoring and protecting enough habitat to compensate
19 for the loss. This habitat protection, restoration, management, and enhancement would be guided by
20 Resource Restoration and Performance Principles VFR1-VFR3, and by AMM1-AMM7, and AMM22.
21 Mitigation Measure BIO-75 would be adopted to address potential adverse effects on nesting yellow
22 warblers. Environmental commitments and AMMs would be in place during all project activities.
23 However, because neither species is an established breeder in the study area, impacts would likely
24 be limited to loss of migratory habitat. Considering these commitments, losses and conversions of
25 least Bell's vireo and yellow warbler habitat under the proposed project would not be adverse.

26 **CEQA Conclusion:** The loss of least Bell's vireo and yellow warbler habitat from the proposed
27 project would represent an adverse effect in the absence of other conservation actions as a result of
28 habitat modification and potential for direct mortality of a special-status species, which would be
29 the same as under the approved project. However, neither species is an established breeder in the
30 study area and impacts would likely be limited to loss of migratory habitat. In addition, habitat
31 protection and restoration associated with Environmental Commitment 3 and Environmental
32 Commitment 7, guided by Resource Restoration and Performance Principles VFR1-VFR3 and by
33 *AMM1 Worker Awareness Training, AMM2 Construction Best Management Practices and Monitoring,*
34 *AMM3 Stormwater Pollution Prevention Plan, AMM4 Erosion and Sediment Control Plan, AMM5 Spill*
35 *Prevention, Containment, and Countermeasure Plan, AMM6 Disposal and Reuse of Spoils, AMM7 Barge*
36 *Operations Plan, and AMM22 Suisun Song Sparrow, Yellow-Breasted Chat, Least Bell's Vireo, Western*
37 *Yellow-Billed Cuckoo,* would be in place during all project activities. Considering these commitments,

1 in addition to Mitigation Measure BIO-75, the proposed project would not result in a substantial
2 adverse effect through habitat modifications and would not substantially reduce the number or
3 restrict the range of least Bell's vireo or yellow warbler.

4 **Incremental Impact:** Changing the footprint of the water conveyance facilities would result in
5 33 fewer acres of impact on least Bell's vireo and yellow warbler habitat. The impact on least
6 Bell's vireo would remain less than significant.

7 Although the incremental impact on yellow warbler would be less under the proposed project
8 when compared with the approved project, the overall impact would still remain significant, as
9 was the case with the approved project. Implementation of Mitigation Measure BIO-75, *Conduct*
10 *Preconstruction Nesting Bird Surveys and Avoid Disturbance of Nesting Birds*, would be needed to
11 reduce potential impacts on yellow warbler to a less-than-significant level, as it was under the
12 approved project.

13 **Mitigation Measure BIO-75: Conduct Preconstruction Nesting Bird Surveys and Avoid**
14 **Disturbance of Nesting Birds**

- 15
 - Refer to the Final EIR/EIS for a description of Mitigation Measure BIO-75.

16 **Impact BIO-77: Effects on Least Bell's Vireo and Yellow Warbler Associated with Electrical**
17 **Transmission Facilities**

18 The potential for least Bell's vireo and yellow warbler colliding with transmission lines was
19 determined to be unlikely under the approved project. The proposed project reduces the risk of
20 electrical transmission line collisions relative to the approved project because the approved project
21 transmission alignment would cross over wetland and riparian habitat on two small islands in the
22 central Delta between Mandeville and Bouldin Islands, which the proposed project would avoid.

23 **NEPA Effects:** Installation and presence of new transmission lines would not result in an adverse
24 effect on least Bell's vireo or yellow warbler because the probability of bird-powerline strikes is
25 unlikely due to the behavior and habitat requirements of these species. *AMM30 Transmission Line*
26 *Design and Alignment Guidelines* would avoid impacts on riparian habitat to the maximum extent
27 feasible, which will minimize the potential for collision. *AMM20 Greater Sandhill Crane* contains the
28 commitment to place bird strike diverters on all new powerlines, which would substantially reduce
29 the risk of mortality from bird strike for least Bell's vireo and yellow warbler from the project.
30 Therefore, the construction and operation of new transmission lines would not result in an adverse
31 effect on least Bell's vireo or yellow warbler.

32 **CEQA Conclusion:** Installation and presence of new transmission lines would result in less-than-
33 significant impact on least Bell's vireo or yellow warbler because the probability of bird-powerline
34 strikes is unlikely due to the lack of occurrences in the study area and the behavior and habitat
35 requirements of these species, which is the same conclusion as under the approved project. *AMM30*
36 *Transmission Line Design and Alignment Guidelines* would avoid impacts on riparian habitat to the
37 maximum extent feasible, which will minimize the potential for collision. *AMM20 Greater Sandhill*
38 *Crane* contains the commitment to place bird strike diverters on all new powerlines, which would
39 substantially reduce the risk of mortality from bird strike for least Bell's vireo and yellow warbler
40 from the project.

Incremental Impact: The impact of the construction and presence of new transmission lines on least Bell’s vireo and yellow warbler would be reduced under the proposed project. The impact under the proposed project would remain less than significant. No mitigation is required.

Suisun Song Sparrow and Saltmarsh Common Yellowthroat

Swainson’s Hawk

Impact BIO-83: Loss or Conversion of Habitat for and Direct Mortality of Swainson’s Hawk

The impacts from the approved project and the proposed project on Swainson’s hawk are presented in Table 12-26. The proposed project water conveyance footprint would affect 125 more acres of Swainson’s hawk habitat than would the approved project. This difference is largely due to increased impacts on croplands to create Byron Tract Forebay and shifting the location of RTM storage on Bouldin Island.

The value of the foraging habitat affected under the approved and proposed project is presented in Table 12-27.

The proposed project would offset the losses to Swainson’s hawk habitat through the protection and restoration of riparian habitat, and through the protection of foraging habitat. The replacement of nesting and foraging habitat would be guided by Resource Restoration and Protection Principles VFR1, VFR2A, SH1, SH2, CL1, and AMM18 *Swainson’s Hawk*. Project construction related effects on Swainson’s hawk would be avoided and minimized through AMM1–AMM7, and *AMM18 Swainson’s Hawk*.

Table 12-26. Impacts on Swainson’s Hawk Modeled Habitat (acres)

Project Component	Habitat Type	Approved Project ^a	Proposed Project (Total) ^a	Proposed Project (Increment)
Water Conveyance Facilities	Nesting	29	18	-11
	Foraging	4,400	4,536	+136
Total Impacts Water Conveyance Facilities		4,429	4,554	+125

^a Includes both permanent and temporary impacts combined.

Table 12-27. Acres of Impacted Foraging Habitat by Value Classes for Swainson’s Hawk

Foraging Habitat Value Class	Cultivated Land and Other Land Cover Types	Water Conveyance Facilities		
		Approved Project	Proposed Project (Total)	Proposed Project (Increment)
Very high	Alfalfa hay	964	1,005	+41
Moderate	Irrigated pasture, other hay crops	2,051	1,397	-654
Low	Other irrigated field and truck/berry crops	115	549	+434
Very low	Safflower, sunflower, corn, grain sorghum	1,270	1,585	+315

NEPA Effects: The loss of Swainson’s hawk nesting and foraging habitat from the proposed project would not be adverse under NEPA because the lead agencies have committed to avoiding and minimizing effects from and to restoring and protecting an acreage that meets or exceeds typical

1 mitigation ratios. This habitat protection, restoration, management, and enhancement would be
2 guided by Resource Restoration and Performance Principles VFR1, VFR2, SH1, SH2, and CL1, and by
3 AMM1–AMM7, *AMM10 Restoration of Temporarily Affected Natural Communities*, and *AMM18*
4 *Swainson’s Hawk*, which would be in place during all project activities. Considering these
5 commitments, losses and conversions of Swainson’s hawk habitat under the proposed project would
6 not be adverse.

7 **CEQA Conclusion:** The effects on Swainson’s hawk habitat from the proposed project would
8 represent an adverse effect as a result of habitat modification of a special-status species and
9 potential for direct mortality in the absence of Environmental Commitments and AMMs, which
10 would be the same as under the approved project. However, the lead agencies have committed to
11 habitat protection, restoration, management, and enhancement associated with Environmental
12 Commitment 3, Environmental Commitment 7, and Environmental Commitment 11 that meet or
13 exceed the typical mitigation ratios. These conservation activities would be guided by Resource
14 Restoration and Performance Principles VFR1, VFR2, SH1, SH2, and CL1s, and by AMM1–AMM6,
15 *AMM10 Restoration of Temporarily Affected Natural Communities*, and *AMM18 Swainson’s Hawk*,
16 which would be in place during all project activities. Considering these commitments, the proposed
17 project would not result in a substantial adverse effect through habitat modifications and would not
18 substantially reduce the number or restrict the range of Swainson’s hawk.

19 **Incremental Impact:** Changing the footprint of the water conveyance facilities would result in
20 125 additional acres of impact on Swainson’s hawk habitat. Cultivated lands used as Swainson’s
21 hawk foraging habitat would be protected under Environmental Commitment 3 and guided by
22 Resource Restoration and Performance Principles SH1 and SH2. The impact on Swainson’s hawk
23 would remain less than significant. No mitigation is required.

24 **Impact BIO-84: Effects on Swainson’s Hawk Associated with Electrical Transmission Facilities**

25 New transmission lines would increase the risk that Swainson’s hawks could be subject to power
26 line strikes, which could result in injury or mortality of Swainson’s hawks. However, as stated in
27 Impact BIO-84 in the Final EIR/EIS, the risk is considered low. The proposed project reduces the risk
28 of electrical transmission line collisions relative to the approved project because the approved
29 project transmission alignment would cross over riparian habitat on two small islands in the central
30 Delta between Mandeville and Bouldin Islands, which the proposed project would avoid.

31 **NEPA Effects:** New transmission lines would minimally increase the risk for Swainson’s hawk power
32 line strikes. All new transmission lines constructed as a result of the project would be fitted with
33 bird diverters, which have been shown to reduce avian mortality by 60%. With implementation of
34 *AMM20 Greater Sandhill Crane*, the construction and operation of transmission lines would not
35 result in an adverse effect on Swainson’s hawk.

36 **CEQA Conclusion:** New transmission lines would minimally increase the risk for Swainson’s hawk
37 power line strikes, which would be the same as under the approved project. All new transmission
38 lines constructed as a result of the project would be fitted with bird diverters, which have been
39 shown to reduce avian mortality by 60%.

40 **Incremental Impact:** The impact of the construction and presence of new transmission lines on
41 Swainson’s hawk would be reduced under the proposed project. The impact under the proposed
42 project would remain less than significant. No mitigation is required.

1 **Tricolored Blackbird**

2 **Impact BIO-87: Loss or Conversion of Habitat for and Direct Mortality of Tricolored Blackbird**

3 The impacts from the approved project and the proposed project on tricolored blackbird are
 4 presented in Table 12-28. The water conveyance footprint under the proposed project would affect
 5 264 fewer acres than would the approved project despite a 221-acre increase in impacts on non-
 6 breeding cultivated foraging habitat from shifting the location of RTM storage on Bouldin Island.

7 The Environmental Commitments under the proposed project would result in the protection and
 8 restoration of nontidal marsh, which would provide nesting and roosting habitat for tricolored
 9 blackbird. The Environmental Commitments would also protect grassland and cultivated lands that
 10 would provide foraging habitat for tricolored blackbird. The protection of foraging habitat would be
 11 guided by the foraging habitat value classes presented in Table 12-29. These actions would be
 12 guided by Resource Restoration and Protection Principle TB1-TB3. Project construction related
 13 effects would be avoided and minimized AMM1–AMM7, and *AMM21 Tricolored Blackbird*.

14 **Table 12-28. Impacts on Tricolored Modeled Habitat (acres)**

Project Component	Habitat Type		Approved Project ^a	Proposed Project (Total) ^a	Proposed Project (Increment)
Water Conveyance Facilities	Breeding	Nesting	21	3	-18
		Foraging-Cultivated	1,554	1,414	-140
	Non-Breeding	Foraging-Noncultivated	395	135	-260
		Roosting	32	18	-14
		Foraging-Cultivated	1,625	1,846	+221
		Foraging-Noncultivated	262	209	-53
Total Impacts Water Conveyance Facilities			3,889	3,625	-264

^a Includes both permanent and temporary impacts combined.

15

1 **Table 12-29. Tricolored Blackbird Foraging Habitat Value Classes**

Foraging Habitat Value Class	Agricultural Crop Type/Habitats	
	Breeding Season ^a Foraging Habitat	Nonbreeding Season Foraging Habitat
Very high	Native pasture, nonirrigated native pasture, annual grasslands, vernal pool grasslands, alkali grasslands, unsprayed alfalfa, unsprayed sunflower, unsprayed mixed alfalfa	Livestock feed lots
High	Sunflower, alfalfa and mixed alfalfa, mixed pasture, induced high water table native pasture, nonirrigated mixed pasture, dairies,	Corn, sunflower, alfalfa and mixed alfalfa, mixed pasture, native pasture, nonirrigated native pasture, rice, dairies, annual grasslands, vernal pool grasslands, alkali grasslands
Moderate	Miscellaneous grasses, fallow lands cropped within 3 years, new lands prepped for crop production, livestock feed lots, organic rice	Miscellaneous grass pasture, nonirrigated mixed pasture, fallow lands cropped within 3 years, new lands prepped for crop production
Low	Mixed grain and hay crops, farmsteads, nonirrigated mixed grain and hay, rice	Wheat, oats, mixed grain and hay, farmsteads, unirrigated mixed grain and hay, and nonirrigated misc. grain and hay

^a Generally March through August; occasional breeding in fall (September through November).

2

3 **NEPA Effects:** The loss of tricolored blackbird habitat from the proposed project would not be
 4 adverse under NEPA because the lead agencies have committed to avoiding and minimizing effects
 5 and to restoring and protecting acreages that meets the typical mitigation ratios. This habitat
 6 protection, restoration, management, and enhancement would be guided by Resource Restoration
 7 and Performance Principles TB1-TB4, and by AMM1-AMM7, and *AMM21 Tricolored Blackbird*,
 8 which would be in place during all project activities. Considering these commitments, losses and
 9 conversions of tricolored blackbird habitat under the proposed project would not be adverse.

10 **CEQA Conclusion:** The effects on tricolored blackbird habitat from the proposed project would
 11 represent an adverse effect as a result of habitat modification of a special-status species and
 12 potential for direct mortality in the absence of Environmental Commitments and AMMs, which
 13 would be the same as under the approved project. However, the lead agencies have committed to
 14 habitat protection, restoration, management, and enhancement associated with Environmental
 15 Commitment 3, Environmental Commitment 10, and Environmental Commitment 11. These
 16 conservation activities would be guided by Resource Restoration and Performance Principles TB1-
 17 TB4, and by AMM1-AMM6, and *AMM21 Tricolored Blackbird*, which would be in place during all
 18 project activities. Considering these commitments, the proposed project would not result in a
 19 substantial adverse effect through habitat modifications and would not substantially reduce the
 20 number or restrict the range of tricolored blackbird.

21 **Incremental Impact:** Changing the footprint of the water conveyance facilities would result in
 22 264 fewer acres of impact on tricolored blackbird habitat. The impact on tricolored blackbird
 23 would remain less than significant, as was the case with the approved project. No mitigation is
 24 required.

1 **Impact BIO-88: Effects on Tricolored Blackbird Associated with Electrical Transmission**
2 **Facilities**

3 New transmission lines would increase the risk that tricolored blackbirds could be subject to power
4 line strikes, which could result in injury or mortality of individuals. Tricolored blackbirds would
5 have the potential to intersect the proposed transmission lines largely due to winter movements
6 throughout the study area, when individuals are migrating in large flocks and dense fog is common
7 in the area. The proposed project reduces the risk of electrical transmission line collisions relative to
8 the approved project because the approved project transmission alignment would cross over
9 wetland habitat on two small islands in the central Delta between Mandeville and Bouldin Islands,
10 which the proposed project would avoid.

11 **NEPA Effects:** New transmission lines would increase the risk for tricolored blackbird powerline
12 strikes, primarily in winter during daily flights between roosting and foraging sites and during
13 migration movements. *AMM20 Greater Sandhill Crane* contains the commitment to place bird strike
14 diverters on all new powerlines, which would reduce the potential impact of the construction of new
15 transmission lines on tricolored blackbird. The increased risk of predation on tricolored blackbird
16 from an increase in raptor perching opportunities would be minimal. Therefore, the construction
17 and operation of new transmission lines under the proposed project would not result in an adverse
18 effect on tricolored blackbird.

19 **CEQA Conclusion:** New transmission lines would increase the risk for tricolored blackbird
20 powerline strikes, primarily in winter during daily flights between roosting and foraging sites and
21 during migration movements. *AMM20 Greater Sandhill Crane* contains the commitment to place bird
22 strike diverters on all new powerlines, which would reduce the potential impact of the construction
23 of new transmission lines on tricolored blackbird. The increased risk of predation on tricolored
24 blackbird from an increase in raptor perching opportunities would be minimal.

25 **Incremental Impact:** The impact of the construction and presence of new transmission lines on
26 tricolored blackbird would be reduced under the proposed project relative to the approved
27 project. The impact under the proposed project would remain less than significant. No
28 mitigation is required.

29 **Western Burrowing Owl**

30 **Impact BIO-91: Loss or Conversion of Habitat for and Direct Mortality of Western Burrowing**
31 **Owl**

32 The impacts from the approved project and the proposed project on western burrowing owl are
33 presented in Table 12-30. The proposed project would affect 326 fewer acres of western burrowing
34 owl habitat that would the approved project. This difference is primarily due to greater impacts on
35 high-value foraging habitat under the approved project from the expansion of the Clifton Court
36 Forebay.

37 The proposed project would result in the protection of grassland cultivated lands, a portion of which
38 would be managed for Swainson's hawk foraging habitat that would also benefit western burrowing
39 owl. The proposed project would also avoid and minimize effects with the implementation of
40 AMM1-AMM7, and *AMM23 Western Burrowing Owl*, which would be in place during all project
41 activities.

