



DRAFT

# Supplemental Environmental Impact Report B.F. Sisk Dam Safety of Dams Modification Project

Prepared for:  
California Department of Water Resources  
1416 Ninth Street, Room 604  
Sacramento, California 95814  
Contact: Sara Paiva-Lowry



JUNE 2021

Prepared by:  
**DUDEK**  
Contact: Markus Lang • [mlang@dudek.com](mailto:mlang@dudek.com)





**DRAFT**

**Supplemental Environmental Impact Report  
B.F. Sisk Dam Safety of Dams Modification Project**

*Prepared for:*

**California Department of Water Resources**

1416 Ninth Street, Room 604  
Sacramento, California 95814

*Contact: Sara Paiva-Lowry*

*Prepared by:*

**DUDEK**

*Contact: Markus Lang  
mlang@dudek.com*

**JUNE 2021**



# Table of Contents

---

| <b><u>SECTION</u></b>  | <b><u>PAGE NO.</u></b> |
|--|------------------------|
| <b>ACRONYMS AND ABBREVIATIONS .....</b>  | <b>ACR-i</b>           |
| <b>EXECUTIVE SUMMARY .....</b>   | <b>ES-1</b>            |
| ES.1 Project Background .....  | ES-1                   |
| ES.1.1 Description of the Approved Project .....   | ES-2                   |
| ES.2 Modified Project Description .....  | ES-2                   |
| ES.2.1 Project Purpose and Objectives .....  | ES-2                   |
| ES.2.2 Proposed Modification to the Project .....  | ES-3                   |
| ES.2.3 Discretionary Actions .....   | ES-4                   |
| ES.3 Areas of Controversy .....  | ES-5                   |
| ES.4 Issues to be Resolved by the Decision-Making Body .....                                   | ES-5                   |
| ES.5 Summary of Impacts and Mitigation Measures .....  | ES-6                   |
| <b>1 INTRODUCTION .....</b>  | <b>1-1</b>             |
| 1.1 Project Background .....   | 1-1                    |
| 1.1.1 B.F. Sisk Dam and San Luis Reservoir .....   | 1-1                    |
| 1.1.2 B.F. Sisk Dam Safety of Dams Modification Project and the 2019 EIS/EIR .....             | 1-2                    |
| 1.1.3 2019 EIS/EIR Public Review and DWR Certification .....                                   | 1-3                    |
| 1.2 Project Objectives .....   | 1-4                    |
| 1.3 Proposed Modifications to the Project .....  | 1-4                    |
| 1.4 Purpose and Legal Authority .....  | 1-5                    |
| 1.5 Scope and Content of the SEIR .....  | 1-6                    |
| 1.6 Approved Project Relationship to B.F. Sisk Dam Raise and Reservoir Expansion Project ..... | 1-7                    |
| 1.7 Draft SEIR Organization .....  | 1-8                    |
| 1.8 Availability of the Draft SEIR .....   | 1-9                    |
| 1.9 Mitigation Monitoring and Reporting Program .....  | 1-9                    |
| 1.10 Incorporation by Reference .....  | 1-12                   |
| <b>2 PROJECT DESCRIPTION .....</b>   | <b>2-1</b>             |
| 2.1 Introduction .....   | 2-1                    |
| 2.2 Existing B.F. Sisk Dam Features and Stability Concerns .....                               | 2-1                    |
| 2.3 Description of the Approved Project .....  | 2-2                    |
| 2.3.1 Project Features .....   | 2-3                    |
| 2.3.2 Project Construction .....   | 2-4                    |
| 2.3.3 Construction Schedule and Assumptions .....  | 2-7                    |
| 2.3.4 Project Operation .....  | 2-8                    |



|          |  |            |
|----------|--|------------|
| 2.4      | Proposed Project Modifications and Clarifications .....                                  | 2-8        |
| 2.4.1    | Additional Impact Areas – Campground Construction and<br>Day Use Area Improvements ..... | 2-8        |
| 2.4.2    | Changes in Borrow Area Location .....  | 2-9        |
| 2.4.3    | Minor Additions to Contractor Work Area .....  | 2-10       |
| 2.4.4    | Additional Construction Assumptions .....  | 2-11       |
| 2.4.5    | Mitigation Site(s) .....   | 2-12       |
| 2.5      | Discretionary Actions .....  | 2-12       |
| <b>3</b> | <b>ENVIRONMENTAL ANALYSIS .....</b>  | <b>3-1</b> |
| 3.1      | Water Quality and Groundwater Resources .....  | 3.1-1      |
| 3.1.1    | Existing Conditions .....  | 3.1-1      |
| 3.1.2    | Relevant Plans, Policies, and Ordinances .....   | 3.1-7      |
| 3.1.3    | Thresholds of Significance .....   | 3.1-13     |
| 3.1.4    | Impacts Analysis .....   | 3.1-13     |
| 3.1.5    | Mitigation Measures .....  | 3.1-33     |
| 3.1.6    | Level of Significance After Mitigation .....   | 3.1-34     |
| 3.2      | Air Quality .....  | 3.2-1      |
| 3.2.1    | Existing Conditions .....  | 3.2-1      |
| 3.2.2    | Relevant Plans, Policies, and Ordinances .....   | 3.2-11     |
| 3.2.3    | Thresholds of Significance .....   | 3.2-17     |
| 3.2.4    | Impacts Analysis .....   | 3.2-21     |
| 3.2.5    | Mitigation Measures .....  | 3.2-43     |
| 3.2.6    | Level of Significance After Mitigation .....   | 3.2-44     |
| 3.3      | Greenhouse Gas Emissions .....   | 3.3-1      |
| 3.3.1    | Existing Conditions .....  | 3.3-1      |
| 3.3.2    | Relevant Plans, Policies, and Ordinances .....   | 3.3-7      |
| 3.3.3    | Thresholds of Significance .....   | 3.3-21     |
| 3.3.4    | Impacts Analysis .....   | 3.3-23     |
| 3.3.5    | Mitigation Measures .....  | 3.3-31     |
| 3.3.6    | Level of Significance After Mitigation .....   | 3.3-33     |
| 3.4      | Flood Protection .....   | 3.4-1      |
| 3.4.1    | Existing Conditions .....  | 3.4-1      |
| 3.4.2    | Relevant Plans, Policies, and Ordinances .....   | 3.4-4      |
| 3.4.3    | Thresholds of Significance .....   | 3.4-10     |
| 3.4.4    | Impacts Analysis .....   | 3.4-10     |
| 3.4.5    | Mitigation Measures .....  | 3.4-20     |
| 3.4.6    | Level of Significance After Mitigation .....   | 3.4-20     |

|        |  |        |
|--------|--|--------|
| 3.5    | Visual Resources .....                         | 3.5-1  |
| 3.5.1  | Existing Conditions.....                       | 3.5-1  |
| 3.5.2  | Relevant Plans, Policies, and Ordinances ..... | 3.5-5  |
| 3.5.3  | Thresholds of Significance .....               | 3.5-8  |
| 3.5.4  | Impacts Analysis .....                         | 3.5-8  |
| 3.5.5  | Mitigation Measures.....                       | 3.5-21 |
| 3.5.6  | Level of Significance After Mitigation .....   | 3.5-21 |
| 3.6    | Noise and Vibration .....                      | 3.6-1  |
| 3.6.1  | Existing Conditions.....                       | 3.6-1  |
| 3.6.2  | Relevant Plans, Policies, and Ordinances ..... | 3.6-4  |
| 3.6.3  | Thresholds of Significance .....               | 3.6-8  |
| 3.6.4  | Impacts Analysis .....                         | 3.6-9  |
| 3.6.5  | Mitigation Measures.....                       | 3.6-18 |
| 3.6.6  | Level of Significance After Mitigation .....   | 3.6-20 |
| 3.7    | Traffic and Transportation .....               | 3.7-1  |
| 3.7.1  | Existing Conditions.....                       | 3.7-1  |
| 3.7.2  | Relevant Plans, Policies, and Ordinances ..... | 3.7-5  |
| 3.7.3  | Thresholds of Significance .....               | 3.7-8  |
| 3.7.4  | Impacts Analysis .....                         | 3.7-8  |
| 3.7.5  | Mitigation Measures.....                       | 3.7-25 |
| 3.7.6  | Level of Significance After Mitigation .....   | 3.7-26 |
| 3.8    | Hazards and Hazardous Materials .....          | 3.8-1  |
| 3.8.1  | Existing Conditions.....                       | 3.8-1  |
| 3.8.2  | Relevant Plans, Policies, and Ordinances ..... | 3.8-7  |
| 3.8.3  | Thresholds of Significance .....               | 3.8-15 |
| 3.8.4  | Impacts Analysis .....                         | 3.8-15 |
| 3.8.5  | Mitigation Measures.....                       | 3.8-29 |
| 3.8.6  | Level of Significance After Mitigation .....   | 3.8-31 |
| 3.9    | Biological Resources .....                     | 3.9-1  |
| 3.9.1  | Existing Conditions.....                       | 3.9-1  |
| 3.9.2  | Relevant Plans, Policies, and Ordinances ..... | 3.9-37 |
| 3.9.3  | Thresholds of Significance .....               | 3.9-45 |
| 3.9.4  | Impacts Analysis .....                         | 3.9-45 |
| 3.9.5  | Mitigation Measures.....                       | 3.9-79 |
| 3.9.6  | Level of Significance After Mitigation .....   | 3.9-88 |
| 3.10   | Land Use .....                                 | 3.10-1 |
| 3.10.1 | Existing Conditions.....                       | 3.10-1 |
| 3.10.2 | Relevant Plans, Policies, and Ordinances ..... | 3.10-4 |
| 3.10.3 | Thresholds of Significance .....               | 3.10-6 |
| 3.10.4 | Impacts Analysis .....                         | 3.10-7 |

|          |   |            |
|----------|---|------------|
| 3.10.5   | Mitigation Measures.....                            | 3.10-12    |
| 3.10.6   | Level of Significance After Mitigation .....        | 3.10-12    |
| 3.11     | Recreation.....                                     | 3.11-1     |
| 3.11.1   | Existing Conditions.....                            | 3.11-1     |
| 3.11.2   | Relevant Plans, Policies, and Ordinances .....      | 3.11-4     |
| 3.11.3   | Thresholds of Significance .....                    | 3.11-6     |
| 3.11.4   | Impacts Analysis .....                              | 3.11-7     |
| 3.11.5   | Mitigation Measures.....                            | 3.11-15    |
| 3.11.6   | Level of Significance After Mitigation .....        | 3.11-16    |
| 3.12     | Cultural Resources .....                            | 3.12-1     |
| 3.12.1   | Existing Conditions.....                            | 3.12-1     |
| 3.12.2   | Relevant Plans, Policies, and Ordinances .....      | 3.12-9     |
| 3.12.3   | Thresholds of Significance .....                    | 3.12-18    |
| 3.12.4   | Impacts Analysis .....                              | 3.12-18    |
| 3.12.5   | Mitigation Measures.....                            | 3.12-21    |
| 3.12.6   | Level of Significance After Mitigation .....        | 3.12-24    |
| 3.13     | Geology, Seismicity, and Soils .....                | 3.13-1     |
| 3.13.1   | Existing Conditions.....                            | 3.13-1     |
| 3.13.2   | Relevant Plans, Policies, and Ordinances .....      | 3.13-11    |
| 3.13.3   | Thresholds of Significance .....                    | 3.13-16    |
| 3.13.4   | Impacts Analysis .....                              | 3.13-17    |
| 3.13.5   | Mitigation Measures.....                            | 3.13-32    |
| 3.13.6   | Level of Significance After Mitigation .....        | 3.13-32    |
| 3.14     | Tribal Cultural Resources.....                      | 3.14-1     |
| 3.14.1   | Existing Conditions.....                            | 3.14-1     |
| 3.14.2   | Relevant Plans, Policies, and Ordinances .....      | 3.14-2     |
| 3.14.3   | Thresholds of Significance .....                    | 3.14-5     |
| 3.14.4   | Impacts Analysis .....                              | 3.14-6     |
| 3.14.5   | Mitigation Measures.....                            | 3.14-9     |
| 3.14.6   | Level of Significance After Mitigation .....        | 3.14-9     |
| <b>4</b> | <b>OTHER CEQA CONSIDERATIONS .....</b>              | <b>4-1</b> |
| 4.1      | Effects Found Not to Be Significant .....           | 4-1        |
| 4.1.1    | Surface Water Supply .....                          | 4-1        |
| 4.1.2    | Fisheries Resources .....                           | 4-2        |
| 4.1.3    | Agricultural Resources.....                         | 4-2        |
| 4.1.4    | Public Utilities, Services, and Power.....          | 4-3        |
| 4.1.5    | Population and Housing .....                        | 4-5        |
| 4.2      | Growth Inducement.....                              | 4-5        |
| 4.3      | Significant Irreversible Environmental Changes..... | 4-6        |



|          |   |            |
|----------|---|------------|
| <b>5</b> | <b>LIST OF PREPARERS .....</b>                | <b>5-1</b> |
| 5.1      | California Department of Water Resources..... | 5-1        |
| 5.2      | Bureau of Reclamation .....                   | 5-1        |
| 5.3      | Dudek.....                                    | 5-1        |
| <b>6</b> | <b>REFERENCES .....</b>                       | <b>6-1</b> |

## TABLES

|        |   |        |
|--------|---|--------|
| ES-1   | Anticipated Permits or Approvals for the Modified Project.....                      | ES-4   |
| ES-2   | Summary of Impacts and Mitigation Measures .....                                    | ES-7   |
| 1-1    | Mitigation Measures Comparison .....  | 1-10   |
| 2-1    | Anticipated Permits or Approvals for the Modified Project.....                      | 2-12   |
| 3.1-1  | Beneficial Uses.....  | 3.1-5  |
| 3.1-2  | Water Quality Impairments for the San Joaquin River Watershed.....                  | 3.1-6  |
| 3.2-1  | San Joaquin Valley Air Basin Attainment Status (Merced County).....                 | 3.2-9  |
| 3.2-2  | Local Ambient Air Quality Data .....  | 3.2-10 |
| 3.2-3  | Ambient Air Quality Standards .....   | 3.2-12 |
| 3.2-4  | SJVAPCD CEQA Significance Thresholds for Criteria Pollutants.....                   | 3.2-18 |
| 3.2-5  | Screening Levels for Potential Odor Sources .....                                   | 3.2-19 |
| 3.2-6  | Construction Scenario Assumptions .....   | 3.2-22 |
| 3.2-7  | Unmitigated Annual Construction Criteria Air Pollutant Emissions.....               | 3.2-27 |
| 3.2-8  | Mitigated Annual Construction Criteria Air Pollutant Emissions .....                | 3.2-28 |
| 3.2-9  | Unmitigated Maximum Daily Construction Criteria Air Pollutant Emissions.....        | 3.2-29 |
| 3.2-10 | Mitigated Maximum Daily Construction Criteria Air Pollutant Emissions .....         | 3.2-30 |
| 3.2-11 | Mitigated Construction Ambient Air Quality Impact Assessment Results .....          | 3.2-32 |
| 3.2-12 | Unmitigated Annual Operational Criteria Air Pollutant Emissions.....                | 3.2-33 |
| 3.2-13 | Unmitigated Maximum Daily Operational Criteria Air Pollutant Emissions .....        | 3.2-33 |
| 3.3-1  | Six Top GHG-Producer Countries and the European Union .....                         | 3.3-5  |
| 3.3-2  | GHG Emissions Sources in California .....   | 3.3-5  |
| 3.3-3  | Unmitigated Annual Construction GHG Emissions.....                                  | 3.3-26 |
| 3.3-4  | Unmitigated Annual Operational GHG Emissions .....                                  | 3.3-27 |
| 3.6-1  | Existing Ambient Noise Monitoring Results.....                                      | 3.6-2  |
| 3.6-2  | Summary of Modeled Existing Traffic Noise Levels .....                              | 3.6-3  |
| 3.6-3  | Noise Standards for New Uses Affected by Traffic, Railroad, and Airport Noise ..... | 3.6-5  |
| 3.6-4  | Non-Transportation Noise Standards Median (L50) / Maximum (Lmax) <sup>1</sup> ..... | 3.6-6  |
| 3.6-5  | Typical Construction Equipment Noise Emission Levels .....                          | 3.6-9  |
| 3.6-6  | Campground Construction Noise Exposure by Phase at Nearest Receiver .....           | 3.6-10 |
| 3.6-7  | Borrow Area 12 Construction Noise Levels by Phase at Nearest Receiver.....          | 3.6-11 |
| 3.6-8  | Borrow Area 14 Construction Noise Levels by Phase at Nearest Receiver.....          | 3.6-12 |