1 **Table 12-30. Impacts on Western Burrowing Owl Modeled Habitat (acres)**

Project Component	Habitat Type	Approved Project ^a	Proposed Project (Total) ^a	Proposed Project (Increment)
Water Conveyance Facilities	High-Value	1,205	753	-452
	Low-Value	2,992	3,118	+126
Total Impacts Water Conveyance Facilities		4,197	3,871	-326

^a Includes both permanent and temporary impacts combined.

2

3 **NEPA Effects:** The loss of western burrowing owl habitat from the proposed project would not be
 4 adverse under NEPA because the lead agencies have committed to avoiding and minimizing effects
 5 and to restoring and protecting an acreage that exceeds typical mitigation ratios. This habitat
 6 protection, restoration, management, and enhancement would be guided by Resource Restoration
 7 and Performance Principle SH1, and by AMM1–AMM7, and *AMM23 Western Burrowing Owl*, which
 8 would be in place during all project activities. Considering these commitments, losses and
 9 conversions of western burrowing owl habitat under the proposed project would not be adverse.

10 **CEQA Conclusion:** The effects on western burrowing owl habitat from the proposed project would
 11 represent an adverse effect as a result of habitat modification of a special-status species and
 12 potential for direct mortality in the absence of Environmental Commitments and AMMs, which
 13 would be the same as under the approved project. However, the lead agencies have committed to
 14 habitat protection, restoration, management, and enhancement associated with Environmental
 15 Commitment 3 and Environmental Commitment 11. These conservation activities would be guided
 16 by Resource Restoration and Performance Principle SH1, and by AMM1–AMM6 and *AMM23 Western*
 17 *Burrowing Owl*, which would be in place during all project activities. Considering these
 18 commitments, the proposed project would not result in a substantial adverse effect through habitat
 19 modifications and would not substantially reduce the number or restrict the range of western
 20 burrowing owl, which would be the same as under the approved project.

21 **Incremental Impact:** Changing the footprint of the water conveyance facilities would result in
 22 326 fewer acres of impact on western burrowing owl habitat. The impact on western burrowing
 23 owl would remain less than significant, as was the case with the approved project. No mitigation
 24 is required.

25 **Western Yellow-Billed Cuckoo**

26 **Impact BIO-95: Loss or Conversion of Habitat for and Direct Mortality of Western Yellow-**
 27 **Billed Cuckoo**

28 The impacts from the approved project and the proposed project on western yellow-billed cuckoo
 29 are presented in Table 12-31. The proposed project would affect 25 fewer acres of western yellow-
 30 billed cuckoo habitat than would the approved project. These differences are due to modifications in
 31 RTM storage areas on Zacharias and Bouldin Islands, shaft locations, and the tunnel conveyor
 32 facility.

33 Riparian habitat would be restored and protected under Environmental Commitment 3 and
 34 Environmental Commitment 7 that would provide migratory habitat for western yellow-billed
 35 cuckoo. This habitat protection, restoration, management, and enhancement would be guided by
 36 Resource Restoration and Performance Principles VFR1-VFR3, and effects on the species will be

1 avoided and minimize with the implementation of AMM1–AMM7, AMM10, and AMM22 *Suisun Song*
 2 *Sparrow, Yellow-Breasted Chat, Least Bell's Vireo, Western Yellow-Billed Cuckoo.*

3 **Table 12-31. Impacts on Western Yellow-Billed Cuckoo Modeled Habitat (acres)**

Project Component	Habitat Type	Approved Project ^a	Proposed Project (Total) ^a	Proposed Project (Increment)
Water Conveyance Facilities	Migratory	41	16	-25
Total Impacts Water Conveyance Facilities		41	16	-25

^a Includes both permanent and temporary impacts combined.

4
 5 **NEPA Effects:** The loss of western yellow-billed cuckoo habitat from the proposed project would not
 6 be adverse under NEPA because the lead agencies have committed to avoiding and minimizing
 7 effects and to restoring and protecting an acreage that meets the typical mitigation ratios. This
 8 habitat protection, restoration, management, and enhancement would be guided by Resource
 9 Restoration and Performance Principles VFR1-VFR3, and by AMM1–AMM7, AMM10, and AMM22
 10 *Suisun Song Sparrow, Yellow-Breasted Chat, Least Bell's Vireo, Western Yellow-Billed Cuckoo.* These
 11 environmental commitments and AMMs would be in place during all project activities. Considering
 12 these commitments, losses and conversions of western yellow-billed cuckoo habitat under the
 13 proposed project would not be adverse.

14 **CEQA Conclusion:** The loss of western yellow-billed cuckoo habitat from the proposed project
 15 would represent an adverse effect in the absence of Environmental Commitments and AMMs as a
 16 result of habitat modification and potential for direct mortality of a special-status species, which
 17 would be the same as under the approved project. However, habitat protection and restoration
 18 associated with Environmental Commitment 3 and Environmental Commitment 7, guided by
 19 Resource Restoration and Performance Principles VFR1-VFR3 and by *AMM1 Worker Awareness*
 20 *Training, AMM2 Construction Best Management Practices and Monitoring, AMM3 Stormwater*
 21 *Pollution Prevention Plan, AMM4 Erosion and Sediment Control Plan, AMM5 Spill Prevention,*
 22 *Containment, and Countermeasure Plan, AMM6 Disposal and Reuse of Spoils, AMM7 Barge Operations*
 23 *Plan, AMM10 Restoration of Temporarily Affected Natural Communities, and AMM22 Suisun Song*
 24 *Sparrow, Yellow-Breasted Chat, Least Bell's Vireo, Western Yellow-Billed Cuckoo,* would be in place
 25 during all project activities. Considering these commitments, the proposed project would not result
 26 in a substantial adverse effect through habitat modifications and would not substantially reduce the
 27 number or restrict the range of western yellow-billed cuckoo.

28 **Incremental Impact:** Changing the footprint of the water conveyance facilities would result in
 29 25 fewer acres of impact on western yellow-billed cuckoo migratory habitat. The impact on
 30 western yellow-billed cuckoo would remain less than significant. No mitigation is required.

31 **Impact BIO-97: Effects on Western Yellow-Billed Cuckoo Associated with Electrical**
 32 **Transmission Facilities**

33 The proposed project would reduce the risk of western yellow-billed cuckoo colliding with electrical
 34 transmission lines relative to the approved project by placing the project transmission lines along
 35 existing lines in the project area. Also, transmission lines for the proposed project avoid crossing
 36 over riparian habitat on two small islands in the central Delta between Mandeville and Bouldin

1 Islands that the approved project went over, which would reduce the risk of collision relative to the
2 approved project.

3 The risk of increased predation on western yellow-billed cuckoo by raptors perching on new
4 transmission line poles was determined to be minimal under the approved project and remains
5 minimal under the proposed project.

6 **NEPA Effects:** The risk of bird-strike is considered to be minimal based on the species' rarity in the
7 study area, its proclivity to remain in the riparian canopy, its presence in the study area during
8 periods of relative high visibility, and its overall ability to successfully negotiate around overhead
9 wires that it may encounter. Transmission line poles and towers also provide perching substrate for
10 raptors, which could result in increased predation pressure on western yellow-billed cuckoo.
11 However, because there is a low probability for the species to occur in the study area, and because
12 the transmission lines that would be constructed near modeled habitat would be temporary, any
13 increased risk of predation on western yellow-billed cuckoo from an increase in raptor perching
14 opportunities would be minimal. Therefore, the construction and operation of new transmission
15 lines under the proposed project would not result in an adverse effect on western yellow-billed
16 cuckoo.

17 **CEQA Conclusion:** The construction and presence of new transmission lines would have a less-than-
18 significant impact on western yellow-billed cuckoo because the risk of bird-strike is considered to
19 be minimal based on the species' rarity in the study area, its proclivity to remain in the riparian
20 canopy, its presence during periods of relative high visibility, and its overall ability to successfully
21 negotiate around overhead wires that it may encounter, which would be the same as under the
22 approved project. Transmission line poles and towers also provide perching substrate for raptors,
23 which could result in increased predation pressure on western yellow-billed cuckoo. However,
24 because there is a low probability for the species to occur in the study area, and because the
25 transmission lines that would be constructed near modeled habitat would be temporary, any
26 increased risk of predation on western yellow-billed cuckoo from an increase in raptor perching
27 opportunities would be minimal.

28 **Incremental Impact:** The impact of the construction and presence of new transmission lines on
29 western yellow-billed cuckoo would be reduced under the proposed project. The impact under
30 the proposed project would remain less than significant. No mitigation is required.

31 **White-Tailed Kite**

32 **Impact BIO-100: Loss or Conversion of Habitat for and Direct Mortality of White-Tailed Kite**

33 The impacts from the approved project and the proposed project on white-tailed kite are presented
34 in Table 12-32. The water conveyance footprint under the proposed project would affect 107 more
35 acres than would the approved project. This difference is largely due to increased impacts on
36 croplands to create Byron Tract Forebay and shifting the location of RTM storage on Bouldin Island.

37 The proposed project would result in the protection and restoration of riparian habitat, which
38 would compensate for the losses in nesting habitat. The proposed project would also result in the
39 protection of cultivated lands as part of the mitigation for Swainson's hawk, and the protection of
40 grassland, which could be used by white-tailed kite as foraging habitat. These actions would occur
41 under Environmental Commitment 3, Environmental Commitment 7, and Environmental
42 Commitment 11 and guided by Resource Restoration and Performance Principles VFR1-VFR3, SH1,

1 SH2, and CL1. Construction related effects would be avoided and minimized with AMM1–AMM6,
2 AMM10, and *AMM39 White-Tailed Kite*.

3 **Table 12-32. Impacts on White-Tailed Kite Modeled Habitat (acres)**

Project Component	Habitat Type	Approved Project ^a	Proposed Project (Total) ^a	Proposed Project (Increment)
Water Conveyance Facilities	Nesting	45	23	-22
	Foraging	4,409	4,538	+129
Total Impacts Water Conveyance Facilities		4,454	4,561	+107

^a Includes both permanent and temporary impacts combined.

4

5 **NEPA Effects:** The loss of white-tailed kite nesting and foraging habitat from the proposed project
6 would not be adverse under NEPA because the lead agencies have committed to avoiding and
7 minimizing effects from and to restoring and protecting an acreage that meets the typical mitigation
8 ratios. This habitat protection, restoration, management, and enhancement would be guided by
9 Resource Restoration and Performance Principles VFR1-VFR3, SH1, SH2, and CL1, AMM1–AMM7,
10 AMM10, and *AMM39 White-Tailed Kite*, which would restrict construction activities during the
11 breeding season and would avoid disturbance and nest abandonment, mortality of eggs, nestlings, or
12 fledglings and would be in place during all project activities. Considering these commitments, losses
13 and conversions of white-tailed kite habitat under the proposed project would not be adverse.

14 **CEQA Conclusion:** The effects on white-tailed kite habitat from the proposed project would
15 represent an adverse effect as a result of habitat modification of a special-status species and
16 potential for take in the absence of Environmental Commitments and AMMs, which would be the
17 same as under the approved project. However, the lead agencies have committed to habitat
18 protection, restoration, management, and enhancement associated with Environmental
19 Commitment 3, Environmental Commitment 7, and Environmental Commitment 11. These
20 conservation activities would be guided by Resource Restoration and Performance Principles VFR1-
21 VFR3, SH1, SH2, and CL1, AMM1–AMM6, AMM10, and *AMM39 White-Tailed Kite*, which would
22 restrict construction activities during the breeding season and which would avoid disturbance and
23 nest abandonment, mortality of eggs, nestlings, or fledglings and would be in place during all project
24 activities. Considering these commitments, the proposed project would not result in a substantial
25 adverse effect through habitat modifications and would not result in take of white-tailed kite
26 pursuant to California Fish and Game Code Section 86, which would be the same as under the
27 approved project.

28 **Incremental Impact:** Changing the footprint of the water conveyance facilities would result in
29 107 additional acres of impact on white-tailed kite habitat. Cultivated lands used as white-tailed
30 kite foraging habitat would be protected under Environmental Commitment 3 and guided by
31 Resource Restoration and Performance Principles SH1 and SH2. The impact on white-tailed kite
32 would remain less than significant. No mitigation is required.

33 **Impact BIO-101: Effects on White-Tailed Kite Associated with Electrical Transmission** 34 **Facilities**

35 The risk of white-tailed kites colliding with transmission lines was determined to be low under the
36 approved project. The proposed project reduces the risk of electrical transmission line collisions

1 relative to the approved project because the approved project transmission alignment would cross
2 over wetland and riparian habitat on two small islands in the central Delta between Mandeville and
3 Bouldin Islands, which the proposed project would avoid. As described in *AMM20 Greater Sandhill*
4 *Crane*, all new project transmission lines would be fitted with flight diverters, which would
5 greatly reduce the risk of white-tailed kite colliding with project powerlines. There would be no
6 take of white-tailed kite from the project as defined under Section 86 of the California Fish and
7 Game Code.

8 **NEPA Effects:** The construction and presence of new transmission lines would not represent an
9 adverse effect because the risk of bird strike is considered to be nominal based on the species'
10 general maneuverability, keen eyesight, and lack of flocking behavior. In addition, *AMM20 Greater*
11 *Sandhill Crane* contains the commitment to place bird strike diverters on all new powerlines, which
12 would further reduce the risk of white-tailed kites colliding with project powerlines. Therefore, the
13 construction and operation of new transmission lines would not result in an adverse effect on white-
14 tailed kite.

15 **CEQA Conclusion:** The construction and presence of new transmission lines would not result in take
16 of white-tailed kite pursuant to California Fish and Game Code Section 86 because the risk of bird
17 strike is considered to be nominal based on the species' general maneuverability, keen eyesight, and
18 lack of flocking behavior, which would be the same as under the approved project. In addition,
19 *AMM20 Greater Sandhill Crane* contains the commitment to place bird strike diverters on all new
20 powerlines, which would further reduce the risk of white-tailed kites colliding with project
21 powerlines.

22 **Incremental Impact:** The impact of the construction and presence of new transmission lines on
23 white-tailed kite would be reduced under the proposed project. The impact under the proposed
24 project would remain less than significant. No mitigation is required.

25 **Yellow-Breasted Chat**

26 **Impact BIO-104: Loss or Conversion of Habitat for and Direct Mortality of Yellow-Breasted** 27 **Chat**

28 The impacts from the approved project and the proposed project on yellow-breasted chat are
29 presented in Table 12-33. The proposed project would affect 33 fewer acres of yellow-breasted chat
30 habitat than would the approved project. This difference is largely due to modifications in RTM
31 storage areas on Zacharias and Bouldin Islands, shaft locations, and the tunnel conveyor facility.

32 The proposed project would result in the restoration and protection of riparian habitat as part of
33 Environmental Commitment 3 and Environmental Commitment 7, and would be guided by Resource
34 Restoration and Performance Principle VFR1, which would offset the loss of yellow-breasted chat
35 habitat. Project construction effects would be avoided and minimized with the implementation of
36 AMM1–AMM7, AMM10, and AMM22 *Suisun Song Sparrow*, *Yellow-Breasted Chat*, *Least Bell's Vireo*,
37 *Western Yellow-Billed Cuckoo*.

1 **Table 12-33. Impacts on Yellow-Breasted Chat Modeled Habitat (acres)**

Project Component	Nesting and Migratory Habitat Type	Approved Project ^a	Proposed Project (Total) ^a	Proposed Project (Increment)
Water Conveyance Facilities	Primary	26	11	-15
	Secondary	31	13	-18
Total Impacts Water Conveyance Facilities		57	24	-33

^a Includes both permanent and temporary impacts combined.

2

3 **NEPA Effects:** The loss of yellow-breasted chat habitat from the proposed project would not be
 4 adverse under NEPA because the lead agencies have committed to avoiding and minimizing effects
 5 from and to restoring and protecting an acreage that meets the typical mitigation ratios. This habitat
 6 protection, restoration, management, and enhancement would be guided by Resource Restoration
 7 and Performance Principle VFR1, and by AMM1–AMM7, AMM10, and AMM22. These environmental
 8 commitments and AMMs would be in place during all project activities. Considering these
 9 commitments, losses and conversions of yellow-breasted chat habitat under the proposed project
 10 would not be adverse.

11 **CEQA Conclusion:** The loss of yellow-breasted chat habitat from the proposed project would
 12 represent an adverse effect in the absence of Environmental Commitments and AMMs as a result of
 13 habitat modification and potential for direct mortality of a special-status species, which would be
 14 the same as under the approved project. However, habitat protection and restoration associated
 15 with Environmental Commitment 3 and Environmental Commitment 7, guided by Resource
 16 Restoration and Performance Principle VFR1 and by *AMM1 Worker Awareness Training, AMM2*
 17 *Construction Best Management Practices and Monitoring, AMM3 Stormwater Pollution Prevention*
 18 *Plan, AMM4 Erosion and Sediment Control Plan, AMM5 Spill Prevention, Containment, and*
 19 *Countermeasure Plan, AMM6 Disposal and Reuse of Spoils, AMM7 Barge Operations Plan, AMM10*
 20 *Restoration of Temporarily Affected Natural Communities* and *AMM22 Suisun Song Sparrow, Yellow-*
 21 *Breasted Chat, Least Bell’s Vireo, Western Yellow-Billed Cuckoo,* would be in place during all project
 22 activities. Considering these commitments, proposed project would not result in a substantial
 23 adverse effect through habitat modifications and would not substantially reduce the number or
 24 restrict the range of yellow-breasted chat, which would be the same as under the approved project.

25 **Incremental Impact:** Changing the footprint of the water conveyance facilities would result in
 26 33 fewer acres of impact on yellow-breasted chat habitat. The impact on yellow-breasted chat
 27 would remain less than significant. No mitigation is required.

28 **Impact BIO-106: Effects on Yellow-Breasted Chat Associated with Electrical Transmission**
 29 **Facilities**

30 The risk of yellow-breasted chat colliding with transmission lines was determined to be low under
 31 the approved project. The proposed project reduces the risk of electrical transmission line collisions
 32 relative to the approved project because the approved project transmission alignment would cross
 33 over riparian habitat on two small islands in the central Delta between Mandeville and Bouldin
 34 Islands, which the proposed project would avoid.