|        |  |         |
|--------|--|---------|
| 3.6-9  | Noise Levels from Minor Additions to Contractor Work Area by Phase at Nearest Receiver .....   | 3.6-12  |
| 3.6-10 | Vibration Velocities for Typical Construction Equipment .....  | 3.6-14  |
| 3.7-1  | Existing Daily Roadway Segment Level of Service .....  | 3.7-3   |
| 3.7-2  | Existing AM and PM Peak Hour Roadway Segment Level of Service .....  | 3.7-4   |
| 3.7-3  | Existing Peak Hour Intersection Level of Service .....   | 3.7-4   |
| 3.7-4  | Peak Hour Trip Generation Estimates for Existing<br>San Luis Creek Campground Area Operations .....                                      | 3.7-13  |
| 3.7-5  | Modified Project Trip Generation for Campground Operation .....  | 3.7-13  |
| 3.7-6  | Approved Project Trip Generation .....   | 3.7-14  |
| 3.7-7  | Existing plus Approved Project Construction plus Campground Operation Daily<br>Roadway Segment Level of Service .....                    | 3.7-14  |
| 3.7-8  | Existing plus Approved Project Peak Construction plus<br>Campground Operation AM and PM Peak-Hour Roadway Segment Level of Service ..... | 3.7-17  |
| 3.7-9  | Existing plus Approved Project Peak Construction plus<br>Campground Operation Intersection Level of Service .....                        | 3.7-18  |
| 3.9-1  | Vegetation Communities and Land Cover Types within Additional Impact Areas .....   | 3.9-2   |
| 3.9-2  | Jurisdictional Aquatic Resources within the Additional Impact Areas <sup>1</sup> .....   | 3.9-7   |
| 3.9-3  | Special-Status Plant Species' Potential to Occur in Additional Impact Areas .....  | 3.9-11  |
| 3.9-4  | Special-Status Wildlife Species' Potential to Occur in Additional Impact Areas .....   | 3.9-16  |
| 3.9-5  | Direct Impacts on Vegetation Communities and Land Cover Types in<br>Additional Impact Areas .....  | 3.9-46  |
| 3.9-6  | Summary of Direct Impacts on Aquatic Resources in<br>Additional Impact Areas by Feature Type .....                                       | 3.9-71  |
| 3.10-1 | Summary of Land Use Acreages in Merced County by Category .....  | 3.10-2  |
| 3.10-2 | Land Management Zones Around and Within the Modified Project Boundary .....  | 3.10-3  |
| 3.11-1 | San Luis Reservoir SRA Recreational Activities .....   | 3.11-2  |
| 3.12-1 | Previously Recorded Cultural Resources Recorded as Intersecting or<br>Near the Survey Area .....   | 3.12-6  |
| 3.12-2 | Cultural Resources Identified and/or Updated During Survey .....   | 3.12-8  |
| 3.13-1 | Regional Faulting .....  | 3.13-4  |
| 3.13-2 | Nearby Mine Sites in Merced County .....   | 3.13-10 |

## FIGURES

|     |  |      |
|-----|--|------|
| 1-1 | Project Location .....                                 | 1-13 |
| 1-2 | Project Vicinity .....                                 | 1-15 |
| 1-3 | Approved Project and Modified Project Boundaries ..... | 1-17 |
| 2-1 | B.F. Sisk Dam Sections .....                           | 2-13 |
| 2-2 | Existing Dam Cross-Section .....                       | 2-15 |
| 2-3 | Approved and Modified Project Footprints .....         | 2-17 |

|        |  |         |
|--------|--|---------|
| 2-4A   | Modified Project Detail .....  | 2-19    |
| 2-4B   | Modified Project Detail .....  | 2-21    |
| 2-5    | Proposed Spillway Conduit Extension .....  | 2-23    |
| 3.1-1  | San Joaquin River Watershed .....  | 3.1-35  |
| 3.1-2  | Delta–Mendota Groundwater Subbasin .....   | 3.1-37  |
| 3.4-1  | Potential Dam Inundation Areas.....  | 3.4-21  |
| 3.5-1  | Existing Visual Character: Proposed Campground Area .....  | 3.5-23  |
| 3.5-2  | Existing Visual Character: Borrow Areas 12 and 14 .....  | 3.5-25  |
| 3.5-3  | Key Observation Points.....  | 3.5-27  |
| 3.5-4a | Key Observation Point 1: Proposed Campground Area from Access Road<br>(Existing Conditions) .....          | 3.5-29  |
| 3.5-4b | Key Observation Point 1: Proposed Campground Area from Access Road<br>(Conceptual Visual Simulation) ..... | 3.5-31  |
| 3.5-5a | Key Observation Point 2: Borrow Areas 12 and 14 from SR-152 (Existing Conditions).....                     | 3.5-33  |
| 3.5-5b | Key Observation Point 2: Borrow Areas 12 and 14 from SR-152 (Visual Simulation) .....                      | 3.5-35  |
| 3.5-6a | Key Observation Point 3: Borrow Areas 12 and 14 from Basalt Road (Existing Conditions) .....               | 3.5-37  |
| 3.5-6b | Key Observation Point 3: Borrow Areas 12 and 14 from Basalt Road<br>(Visual Simulation) .....              | 3.5-39  |
| 3.6-1  | Noise Monitoring Sites and Nearby Noise Sensitive Land Uses (NSLU).....                                    | 3.6-23  |
| 3.8-1A | Hazardous Materials Sites, Northern Portion.....   | 3.8-33  |
| 3.8-1B | Hazardous Materials Sites, Southern Portion .....  | 3.8-35  |
| 3.8-2  | Fire Hazard Severity Zones.....  | 3.8-37  |
| 3.9-1A | Vegetation Communities, Land Cover Types, and Jurisdictional Waters.....                                   | 3.9-89  |
| 3.9-1B | Vegetation Communities, Land Cover Types, and Jurisdictional Waters.....                                   | 3.9-91  |
| 3.9-1C | Vegetation Communities, Land Cover Types, and Jurisdictional Waters.....                                   | 3.9-93  |
| 3.9-1D | Vegetation Communities, Land Cover Types, and Jurisdictional Waters.....                                   | 3.9-95  |
| 3.9-1E | Vegetation Communities, Land Cover Types, and Jurisdictional Waters.....                                   | 3.9-97  |
| 3.9-1F | Vegetation Communities, Land Cover Types, and Jurisdictional Waters.....                                   | 3.9-99  |
| 3.9-1G | Vegetation Communities, Land Cover Types, and Jurisdictional Waters.....                                   | 3.9-101 |
| 3.9-1H | Vegetation Communities, Land Cover Types, and Jurisdictional Waters.....                                   | 3.9-103 |
| 3.9-1I | Vegetation Communities, Land Cover Types, and Jurisdictional Waters.....                                   | 3.9-105 |
| 3.9-1J | Vegetation Communities, Land Cover Types, and Jurisdictional Waters.....                                   | 3.9-107 |
| 3.9-1K | Vegetation Communities, Land Cover Types, and Jurisdictional Waters.....                                   | 3.9-109 |
| 3.9-2A | Special-status Species Observations.....   | 3.9-111 |
| 3.9-2B | Special-status Species Observations.....   | 3.9-113 |
| 3.9-2C | Special-status Species Observations.....   | 3.9-115 |
| 3.9-2D | Special-status Species Observations.....   | 3.9-117 |
| 3.9-2E | Special-status Species Observations.....   | 3.9-119 |
| 3.9-2F | Special-status Species Observations.....   | 3.9-121 |