35 **NEPA Effects:** The construction and presence of new transmission lines would not result in an
 36 adverse effect on yellow-breasted chat because the risk of bird strike is considered to be minimal
 37 based on the species’ small, relatively maneuverable body; its foraging behavior; and its presence in

1 the project area during the summer during periods of high visibility. Under *AMM20 Greater Sandhill*
2 *Crane*, all new project transmission lines would be fitted with bird diverters, which would further
3 reduce any potential for powerline collisions.

4 **CEQA Conclusion:** The construction and presence of new transmission lines under the proposed
5 project would have a minimal impact on yellow-breasted chat because the risk of bird strike is
6 considered to be low based on the species' small, relatively maneuverable body; its foraging
7 behavior; and its presence in the project area during the summer during periods of high visibility,
8 which would be the same as under the approved project. Under *AMM20 Greater Sandhill Crane*, all
9 new project transmission lines would be fitted with bird diverters, which would further reduce any
10 potential for powerline collisions.

11 **Incremental Impact:** The impact of the construction and presence of new transmission lines on
12 yellow-breasted chat would be reduced under the proposed project. The impact under the
13 proposed project would remain less than significant. No mitigation is required.

14 **Cooper's Hawk and Osprey**

15 **Impact BIO-109: Loss or Conversion of Habitat for and Direct Mortality of Cooper's Hawk and** 16 **Osprey**

17 The impacts from the approved project and the proposed project on Cooper's hawk and osprey are
18 presented in Table 12-34. The proposed project would result in 22 fewer acres of impacts on these
19 species than would the approved project. This difference is due to modifications in RTM storage
20 areas on Zacharias and Bouldin Islands, shaft locations, and the tunnel conveyor facility.

21 The proposed project would result in the restoration and protection of riparian habitat as part of
22 Environmental Commitment 3 and Environmental Commitment 7 and would be guided by Resource
23 Restoration and Performance Principle VFR1 and AMM18 *Swainson's Hawk*, which would offset the
24 loss in habitat of these species. Project construction effects would be avoided and minimized with
25 the implementation of AMM1-AMM7, AMM10, and Mitigation Measure BIO-75, *Conduct*
26 *Preconstruction Nesting Bird Surveys and Avoid Disturbance of Nesting Birds*.

27 **Table 12-34. Impacts on Cooper's Hawk and Osprey Modeled Habitat (acres)**

Project Component	Habitat Type	Approved Project ^a	Proposed Project (Total) ^a	Proposed Project (Increment)
Water Conveyance Facilities	Nesting	45	23	-22
Total Impacts Water Conveyance Facilities		45	23	-22

^a Includes both permanent and temporary impacts combined.

28
29 **NEPA Effects:** The loss of Cooper's hawk and osprey nesting habitat from the proposed project
30 would not be adverse under NEPA because the lead agencies committed to avoiding and minimizing
31 effects from and to restoring and protecting an acreage that meets the typical mitigation ratios. This
32 habitat protection, restoration, management, and enhancement would be guided by Resource
33 Restoration and Performance Principle VFR1, and by AMM1-AMM7, AMM10, and *AMM18*
34 *Swainson's Hawk*, which would be in place during all project activities. In addition, Mitigation
35 Measure BIO-75 would be adopted to address potential impacts on nesting individuals. Considering

1 these commitments, losses and conversions of Cooper's hawk and osprey habitat under the
2 proposed project would not be adverse.

3 **CEQA Conclusion:** The effects on Cooper's hawk and osprey habitat from the proposed project
4 would represent an adverse effect as a result of habitat modification of a special-status species and
5 potential for direct mortality in the absence of Environmental Commitments and AMMs, which
6 would be the same as under the approved project. However, the lead agencies have committed to
7 habitat protection, restoration, management and enhancement associated with Environmental
8 Commitment 3, Environmental Commitment 7, and Environmental Commitment 11. These
9 conservation activities would be guided by Resource Restoration and Performance Principle VFR1,
10 and by AMM1-AMM6, AMM10, and AMM18 *Swainson's Hawk*, which would be in place during all
11 project activities. In addition, Mitigation Measure BIO-75 would be adopted to address potential
12 impacts on nesting individuals. Considering these commitments, the proposed project would not
13 result in a substantial adverse effect through habitat modifications and would not substantially
14 reduce the number or restrict the range of Cooper's hawk and osprey.

15 **Incremental Impact:** Changing the footprint of the water conveyance facilities would result in
16 22 fewer acres of impact on Cooper's hawk and osprey habitat. Although the incremental impact
17 on habitat for these species would be less under the proposed project when compared with the
18 approved project, the overall impact would still remain significant. Implementation of Mitigation
19 Measure BIO-75, Conduct Preconstruction Nesting Bird Surveys and Avoid Disturbance of Nesting
20 Birds, would be needed to reduce potential impacts on Cooper's hawk and osprey to a less-than-
21 significant level, as it was under the approved project.

22 **Mitigation Measure BIO-75: Conduct Preconstruction Nesting Bird Surveys and Avoid** 23 **Disturbance of Nesting Birds**

24 See Mitigation Measure BIO-75 under Impact BIO-75.

25 **Impact BIO-110: Effects on Cooper's Hawk and Osprey Associated with Electrical** 26 **Transmission Facilities**

27 The risk of Cooper's hawk and osprey colliding with transmission lines was determined to be low
28 under the approved project. The proposed project reduces the risk of electrical transmission line
29 collisions relative to the approved project because the approved project transmission alignment
30 would cross over riparian habitat on two small islands in the central Delta between Mandeville and
31 Bouldin Islands, which the proposed project would avoid.

32 **NEPA Effects:** The construction and presence of new transmission lines would not represent an
33 adverse effect because the risk of bird strike is considered to be minimal based on the flight
34 behavior, the general maneuverability, and keen eyesight of Cooper's hawk and osprey. In addition,
35 AMM20 *Greater Sandhill Crane* contains the commitment to place bird strike diverters on all new
36 powerlines, which would further reduce any risk of mortality from bird strike for Cooper's hawk
37 and osprey from the project. Therefore, the construction and operation of new transmission lines
38 under the proposed project would not result in an adverse effect on Cooper's hawk and osprey.

39 **CEQA Conclusion:** The construction and presence of new transmission lines would not represent an
40 adverse effect because the risk of bird strike is considered to be minimal based on the flight
41 behavior, the general maneuverability, and keen eyesight of Cooper's hawk and osprey, which would
42 be the same as under the approved project. In addition, AMM20 *Greater Sandhill Crane* contains the

1 commitment to place bird strike diverters on all new powerlines, which would further reduce any
2 risk of mortality from bird strike for Cooper’s hawk and osprey from the project.

3 **Incremental Impact:** The impact of the construction and presence of new transmission lines on
4 Cooper’s hawk and osprey would be reduced under the proposed project relative to the
5 approved project. The impact under the proposed project would remain less than significant. No
6 mitigation is required.

7 **Golden Eagle and Ferruginous Hawk**

8 **Impact BIO-113: Loss or Conversion of Habitat for and Direct Mortality of Golden Eagle and**
9 **Ferruginous Hawk**

10 The impacts from the approved project and the proposed project on golden eagle and ferruginous
11 hawk are presented in Table 12-35. The proposed project would affect 483 fewer acres of habitat for
12 these species relative to the approved project. This difference is largely due to the greater impacts
13 on habitat due to changes in RTM placement on Bouldin Island, changes in the tunnel work area on
14 Mandeville Island, and the expansion of Clifton Court Forebay under the approved project.

15 The proposed project would result in the protection of vernal pool and alkali seasonal wetland
16 complex, grassland, and cultivated lands that would provide foraging habitat for these species under
17 Environmental Commitment 3. Potential effects on these species during construction would be
18 avoided and minimized by AMM1-AMM7.

19 **Table 12-35. Impacts on Golden Eagle and Ferruginous Hawk Habitat (acres)**

Project Component	Habitat Type	Approved Project ^a	Proposed Project (Total) ^a	Proposed Project (Increment)
Water Conveyance Facilities	Foraging	2,531	2,038	-483
Total Impacts Water Conveyance Facilities		2,531	2,038	-483

^a Includes both permanent and temporary impacts combined.

20

21 **NEPA Effects:** The loss of golden eagle and ferruginous hawk foraging habitat from the proposed
22 project would not be adverse under NEPA because the lead agencies have committed to avoiding
23 and minimizing effects and to restoring and protecting an acreage that exceeds the typical
24 mitigation ratios. This habitat protection, restoration, management, and enhancement would be
25 guided by and by AMM1–AMM7, which would be in place during all project activities. Considering
26 these commitments, losses and conversions of mountain plover habitat under the proposed project
27 would not be adverse.

28 **CEQA Conclusion:** The effects on golden eagle and ferruginous hawk foraging habitat from the
29 proposed project would represent an adverse effect as a result of habitat modification of a special-
30 status species in the absence of Environmental Commitments and AMMs, which would less than the
31 total impacts under the approved project but both effects would be considered adverse. However,
32 the lead agencies have committed to habitat protection, restoration, management, and enhancement
33 associated with Environmental Commitment 3 and Environmental Commitment 11. These
34 conservation activities would be guided by and by AMM1–AMM7, which would be in place during all
35 project activities. Considering these commitments, the proposed project would not result in a
36 substantial adverse effect through habitat modifications.

Incremental Impact: Changing the footprint of the water conveyance facilities would result in 483 fewer acres of impact on golden eagle and ferruginous hawk habitat. The impact on these species would remain less than significant. No mitigation is required.

Cormorants, Herons and Egrets

Impact BIO-117: Loss or Conversion of Nesting Habitat for and Direct Mortality of Cormorants, Herons and Egrets

The impacts from the approved project and the proposed project on cormorants, herons, and egrets are presented in Table 12-36. The proposed project would result in 36 fewer acres of impacts on these species compared with the approved project. This difference are due to modifications in RTM storage areas on Zacharias and Bouldin Islands, shaft locations, and the tunnel conveyor facility.

The proposed project would result in the restoration and protection of riparian habitat under Environmental Commitment 3 and Environmental Commitment 7. These Environmental Commitments would be guided by Resource Restoration and Protection Principle VFR1 and AMM18 *Swainson’s Hawk*, which accelerates riparian restoration. The effects of project construction on these species would be avoided and minimized with the implementation of AMM1–AMM7 and AMM10, Mitigation Measure BIO-75, *Conduct Preconstruction Nesting Bird Surveys and Avoid Disturbance of Nesting Bird*, and Mitigation Measure BIO-117, *Avoid Impacts on Rookeries*.

Table 12-36. Impacts on Cormorant, Heron and Egret Modeled Habitat (acres)

Project Component	Habitat Type	Approved Project ^a	Proposed Project (Total) ^a	Proposed Project (Increment)
Water Conveyance Facilities	Nesting (Rookeries)	70	34	-36
Total Impacts Water Conveyance Facilities		70	34	-36

^a Includes both permanent and temporary impacts combined.

NEPA Effects: The loss of cormorant, heron, and egret nesting habitat from the proposed project would not be adverse under NEPA because the lead agencies have committed to avoiding and minimizing effects and to restoring and protecting an acreage that meets the typical mitigation ratios. This habitat protection, restoration, management, and enhancement would be guided by Resource Restoration and Protection Principle VFR1, and by AMM1–AMM7, AMM10, and AMM18 *Swainson’s Hawk*, which would be in place during all project activities. In addition, Mitigation Measure BIO-75 and Mitigation Measure BIO-117 would be adopted to address potential impacts on nesting individuals. Considering these commitments, losses and conversions of cormorant, heron, and egret habitat under the proposed project would not be adverse.

CEQA Conclusion: The effects on cormorant, heron, and egret habitat from the proposed project would represent an adverse effect as a result of habitat modification of a special-status species and potential for direct mortality in the absence of Environmental Commitments and AMMs, which would be the same as under the approved project. However, the lead agencies have committed to habitat protection, restoration, management, and enhancement associated with Environmental Commitment 3, Environmental Commitment 7, and Environmental Commitment 11. These conservation activities would be guided by Resource Restoration and Performance Principle VFR1, and by AMM1–AMM6, AMM10, and AMM18 *Swainson’s Hawk*, which would be in place during all project activities. In addition, Mitigation Measure BIO-75 and Mitigation Measure BIO-117 would be

1 adopted to address potential impacts on nesting individuals. Considering these commitments, the
2 proposed project would not result in a substantial adverse effect through habitat modifications and
3 would not substantially reduce the number or restrict the range of cormorants, herons, or egrets.

4 **Incremental Impact:** Changing the footprint of the water conveyance facilities would result in
5 36 fewer acres of impact on habitat for cormorants, herons, and egrets. Although the
6 incremental impact on habitat for these species would be less than under the approved project,
7 the overall impact would still remain significant. Implementation of Mitigation Measure BIO-75,
8 Conduct Preconstruction Nesting Bird Surveys and Avoid Disturbance of Nesting Birds, and
9 Mitigation Measure BIO-117, Avoid Impacts on Rookeries, would be needed to reduce potential
10 impacts on cormorants, herons, and egrets to a less-than-significant level.

11 **Mitigation Measure BIO-75: Conduct Preconstruction Nesting Bird Surveys and Avoid**
12 **Disturbance of Nesting Birds**

13 See Mitigation Measure BIO-75 under Impact BIO-75.

14 **Mitigation Measure BIO-117: Avoid Impacts on Rookeries**

15 Refer to the Final EIR/EIS for a description of Mitigation Measure BIO-117.

16 **Impact BIO-118: Effects Associated with Electrical Transmission Facilities on Cormorants,**
17 **Herons and Egrets**

18 The risk of cormorants, herons, and egrets colliding with transmission lines would increase under
19 the proposed and approved projects. The proposed project reduces the risk of electrical
20 transmission line collisions relative to the approved project because the approved project
21 transmission alignment would cross over wetland and riparian habitat on two small islands in the
22 central Delta between Mandeville and Bouldin Islands, which the proposed project would avoid.

23 **NEPA Effects:** New transmission lines would increase the risk for bird-power line strikes, which
24 could result in injury or mortality of cormorants, herons, and egrets. The implementation of *AMM20*
25 *Greater Sandhill Crane* would require the installation of bird flight diverters on all new transmission
26 lines, which could reduce bird strike risk of cormorants, herons, and egrets by 60%. With the
27 installation of bird flight diverters, the construction and operation of new transmission lines under
28 the proposed project would not result in an adverse effect on cormorants, herons, and egrets.

29 **CEQA Conclusion:** New transmission lines would increase the risk for bird-power line strikes, which
30 could result in injury or mortality of cormorants, herons, and egrets, which would be the same
31 under the approved project. The implementation of *AMM20 Greater Sandhill Crane* would require
32 the installation of bird flight diverters on all new transmission lines, which could reduce bird strike
33 risk of cormorants, herons, and egrets by 60%.

34 **Incremental Impact:** The impact of the construction and presence of new transmission lines on
35 cormorants, herons, and egrets would be reduced under the proposed project. The impact under
36 the proposed project would remain less than significant. No mitigation is required.

1 **Short-Eared Owl and Northern Harrier**

2 **Impact BIO-121: Loss or Conversion of Habitat for and Direct Mortality of Short-Eared Owl**
3 **and Northern Harrier**

4 The impacts from the approved project and the proposed project on short-eared owl and northern
5 harrier are presented in Table 12-37. The proposed project would affect 537 fewer acres of habitat
6 for these species relative to the approved project. These differences would be largely due to the
7 relocation of RTM storage areas on Zacharias Island and Bouldin Island and the use of the Byron
8 Tract Forebay instead of the Clifton Court Forebay expansion.

9 The proposed project would offset the effects on these species through the restoration and
10 protection of nontidal marsh, grassland, and the protection of vernal pool and alkali seasonal
11 wetlands, and cultivated lands under Environmental Commitment 3, Environmental Commitment 7,
12 Environmental Commitment 8, and Environmental Commitment 10. Project construction effects on
13 these species will be avoided and minimized with the implementation of AMM1-AMM7 and
14 Mitigation Measure BIO-75, *Conduct Preconstruction Nesting Bird Surveys and Avoid Disturbance of*
15 *Nesting Birds*.

16 **Table 12-37. Impacts on Short-Eared Owl and Northern Harrier Modeled Habitat (acres)**

Project Component	Habitat Type	Approved Project ^a	Proposed Project (Total) ^a	Proposed Project (Increment)
Water Conveyance Facilities	Nesting and Foraging	1,817	1,280	-537
Total Impacts Water Conveyance Facilities		1,817	1,280	-537

^a Includes both permanent and temporary impacts combined.

17

18 **NEPA Effects:** The loss of short-eared owl and northern harrier nesting habitat from the proposed
19 project would not be adverse under NEPA because the lead agencies have committed to avoiding
20 and minimizing effects and to restoring and protecting an acreage that exceeds the typical
21 mitigation ratios. This habitat protection, restoration, management, and enhancement would be
22 guided by Resource Restoration and Performance Principles CBR1, SH1, and SH2, and by AMM1-
23 AMM7, which would be in place during all project activities. In addition, Mitigation Measure BIO-75
24 would be adopted to address potential impacts on nesting individuals. Considering these
25 commitments, losses and conversions of short-eared owl and northern harrier habitat under the
26 proposed project would not be adverse.

27 **CEQA Conclusion:** The effects on short-eared owl and northern harrier habitat from the proposed
28 project would represent an adverse effect as a result of habitat modification of a special-status
29 species and potential for direct mortality in the absence of Environmental Commitments and AMMs,
30 which would be the same as under the approved project. However, the lead agencies have
31 committed to habitat protection, restoration, management and enhancement associated with
32 Environmental Commitment 3, Environmental Commitment 4, Environmental Commitment 10, and
33 Environmental Commitment 11. These conservation activities would be guided by Resource
34 Restoration and Performance Principles CBR1, SH1, and SH2, and by AMM1-AMM7, which would be
35 in place during all project activities. In addition, Mitigation Measure BIO-75 would be adopted to
36 address potential impacts on nesting individuals. Considering these commitments, the proposed

1 project would not result in a substantial adverse effect through habitat modifications and would not
2 substantially reduce the number or restrict the range of short-eared owl and northern harrier.

3 **Incremental Impact:** Changing the footprint of the water conveyance facilities would result in
4 537 fewer acres of impact on short-eared owl and northern harrier habitat. Although the
5 incremental impact on habitat for these species would be less under the proposed project when
6 compared with the approved project, the overall impact would remain significant
7 Implementation of Mitigation Measure BIO-75, Conduct Preconstruction Nesting Bird Surveys and
8 Avoid Disturbance of Nesting Birds, would be needed to reduce potential impacts on short-eared
9 owl and northern harrier to a less-than-significant level.

10 **Mitigation Measure BIO-75: Conduct Preconstruction Nesting Bird Surveys and Avoid**
11 **Disturbance of Nesting Birds**

12 See Mitigation Measure BIO-75 under Impact BIO-75.

13 **Impact BIO-122: Effects on Short-Eared Owl and Northern Harrier Associated with Electrical**
14 **Transmission Facilities**

15 The risk of short-eared owl and northern harrier colliding with transmission lines was determined
16 to be low under the approved project. The proposed project reduces the risk of electrical
17 transmission line collisions relative to the approved project because the approved project
18 transmission alignment would cross over wetland habitat on two small islands in the central Delta
19 between Mandeville and Bouldin Islands, which the proposed project would avoid.

20 **NEPA Effects:** The construction and presence of new transmission lines would not result in an
21 adverse effect on short-eared owl or northern harrier because the risk of bird strike is considered to
22 be low for both species based on their keen eyesight and behavioral characteristics. New
23 transmission lines would minimally increase the risk for short-eared owl and northern harrier
24 power line strikes. All new transmission lines constructed as a result of the project would be fitted
25 with bird diverters (*AMM20 Greater Sandhill Crane*), which have been shown to reduce avian
26 mortality by 60% and which would further reduce any potential for powerline collisions. Therefore,
27 the construction and operation of transmission lines under the proposed project would not result in
28 an adverse effect on short-eared owl or northern harrier.

29 **CEQA Conclusion:** The construction and presence of new transmission lines would not result in a
30 significant impact on short-eared owl or northern harrier because the risk of bird strike is
31 considered to be low for both species based on their keen eyesight and behavioral characteristics,
32 which would be the same conclusion under the approved project. New transmission lines would
33 minimally increase the risk for short-eared owl and northern harrier power line strikes. All new
34 transmission lines constructed as a result of the project would be fitted with bird diverters (*AMM20*
35 *Greater Sandhill Crane*), which have been shown to reduce avian mortality by 60% and which would
36 further reduce any potential for powerline collisions.

37 **Incremental Impact:** The impact of the construction and presence of new transmission lines on
38 short-eared owl and northern harrier would be reduced under the proposed project. The impact
39 under the proposed project would remain less than significant. No mitigation is required.

1 **Mountain Plover**

2 **Impact BIO-125: Loss or Conversion of Habitat for and Direct Mortality of Mountain Plover**

3 The impacts from the approved project and the proposed project on mountain plover are presented
4 in Table 12-38. The proposed project would affect 483 fewer acres of habitat for this species relative
5 to the approved project.

6 The proposed project would result in the protection of vernal pool and alkali seasonal wetland
7 complex, grassland, and cultivated lands that would provide foraging habitat for mountain plover
8 under Environmental Commitment 3. Potential effects on the species during construction would be
9 avoided and minimized by AMM1-AMM7.

10 **Table 12-38. Impacts on Mountain Plover Modeled Habitat (acres)**

Project Component	Habitat Type	Approved Project ^a	Proposed Project (Total) ^a	Proposed Project (Increment)
Water Conveyance Facilities	Wintering	2,531	2,038	-483
Total Impacts Water Conveyance Facilities		2,531	2,038	-483

^a Includes both permanent and temporary impacts combined.

11

12 **NEPA Effects:** The loss of mountain plover wintering habitat from the proposed project would not
13 be adverse under NEPA because the lead agencies have committed to avoiding and minimizing
14 effects and to restoring and protecting an acreage that exceeds the typical mitigation ratios. AMM1-
15 AMM7 would be in place during all project activities. Considering these commitments, losses and
16 conversions of mountain plover habitat under the proposed project would not be adverse.

17 **CEQA Conclusion:** The effects on mountain plover wintering habitat from the proposed project
18 would represent an adverse effect as a result of habitat modification of a special-status species and
19 potential for direct mortality in the absence of Environmental Commitments and AMMs, which
20 would be the same as under the approved project. However, the lead agencies have committed to
21 habitat protection, restoration, management, and enhancement associated with Environmental
22 Commitment 3 and Environmental Commitment 11. AMM1-AMM7 would be in place during all
23 project activities. Considering these commitments, the proposed project would not result in a
24 substantial adverse effect through habitat modifications and would not substantially reduce the
25 number or restrict the range of mountain plover.

26 **Incremental Impact:** Changing the footprint of the water conveyance facilities would result in
27 483 fewer acres of impact on mountain plover habitat. The impact on the species would remain
28 less than significant No mitigation is required.

29 **California Horned Lark and Grasshopper Sparrow**

30 **Impact BIO-130: Loss or Conversion of Habitat for and Direct Mortality of California Horned**
31 **Lark and Grasshopper Sparrow**

32 The impacts from the approved project and the proposed project on California horned lark and
33 grasshopper sparrow are presented in Table 12-39. The proposed project would affect 483 fewer
34 acres of habitat for these species relative to the approved project.

The proposed project would result in the protection of vernal pool and alkali seasonal wetland complex, grassland, and cultivated lands that would provide habitat for these species under Environmental Commitment 3. Potential effects on these species during construction would be avoided and minimized by AMM1–AMM7 and Mitigation Measure BIO-75, *Conduct Preconstruction Nesting Bird Surveys and Avoid Disturbance of Nesting Birds*.

Table 12-39. Impacts on California Horned Lark and Grasshopper Sparrow Modeled Habitat (acres)

Project Component	Habitat Type	Approved Project ^a	Proposed Project (Total) ^a	Proposed Project (Increment)
Water Conveyance Facilities	Breeding	2,531	2,038	-483
Total Impacts Water Conveyance Facilities		2,531	2,038	-483

^a Includes both permanent and temporary impacts combined.

NEPA Effects: The loss of California horned lark and grasshopper sparrow habitat from the proposed project not be adverse under NEPA because the lead agencies have committed to avoiding and minimizing effects and to restoring and protecting an acreage that exceeds typical mitigation ratios. AMM1–AMM7 would be in place during all project activities. In addition, Mitigation Measure BIO-75 would be adopted to address potential impacts on nesting individuals. Considering these commitments, losses and conversions of California horned lark and grasshopper sparrow under the proposed project would not be adverse.

CEQA Conclusion: The effects on California horned lark and grasshopper sparrow habitat from the approved project would represent an adverse effect as a result of habitat modification of a special-status species and potential for direct mortality in the absence of Environmental Commitments and AMMs, which would be the same as under the approved project. However, the lead agencies have committed to habitat protection, restoration, management, and enhancement associated with Environmental Commitment 3 and Environmental Commitment 11. AMM1–AMM7 would be in place during all project activities. In addition, Mitigation Measure BIO-75 would be adopted to address potential impacts on nesting individuals. Considering these commitments, the proposed project would not result in a substantial adverse effect through habitat modifications and would not substantially reduce the number or restrict the range of California horned lark and grasshopper sparrow, which would be the same as under the approved project.

Incremental Impact: Changing the footprint of the water conveyance facilities would result in 483 fewer acres of impact on California horned lark and grasshopper sparrow habitat. Although the impact on habitat for these species would be less under the proposed project when compared with the approved project, the overall impact would still remain significant. Implementation of Mitigation Measure BIO-75, *Conduct Preconstruction Nesting Bird Surveys and Avoid Disturbance of Nesting Birds*, would be needed to reduce potential impacts on California horned lark and grasshopper sparrow to a less-than-significant level.

Mitigation Measure BIO-75: Conduct Preconstruction Nesting Bird Surveys and Avoid Disturbance of Nesting Birds

See Mitigation Measure BIO-75 under Impact BIO-75.

1 **Least Bittern and White-Faced Ibis**

2 **Loggerhead Shrike**

3 **Impact BIO-138: Loss or Conversion of Modeled Habitat for and Direct Mortality of**
 4 **Loggerhead Shrike**

5 The impacts from the approved project and the proposed project on loggerhead shrike are
 6 presented in Table 12-40. The proposed project would affect 539 fewer acres of loggerhead shrike
 7 habitat relative to the approved project. This difference is due to the proposed project having fewer
 8 impacts on modeled habitat from RTM storage areas and facilities around Clifton Court Forebay.

9 The proposed project would result in the protection of grassland and cultivated lands as Swainson’s
 10 hawk foraging habitat (Resource Restoration and Performance Principle SH 1). In addition, the
 11 planting of shrubs under riparian restoration actions may provide nesting habitat for shrikes. The
 12 proposed project would also restore and protect riparian habitat. Construction related effects on
 13 loggerhead shrike would be avoided and minimized through the implementation of Mitigation
 14 Measure BIO-75, *Conduct Preconstruction Nesting Bird Surveys and Avoid Disturbance of Nesting*
 15 *Birds* and AMM1-AMM6, and AMM10.

16 **Table 12-40. Impacts on Loggerhead Shrike Modeled Habitat (acres)**

Project Component	Habitat Type	Approved Project ^a	Proposed Project (Total) ^a	Proposed Project (Increment)
Water Conveyance Facilities	High-Value	2,531	2,038	-483
	Low-Value	360	314	-46
Total Impacts Water Conveyance Facilities		2,891	2,352	-539

^a Includes both permanent and temporary impacts combined.

17

18 **NEPA Effects:** The loss of loggerhead shrike habitat from the proposed project would not be adverse
 19 under NEPA because the lead agencies have committed to avoiding and minimizing effects and to
 20 restoring and protecting an acreage that exceeds the typical mitigation ratios. This habitat
 21 protection, restoration, management, and enhancement associated with Environmental
 22 Commitment 3, Environmental Commitment 7, Environmental Commitment 8, and Environmental
 23 Commitment 11. These conservation actions would be guided by Resource Restoration and
 24 Performance Principles SH1, SH2, CL1, RBR5, and VFR1, and by AMM1–AMM6, *AMM10 Restoration*
 25 *of Temporarily Affected Natural Communities*, and *AMM18 Swainson’s Hawk*, which would be in place
 26 during all project activities. In addition, Mitigation Measure BIO-75 would be adopted to address
 27 potential impacts on nesting individuals. Considering these commitments, losses and conversions of
 28 loggerhead shrike habitat under the proposed project would not be adverse.

29 **CEQA Conclusion:** The effects on loggerhead shrike habitat from the proposed project would
 30 represent an adverse effect as a result of habitat modification of a special-status species and
 31 potential for direct mortality in the absence of Environmental Commitments and AMMs, which
 32 would be the same as under the approved project. However, the lead agencies have committed to
 33 habitat protection, restoration, management, and enhancement (including the maintenance of
 34 important habitat characteristics such as trees and shrubs) associated with Environmental
 35 Commitment 3, Environmental Commitment 7, Environmental Commitment 8, and Environmental
 36 Commitment 11. These conservation activities would be guided by Resource Restoration and

1 Performance Principles SH1, SH2, CL1, RBR5, and VFR1, and by AMM1–AMM6, AMM1–AMM6,
 2 *AMM10 Restoration of Temporarily Affected Natural Communities*, and *AMM18 Swainson’s Hawk*,
 3 which would be in place during all project activities. In addition, Mitigation Measure BIO-75 would
 4 be adopted to address potential impacts on nesting individuals. Considering these commitments, the
 5 proposed project would not result in a substantial adverse effect through habitat modifications and
 6 would not substantially reduce the number or restrict the range of loggerhead shrike.

7 ***Incremental Impact:*** Changing the footprint of the water conveyance facilities would result in
 8 539 fewer acres of impact on loggerhead shrike habitat. Although the incremental impact on
 9 habitat for the species would be less under the proposed project when compared with the
 10 approved project, the overall impact would still remain significant. Implementation of Mitigation
 11 Measure BIO-75, *Conduct Preconstruction Nesting Bird Surveys and Avoid Disturbance of Nesting*
 12 *Birds*, would be needed to reduce potential impacts on loggerhead shrike to a less-than-
 13 significant level.

14 **Mitigation Measure BIO-75: Conduct Preconstruction Nesting Bird Surveys and Avoid**
 15 **Disturbance of Nesting Birds**

16 See Mitigation Measure BIO-75 under Impact BIO-75.

17 **Song Sparrow “Modesto” Population**

18 **Impact BIO-142: Loss or Conversion of Habitat for and Direct Mortality of Modesto Song**
 19 **Sparrow**

20 The impacts from the approved project and the proposed project on Modesto song sparrow are
 21 presented in Table 12-41. The proposed project would affect 65 fewer acres of Modesto song
 22 sparrow habitat than would the approved project. This difference is largely due to the relocation of
 23 RTM sites and shaft locations under the proposed project.

24 The proposed project would offset loss in habitat with the restoration and protection of riparian and
 25 nontidal marsh under Environmental Commitment 3, Environmental Commitment 4, Environmental
 26 Commitment 7 and Environmental Commitment 10, guided by Resource Restoration and
 27 Performance Principles CBR1 and CBR2. The proposed project includes commitments to implement
 28 the following measures that will avoid and minimize effects on the species: AMM1 Worker
 29 Awareness Training, AMM2 Construction Best Management Practices and Monitoring, AMM3
 30 Stormwater Pollution Prevention Plan, AMM4 Erosion and Sediment Control Plan, AMM5 Spill
 31 Prevention, Containment, and Countermeasure Plan, AMM6 Disposal and Reuse of Spoils, AMM7
 32 Barge Operations Plan. These AMMs and Mitigation Measure BIO-75, *Conduct Preconstruction*
 33 *Nesting Bird Surveys and Avoid Disturbance of Nesting Birds* would avoid and minimize effects on
 34 Modesto Song Sparrow.

35 **Table 12-41. Impacts on Modesto Song Sparrow Modeled Habitat (acres)**

Project Component	Habitat Type	Approved Project ^a	Proposed Project (Total) ^a	Proposed Project (Increment)
Water Conveyance Facilities	Nesting	127	62	-65
Total Impacts Water Conveyance Facilities		127	62	-65

^a Includes both permanent and temporary impacts combined.

36

1 **NEPA Effects:** The loss of Modesto song sparrow nesting habitat from the proposed project would
2 not be adverse under NEPA because the lead agencies have committed to avoiding and minimizing
3 effects and to restoring and protecting an acreage that exceeds the typical mitigation ratios. This
4 habitat protection, restoration, management, and enhancement would be guided by Resource
5 Restoration and Performance Principle CBR1, and by AMM1–AMM7, which would be in place during
6 all project activities. In addition, Mitigation Measure BIO-75 would be adopted to address potential
7 impacts on nesting individuals. Considering these commitments, losses and conversions of Modesto
8 song sparrow habitat under the proposed project would not be adverse.

9 **CEQA Conclusion:** The effects on Modesto song sparrow habitat from the proposed project would
10 represent an adverse effect as a result of habitat modification of a special-status species and
11 potential for direct mortality in the absence of other Environmental Commitments and AMMs, which
12 would be the same as under the approved project. However, the lead agencies have committed to
13 habitat protection, restoration, management, and enhancement associated with Environmental
14 Commitment 3, Environmental Commitment 4, Environmental Commitment 7, Environmental
15 Commitment 10, and Environmental Commitment 11. These conservation activities would be guided
16 by Resource Restoration and Performance Principle CBR1, and by AMM1–AMM6, which would be in
17 place during all project activities. In addition, Mitigation Measure BIO-75 would be adopted to
18 address potential impacts on nesting individuals. Considering these commitments, the proposed
19 project would not result in a substantial adverse effect through habitat modifications and would not
20 substantially reduce the number or restrict the range of Modesto song sparrow.

21 **Incremental Impact:** Changing the footprint of the water conveyance facilities would result in
22 65 fewer acres of impact on Modesto song sparrow habitat. Although the incremental impact on
23 habitat for the species would be less under the proposed project when compared with the
24 approved project, the overall impact would remain significant. Implementation of Mitigation
25 Measure BIO-75, Conduct Preconstruction Nesting Bird Surveys and Avoid Disturbance of Nesting
26 Birds, would be needed to reduce potential impacts on Modesto song sparrow to a less-than-
27 significant level

28 **Mitigation Measure BIO-75: Conduct Preconstruction Nesting Bird Surveys and Avoid**
29 **Disturbance of Nesting Birds**

30 See Mitigation Measure BIO-75 under Impact BIO-75.

31 **Impact BIO-143: Effects on Modesto Song Sparrow Associated with Electrical Transmission**
32 **Facilities**

33 New transmission lines would increase the risk for bird-power line strikes, which could result in
34 injury or mortality of Modesto song sparrow. The proposed project reduces the risk of electrical
35 transmission line collisions relative to the approved project because the approved project
36 transmission alignment would cross over wetland habitat on two small islands in the central Delta
37 between Mandeville and Bouldin Islands, which the proposed project would avoid.

38 **NEPA Effects:** The incremental increased risk of bird-powerline strikes from the construction of new
39 transmission lines would not adversely affect the Modesto song sparrow population.

40 **CEQA Conclusion:** The incremental increased risk of bird-powerline strikes from the construction of
41 new transmission lines would have a minimal impact on the Modesto song sparrow population,
42 which is the same determination as under the approved project.

1 **Incremental Impact:** The impact of the construction and presence of new transmission lines on
 2 Modesto song sparrow would be reduced under the proposed project and would remain as less
 3 than significant. No mitigation is required.