|  |         |
|--|---------|
| 3.9-2G Special-status Species Observations.....                                      | 3.9-123 |
| 3.9-2H Special-status Species Observations.....                                      | 3.9-125 |
| 3.9-2I Special-status Species Observations.....                                      | 3.9-127 |
| 3.9-3A California Tiger Salamander Aquatic Habitat .....                             | 3.9-129 |
| 3.9-3B California Tiger Salamander Aquatic Habitat .....                             | 3.9-131 |
| 3.9-4A California Red-legged Frog Aquatic Habitat.....                               | 3.9-133 |
| 3.9-4B California Red-legged Frog Aquatic Habitat.....                               | 3.9-135 |
| 3.10-1 Land Management and Ownership Status.....                                     | 3.10-13 |
| 3.10-2 General Plan Land Use .....   | 3.10-15 |
| 3.10-3 Land Management Zones.....  | 3.10-17 |
| 3.11-1 San Luis Reservoir State Recreation Area.....                                 | 3.11-17 |
| 3.11-2 San Luis Reservoir State Recreation Area Use Areas.....                       | 3.11-19 |
| 3.11-3 Modified Project and San Luis Reservoir State Recreation Area Use Areas ..... | 3.11-21 |
| 3.12-1 Approved Project and Modified Project Survey Areas.....                       | 3.12-25 |
| 3.13-1 Regional Faulting .....   | 3.13-33 |
| 3.13-2 Geologic Map.....   | 3.13-35 |
| 3.13-3 Local Faulting .....  | 3.13-37 |

## APPENDICES

|    |  |
|----|--|
| A  | Project Plans                            |
| B1 | CalEEMod Assumptions                     |
| B2 | Ambient Air Quality Assessment           |
| C  | Noise Modeling                           |
| D1 | Traffic Count                            |
| D2 | LOS Worksheets and Other Data            |
| E  | Cultural Resources Report (Confidential) |

INTENTIONALLY LEFT BLANK



# Acronyms and Abbreviations

| Acronym/Abbreviation | Definition  |
|----------------------|---|
| AB                   | Assembly Bill   |
| ADA                  | Americans with Disabilities Act                       |
| AERMOD               | American Meteorological Society/EPA Regulatory Model  |
| APE                  | area of potential effect                              |
| BAM                  | Best Available Maps                                   |
| BenMAP               | Benefits Mapping and Analysis Program                 |
| BGEPA                | Bald and Golden Eagle Protection Act                  |
| BMP                  | best management practice                              |
| CAAQS                | California Ambient Air Quality Standards              |
| CAL FIRE             | California Department of Forestry and Fire Protection |
| CalEEMod             | California Emissions Estimator Model                  |
| CalEPA               | California Environmental Protection Agency            |
| CalGEM               | California Geologic Energy Management Division        |
| CALGreen             | California's Green Building Standards                 |
| Caltrans             | California Department of Transportation               |
| CAPCOA               | California Air Pollution Control Officers Association |
| CARB                 | California Air Resources Board                        |
| CBC                  | California Building Code                              |
| CDFW                 | California Department of Fish and Wildlife            |
| CDPR                 | California Department of Parks and Recreation         |
| CEC                  | California Energy Commission                          |
| CEQA                 | California Environmental Quality Act                  |
| CEQA Guidelines      | State of California CEQA Guidelines                   |
| CESA                 | California Endangered Species Act                     |
| CFC                  | California Fire Code                                  |
| CGS                  | California Geological Survey                          |
| CH <sub>4</sub>      | methane   |
| CNDDDB               | California Natural Diversity Database                 |
| CNRA                 | California Natural Resources Agency                   |
| CO                   | carbon monoxide                                       |
| CO <sub>2</sub>      | carbon dioxide  |
| CO <sub>2</sub> e    | carbon dioxide equivalent                             |
| CRHR                 | California Register of Historical Resources           |
| CUPA                 | Certified Unified Program Agency                      |
| CVFPB                | Central Valley Flood Protection Board                 |
| CVFPP                | Central Valley Flood Protection Plan                  |
| CVP                  | Central Valley Project                                |
| CVRWQCB              | Central Valley Regional Water Quality Control Board   |
| CWA                  | Clean Water Act                                       |
| dB                   | decibel   |
| dBA                  | A-weighted decibels                                   |
| DDT                  | dichloro-diphenyl-trichloroethane                     |
| DMC                  | Delta – Mendota Canal                                 |
| DPM                  | diesel particulate matter                             |

| Acronym/Abbreviation | Definition  |
|----------------------|---|
| DSOD                 | Division of Safety of Dams                        |
| DTSC                 | California Department of Toxic Substances Control |
| du/ac                | dwelling units per acre                           |
| DWR                  | California Department of Water Resources          |
| EIR                  | environmental impact report                       |
| EIS                  | environmental impact statement                    |
| EO                   | Executive Order                                   |
| EPA                  | U.S. Environmental Protection Agency              |
| FEMA                 | Federal Emergency Management Agency               |
| FESA                 | federal Endangered Species Act                    |
| FHSZ                 | Fire Hazard Severity Zone                         |
| FHWA                 | Federal Highway Administration                    |
| FMMP                 | Farmland Mapping and Monitoring Program           |
| GGERP                | Greenhouse Gas Emissions Reduction Plan           |
| GHG                  | greenhouse gas                                    |
| Gianelli Plant       | Gianelli Pumping-Generating Plant                 |
| GSA                  | Groundwater Sustainability Agency                 |
| GSP                  | Groundwater Sustainability Plan                   |
| GWP                  | global warming potential                          |
| HAP                  | hazardous air pollutant                           |
| HCP                  | habitat conservation plan                         |
| HERO                 | Human and Ecological Risk Office                  |
| HFC                  | hydrofluorocarbon                                 |
| HIA                  | health impact assessment                          |
| I                    | Interstate  |
| IFC                  | International Fire Code                           |
| in/sec               | inches per second                                 |
| ITE                  | Institute of Transportation Engineers             |
| KOP                  | Key Observation Point                             |
| Ldn                  | day-night noise level                             |
| Leq                  | average equivalent noise level                    |
| LID                  | Low Impact Development                            |
| Lmax                 | maximum noise level                               |
| LOS                  | level of service                                  |
| LUST                 | leaking underground storage tank                  |
| MCAG                 | Merced County Association of Governments          |
| MM                   | Mitigation Measure                                |
| MMRP                 | Mitigation Monitoring and Reporting Program       |
| MMT                  | million metric tons                               |
| MS4                  | Municipal Separate Storm Sewer System             |
| MT                   | metric tons                                       |
| Mw                   | moment magnitude                                  |
| N <sub>2</sub> O     | nitrous oxide                                     |
| NAAQS                | National Ambient Air Quality Standards            |
| NAHC                 | Native American Heritage Commission               |
| NEHRPA               | National Earthquake Hazards Reduction Program Act |
| NEPA                 | National Environmental Policy Act                 |