4 **Mitigation Measure BIO-75: Conduct Preconstruction Nesting Bird Surveys and Avoid**
 5 **Disturbance of Nesting Birds**

6 See Mitigation Measure BIO-75 under Impact BIO-75.

7 **Yellow-Headed Blackbird**

8 **Impact BIO-148: Loss of Habitat for and Direct Mortality of Yellow-Headed Blackbird**

9 The impacts from the approved project and the proposed project on yellow-headed blackbird are
 10 presented in Table 12-42. The proposed project would affect 61 additional acres of yellow-headed
 11 blackbird habitat relative to the approved project. The difference is due to increased impacts on
 12 croplands to create Byron Tract Forebay and shifting the location of RTM storage on Bouldin Island.

13 The impacts on nesting habitat under the proposed project would be offset by the restoration and
 14 protection of nontidal marsh under Environmental Commitment 3 and Environmental Commitment
 15 10. The impact on foraging habitat would be offset by the protection of grassland and cultivated
 16 lands under Environmental Commitment 10, much of which would provide suitable foraging habitat
 17 for the species. Construction related effects on yellow-headed blackbird would be avoided and
 18 minimized through the implementation of Mitigation Measure BIO-75, *Conduct Preconstruction*
 19 *Nesting Bird Surveys and Avoid Disturbance of Nesting Birds* and AMM1-AMM6, and AMM10.

20 **Table 12-42. Impacts on Yellow-Headed Blackbird Modeled Habitat (acres)**

Project Component	Habitat Type	Approved Project ^a	Proposed Project (Total) ^a	Proposed Project (Increment)
Water Conveyance Facilities	Nesting	57	28	-29
	Foraging	3,105	3,195	90
Total Impacts Water Conveyance Facilities		3,162	3,223	61

^a Includes both permanent and temporary impacts combined.

21
 22 **NEPA Effects:** The loss of yellow-headed blackbird nesting and foraging habitat from the proposed
 23 project would not be adverse under NEPA because the lead agencies have committed to avoiding
 24 and minimizing effects and to restoring and protecting an acreage that exceeds the typical
 25 mitigation ratios. This habitat protection, restoration, management, and enhancement would be
 26 guided by Resource Restoration and Performance Principle CBR1, and by AMM1-AMM7, which
 27 would be in place during all project activities. In addition, Mitigation Measure BIO-75 would be
 28 adopted to address potential impacts on nesting individuals. Considering these commitments, losses
 29 and conversions of yellow-headed blackbird habitat under the proposed project would not be
 30 adverse.

31 **CEQA Conclusion:** The effects on yellow-headed blackbird habitat from the proposed project would
 32 represent an adverse effect as a result of habitat modification of a special-status species and
 33 potential for direct mortality in the absence of Environmental Commitments and AMMs, which
 34 would be the same as under the approved project. However, the lead agencies have committed to

1 habitat protection, restoration, management, and enhancement associated with Environmental
2 Commitment 3, Environmental Commitment 4, Environmental Commitment 10, and Environmental
3 Commitment 11. These conservation activities would be guided by Resource Restoration and
4 Performance Principle CBR1, and by AMM1–AMM7, which would be in place during all project
5 activities. In addition, Mitigation Measure BIO-75 would be adopted to address potential impacts on
6 nesting individuals. Considering these commitments, the proposed project would not result in a
7 substantial adverse effect through habitat modifications and would not substantially reduce the
8 number or restrict the range of yellow-headed blackbird.

9 **Incremental Impact:** Changing the footprint of the water conveyance facilities would result in
10 61 additional acres of impact on yellow-headed blackbird habitat and would remain significant.
11 Cultivated lands that would be used by yellow-headed blackbird would be protected under
12 Environmental Commitment 3. Implementation of Mitigation Measure BIO-75. Conduct
13 Preconstruction Nesting Bird Surveys and Avoid Disturbance of Nesting Birds, would be needed to
14 reduce potential impacts on yellow-headed blackbird to a less-than-significant level.

15 **Mitigation Measure BIO-75: Conduct Preconstruction Nesting Bird Surveys and Avoid**
16 **Disturbance of Nesting Birds**

17 See Mitigation Measure BIO-75 under Impact BIO-75.

18 **Impact BIO-149: Effects on Yellow-Headed Blackbird Associated with Electrical Transmission**
19 **Facilities**

20 New transmission lines would increase the risk for bird-power line strikes, which could result in
21 injury or mortality of yellow-headed blackbirds. Yellow-headed blackbirds are colonial and have the
22 potential to collide with the proposed transmission lines when migrating in large flocks. The
23 proposed project reduces the risk of electrical transmission line collisions relative to the approved
24 project because the approved project transmission alignment would cross over wetland habitat on
25 two small islands in the central Delta between Mandeville and Bouldin Islands, which the proposed
26 project would avoid.

27 **NEPA Effects:** New transmission lines would increase the risk for bird-power line strikes, which
28 could result in injury or mortality of yellow-headed blackbird. *AMM20 Greater Sandhill Crane*
29 contains the commitment to place bird strike diverters on all new powerlines, which would reduce
30 the potential impact of the construction of new transmission lines on yellow-headed blackbird. The
31 increased risk of predation on yellow-headed blackbird from an increase in raptor perching
32 opportunities would be minimal. Therefore, the construction and operation of new transmission
33 lines under the proposed project would not result in an adverse effect on yellow-headed blackbird.

34 **CEQA Conclusion:** New transmission lines would increase the risk for bird-power line strikes, which
35 could result in injury or mortality of yellow-headed blackbird, which would be the same as under
36 the approved project. *AMM20 Greater Sandhill Crane* contains the commitment to place bird strike
37 diverters on all new powerlines, which would reduce the potential impact of the construction of new
38 transmission lines on yellow-headed blackbird. The increased risk of predation on yellow-headed
39 blackbird from an increase in raptor perching opportunities would be minimal. The construction
40 and operation of new transmission lines under the proposed project would not substantially reduce
41 the number or restrict the range of the species, which is the same determination as under the
42 approved project.

1 **Incremental Impact:** The impact of the construction and presence of new transmission lines on
2 yellow-headed blackbird would be reduced under the proposed project. The impact under the
3 proposed project would remain less than significant. No mitigation is required.

4 **Mitigation Measure BIO-75: Conduct Preconstruction Nesting Bird Surveys and Avoid**
5 **Disturbance of Nesting Birds**

6 See Mitigation Measure BIO-75 under Impact BIO-75.

7 **Riparian Brush Rabbit**

8 **Impact BIO-152: Loss or Conversion of Habitat for and Direct Mortality of Riparian Brush**
9 **Rabbit**

10 The impacts from the approved project and proposed project on riparian brush rabbit modeled
11 habitat are presented in Table 12-43. The proposed project would affect 210 fewer acres of riparian
12 brush rabbit modeled habitat than the approved project.

13 The proposed project would result in the protection and restoration of riparian habitat suitable for
14 riparian brush rabbit. This habitat protection, restoration, and enhancement would be guided by
15 species-specific Resource Restoration and Performance Principles L1 and RBR1-RBR5, and by
16 AMM1-AMM6, AMM10, and AMM25, which would be in place throughout the period of construction
17 and operations.

18 **Table 12-43. Impacts on Riparian Brush Rabbit Modeled Habitat (acres)**

Project Component	Habitat Type	Approved Project ^a	Proposed Project (Total) ^a	Proposed Project (Increment)
Water Conveyance Facilities	Riparian	18	1	-17
	Grassland	232	390	-193
Total Impacts Water Conveyance Facilities		250	40	-210

^a Includes both permanent and temporary impacts combined.

19
20 **NEPA Effects:** The loss of riparian brush rabbit habitat and potential mortality under the proposed
21 project would not be an adverse effect because there is little likelihood of riparian brush rabbits
22 being present and because the lead agencies have committed to protecting and restoring the acreage
23 required to meet the typical mitigation ratios. This habitat protection, restoration, and enhancement
24 would be guided by species-specific Resource Restoration and Performance Principles L1 and RBR1-
25 RBR5, and by AMM1-AMM6, AMM10, and AMM25, which would be in place throughout the period
26 of construction and operations. Considering these commitments, the effects of proposed project as a
27 whole on riparian brush rabbit would not be an adverse effect.

28 **CEQA Conclusion:** Considering the proposed project's commitment to the protection, restoration,
29 and management of riparian brush rabbit habitat, Resource Restoration and Performance Principles
30 L1 and RBR1-RBR5, and with the implementation of AMM1-AMM7, AMM10, and AMM25, the loss of
31 habitat or direct mortality of riparian brush rabbit as a result of implementing the proposed project
32 would not represent a substantial adverse effect through habitat modifications and would not
33 substantially reduce the number or restrict the range of the species, as it would under the approved
34 project.

Incremental Impact: Changing the footprint of the water conveyance facilities would result in 210 fewer acres of impact on riparian brush rabbit habitat. The impact on riparian brush rabbit habitat would remain less than significant. No mitigation is required.

San Joaquin Kit Fox and American Badger

Impact BIO-162: Loss or Conversion of Habitat for and Direct Mortality of San Joaquin Kit Fox and American Badger

The impacts from the approved project and the proposed project on San Joaquin kit fox modeled habitat are presented in Table 12-44. Because American badger uses grasslands for denning and foraging and may occupy the same range as the San Joaquin kit fox in the project area, effects are anticipated to be the same as those described for San Joaquin kit fox. The proposed project would affect 202 fewer acres of modeled habitat for San Joaquin kit fox than would the approved project. These differences would be due to the changes in the footprint of the water conveyance facilities at Clifton Court Forebay under the proposed project.

The proposed project would include the protection of grassland in the greater Byron Hills area following Resource Restoration and Protection Principles L2 and G10, and guided by AMM1–AMM6, AMM10, and AMM24. Environmental Commitments and associated Resource Restoration and Protection Principles to benefit the San Joaquin kit fox which would also benefit American badger which uses similar habitat (see BDCP Chapter 3, *Conservation Strategy*). In addition, the implementation of Mitigation Measure BIO-162 would avoid direct mortality of American badger from construction-related activities.

Table 12-44. Impacts on San Joaquin Kit Fox Modeled Habitat (acres)

Project Component	Habitat Type	Approved Project ^a	Proposed Project (Total) ^a	Proposed Project (Increment)
Water Conveyance Facilities	Modeled Habitat	313	111	-202
Total Impacts Water Conveyance Facilities		313	111	-202

^a Includes both permanent and temporary impacts combined.

NEPA Effects: In the absence of actions to restore and protect habitat, the effects on San Joaquin kit fox and American badger habitat from the proposed project would represent an adverse effect as a result of habitat modification and potential direct mortality of special-status species. However, with habitat protection, restoration, management, and enhancement guided by Resource Restoration and Protection Principles L2 and G10, and guided by AMM1–AMM6, AMM10, and AMM24 which would be in place throughout the construction period, the effects of the proposed project as a whole on San Joaquin kit fox and American badger would not be adverse effect. In addition, the implementation of Mitigation Measure BIO-162 would avoid direct mortality of American badger from construction-related activities.

CEQA Conclusion: In the absence of the proposed Environmental Commitments, the effects on San Joaquin kit fox and American badger habitat from the proposed project would represent a significant impact as a result of habitat modification, which would be the same as under the approved project. However, habitat protection, restoration, management, and enhancement guided by Resource Restoration and Protection Principles L2, and G10, and guided by AMM1–AMM6,

1 AMM10, and AMM24, would be in place throughout the time period of construction and operations,
2 and with implementation of Mitigation Measure BIO-162.

3 **Incremental Impact:** Changing the footprint of the water conveyance facilities would result in
4 202 fewer acres of impact on habitat for San Joaquin kit fox and American badger habitat. The
5 impact on these species would remain less than significant with the implementation of
6 Mitigation Measure BIO-162 for American Badger.

7 **Mitigation Measure BIO-162: Conduct Preconstruction Survey for American Badger**

8 Refer to the Final EIR/EIS for a description of Mitigation Measure BIO-162.

9 **San Joaquin Pocket Mouse**

10 **Impact BIO-164: Loss or Conversion of Habitat for and Direct Mortality of San Joaquin Pocket**
11 **Mouse**

12 The loss of habitat for San Joaquin pocket mouse under the proposed and approved projects is
13 summarized in Table 12-45. The proposed project would affect 209 fewer acres of San Joaquin
14 pocket mouse impact than would the approved project. The reduction in affected acreage is due to
15 changes in RTM placement on Bouldin Island and changes in tunnel work area on Mandeville Island.
16 In addition, changes in the location of tunnel shafts, tunnel conveyor and use of Byron Tract Forebay
17 instead of the expansion of Clifton Court Forebay reduce the loss of grassland.

18 The proposed project would result in the protection of grassland under Environmental Commitment
19 3, which would be guided by Resource Restoration and Protection Principle G3. Impacts on this
20 species would be avoided and minimized with AMM1–AMM6 and AMM10.

21 **Table 12-45. Impacts on San Joaquin Pocket Mouse Habitat (acres)**

Project Component	Habitat Type	Approved Project ^a	Proposed Project (Total) ^a	Proposed Project (Increment)
Water Conveyance Facilities	Grassland	664	455	-209
Total Impacts Water Conveyance Facilities		664	455	-209

^a Includes both permanent and temporary impacts combined.

22

23 **NEPA Effects:** In the absence of the Environmental Commitments, the effects on San Joaquin pocket
24 mouse habitat and potential mortality of a special-status species resulting from the proposed project
25 would represent an adverse effect. However, the lead agencies have committed to habitat protection
26 and management associated with Environmental Commitment 3 and Environmental Commitment
27 11. This habitat protection and management would be guided by Resource Restoration and
28 Performance Principle G3, and by AMM1–AMM6 and AMM10, which would be in place during
29 construction. Considering these commitments, losses of San Joaquin pocket mouse and potential
30 mortality under the proposed project would not be an adverse effect.

31 **CEQA Conclusion:** Considering the proposed project’s commitment to the protection and
32 management of grasslands and with the implementation of Resource Restoration and Protection
33 Principle G3 and AMM1–AMM6 and AMM10, the loss of habitat or direct mortality under the
34 proposed project would not result in a substantial adverse effect through habitat modifications and
35 would not substantially reduce the number or restrict the range of San Joaquin pocket mouse.

1 **Incremental Impact:** Changing the footprint of the water conveyance facilities would result in
 2 209 fewer acres of impact on San Joaquin pocket mouse habitat. The impact on San Joaquin
 3 pocket mouse would remain less than significant and no mitigation is required.

4 **Special-Status Bat Species**

5 **Impact BIO-166: Loss or Conversion of Habitat for and Direct Mortality of Special-Status Bats**

6 The impacts from the approved project and the proposed project on special-status bats modeled
 7 habitat are presented in Table 12-46. The proposed project would affect 41 fewer acre of roosting
 8 habitat and 127 more acres of foraging habitat than would the approved project. The differences are
 9 due to a number of different project features along the length of the water conveyance footprint.

10 The protection and restoration of special-status bats foraging and roosting habitats would occur for
 11 the proposed project under Environmental Commitment 3, *Natural Communities Protection and*
 12 *Restoration*, Environmental 7, *Riparian Natural Community Restoration*, Environmental Commitment
 13 8, *Grassland Natural Community*, Environmental Commitment 9, *Vernal Pool and Alkali Seasonal*
 14 *Wetlands Restoration*, and Environmental Commitment 10, *Nontidal Restoration*. The proposed
 15 project would protect and restore grassland, vernal pool/alkali seasonal wetland complexes with
 16 associated grasslands, valley/foothill riparian, nontidal marsh, and cultivated lands which would be
 17 guided by Resource Restoration and Protection Principles CL1, CL2, G1, G3, G4, and guided by
 18 AMM1–AMM6, and AMM10 and Mitigation Measure BIO-166.

19 **Table 12-46. Impacts on Special-Status Bat Roosting and Foraging Habitat (acres)**

Project Component	Habitat Type	Approved Project ^a	Proposed Project (Total) ^a	Proposed Project (Increment)
Water Conveyance Facilities	Roosting	204	163	-41
	Foraging	5,387	5,514	+127
Total Impacts Water Conveyance Facilities		5,591	5,677	+86

^a Includes both permanent and temporary impacts combined.

20

21 **NEPA Effects:** The losses of roosting and foraging habitat for special-status bats, in the absence of
 22 the Environmental Commitments, would represent an adverse effect as a result of habitat
 23 modification and potential direct mortality of a special-status species. However, with habitat
 24 protection and restoration associated with the Environmental Commitments 3, 7, 8, 9, and 10,
 25 Resource Restoration and Performance Principles CL1, CL2, G1, G3, G4, the implementation of
 26 AMM1–AMM6, and AMM10, and implementation of Mitigation Measure BIO-166, the effects of the
 27 proposed project as a whole on special-status bats would not be an adverse effect.

28 **CEQA Conclusion:** The loss of roosting habitat from the proposed project would be mitigated
 29 through implementation of Mitigation Measure BIO-166, which would ensure there is no significant
 30 impact under CEQA on roosting special-status bats, either directly or through habitat modifications
 31 and no substantial reduction in numbers or a restriction in the range of special-status bats, which
 32 would be the same as under the approved project. The project also contains commitments to
 33 implement habitat protection and restoration associated with the Environmental Commitments and
 34 Resource Restoration and Protection Principles, and AMM1–6 and AMM10, which would offset the

1 loss of foraging habitat. These AMMs include elements that avoid or minimize the risk of project
2 activities affecting habitat and species adjacent to work areas and storage sites.

3 **Incremental Impact:** Changing the footprint of the water conveyance facilities would result in
4 86 more acres of impact on special-status bat foraging habitat. Because bats forage over a wide-
5 ranging area and utilize a variety of habitats the impact on these species would remain less than
6 significant with the implementation of Mitigation Measure BIO-166.

7 Mitigation Measure BIO-166: Conduct Preconstruction Surveys for Roosting Bats and Implement
8 Protective Measures

9 **Refer to the Final EIR/EIS for a description of Mitigation Measure BIO-166.**

10 **Plant Species**

11 **Vernal Pool Species**

12 The impacts on vernal pool plant species from the approved project and proposed project are
13 presented in Table 12-47. The proposed project would affect 19 fewer acres of modeled habitat for
14 vernal pool plant species than would the approved project. In addition, the impact on one
15 occurrence of alkali milkvetch under the approved project would be avoided under the proposed
16 project. The implementation of AMM1-6 AMM10, AMM11, AMM37, and Environmental
17 Commitment 9, as described in Final EIR/EIS Appendix 3B, would ensure that effects of construction
18 on vernal pools are avoided, minimized, or compensated for.