| Acronym/Abbreviation | Definition  |
|----------------------|---|
| NFPA                 | National Fire Protection Association  |
| NHTSA                | National Highway Traffic Safety Administration                                    |
| NMFS                 | National Marine Fisheries Service   |
| NO <sub>2</sub>      | nitrogen dioxide  |
| NOP                  | Notice of Preparation   |
| NO <sub>x</sub>      | oxides of nitrogen  |
| NPDES                | National Pollutant Discharge Elimination System                                   |
| NRHP                 | National Register of Historic Places  |
| NVS                  | north valley section  |
| O <sub>3</sub>       | ozone   |
| OHV                  | off-highway vehicle   |
| OPR                  | Governor's Office of Planning and Research  |
| OSHA                 | Occupational Safety and Health Administration                                     |
| PFC                  | perfluorocarbon   |
| PG&E                 | Pacific Gas and Electric Company  |
| PM                   | particulate matter  |
| PM <sub>10</sub>     | particulate matter with an aerodynamic diameter equal to or less than 10 microns  |
| PM <sub>2.5</sub>    | particulate matter with an aerodynamic diameter equal to or less than 2.5 microns |
| PPV                  | peak particle velocity  |
| RCRA                 | Resource Conservation and Recovery Act  |
| Reclamation          | U.S. Bureau of Reclamation  |
| RMP/GP               | Resource Management Plan/General Plan   |
| ROG                  | reactive organic gas  |
| RSL                  | Regional Screening Level  |
| RTP/SCS              | Regional Transportation Plan and Sustainable Communities Strategy                 |
| RWQCB                | Regional Water Quality Control Board  |
| SB                   | Senate Bill   |
| SCAQMD               | South Coast Air Quality Management District                                       |
| SEIR                 | supplemental environmental impact report  |
| SEIS                 | supplemental environmental impact statement                                       |
| SF <sub>6</sub>      | sulfur hexafluoride   |
| SGMA                 | Sustainable Groundwater Management Act  |
| SHPO                 | State Historic Preservation Officer   |
| SJVAB                | San Joaquin Valley Air Basin  |
| SJVAPCD              | San Joaquin Valley Air Pollution Control District                                 |
| SO <sub>2</sub>      | sulfur dioxide  |
| SO <sub>x</sub>      | sulfur oxides   |
| SR                   | State Route   |
| SRA                  | State Recreation Area   |
| SVS                  | south valley section  |
| SWP                  | California State Water Project  |
| SWPPP                | Stormwater Pollution Prevention Plan  |
| SWRCB                | State Water Resources Control Board   |
| TAC                  | toxic air contaminant   |
| TISG                 | Vehicle Miles Traveled-Focused Transportation Impact Study Guide                  |
| USACE                | U.S. Army Corps of Engineers  |
| USFWS                | U.S. Fish and Wildlife Service  |

| Acronym/Abbreviation | Definition   |
|----------------------|--|
| VdB                  | vibration decibel                                    |
| VMТ                  | vehicle miles traveled                               |
| VOC                  | volatile organic compound                            |
| WGCEP                | Working Group on California Earthquake Probabilities |
| µg/m <sup>3</sup>    | micrograms per cubic meter                           |

# Executive Summary

---

This supplemental environmental impact report (SEIR) has been prepared by the California Department of Water Resources (DWR) pursuant to the California Environmental Quality Act (CEQA) Statute and State of California CEQA Guidelines (CEQA Guidelines) (California Public Resources Code, Section 21000 et seq.; 14 CCR 15000 et seq.) to analyze and disclose environmental impacts associated with implementation of the B.F. Sisk Dam Safety of Dams Modification Project.

DWR prepared and certified an environmental impact report (EIR) for the B.F. Sisk Dam Safety of Dams Modification Project in 2019, logged as State Clearinghouse No. 2009091004. That document was a joint federal and state environmental review and included an environmental impact statement (EIS) prepared in conformance with the federal National Environmental Policy Act (NEPA) and an EIR prepared pursuant to CEQA requirements. The Bureau of Reclamation (Reclamation) served as the federal lead agency for NEPA review and DWR served as the state lead agency with responsibility for carrying out review in accordance with CEQA. The document, B.F. Sisk Dam Safety of Dams Modification Project Environmental Impact Statement/Environmental Impact Report (Reclamation and DWR 2019), is referred to herein as the 2019 EIS/EIR. The 2019 EIS/EIR analyzed and disclosed the environmental impacts of a multiyear construction project aimed at alleviating existing seismic stability concerns at B.F. Sisk Dam, which impounds San Luis Reservoir, located on land controlled by Reclamation in western unincorporated Merced County, California. The project addressed in the 2019 EIS/EIR is referred to herein as the Approved Project; the Approved Project plus proposed modifications identified since certification of the 2019 EIS/EIR—the subject of this SEIR—is referred to as the Modified Project.

This SEIR is an informational document intended for use by DWR, other public agencies, and members of the general public in evaluating the potential environmental effects of the Modified Project. This SEIR is a supplement to the CEQA component of the 2019 EIS/EIR, addressing changes to the Approved Project identified by the joint DWR and Reclamation design team subsequent to DWR's certification of the EIR. In summary, the changes consist of minor additions to the impact area and potential addition of materials excavation sites within the previous study area. The changes associated with the Modified Project are summarized in greater detail in Section 1.3, Proposed Modifications to the Project, in Chapter 1, Introduction, and detailed in Chapter 2, Project Description, of this SEIR.

## ES.1 Project Background

B.F. Sisk Dam is located in western Merced County, on the west side of California's Central Valley, approximately 9 miles west of the City of Los Banos on State Route 152 (Figure 1-1, Project Location, in Chapter 1). The dam was constructed between 1963 and 1967 to impound San Luis Reservoir, which provides supplemental storage capacity for the Central Valley Project (CVP) and California State Water Project (SWP). It is part of the San Luis Joint-Use Complex, or San Luis Unit of the CVP and SWP, which was authorized by the United States Congress in 1960 under the San Luis Act (Public Law 86-488) and is a joint effort of the federal and State of California governments. The San Luis Unit, including San Luis Reservoir, is owned by Reclamation and operated by DWR. Recreation uses at San Luis Reservoir, including boating, overnight camping, and hiking, are managed by the California Department of Parks and Recreation as part of the larger San Luis Reservoir State Recreation Area.

The dam is in an area with potential for severe seismic activity from known faults, primarily the Ortigalita Fault, which crosses the reservoir. Studies of the seismic safety of B.F. Sisk Dam completed by Reclamation and DWR beginning in the 1980s determined that less-dense soils under the dam and in the dam abutments could undergo liquefaction during a seismic event and result in significant deformation (i.e., crest settlement) of the dam. Seismic analysis and modeling carried out on the dam determined that the predicted settlement of the dam crest as a result

of a severe seismic event could result in the dam crest height settling below the surface level of the reservoir, which would allow water to overtop and erode the dam embankment. Settling of the dam embankment also has the potential to result in cracks in the dam embankment that could result in leaks and erosion of the embankment material. Reclamation and DWR completed a probabilistic risk analysis to determine the likelihood of events that could lead to dam failure. The probabilistic risk analysis determined that failure of the dam is very unlikely, but that consequences of a dam failure would be severe and therefore do not meet Reclamation's Public Protection Guidelines (Reclamation 2011) and warrant corrective action. Corrective actions studies were carried out by Reclamation with participation by DWR (Reclamation 2019).

The corrective actions studies indicated that deformation potential would be addressed by removing the alluvium and clayey slopewash, constructing downstream stability berms keyed into the underlying bedrock, and raising the dam crest 12 feet to increase the reservoir's freeboard, or the distance between the water surface and the dam crest (Reclamation 2013). Raising the dam would be accomplished by placing additional material on the downstream face of the embankment, which would also serve to strengthen the embankment; no additional water storage would be provided by the increase in dam height as part of the increase in dam crest height. These measures to alleviate risk associated with a seismic event would be implemented as part of the Approved Project evaluated in the 2019 EIS/EIR.

## ES.1.1 Description of the Approved Project

In summary, the Approved Project, referred to as the Crest Raise Alternative in the 2019 EIS/EIR, involves making improvements to the downstream side of the existing dam to enhance its stability, and increasing the dam crest height to reduce the potential that water would overtop the dam if seismic-induced slumping were to occur. These improvements would be accomplished by (1) constructing stability berms and downstream crack filters in select areas, (2) adding additional material over the entire area of the existing embankment, (3) installing a new filter around the existing spillway conduit, and (4) extending the spillway conduit to meet the resultant downstream edge of the extended embankment. Construction of three foundation shear keys to anchor the proposed stability berms to underlying bedrock is also part of the Crest Raise Alternative. One of the three locations for the proposed shear keys is described as optional but was analyzed by the 2019 EIS/EIR as part of the Approved Project to provide design flexibility. Features of the Approved Project are further described in Chapter 2 of this SEIR. It should be noted that the 2019 EIS/EIR described the Approved Project to the level of design available at the time the 2019 EIS/EIR was prepared and minor changes could occur as project plans approach final design.