1 **Table 12-47. Summary of Impacts on Vernal Pool Plant Species under Approved Project and Proposed Project**

	Acres in Study Area	Occurrences in Study Area	Approved Project Acres Affected	Approved Project Occurrences Affected	Proposed Project Acres Affected (Total)	Proposed Project Occurrences Affected (Total)	Proposed Project Acres Affected (Increment)	Proposed Project Occurrences Affected (Increment)	Impacts
Habitat									
Vernal pool complex	9,557	-	13	-	3	-	-10	-	Potential habitat loss from construction of the water conveyance facilities
Degraded vernal pool complex	2,576	-	9	-	1	-	-8	-	Potential habitat loss from construction of the water conveyance facilities
Alkali Seasonal Wetland	188	-	1	-	0	-	-1	-	Potential habitat loss from construction of the water conveyance facilities
Total	12,321	-	23	-	4	-	-19	-	Potential habitat loss from construction of the water conveyance facilities
Species									
Alkali milk-vetch	-	16	-	1	-	0	-	-1	Potential habitat loss from construction of the water conveyance facilities
Dwarf downingia	-	12	-	0	-	0	-	0	None
Boggs Lake hedge-hyssop	-	1	-	0	-	0	-	0	None
Legenere	-	8	-	0	-	0	-	0	None
Heckard's peppergrass	-	4 ^a	-	0	-	0	-	0	None
Ferris' milk-vetch	-	6	-	0	-	0	-	0	None
Vernal pool smallscale	-	2	-	0	-	0	-	0	None
Hogwallow starfish	-	0	-	0	-	0	-	0	None
Ferris' goldfields	-	4	-	0	-	0	-	0	None
Contra Costa goldfields	-	7	-	0	-	0	-	0	None

	Acres in Study Area	Occurrences in Study Area	Approved Project Acres Affected	Approved Project Occurrences Affected	Proposed Project Acres Affected (Total)	Proposed Project Occurrences Affected (Total)	Proposed Project Acres Affected (Increment)	Proposed Project Occurrences Affected (Increment)	Impacts
Cotula-leaf navarretia	-	5	-	0	-	0	-	0	None
Baker's navarretia	-	3	-	0	-	0	-	0	None
Colusa grass	-	1	-	0	-	0	-	0	None
Bearded popcorn- flower	-	4	-	0	-	0	-	0	None
Delta woolly marbles	-	3	-	0	-	0	-	0	None
Saline clover	-	9	-	0	-	0	-	0	None
Solano grass	-	1	-	0	-	0	-	0	None

^a One additional occurrence is in alkali seasonal wetlands.

1 **Impact BIO-169: Effects on Habitat and Populations of Vernal Pool Plants**

2 **NEPA Effects:** The approved project would result in the loss of modeled habitat for vernal pool plant
3 species and the loss of one occurrence of alkali milk vetch. The proposed project would result in a
4 smaller loss of habitat for vernal pool plant species and would avoid the loss of one occurrence of
5 alkali milk vetch. These adverse effects would be minimized or offset by AMM 11, AMM12, AMM 30,
6 and Environmental Commitment 9 With avoidance and restoration of habitat occupied by these
7 species, these effects would not be adverse, under either the approved project or the proposed
8 project.

9 **CEQA Conclusion:** Because loss of modeled habitat for vernal pool plant species would be offset
10 through restoration, and because impacts on occurrences of special-status vernal pool plant species
11 would be avoided or compensated for, implementation of either the approved project or the
12 proposed project would not result in a reduction in the range or numbers of 17 special-status vernal
13 pool plant species in the study area. The proposed project would have fewer impacts on modeled
14 vernal pool habitat than the approved project.

15 **Incremental Impact:** Changing the footprint of the water conveyance facilities would result in
16 19 fewer acres of impact on vernal pool plant habitat. The impact on vernal pool plants would
17 remain less than significant and no mitigation is required.

18 **Alkali Seasonal Wetland Species**

19 The impacts on alkali seasonal wetland plant species from the approved project and proposed
20 project are presented in Table 12-48. The proposed project would affect 44 fewer acres of modeled
21 habitat for San Joaquin spearscale and 76 fewer acres of modeled habitat for Delta button celery
22 than would the approved project. The proposed project would affect 1 less acre of alkali seasonal
23 wetlands than would the approved project. The proposed project would avoid two populations of
24 San Joaquin spearscale that would be affected under the approved project. The proposed project
25 would avoid one population of crownscale that would be affected by the approved project. The
26 implementation of AMM1-AMM6 AMM10, AMM11, AMM37, and Environmental Commitment 9, as
27 described in Final EIR/EIS Appendix 3B, would ensure that effects of construction on alkali seasonal
28 wetlands are avoided, minimized, or compensated for.

1 **Table 12-48. Summary of Impacts on Seasonal Alkali Wetland Plant Species under Approved Project and Proposed Project**

	Acres in Study Area	Occurrences in Study Area	Approved Project Acres Affected	Approved Project Occurrences Affected	Proposed Project Acres Affected (Total)	Proposed Project Occurrences Affected (Total)	Proposed Project Acres Affected (Increment)	Proposed Project Occurrences Affected (Increment)	Impacts
Habitat									
San Joaquin spearscale modeled habitat	14,933	-	76	-	31	-	-44	-	Potential habitat loss from construction of water conveyance facilities
Brittlescale modeled habitat	451	-	0.0	-	0.0	-	0	-	Potential habitat loss from construction of water conveyance facilities
Heartscale modeled habitat	6,528	-	0.0	-	0.0	-	0	-	None
Delta button-celery modeled habitat	3,361 ^a	-	96	-	20	-	-76	-	Habitat loss from construction of water conveyance facilities
Alkali seasonal wetlands	3,723	-	1	-	0.0	-	-1	-	Potential habitat loss from construction of water conveyance facilities
Species									
San Joaquin spearscale	-	19	-	2	-	0	-2	-	Population loss from construction of water conveyance facilities
Brittlescale	-	8	-	0	-	0	0	-	None
Heartscale	-	3	-	0	-	0	0	-	None
Delta button-celery	-	1 ^b	-	0	-	0	0	-	None
Heckard's peppergrass	-	1 ^c	-	0	-	0	0	-	None
Crownscale	-	17	-	1	-	0	-1	-	Population loss from construction of water conveyance facilities
Palmate-bracted bird's-beak	-	1	-	0	-	0	0	-	None
Recurved larkspur	-	4	-	0	-	0	0	-	None

^a A portion of this acreage consists of riparian habitat.

^b A second occurrence in study area is in riparian habitat.

^c Four additional occurrences of Heckard's peppergrass are associated with vernal pools.

1 **Impact BIO-170: Effects on Habitat and Populations of Alkali Seasonal Wetland Plants**

2 **NEPA Effects:** The approved project would result in the loss of modeled habitat for San Joaquin
3 spearscale and Delta button-celery and would affect occurrences of San Joaquin spearscale and
4 crownscale. The proposed project would result in a smaller loss of modeled habitat for San Joaquin
5 spearscale and Delta button-celery, would avoid the loss of San Joaquin spearscale occurrences and
6 would avoid the loss of the crownscale occurrence. Under the approved project, loss of modeled
7 habitat for alkali seasonal wetland plant species would be offset through restoration of grassland,
8 vernal pool, and alkali seasonal wetland habitat (Environmental Commitments 8 and 9), and impacts
9 on two occurrences of San Joaquin spearscale and one occurrence of crownscale would be avoided
10 or compensated for through AMM11. With avoidance and restoration of habitat occupied by these
11 species, these effects would not be adverse, under either the approved project or the proposed
12 project.

13 **CEQA Conclusion:** Because loss of modeled habitat for alkali seasonal wetland plant species would
14 be offset through restoration, and because impacts on occurrences of special-status alkali seasonal
15 wetland species would be avoided or compensated for, impacts on alkali seasonal wetlands as a
16 result of implementing either the approved project or the proposed project would not result in
17 substantially reducing the number or restricting the range of seven special-status alkali seasonal
18 wetland plant species. The proposed project would have fewer impacts on habitat for alkali seasonal
19 wetland species than the approved project and would avoid the loss of populations.

20 **Incremental Impact:** Changing the footprint of the water conveyance facilities would result in
21 fewer acres of impact on habitat for alkali seasonal wetland plant habitat and occurrences. The
22 impact on alkali seasonal wetland plant species would remain less than significant and no
23 mitigation is required.

24 **Grassland Species**

25 The impacts on grassland plant species from the approved project and proposed project are
26 presented in Table 12-49. The proposed project would affect 313 fewer acres of grassland habitat
27 than would the approved project. No known occurrences of special-status grassland plant species
28 would be affected under either the approved project or the proposed project. The implementation of
29 AMM1-AMM6 AMM10, AMM11, AMM37, and Environmental Commitment 9, as described in Final
30 EIR/EIS Appendix 3B, would ensure that effects of construction on grassland species are avoided,
31 minimized, or compensated for.

1 **Table 12-49. Summary of Impacts on Grassland Plant Species under Approved Project and Proposed Project**

	Acres in Study Area	Occurrences in Study Area	Approved Project Acres Affected	Approved Project Occurrences Affected	Proposed Project Acres Affected (Total)	Proposed Project Occurrences Affected (Total)	Proposed Project Acres Affected (Increment)	Proposed Project Occurrences Affected (Increment)	Impacts
Habitat									
Carquinez goldenbush modeled habitat	1,346	-	0	-	0	-	0	-	None
Grassland	78,047	-	664	-	351	-	-313	-	Habitat loss from construction of water conveyance facilities
Species									
Carquinez goldenbush	-	10	-	0	-	0	0	-	None
Big tarplant	-	5	-	0	-	0	0	-	None
Round-leaved filaree	-	2	-	0	-	0	0	-	None
Pappose tarplant	-	7	-	0	-	0	0	-	None
Parry's rough tarplant	-	5	-	0	-	0	0	-	None
Small-flowered morning-glory	-	0	-	0	-	0	0	-	None
Diamond-petaled poppy	-	1	-	0	-	0	0	-	None
Stinkbells	-	1	-	0	-	0	0	-	None
Fragrant fritillary	-	4	-	0	-	0	0	-	None
Gairdner's yampah	-	0	-	0	-	0	0	-	None
Streamside daisy ^a	-	1	-	0	-	0	0	-	None
Caper-fruited trepidocarpum	-	8	-	0	-	0	0	-	None
^a This species actually occurs in upland woodland, a habitat that has not been mapped or quantified for analysis of the approved project.									

2

1 **Impact BIO-171: Effects on Habitat and Populations of Grassland Plants**

2 **NEPA Effects:** The loss of modeled and occupied habitat for Carquinez goldenbush would be avoided
3 under both the approved project and the proposed project. The approved project would result in the
4 loss of grassland habitat for special-status grassland species, and the proposed project would result
5 in fewer impacts on grassland habitat. Loss of grassland habitat would be compensated for by the
6 restoration of grassland habitat (Environmental Commitment 8). Neither the approved project nor
7 the proposed project would affect any known occurrences of special-status grassland species. With
8 restoration of habitat for these species, these effects would not be adverse under either the
9 approved project or the proposed project.

10 **CEQA Conclusion:** Because loss of modeled habitat for Carquinez goldenbush and habitat for
11 grassland plant species would be avoided or offset through restoration, and because impacts on
12 occurrences of special-status grassland species would be avoided, impacts on grasslands as a result
13 of implementing either the approved project or the proposed project would not result in
14 substantially reducing the number or restricting the range of twelve special-status grassland plant
15 species. The proposed project would have fewer impacts on grassland habitat than the approved
16 project, but neither project would have impacts on special-status grassland species.

17 **Incremental Impact:** Changing the footprint of the water conveyance facilities would result in
18 313 fewer acres of impact on habitat for grassland plant habitat. The impact on grassland plant
19 species would remain less than significant and no mitigation is required.

20 **Valley/Foothill Riparian Species**

21 The impacts on valley/foothill riparian plant species from the approved project and proposed
22 project are presented in Table 12-50. The proposed project would affect 36 fewer acres of
23 valley/foothill riparian habitat than would the approved project. No known occurrences of special-
24 status valley/foothill riparian plant species would be affected under either the approved project or
25 the proposed project. The implementation of AMM1–AMM6 AMM10, AMM11, AMM37, and
26 Environmental Commitment 7, as described in Final EIR/EIS Appendix 3B, would ensure that effects
27 of construction on valley/foothill riparian species are avoided, minimized, or compensated for.

1 **Table 12-50. Summary of Impacts on Valley/Foothill Riparian Plant Species under the Approved Project and Proposed Project**

	Acres in Study Area	Occurrences in Study Area	Approved Project Acres Affected	Approved Project Occurrences Affected	Proposed Project Acres Affected (Total)	Proposed Project Occurrences Affected (Total)	Proposed Project Acres Affected (Increment)	Proposed Project Occurrences Affected (Increment)	Impacts
Habitat									
Delta button-celery modeled habitat	3,361 ^a	-	96	-	20	-	-76	-	None
Slough thistle modeled habitat	1,834	-	0	-	0	-	0	-	None
Valley/foothill riparian habitat	17,966	-	70	-	34	-	-36	-	Habitat loss from construction of water conveyance facilities
Species									
Delta button-celery	-	1 ^b	-	0	-	0	-	0	None
Slough thistle	-	2	-	0	-	0	-	0	None
Northern California black walnut	-	1	-	0	-	0	-	0	None
Wright's trichocoronis	-	1	-	0	-	0	-	0	None
^a A portion of this acreage consists of alkali seasonal wetland.									
^b A second occurrence is in alkali seasonal wetland.									

2

1 **Impact BIO-172: Effects on Habitat and Populations of Valley/Foothill Riparian Plants**

2 **NEPA Effects:** The proposed project would result in the loss of Delta button-celery modeled habitat
3 and riparian habitat for special-status riparian plant species. The proposed project would result in
4 less loss of Delta button-celery modeled habitat and riparian habitat for special-status riparian plant
5 species than the approved project. Loss of riparian habitat would be offset through Environmental
6 Commitment 7. With restoration of habitat for these species, these effects would not be adverse,
7 under either the approved project or the proposed project.

8 **CEQA Conclusion:** Because the loss of modeled habitat for Delta button-celery and slough thistle and
9 valley/foothill riparian habitat would be avoided or offset through restoration, and because impacts
10 on occurrences of special-status valley/foothill riparian species would be avoided, impacts on
11 valley/foothill riparian species as a result of implementing either the approved project or the
12 proposed project would not result in substantially reducing the number or restricting the range of
13 four special-status valley/foothill riparian plant species. The proposed project would have fewer
14 impacts on modeled Delta button-celery and valley/foothill riparian habitat than the approved
15 project.

16 **Incremental Impact:** Changing the footprint of the water conveyance facilities would result in
17 **36 fewer acres of impact on habitat for riparian plant habitat. The impact on riparian plant**
18 **species would remain less than significant and no mitigation is required.**

19 **Tidal Wetland Species**

20 The impacts on tidal wetland plant species from the approved project and proposed project are
21 presented in Table 12-51. The proposed project would affect 17 fewer acres of modeled habitat for
22 Delta mudwort and Mason’s lilaepsis than would the approved project. The proposed project
23 would affect 2 fewer acres of modeled habitat for side-flowering skullcap than would the approved
24 project. The proposed project would affect 1 fewer acres of modeled habitat for Delta tule pea and
25 Suisun Marsh aster than would the approved project. The proposed project would affect four fewer
26 populations of Mason’s lilaepsis than would the approved project. The implementation of AMM1–
27 AMM6 AMM10, AMM11, AMM37, and Environmental Commitment 4, as described in Final EIR/EIS
28 Appendix 3B, would ensure that effects of construction on tidal wetland species are avoided,
29 minimized, or compensated for.

1 **Table 12-51. Summary of Impacts on Tidal Wetland Plant Species under Approved Project and Proposed Project**

	Acres in Study Area	Occurrences in Study Area	Approved Project Acres Affected	Approved Project Occurrences Affected	Proposed Project Acres Affected (Total)	Proposed Project Occurrences Affected (Total)	Proposed Project Acres Affected (Increment)	Proposed Project Occurrences Affected (Increment)	Impacts
Habitat									
Delta mudwort/ Mason's lilaepsis modeled habitat	6,081	-	37	-	20	-	-17	-	Potential habitat loss from construction of water conveyance facilities
Side-flowering skullcap modeled habitat	2,497	-	7	-	5	-	-2	-	Potential habitat loss from construction of water conveyance facilities
Soft bird's-beak modeled habitat	1,228	-	0	-	0	-	0	-	None
Delta tule pea/Suisun Marsh aster modeled habitat	5,853	-	2	-	1	-	-1	-	Potential habitat loss from construction of water conveyance facilities
Suisun thistle modeled habitat	1,281	-	0	-	0	-	0	-	None
Tidal brackish emergent wetland	8,501	-	0	-	0	-	0	-	None
Tidal freshwater emergent wetland	8,856	-	9	-	5	-	-4	-	Habitat loss from construction of water conveyance facilities
Species									
Delta mudwort	-	58	-	0	-	0	0	-	None
Delta tule pea	-	106	-	0	-	0	0	-	None
Mason's lilaepsis	-	181	-	9	-	4	-5	-	Occurrences affected by construction of water conveyance facilities
Side-flowering skullcap	-	12	-	1	-	1	0	-	Occurrence affected by construction of water conveyance facilities
Soft bird's-beak	-	13	-	0	-	0	0	-	None
Suisun Marsh aster	-	164	-	3	-	3	0	-	Occurrences affected by construction of water conveyance facilities
Suisun thistle	-	4	-	0	-	0	0	-	None
Bolander's water hemlock	-	8	-	0	-	0	0	-	None

2

1 **Impact BIO-173: Effects on Habitat and Populations of Tidal Wetland Plants**

2 **NEPA Effects:** The approved project would result in the loss of modeled and occupied habitat for
3 special-status tidal wetland plants. However, this loss would be offset through tidal habitat
4 restoration (Environmental Commitment 4). The approved project would affect occurrences of
5 Mason’s lilaepsis, side-flowering skullcap, and Suisun Marsh aster. These effects would be avoided
6 or compensated for through AMM11. The proposed project would affect fewer acres of habitat for
7 special-status tidal wetland plants and fewer occurrences of Mason’s lilaepsis and would require
8 less habitat restoration. With avoidance and restoration of habitat occupied by these species, these
9 effects would not be adverse under either the approved project or the proposed project.