## ES.2 Modified Project Description

### ES.2.1 Project Purpose and Objectives

The project objectives have not changed since certification of the 2019 EIS/EIR. As noted in Section 1.3, Purpose and Need/Project Objectives, of the 2019 EIS/EIR, San Luis Reservoir is an important CVP and SWP facility and a key component of California's water supply system. Therefore, proper functioning of the reservoir is critical to maintaining water distribution for federal, state, and local uses. Reclamation and DWR have determined that actions to reduce risks from earthquakes to the public downstream of the dam are needed. The Modified Project objectives are as follows:

1. Implement cost-effective measures to prevent destabilization of the dam embankment and to ensure dam stability, in the event of an earthquake
2. Reduce safety concerns of the public downstream of the dam
3. Maintain water supply deliveries to federal and state contractors through the CVP and SWP

## ES.2.2 Proposed Modification to the Project

Chapter 2 of this SEIR presents a detailed description of the proposed changes to the Approved Project since DWR's certification of the 2019 EIS/EIR, which are summarized in this section. Please refer to Chapter 2 for a detailed description of the Modified Project.

The new impact areas are associated with development of a new permanent public campground on the northwestern shore of O'Neill Forebay, located downstream and east of San Luis Reservoir, and with implementing minor upgrades to the existing San Luis Creek Day Use Area on the western shore of O'Neill Forebay.<sup>1</sup> These Modified Project components are intended to compensate for the construction-related temporary closure of Basalt Campground and potential temporary closure of Medeiros Campground, both public campgrounds within the San Luis Reservoir State Recreation Area. The proposed campground work was identified as Mitigation Measure REC-1 in the 2019 EIS/EIR, but impacts from implementing the mitigation measure were not evaluated in the 2019 EIS/EIR. As such, impacts associated with implementing Mitigation Measure REC-1<sup>2</sup> from the 2019 EIS/EIR are included within the scope of this SEIR and described as part of the Modified Project.

Another modification addressed in this SEIR is the consideration by the design team of two alternative on-site borrow areas as sources of earth-fill material for the dam rehabilitation, beyond the borrow areas identified in the 2019 EIS/EIR (referred to in that document as Borrow Area 6 and the Basalt Hill Borrow Area). The new alternative sites, referred to as Borrow Area 12 and Borrow Area 14, are located within areas east of B.F. Sisk Dam anticipated for contractor staging activity in the 2019 EIS/EIR. The borrow areas do not represent further additions to the Modified Project's footprint; however, the potential scale of excavation and grading activity anticipated in these borrow areas represents a change from the Approved Project as disclosed in the 2019 EIS/EIR. As such, DWR deemed additional environmental impact analysis to be appropriate for compliance with CEQA. Geotechnical investigations and materials testing are planned or are underway at all four prospective borrow areas, and depending on the testing results and the presence of suitable materials, it is possible that some combination of all four borrow areas would be used as materials sources during Modified Project construction.

The Modified Project also entails a modification to public campground and day use area closure in the vicinity of San Luis Reservoir and O'Neill Forebay compared to the Approved Project. The 2019 EIS/EIR project description acknowledged closure of Basalt Campground for the duration of Approved Project construction. Analysis presented in the 2019 EIS/EIR also anticipated closure of the Medeiros Use Area for the duration of construction.<sup>3</sup> San Luis Creek Day Use Area was anticipated to remain open, but under the Modified Project, portions of the day use area could be temporarily closed while improvements described above are made. Any temporary closures of the day use area, if necessary, would be at the discretion of California Department of Parks and Recreation and would be

<sup>1</sup> The 2019 EIS/EIR considered and addressed the work that would be required in the East Dike area of the dam; however, this area was inadvertently omitted from exhibits and figures within the 2019 EIS/EIR. To correct for this mapping omission, the East Dike area is identified and mapped as part of the Approved Project footprint in this SEIR and is not evaluated as a change in the Approved Project.

<sup>2</sup> Mitigation Measure REC-1 in the 2019 EIS/EIR included the expansion of the boat launch at Dinosaur Point Use Area. Since that time, the California Department of Parks and Recreation has indicated the previously proposed expansion of this boat launch is no longer required, as the facility currently has excess capacity and would accommodate any increase in use due to the closure of the Basalt Campground boat launch for the duration of Modified Project construction. As such, modifications to the Dinosaur Point Use Area are not addressed in this SEIR.

<sup>3</sup> The 2019 EIS/EIR assumed that the Medeiros Use Area (and campground) south of O'Neill Forebay would be closed during the entire construction phase of the Approved Project; the 2019 EIS/EIR addressed the potential impacts of this closure. However, the Medeiros Use Area was inadvertently not included in the Approved Project footprint as shown in the exhibits and figures of the 2019 EIS/EIR. As such, and to correct this mapping omission, the Medeiros Use Area is identified and mapped as part of the Approved Project footprint in this SEIR.

scheduled to coincide with low use periods would not be expected to require closure of the entire facility and portions of the facility not affected by construction would remain open for public use.

These Modified Project components are intended to compensate for the construction-related temporary closure of Basalt Campground and potential temporary closure of Medeiros Campground, as required by Mitigation Measure REC-1<sup>1</sup> from the 2019 EIS/EIR. Both facilities are public campgrounds within the San Luis Reservoir State Recreation Area. The proposed new campground would be developed in consultation with the California Department of Parks and Recreation.

The Modified Project also includes some minor expansions of the contractor work areas that were not part of the original study area. In general, the overall construction schedule and assumptions regarding personnel and equipment remain unchanged from the Approved Project; however, additional construction assumptions are included in the Modified Project and analyzed in this SEIR.

The Modified Project would involve purchasing mitigation credits from mitigation banks approved by regulatory agencies to satisfy compensatory mitigation requirements of the 2019 EIS/EIR, and as required by terms and conditions of permits and approvals required from regulatory agencies (refer to Table ES-1; see Section 3.9, Biological Resources, for details). The purchase of lands in established mitigation banks for the purpose of preservation would not otherwise require additional changes to the physical environment.

### ES.2.3 Discretionary Actions

A list of permits anticipated for the Approved Project is presented as Table 1-1 of the 2019 EIS/EIR. An updated list for the Modified Project is shown in Table ES-1.

**Table ES-1. Anticipated Permits or Approvals for the Modified Project**

| Approving Agency | Permit or Approval  | Applying Agency |
|------------------|---|-----------------|
| USFWS            | Federal Endangered Species Act Formal Consultation                                      | Reclamation     |
| CVRWQCB          | Clean Water Act Section 401 Certification   | Reclamation/DWR |
| USACE            | Clean Water Act Section 404 Permit  | Reclamation     |
| CDFW             | California Fish and Game Code Section 2081 (b) Incidental Take Permit                   | Reclamation/DWR |
| CDFW             | California Fish and Game Code Section 1602 Lake and Streambed Alteration Agreement      | Reclamation/DWR |
| SHPO and/or ACHP | NHPA Section 106 Compliance   | Reclamation     |
| CVRWQCB          | NPDES Permit for General Construction   | Reclamation/DWR |
| CVRWQCB          | NPDES/WDR Individual Permit for Discharge   | Reclamation/DWR |
| SJAPCD           | Clean Air Act Fugitive Dust Control Plan & Indirect Source Review Air Impact Assessment | Reclamation/DWR |
| Caltrans         | Encroachment Permit for work in State Route 152 right-of-way                            | Reclamation/DWR |
| CVRWQCB          | Construction dewatering discharge permit  | Reclamation/DWR |
| WAPA             | Plan approval for electrical tower relocation   | Reclamation/DWR |
| Merced County    | Encroachment Permit for work on Gonzaga Road  | Reclamation/DWR |

**Notes:** USFWS = U.S. Fish and Wildlife Service; Reclamation = Bureau of Reclamation; CVRWQCB = Central Valley Regional Water Quality Control Board; DWR = California Department of Water Resources; USACE = U.S. Army Corps of Engineers; CDFW = California Department of Fish and Wildlife; SHPO = State Historic Preservation Officer; ACHP = Advisory Council on Historic Preservation; NHPA = National Historic Preservation Act; NPDES = National Pollutant Discharge Elimination System; WDR = water discharge requirement; SJAPCD = San Joaquin Air Pollution Control District; Caltrans = California Department of Transportation; WAPA = Western Area Power Administration.