10 **CEQA Conclusion:** Because loss of modeled habitat for tidal wetland plant species would be avoided
11 or offset through restoration, and because impacts on occurrences of special-status grassland
12 species would be avoided or compensated for, impacts on tidal wetlands as a result of implementing
13 either the approved project or the proposed project would not result in substantially reducing the
14 number or restricting the range of eight special-status tidal wetland plant species. The proposed
15 project would have fewer impacts on modeled habitat and fewer impacts on populations of special-
16 status tidal wetland plants than the approved project.

17 **Incremental Impact:** Changing the footprint of the water conveyance facilities would result in
18 fewer acres of impact on habitat for tidal wetland plant habitat and occurrences. The impact on
19 tidal wetland plant species would remain less than significant and no mitigation is required.

20 **Nontidal Wetland Species**

21 The impacts on nontidal wetland plant species from the approved project and proposed project are
22 presented in Table 12-52. The proposed project would affect 42 fewer acres of nontidal wetlands
23 than would the approved project. The proposed project would have fewer impacts on bristly sedge
24 and woolly rose-mallow than would the approved project. The implementation of AMM1–AMM6
25 AMM10, AMM11, AMM37, and Environmental Commitment 10, as described in Final EIR/EIS
26 Appendix 3B, would ensure that effects of construction on nontidal wetland species are avoided,
27 minimized, or compensated for.

1 **Table 12-52. Summary of Impacts on Nontidal Wetland Plant Species under the Approved Project and Proposed Project**

	Acres in Study Area	Occurrences in Study Area	Approved Project Acres Affected	Approved Project Occurrences Affected	Proposed Project Acres Affected (Total)	Proposed Project Occurrences Affected (Total)	Proposed Project Acres Affected (Increment)	Proposed Project Occurrences Affected (Increment)	Impacts
Habitat									
Nontidal freshwater aquatic	5,567	-	64	-	22	-	-42	-	Loss or disturbance of habitat from construction of water conveyance facilities
Nontidal freshwater perennial emergent wetland	1,509	-	5	-	4	-	-1	-	Loss or disturbance of habitat from construction of water conveyance facilities
Species									
Watershield	-	3	-	1	-	1	0	-	Loss of habitat from construction of water conveyance facilities
Bristly sedge	-	18	-	1	-	0	-1	-	Loss of occurrences from construction of water conveyance facilities
Woolly rose-mallow ^a	-	121	-	8	-	6	-2	-	Loss of occurrences from construction of water conveyance facilities
Eel grass pondweed	-	1	-	0	-	0	0	-	None
Sanford's arrowhead	-	23	-	1	-	1	0	-	None
Marsh skullcap ^a	-	1	-	1	-	1	0	-	None
^a Also occurs in valley/foothill riparian habitat.									

2

1 **Impact BIO-175: Effects on Habitat and Populations of Nontidal Wetland Plants**

2 **NEPA Effects:** The approved project would result in the loss of nontidal wetland habitat for special-
3 status nontidal wetland plants, and the proposed project would result in less loss of nontidal
4 wetland habitat. The approved project could result in a reduction in the range and numbers of
5 watershield, bristly sedge, and woolly rose-mallow, which would be an adverse effect. The proposed
6 project would avoid effects on bristly sedge and would have fewer impacts on woolly-rose mallow
7 but have the same impacts on watershield. Adverse effects on these species could be avoided or
8 offset through implementation of AMM11. With avoidance and restoration of habitat occupied by
9 these species, these effects would not be adverse, under either the approved project or the proposed
10 project.

11 **CEQA Conclusion:** Under the approved project, construction of the water conveyance facilities could
12 result in a reduction in the range and numbers of watershield, bristly sedge, and woolly rose-
13 mallow. The proposed project would have fewer impacts on habitat for nontidal wetland species
14 than the approved project and would have fewer impacts on populations of special-status nontidal
15 wetland plants than the approved project. Because loss of nontidal wetland habitat would be
16 avoided or offset through restoration, and because impacts on occurrences of special-status non-
17 tidal wetland species would be avoided or compensated for, neither the approved project nor the
18 proposed project would result in substantially reducing the number or restricting the range of six
19 special-status nontidal wetland plant species.

20 **Incremental Impact:** Changing the footprint of the water conveyance facilities would result in
21 42 fewer acres of impact on habitat for nontidal wetland plant habitat and occurrences. The
22 impact on nontidal wetland plant species would remain less than significant and no mitigation is
23 required.

24 **General Terrestrial Biology**

25 **Wetlands and Other Waters of the United States**

26 The proposed project would permanently and temporarily remove or convert wetlands and open
27 water that are regulated by USACE under Section 404 of the CWA. The 404 regulations and relevant
28 information on mitigating the effects of impact on wetlands and other waters of the United States
29 are described in Section 12.2.1.1 of the Final EIR/EIS. The methods used to conduct these analyses
30 are described in Section 12.3.2.4, *Methods Used to Assess Wetlands and Other Waters of the United*
31 *States* of the Final EIR/EIS. Waters of the United States data used for this analysis is based on a
32 verified wetland delineation from the USACE that was completed in early 2015 and updated in 2018
33 by DWR. The updates to the delineation were for the area beneath the proposed Byron Tract
34 Forebay and associated canal and the new transmission line alignment for the intakes and tunnel
35 work area, which would be on an existing transmission line that would be upgraded. The waters of
36 the United States were mapped at a finer scale than that which was done for the natural community
37 mapping for the BDCP and therefore the acreages of these two datasets differ when compared with
38 each other. The waters of the United States mapping identified numerous agricultural ditches and
39 seasonal wetlands occurring within and associated with cultivated lands, which explains the
40 majority of the difference. The additional mapping done in 2018 added only a very small amount of
41 additional acreage.

1 **Impact BIO-176: Effects of Constructing Water Conveyance Facilities on Wetlands and Other**
 2 **Waters of the United States**

3 The impacts from the approved project and the proposed project on wetlands and other waters of
 4 the United States are presented in Tables 12-53 and 12-54. The proposed project would affect 448
 5 fewer acres of wetlands and waters of the United States (Table 12-55). These differences are mostly
 6 due to the relocation of RTM storage areas on Zacharias Island and Bouldin Island and the change
 7 from the Clifton Court Forebay expansion to the new Byron Tract Forebay.

8 **Table 12-53. Estimated Fill of Waters of the United States Associated with the Construction of**
 9 **Water Conveyance Facilities under the Approved Project (acres)**

Wetland/Water Type	Permanent Impact	Temporary Impacts Treated as Permanent ^a	Temporary Impact ^b	Total Impact ^c
Agricultural Ditch	42.2	13.2	0	55.4
Alkaline Wetland	10.4	0.1	0	10.5
Clifton Court Forebay	257.9	0	1,930.6	257.9
Conveyance Channel	7.1	2.9	0	10.0
Depression	29.3	6.2	0	35.5
Emergent Wetland	56.8	14.7	0	71.5
Forest	7.2	5.2	0	12.4
Lake	23.2	0	0	23.2
Scrub-Shrub	12.7	3.7	0	16.3
Seasonal Wetland	114.5	10.0	0	124.5
Tidal Channel	15.3	65.6	0	80.8
Vernal Pool	0.3	0	0	0.3
Total	577	121	1,931	698

^a Temporary impacts treated as permanent are temporary impacts expected to last more than 1 year. These impact sites would eventually be restored to pre-project conditions; however, due to the duration of effect, compensatory mitigation would be included for these areas.

^b Temporary impacts are due to dredging Clifton Court Forebay.

^c Total does not include temporary impacts on Clifton Court Forebay because these would just be temporary disturbance to open water, which typically do not require compensatory mitigation.

10

1 **Table 12-54. Estimated Fill of Waters of the United States Associated with the Construction of**
 2 **Water Conveyance Facilities under the Proposed Project (acres)**

Wetland/Water Type	Permanent Impact	Temporary Impacts Treated as Permanent ^a	Temporary Impact	Total Impact
Agricultural Ditch	70.75	9.39	0	80.14
Alkaline Wetland	0.26	0	0	0.26
Clifton Court Forebay	0	0	0	0
Conveyance Channel	19.22	0.20	0	19.42
Depression	0.01	1.77	0	1.78
Emergent Wetland	3.92	7.40	0	11.32
Forest	0.11	7.29	0	7.40
Lake	0	0	0	0
Scrub-Shrub	1.59	3.62	0	5.21
Seasonal Wetland	41.22	17.54	0	58.76
Tidal Channel	8.91	56.30	0	65.21
Vernal Pool	0	0	0	0
Total	146	104	0	250

^a Temporary impacts treated as permanent are temporary impacts expected to last more than 1 year. These impact sites would eventually be restored to pre-project conditions; however, due to the duration of effect, compensatory mitigation would be included for these areas.

3
 4 **Table 12-55. Incremental Difference between Approved Project and Proposed Project Estimated**
 5 **Fill of Waters of the United States Associate with the Construction of Water Conveyance Facilities**
 6 **under the Proposed Project (acres)**

Wetland/Water Type	Approved Project	Proposed Project	Proposed Project (Increment)
Agricultural Ditch	55.4	80.14	24.74
Alkaline Wetland	10.5	0.26	-10.24
Clifton Court Forebay	257.9	0	-257.9
Conveyance Channel	10.0	19.42	9.42
Depression	35.5	1.78	-33.72
Emergent Wetland	71.5	11.32	-60.18
Forest	12.4	7.40	-5
Lake	23.2	0	-23.2
Scrub-Shrub	16.3	5.21	-11.09
Seasonal Wetland	124.5	58.76	-65.74
Tidal Channel	80.8	65.21	-15.59
Vernal Pool	0.3	0	-0.3
Total	698	250	-448

7
 8 The majority of the impacts on wetlands and waters of United States would be on wetlands found
 9 within cultivated lands (mostly agricultural ditches and seasonal wetlands) and tidal channels. The
 10 impacted seasonal wetlands mapped within the Conveyance Planning Area, as described in Section

1 12.3.2.4, *Methods Used to Assess Wetlands and Other Waters of the United States*, in the Final EIR/EIS,
2 all occur in the central Delta within plowed agricultural fields and would be mostly affected by the
3 forebay construction, road interchange, and tunnel work areas. Tidal channels would be mostly
4 affected by intake construction and barge unloading facilities.

5 These impacts would include the discharge of fill material into wetland and waters at various
6 locations. The material proposed for discharge consists of clean soil, rock, concrete, grout, sheet
7 piles, and RTM. Discharge of fill material would be associated with the construction of the intake
8 facilities on the banks of the Sacramento River; construction of levees on the landside of the existing
9 levees at the intake locations, construction of the intermediate forebay and Byron Tract Forebay
10 (with the pumping plant) on upland areas with drainage features, tunnel shafts (drive, vent, and
11 reception shafts) on upland areas with drainage features; tunnels at depths of at least 100 feet
12 below ground level; disposal of excavated tunnel material on upland areas with drainage features;
13 construction of barge landings in rivers and sloughs; and installation of the Head of Old River (HOR)
14 Gate in the Old and San Joaquin River confluence. Seven disposal sites are proposed for tunnel
15 material excavated from the north tunnels and dual main tunnels.

16 The proposed project could potentially result in indirect effects on wetlands and other waters of the
17 United States as a result of project construction. Construction activities, such as excavation, changes
18 in topography, and compaction of soils, have a potential to change the hydrology of wetlands and
19 waters of the United States adjacent to or further removed from the construction footprint. These
20 effects are expected to be few and localized because groundwater in the project areas is very
21 shallow, which means any water drained from a wetland or water due to nearby excavation or
22 changes in local infiltration due to changes in topography and soil compaction would likely be
23 replenished from the shallow groundwater adjacent to these areas. Construction activities may also
24 indirectly affect wetlands and waters due to changes in water quality from suspended sediment,
25 accidental spills of contaminants, including cement, oil, fuel, hydraulic fluids, paint, and other
26 construction-related materials, resulting in localized water quality degradation. Such effects could in
27 turn result in adverse effects depending on the nature and extent of the spill and the contaminants
28 involved. The construction footprint for the project includes areas with known or potentially
29 contaminated sediments, indicating the potential for release and dispersal of these contaminants if
30 these sediments are disturbed during construction. Some of these contaminants include metals,
31 PCBs, and hydrocarbons (Final EIR/EIS, p. 11-3181). Construction activities that could result in
32 dispersal of contaminants include dredging and cofferdam installation.

33 Unavoidable impacts on waters of the United States would be offset such that the loss of acreage and
34 functions due to construction activities are fully compensated. Wetland functions are defined as a
35 process or series of processes that take place within a wetland. These include the storage of water,
36 transformation of nutrients, growth of living matter, and diversity of wetland plants, and they have
37 value for the wetland itself, for surrounding ecosystems, and for people. Functions can be grouped
38 broadly as habitat, hydrologic/hydraulic, or water quality. Not all wetlands perform all functions nor
39 do they perform all functions equally well. The location and size of a wetland may determine what
40 functions it will perform. For example, the geographic location may determine its habitat functions,
41 and the location of a wetland within a watershed may determine its hydrologic/hydraulic or water-
42 quality functions. Many factors determine how well a wetland will perform these functions: climatic
43 conditions, quantity and quality of water entering the wetland, and disturbances or alteration within
44 the wetland or the surrounding ecosystem. Wetland disturbances may be the result of natural
45 conditions, such as an extended drought, or human activities, such as land clearing, dredging, or the
46 introduction of nonnative species. Wetlands are among the most productive habitats in the world,

1 providing food, water, and shelter for fish, shellfish, birds, and mammals, and serving as a breeding
2 ground and nursery for numerous species. Many endangered plant and animal species are
3 dependent on wetland habitats for their survival. Hydrologic and hydraulic functions are those
4 related to the quantity of water that enters, is stored in, or leaves a wetland. These functions include
5 such factors as the reduction of flow velocity, the role of wetlands as ground-water recharge or
6 discharge areas, and the influence of wetlands on atmospheric processes. Water-quality functions
7 include the trapping of sediment, pollution control, and the biochemical processes that take place as
8 water enters, is stored in, or leaves a wetland.

9 The functions of the waters of the United States that would be temporarily or permanently impacted
10 by the proposed project vary greatly depending primarily on existing land uses and historical levels
11 of disturbance. Generally, agricultural ditches and conveyance channels, which are regularly
12 maintained and often devoid of vegetation, support only minimal hydraulic function (water
13 conveyance), with virtually no water quality or habitat function. With respect to Clifton Court
14 Forebay, the facility is regularly maintained, but supports some hydrologic, hydraulic, and water
15 quality functions (e.g., reduction of velocity, groundwater recharge, and trapping of sediment). Tidal
16 channels affected by the proposed project support functions in all three categories, but the level at
17 which these functions perform vary depending on setting, size, and level of disturbance. The alkaline
18 wetlands and vernal pools exist in nonnative grasslands and have been subjected to some
19 disturbance due to past land uses. Although these features likely support habitat, water quality, and
20 hydrologic/hydraulic functions, the capacity of these features to perform such functions vary
21 depending on the overall ecological setting and level of disturbance. Functions associated with
22 emergent wetland, forest, and scrub-shrub, depend primarily on the location of these habitat types.
23 Where they exist as in-stream (in-channel islands) or as the thick band of habitat adjacent to a
24 waterway, these features are expected to function at a high level. However, where these habitats
25 exist as thin bands, or where they are situated in agricultural fields, their habitat functions will be
26 considerably lower. All of the wetlands classified as seasonal wetlands occur in agricultural fields. As
27 such, their habitat functions have been greatly compromised, but they retain some water quality and
28 hydrologic/hydraulic function. Like seasonal wetlands, most depressions occur within agricultural
29 areas; however the depressions may support wetland vegetation at their edges. The areas mapped
30 as lake are the dredged borrow ponds created during the construction of Interstate 5. Although
31 relatively small, each lake is likely performing functions from all three categories.

32 A functional assessment of wetlands proposed for fill would be conducted during the development
33 of the Conceptual Mitigation Plan as part of the Clean Water Act permitting process. The results of
34 this assessment would be compared with the expected functions at the proposed mitigation site(s)
35 such that it can be confirmed that the compensatory mitigation will in fact accomplish full functional
36 replacement of impacted wetlands. All impacted wetlands would be replaced with fully functional
37 compensatory wetland habitat demonstrating high levels of habitat, water quality, and
38 hydrologic/hydraulic function. Because many impacted wetlands would be significantly less than
39 high function, the compensatory mitigation would result in a net increase in wetland function.

40 The proposed project was designed to avoid waters of the United States to the maximum extent
41 practicable. Each of the conveyance components has been located in upland areas where it was
42 feasible to do so. Once construction begins, AMM2 and AMM6 would be implemented, as described
43 in the AMMs set out in Appendix 3B, *Environmental Commitments, AMMs, and CMs*, to further avoid
44 and minimize effects on waters of the United States as well as on special-status species. The AMMs
45 would be implemented during all phases of a project, from siting through design, construction, and
46 on to operations and maintenance. The AMMs that pertain specifically to waters of the United States

1 are AMM1 Worker Awareness Training, AMM2 Construction Best Management Practices and
2 Monitoring, AMM3 Stormwater Pollution Prevention Plan, AMM4 Erosion and Sediment Control Plan,
3 AMM5 Spill Prevention, Containment, and Countermeasure Plan, AMM6 Disposal and Reuse of Spoils,
4 AMM7 Barge Operations Plan, AMM10 Restoration of Temporarily Affected Natural Communities,
5 AMM12 Vernal Pool Crustaceans, AMM30 Transmission Line Design and Alignment Guidelines, AMM34
6 Construction Site Security, and AMM36 Notification of Activities in Waterways.

7 The implementation of measures to avoid and minimize impacts on habitat for aquatic species and
8 species which utilize aquatic habitats, such as California tiger salamander, giant garter snake,
9 California red legged frog, western pond turtle, riparian woodrat, and riparian brush rabbit, would
10 also result in further avoidance and minimization of effects on waters of the United States.

11 Aside from wetland habitats that would be created as a result of implementing Environmental
12 Commitment 4–Environmental Commitment 10 described for proposed project, some of which
13 could serve the dual purpose of offsetting effects on species and mitigating impacts on waters of the
14 United States, more specific mitigation is required to ensure that there is no net loss of wetland
15 functions and values as a result of implementing the proposed project pursuant to USACE’s and U.S.
16 EPA’s Mitigation Rule (see Section 12.2.1.1 in the Final EIR/EIS). Mitigation Measure BIO-176,
17 *Compensatory Mitigation for Fill of Waters of the United States* would be adopted to address adverse
18 impacts on waters of the United States.

19 **NEPA Effects:** The permanent and temporary loss of wetlands and waters of the United States as a
20 result of constructing the proposed project water conveyance facilities would be a substantial effect
21 if not compensated by wetland restoration and protection. The lead agencies would implement
22 AMM1–AMM7, AMM10, AMM12, AMM30, AMM34, and AMM36, which would avoid and minimize fill
23 of wetlands and waters and any indirect effects on wetlands and waters. However, specific
24 mitigation would be required to ensure that the proposed project does not result in a loss of
25 functions and values of waters of the United States and thus that the affect is not adverse. Mitigation
26 Measure BIO-176, *Compensatory Mitigation for Fill of Waters of the United States*, would be adopted
27 to reduce these effects such that they are not adverse.

28 **CEQA Conclusion:** The permanent and temporary loss of wetlands and waters of the United States
29 as a result of constructing the proposed project water conveyance facilities would be a significant
30 impact, as it would under the approved project. Specific mitigation would be required to ensure that
31 the proposed project does not result in a loss of functions and values of waters of the United States.
32 Mitigation Measure BIO-176, *Compensatory Mitigation for Fill of Waters of the United States*, would
33 be adopted to reduce the impact to a less-than-significant level. Additionally, the proposed project
34 would restore of wetlands as part of the proposed project, which would include tidal marsh
35 restoration (Environmental Commitment 4), vernal pool/alkali seasonal wetlands (Environmental
36 Commitment 9), and nontidal marsh restoration (Environmental Commitment 10). In addition, the
37 proposed project would restore riparian habitat (Environmental Commitment 7), some portion of
38 which may also qualify as forested or scrub-shrub wetland. In addition, levees will have channel
39 margin enhancement conducted on them (Environmental Commitment 6), which would include
40 improving channel geometry and restoring riparian, marsh, and mudflat habitats on the water side
41 of levees.

42 The success in implementing these Environmental Commitments would be assured through
43 effectiveness monitoring, which includes success criteria, and adaptive management as outlined in
44 the *Adaptive Management and Monitoring* sections of the BDCP for tidal marsh restoration (BDCP

1 Chapter 3, *Conservation Strategy*, Section 3.4.4.4), channel margin enhancement (BDCP Section
2 3.4.6.4), valley/foothill riparian restoration (BDCP Section 3.4.7.4), vernal pool and alkali seasonal
3 wetland complex restoration (BDCP Section 3.4.9.4), and nontidal marsh restoration (BDCP Section
4 3.4.10.3). All restored areas will be secured in fee-title or through conservation easements.

5 The proposed project would also protect and manage the following natural communities that
6 contain wetlands: valley/foothill riparian, vernal pool/alkali seasonal wetland complex, and
7 nontidal marsh. In addition, grasslands and cultivated lands will be protected and managed, which
8 would likely include areas of seasonal wetlands, ponds, and agricultural ditches.

9 The proposed project also includes the following Resource Restoration and Performance Principles
10 (see Table 3-12 in Final EIR/EIS Chapter 3, *Project Description*) to further guide the Environmental
11 Commitments that would also contribute to establishing and maintaining the functions and values of
12 restored and protected waters of the United States.

- 13 ● Restore or create vernal pool and alkali seasonal wetland complex to achieve no net loss of
14 wetted acres (Resource Restoration and Performance Principle VP/AW2).
- 15 ● Provide appropriate seasonal flooding characteristics for supporting and sustaining vernal pool
16 and alkali seasonal wetland complex species (Resource Restoration and Performance Principle
17 VP/AW4).
- 18 ● In grasslands surrounding protected and created vernal pools and alkali seasonal wetlands
19 complex, increase the extent, distribution, and density of native perennial grasses intermingled
20 with other native species, including annual grasses, geophytes, and other forbs (Resource
21 Restoration and Performance Principle VP/AW6).
- 22 ● Increase the size and connectivity of protected vernal pool and alkali seasonal wetland complex
23 in the greater Byron Hill area (Resource Restoration and Performance Principle VP/AW3).
- 24 ● Protect up to six acres of stock ponds and other aquatic features within protected grasslands to
25 provide aquatic breeding habitat for native amphibians and aquatic reptiles (Resource
26 Restoration and Performance Principle G2).
- 27 ● Maintain and enhance aquatic features in grasslands to provide suitable inundation depth and
28 duration and suitable composition of vegetative cover to support breeding for amphibian and
29 aquatic reptile species (Resource Restoration and Performance Principle G7).
- 30 ● Maintain and protect the small patches of important wildlife habitats associated with cultivated
31 lands that occur in cultivated lands within the conservation area, including isolated valley oak
32 trees, trees and shrubs along field borders and roadsides, remnant groves, riparian corridors,
33 water conveyance channels, grasslands, ponds, and wetlands (Resource Restoration and
34 Performance Principle CL1).
- 35 ● Create and protect nontidal marsh consisting of a mosaic of nontidal perennial aquatic and
36 nontidal freshwater emergent wetland natural communities, which will include suitable habitat
37 characteristics for western pond turtle (Resource Restoration and Performance Principle
38 WPT1).
- 39 ● Create aquatic habitat for the giant garter snake will be connected to the protected rice land or
40 equivalent-value habitat (Resource Restoration and Performance Principle GGS1).

- 1 • Protect, restore, and/or create rice land or equivalent-value habitat (e.g., perennial wetland) for
2 the giant garter snake in Conservation Zones 4 and/or 5 (Resource Restoration and
3 Performance Principle GGS3).
- 4 • Create at least 320 acres of managed wetlands (part of the nontidal wetland restoration
5 acreage) in minimum patch sizes of 40 acres within the Greater Sandhill Crane Winter Use Area
6 in CZs 3, 4, 5, or 6, with consideration of sea level rise and local seasonal flood events. The
7 wetlands will be located within 2 miles of existing permanent roost sites and protected in
8 association with other protected natural community types (excluding nonhabitat cultivated
9 lands) at a ratio of 2:1 upland to wetland to provide buffers around the wetlands (Resource
10 Restoration and Performance Principle GSC2).
- 11 • Create at least two 90-acre wetland complexes within the Stone Lakes NWR project boundary.
12 The complexes will be no more than 2 miles apart and will help provide connectivity between
13 the Stone Lakes and Cosumnes River Preserve greater sandhill crane populations. Each complex
14 will consist of at least three wetlands totaling at least 90 acres of greater sandhill crane roosting
15 habitat, and will be protected in association with other protected natural community types
16 (excluding nonhabitat cultivated lands) at a ratio of at least 2:1 uplands to wetlands (i.e., two
17 sites with at least 90 acres of wetlands each). One of the 90-acre wetland complexes may be
18 replaced by 180 acres of cultivated lands (e.g., cornfields) that are flooded following harvest to
19 support roosting cranes and provide highest-value foraging habitat, provided such substitution
20 is consistent with the long-term conservation goals of Stone Lakes NWR for greater sandhill
21 crane (Resource Restoration and Performance Principle GSC3).

22 The lead agencies would also implement AMM1–AMM7, AMM10, AMM12, AMM30, AMM34, and
23 AMM36, which would avoid and minimize fill of wetlands and waters and any indirect effects on
24 wetlands and waters. As stated above, specific mitigation would be required to ensure that the
25 proposed project does not result in a loss of functions and values of waters of the United States.
26 Mitigation Measure BIO-176, *Compensatory Mitigation for Fill of Waters of the United States*, would
27 be adopted to reduce project effects.

28 **Incremental Impact:** Changing the footprint of the water conveyance facilities would result in
29 448 fewer acres of impact on waters of the United States. The impact on waters of the United
30 States would remain less than significant and no mitigation is required.

31 **Mitigation Measure BIO-176: Compensatory Mitigation for Fill of Waters of the United** 32 **States**

33 Refer to the Final EIR/EIS for a description of Mitigation Measure BIO-176.

34 **Shorebirds and Waterfowl**

35 **Impact BIO-178: Loss or Conversion of Habitat for Waterfowl and Shorebirds as a Result of** 36 **Water Conveyance Facilities Construction**

37 Water conveyance construction under the proposed project would result in the conversion of 3,891
38 acres of habitat for waterfowl and shorebirds, which is 305 fewer acres than would be converted
39 under the approved project. Most of this difference is due to a larger acreage of cultivated lands that
40 are suitable for waterfowl and shorebirds affected under the approved project. The proposed
41 project would affect approximately 49 fewer acres of suitable waterfowl and shorebird wetland
42 habitat than the approved project.

1 Cultivated lands would be protected and grassland would be protected and restored under the
2 proposed project. In addition, tidal freshwater emergent wetlands and nontidal wetlands would be
3 protected and restored or created in the Delta. The restored and protected areas would provide
4 suitable nesting and/or foraging habitat for these species. These conservation actions would be
5 associated with the aforementioned Environmental Commitments and would occur in the same
6 timeframe as the construction losses. Construction activities could have an adverse effect on nesting
7 shorebirds or waterfowl if they were present in or adjacent to work areas and could result in
8 destruction of nests or disturbance of nesting and foraging behaviors. Mitigation Measure BIO-75,
9 *Conduct Preconstruction Nesting Bird Surveys and Avoid Disturbance of Nesting Birds*, would be
10 adopted to minimize adverse effects on nesting birds.

11 **NEPA Effects:** Habitat loss from construction of the proposed project water conveyance facilities
12 would not result in an adverse effect on shorebirds and waterfowl because of the natural
13 communities and cultivated lands that would be restored and protected. If waterfowl were present
14 in or adjacent to work areas, construction activities could result in destruction of nests or
15 disturbance of nesting and foraging behaviors, which would be an adverse effect on nesting
16 shorebirds and waterfowl. Mitigation Measure BIO-75, *Conduct Preconstruction Nesting Bird Surveys*
17 *and Avoid Disturbance of Nesting Birds*, would be adopted to minimize adverse effects on nesting
18 birds.

19 **CEQA Conclusion:** Habitat loss from construction of the proposed project water conveyance
20 facilities would have a less-than-significant impact on shorebirds and waterfowl because of the
21 natural communities and cultivated lands that would be restored and protected, which is the same
22 conclusion as under the approved project. If waterfowl were present in or adjacent to work areas,
23 construction activities could result in destruction of nests or disturbance of nesting and foraging
24 behaviors, which would be a significant impact. Implementation of Mitigation Measure BIO-75,
25 *Conduct Preconstruction Nesting Bird Surveys and Avoid Disturbance of Nesting Birds*, which would
26 identify birds prior to disturbance and would allow for avoidance measures.

27 **Incremental Impact:** Changing the footprint of the water conveyance facilities would result in
28 305 fewer acres of impact on shorebird and waterfowl habitat. Although the incremental impact
29 on habitat for these species would be less under the proposed project when compared with the
30 approved project, the overall impact would still remain significant. Implementation of
31 Mitigation Measure BIO-75, *Conduct Preconstruction Nesting Bird Surveys and Avoid Disturbance*
32 *of Nesting Birds*, would be needed to reduce potential impacts on shorebirds and waterfowl to a
33 less-than-significant level, as it was under the approved project.

34 **Mitigation Measure BIO-75: Conduct Preconstruction Nesting Bird Surveys and Avoid**
35 **Disturbance of Nesting Birds**

36 See Mitigation Measure BIO-75 under Impact BIO-75.

37 **Impact BIO-182: Effects on Shorebirds and Waterfowl Associated with Electrical**
38 **Transmission Facilities**

39 The proposed project reduces this risk of shorebirds and waterfowl colliding with electrical
40 transmission lines relative to the approved project by placing the project transmission lines along
41 existing lines around the proposed Byron Tract Forebay. Also, the proposed project transmission
42 lines avoid crossing over wetland habitat on two small islands in the central Delta between

1 Mandeville and Bouldin Islands that the approved project would cross over, which would reduce the
2 risk of collision relative to the approved project.

3 **NEPA Effects:** New transmission lines would increase the risk for shorebird and waterfowl power
4 line strikes which could have a substantial adverse effect as a result of direct mortality. This impact
5 would be significant. With the implementation of *AMM20 Greater Sandhill Crane*, the potential effect
6 of the construction of new transmission lines on shorebird and waterfowl would not be adverse.

7 **CEQA Conclusion:** New transmission lines would increase the risk for shorebird and waterfowl
8 power line strikes which could have a substantial adverse effect as a result of direct mortality, which
9 would be the same as under the approved project. The implementation of *AMM20 Greater Sandhill
10 Crane* would reduce the potential impact of powerline strikes from the construction of new
11 transmission lines on shorebirds and waterfowl.

12 **Incremental Impact:** The impact of the construction and presence of new transmission lines on
13 shorebirds and waterfowl would be reduced under the proposed project relative to the
14 approved project. The impact under the proposed project would remain less than significant and
15 no mitigation is required.

16 **Mitigation Measure BIO-75: Conduct Preconstruction Nesting Bird Surveys and Avoid**
17 **Disturbance of Nesting Birds**

18 See Mitigation Measure BIO-75 under Impact BIO-75.

19 **Common Wildlife and Plants**

20 **Impact BIO-184: Effects on Habitat and Populations of Common Wildlife and Plants**

21 The proposed project would affect less habitat for common wildlife and plants than the approved
22 project. The proposed project would affect 2,156 fewer acres of natural communities and cultivated
23 lands suitable for common wildlife and plants relative to the approved project. Most of this
24 difference is due to the change from modifying Clifton Court Forebay and the associated dredging.

25 The other general effects related to project construction would be the same between the proposed
26 and approved projects. See the discussion of Impact BIO-184 under Alternative 4A in Final EIR/EIS
27 Section 12.3.4.2.

28 The proposed project would result in the restoration and protection of natural communities and
29 cultivated lands that would offset effects on common wildlife and plants.

30 **NEPA Effects:** The direct and indirect effects associated with the proposed project would not be
31 adverse because of implementation of Environmental Commitments and AMMs. These actions
32 would result in avoiding and minimizing effects on common wildlife and plants as well.

33 **CEQA Conclusion:** Construction activities would have impacts on common wildlife and plants in the
34 study area through habitat loss and through direct or indirect loss or injury of individuals, which
35 would be same as under the proposed project. The loss of habitat would not be substantial, because
36 habitat restoration would increase the amount and extent of habitat adopted for use by most
37 common wildlife and plant species. Environmental commitments to avoid or minimize effects on
38 special-status species, and to enhance natural communities also would result in avoiding and
39 minimizing effects on common wildlife and plants.

Incremental Impact: Changing the footprint of the water conveyance facilities would result in 2,156 fewer acres of impact on habitat for common wildlife and plants. The impact on common wildlife and plants would remain less than significant and no mitigation is required.

Invasive Plant Species

Impact BIO-186: Adverse Effects on Natural Communities Resulting from the Introduction and Spread of Invasive Plant Species

The proposed project would have a smaller temporary disturbance footprint than the approved project, which would be 2,107 acres less than the approved project (Table 12-56). This would result in the proposed project having decreased potential for the introduction and spread of invasive plant species relative to the approved project. See the discussion of Impact BIO-186 under Alternative 4A in Final EIR/EIS Section 12.3.4.2.

Table 12-56. Summary of Temporary Disturbance in Natural Communities under the Proposed Project

Natural Community	Approved Project Temporary Impacts (acres)	Proposed Project Temporary Impacts (acres)	Proposed Project (Increment)
Agricultural	1,098	1,032	-66
Alkali Seasonal Wetland Complex	0	0	0
Grassland	197	127	-70
Managed Wetland	27	19	-8
Nontidal Freshwater Perennial Emergent Wetland	4	3	0
Nontidal Perennial Aquatic	6	5	-1
Tidal Freshwater Emergent Wetland	8	5	-2
Tidal Perennial Aquatic	2,019	80	-1,939
Valley/Foothill Riparian	33	25	-8
Vernal Pool Complex	3	2	0
Total	3,459	1,353	-2,107

NEPA Effects: The implementation of AMM4, AMM10, and AMM11, and Environmental Commitment 11 would reduce the potential for the introduction and spread of invasive plants and avoid or minimize the potential effects on natural communities and special-status species; therefore, these effects would not be adverse.

CEQA Conclusion: Under the proposed project, impacts on natural communities from the introduction or spread of invasive plants as a result of implementing the proposed project would not result in the long-term degradation of a sensitive natural community due to substantial alteration of site conditions.

Incremental Impact: Changing the footprint of the water conveyance facilities would result in 2,107 fewer acres of temporary impacts on natural communities and cultivated lands, which would decrease the potential for the spread of invasive plants relative to the approved project. The impact from the potential spread of invasive plant species would remain less than significant and no mitigation is required.

1 12.3.2 Cumulative Analysis

2 Cumulative effects related to construction of water conveyance facilities would be the same as under
3 the approved project. Please refer to the Chapter 12 of the Final EIR/EIS for more information on
4 cumulative effects.

5 12.4 References Cited

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1 **12.4.2 Personal Communications**

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