## ES.3 Areas of Controversy

In September 2009, DWR issued a Notice of Preparation of an EIR for the B.F. Sisk Dam Safety of Dams Modification Project pursuant to CEQA, and Reclamation published a Notice of Intent to prepare an EIS in the Federal Register. The Notice of Preparation was circulated for a 30-day period to responsible agencies under CEQA. Reclamation and DWR held one scoping meeting at the San Luis Reservoir State Recreation Area on September 23, 2009. Comments received during public scoping addressed the following areas of concern:

- Water quality impacts during and after project construction
- Flooding due to a major earthquake
- Loss of access to recreational areas and potential interference of daily park operations
- Construction and operational impacts to project area wildlife
- Change in dam storage capacity

After completion of the Draft 2019 EIS/EIR, Reclamation and DWR met their respective public review obligations for the 2019 EIS/EIR relative to NEPA and CEQA. A Notice of Availability was published in the Federal Register (Vol. 84, No. 71) on Friday, April 12, 2019, commencing the mandatory public review period that then concluded on May 28, 2019. Five written comments on the 2019 EIS/EIR were received during the public review period and raised the following key areas of concern:

- Inclusion of the San Luis Reservoir Low Point Improvement Project in the cumulative analysis
- Preference of the Crest Raise Alternative (i.e., Approved Project)
- Potential interruptions to operations of the SWP during construction
- Coordination of water supply considerations with other water supply projects, the SWP, and CVP

## ES.4 Issues to be Resolved by the Decision-Making Body

The issues to be resolved by DWR as the decision-making agency are (1) whether to approve the Modified Project and (2) how to mitigate significant effects that could result from implementation of the Modified Project. In accordance with Public Resources Code, Section 21081 and CEQA Guidelines Section 15093, whenever significant effects cannot be mitigated to below a level of significance, the decision-making agency must consider the benefits of a project against any unavoidable environmental risks when determining whether to approve the project. DWR must therefore consider the benefits of the Modified Project and make a determination on whether the benefits of the Modified Project outweigh and make “acceptable” the significant and unavoidable impacts associated with air quality and noise that have been identified by the CEQA review process.

DWR must also make a determination as to whether the significant impacts associated with the environmental issues of air quality, greenhouse gas emissions, visual resources, traffic and transportation, biological resources, cultural resources, and tribal cultural resources would be less than significant with implementation of mitigation measures identified in the 2019 EIS/EIR and this SEIR.

## ES.5 Summary of Impacts and Mitigation Measures

Table ES-2 provides a summary of significant impacts identified by the analysis of the Modified Project, mitigation measures identified to reduce the impact, and the level of impact significance after implementation of the mitigation measures. Please refer to Table 1-1 in Chapter 1 for a comparison of mitigation measures from the 2019 EIS/EIR to mitigation measures identified by this SEIR. As described under Section 1.9 in Chapter 1, all mitigation measures from the 2019 EIS/EIR would be implemented unless new or revised measures are identified by this SEIR.

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic   | Impact Before Mitigation | Mitigation Measure(s)  | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---|--------------------------|--|---|---|
| <b>Air Quality</b>  |                          |  |   |   |
| Would the Modified Project conflict with or obstruct implementation of the applicable air quality plan? | PS                       | <p><b>AQ-1 (Same as AQ-1 in 2019 EIS/EIR): Reduce Emissions from Off-Road Construction Equipment by Using Tier 4 Construction Equipment.</b> Impacts on air quality from construction activities will be reduced by using construction equipment compliant with the Tier 4 emission standards for off-road diesel engines instead of the fleet average for the San Joaquin Valley Air Basin. Records will be maintained by the construction contractor that demonstrate that actual emissions would not exceed the SJVAPCD's significance criteria and would be submitted to Reclamation monthly.</p> <p>If NOx emissions are forecasted to exceed thresholds, then changes will be made so that the threshold is not exceeded, or work will be stopped.</p> <p><b>AQ-2 (Same as AQ-2 in 2019 EIS/EIR) Reduce Exhaust Emissions from On-Road Trucks.</b> All haul trucks, vendor trucks, and other heavy-heavy duty trucks operating on site with on-road engines will meet model year 2015 or better emission standards.</p> <p><b>AQ-3 (Same as AQ-3 in 2019 EIS/EIR) Implement Best Available Mitigation Measures for Construction Phase.</b> As required by the SJVAPCD, the project must apply the following best available mitigation measures for the construction phase:</p> | LTS   | No  |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic | Impact Before Mitigation | Mitigation Measure(s)  | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---------------------|--------------------------|--|---|---|
|                     |                          | <p>All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, covered with a tarp or other suitable cover or vegetative ground cover.</p> <p>All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant.</p> <p>All land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking.</p> <p>With the demolition of buildings up to six stories in height, all exterior surfaces of the building shall be wetted during demolition.</p> <p>When materials are transported off site, all material shall be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained.</p> <p>All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. <i>(The use of dry rotary brushes is expressly prohibited except where</i></p> |   |   |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic  | Impact Before Mitigation | Mitigation Measure(s)  | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|--|--------------------------|--|---|---|
|  |                          | <p><i>preceded or accompanied by sufficient wetting to limit the visible dust emissions.) (Use of blower devices is expressly forbidden.)</i></p> <p>Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions utilizing sufficient water or chemical stabilizer/suppressant.</p> <p>Within urban areas, trackout shall be immediately removed when it extends 50 or more feet from the site and at the end of each workday.</p> <p>An owner/operator of any site with 150 or more vehicle trips per day, or 20 or more vehicle trips per day by vehicles with three or more axles shall implement mitigation measures to prevent carryout and trackout.</p> |   |   |
| Would the Modified Project violate any ambient air quality standard or contribute substantially to an existing or projected violation of any ambient air quality standard? | PS                       | AQ-1 through AQ-3 above.   | LTS   | No  |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic  | Impact Before Mitigation | Mitigation Measure(s)  | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|--|--------------------------|--|---|---|
| Would the Modified Project result in a cumulatively considerable net increase of any criteria pollutant for which the area of analysis is nonattainment under an applicable Federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone [O <sub>3</sub> ] precursors)? | PS                       | AQ-1 through AQ-3 above.   | SU  | No  |
| Would the Modified Project expose sensitive receptors to substantial pollutant concentrations?   | PS                       | AQ-1 through AQ-3 above.   | LTS   | No  |
| <b>Greenhouse Gas Emissions</b>  |                          |  |   |   |
| Would the Modified Project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?  | PS                       | <b>SEIR-GHG-1 (New mitigation measure): Construction GHG Emissions Reductions.</b> To reduce greenhouse gas (GHG) emissions generated by equipment during construction, the following measures shall be incorporated into the Modified Project: <ul style="list-style-type: none"> <li>i. The proper tuning and maintenance of all construction equipment in accordance with manufacturer's specifications</li> <li>ii. Where feasible, employing the use of electrical or alternative fueled (i.e., non-diesel) construction equipment, including forklifts, concrete/industrial saws, pumps, aerial lifts, air compressors, and other comparable equipment types to the extent commercially available</li> </ul> | LTS   | No  |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic | Impact Before Mitigation | Mitigation Measure(s)  | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---------------------|--------------------------|--|---|---|
|                     |                          | <p>iii. To reduce the need for electric generators and other fuel-powered equipment, providing on-site electrical hookups for the use of hand tools such as saws, drills, and compressors used for construction where feasible and appropriate</p> <p>iv. Encouraging and providing carpools, shuttle vans, transit passes and/or secure bicycle parking for construction worker commutes</p> <p><b>SEIR-GHG-2 (Replaces GHG-1 in the 2019 EIS/EIR): Carbon Offsets – Construction Emissions.</b> The California Department of Water Resources (DWR) and Bureau of Reclamation (Reclamation) shall retire carbon offsets in a quantity sufficient to offset the Modified Project's construction greenhouse gas (GHG) emissions to below the DWR thresholds of 25,000 metric ton carbon dioxide equivalent (MT CO<sub>2</sub>e) total and 12,500 MT CO<sub>2</sub>e per year for Extraordinary Construction Projects, consistent with the performance standards and requirements set forth below. Based on modeling conducted to date, a minimum of 104,537 MT CO<sub>2</sub>e would be required to reduce emissions below the project-level significance threshold.</p> <p><b>Carbon Offset Standards – Eligible Registries, Acceptable Protocols and Defined Terms</b></p> <p>“Carbon offset” shall mean an instrument, credit, or other certification verifying the reduction of GHG emissions issued by the Climate Action Reserve,</p> |   |   |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic | Impact Before Mitigation | Mitigation Measure(s)  | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---------------------|--------------------------|--|---|---|
|                     |                          | <p>the American Carbon Registry, or Verra (previously, the Verified Carbon Standard). This shall include, but is not limited to, an instrument, credit or other certification issued by these registries for GHG reduction activities within the Merced County region. Offsets from the Clean Development Mechanism (CDM) registry or generated under CDM protocols shall not be purchased or used to satisfy offset requirements. Qualifying carbon offsets presented for compliance with this mitigation measure may be used provided that each registry shall continue its existing practice of requiring the following for the development and approval of protocols or methodologies:</p> <ul style="list-style-type: none"> <li>i. Adherence to established GHG accounting principles set forth in the International Organization for Standardization (ISO) 14064, Part 2 or the World Resources Institute/World Business Council for Sustainable Development (WRI/WBCSD) Greenhouse Gas Protocol for Project Accounting</li> <li>ii. Oversight of the implementation of protocols and methodologies that define the eligibility of carbon offset projects and set forth standards for the estimation, monitoring and verification of GHG reductions achieved from such projects. The protocols and methodologies shall: <ul style="list-style-type: none"> <li>a. Be developed by the registries through a transparent public and expert stakeholder</li> </ul> </li> </ul> |   |   |



Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic | Impact Before Mitigation | Mitigation Measure(s)  | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---------------------|--------------------------|--|---|---|
|                     |                          | <p>review process that affords an opportunity for comment and is informed by science</p> <p>b. Incorporate standardized offset crediting parameters that define whether and how much emissions reduction credit a carbon offset project should receive, having identified conservative project baselines and the length of the crediting period and considered potential leakage and quantification uncertainties</p> <p>c. Establish data collection and monitoring procedures, mechanisms to ensure permanency in reductions, and additionality and geographic boundary provisions</p> <p>d. Adhere to the principles set forth in the program manuals of each of the aforementioned registries, as such manuals are updated from time to time</p> <p>Further, any carbon offset used to reduce the Modified Project's GHG emissions shall be a carbon offset that represents the past or forecasted reduction or sequestration of one MT of CO<sub>2</sub>e that is "not otherwise required" (California Environmental Quality Act [CEQA] Guidelines Section 15126.4(c)(3)). Each carbon offset used to reduce GHG emissions shall achieve additional, real, permanent, quantifiable, verifiable, and</p> |   |   |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic | Impact Before Mitigation | Mitigation Measure(s)  | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---------------------|--------------------------|--|---|---|
|                     |                          | <p>enforceable reductions, which are defined for purposes of this mitigation measure as follows:</p> <ul style="list-style-type: none"> <li>i. “Additional” means that the carbon offset is not otherwise required by law or regulation, and not any other GHG emissions reduction that otherwise would occur.</li> <li>ii. “Real” means that the GHG reduction underlying the carbon offset results from a demonstrable action or set of actions, and is quantified under the protocol or methodology using appropriate, accurate, and conservative methodologies that account for all GHG emissions sources and sinks within the boundary of the applicable carbon offset project, uncertainty, and the potential for activity-shifting leakage and market-shifting leakage.</li> <li>iii. “Verifiable” means that the GHG reduction underlying the carbon offset is well documented, transparent, and set forth in a document prepared by an independent verification body that is accredited through the American National Standards Institute (ANSI).</li> <li>iv. “Permanent” means that the GHG reduction underlying the carbon offset is not reversible; or, when GHG reduction may be reversible, that a mechanism is in place to replace any reversed GHG emission reduction.</li> </ul> |   |   |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic | Impact Before Mitigation | Mitigation Measure(s)  | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---------------------|--------------------------|--|---|---|
|                     |                          | <p>v. “Quantifiable” means the ability to accurately measure and calculate the GHG reduction relative to a project baseline in a reliable and replicable manner for all GHG emission sources and sinks included within the boundary of the carbon offset project, while accounting for uncertainty and leakage.</p> <p>vi. “Enforceable” means that the implementation of the GHG reduction activity must represent the legally binding commitment of the offset project developer to undertake and carry it out.</p> <p>The protocols and methodologies of the Climate Action Reserve, the American Carbon Registry, and Verra establish and require carbon offset projects to comply with standards designed to achieve additional, real, permanent, quantifiable, verifiable, and enforceable reductions. The above definitions are provided as criteria and performance standards associated with the use of carbon offsets. Such criteria and performance standards are intended only to further construe the standards under CEQA for mitigation related to GHG emissions (see, e.g., State of California CEQA Guidelines Section 15126.4[a][c]), and are not intended to apply or incorporate the requirements of any other statutory or regulatory scheme not applicable to the Modified Project (e.g., the California Cap-and-Trade Program).</p> |   |   |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic   | Impact Before Mitigation | Mitigation Measure(s)   | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---|--------------------------|---|---|---|
| Would the Modified Project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?   | PS                       | SEIR-GHG-1 and SEIR-GHG-2 above.  | LTS   | No  |
| <b>Visual Resources</b>   |                          |   |   |   |
| Would the Modified Project create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?  | PS                       | <b>VIS-1 (Same as VIS-1 in 2019 EIS/EIR):</b> To reduce visual intrusion from light sources, Reclamation shall require the contractors to implement measures to reduce light and glare while meeting minimum safety and security standards. Light reduction measures must include: directing lighting downward to prevent spillover onto nearby areas, utilization of lighting fixtures with directional shielding to focus on areas being lit, and a construction requirement that all lighting in areas not under active construction be shut off. To reduce the amount of glare, building finishes shall be subdued and earth-toned. On-site mechanical equipment roofing materials, and any exposed vents or flashings must be constructed of non-glare finishes that minimizes reflectivity. | LTS   | No  |
| <b>Noise and Vibration</b>  |                          |   |   |   |
| Would the Modified Project result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? | PS                       | <b>NOISE-1 (Same as NOISE-1 in 2019 EIS/EIR):</b> A Noise Control Plan (NCP) will be developed by the construction contractor prior to the start of any construction activities to address increased noise levels as a result of the proposed project and alternatives. The NCP will identify the procedures for predicting construction noise levels at sensitive  | SU  | No  |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic | Impact Before Mitigation | Mitigation Measure(s)  | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---------------------|--------------------------|--|---|---|
|                     |                          | <p>receptors and will describe the reduction measures required to minimize construction noise. The noise mitigation measures in the NCP will include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• Appropriate level of sound attenuation will be used or constructed to minimize noise levels by at least 3 dBA. Potential sound attenuation measures could include, but are not limited to stationary equipment and stockpiles, or otherwise placed between the source(s) of construction noise and noise-sensitive receptors, as appropriate. The feasible measures will be determined by the construction contractor based on an initial evaluation of each construction site.</li> <li>• Contractor will be responsible for maintaining equipment in best possible working condition and outfitting construction equipment with the most effective locally available commercial mufflers or other noise attenuation devices;</li> <li>• When feasible, the loudest construction activities will be conducted during Merced County construction noise exempt hours, between 7 a.m. and 6 p.m.;</li> <li>• Operation of construction equipment between the hours between 6 p.m. and 10 p.m. will be prohibited within 9,100 feet of the subdivision off SR 152. During the hours between 10 p.m. and 6 a.m. the operation of construction equipment will</li> </ul> |   |   |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic | Impact Before Mitigation | Mitigation Measure(s)   | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---------------------|--------------------------|---|---|---|
|                     |                          | <p>be prohibited within 9,550 feet of the subdivision off SR 152.</p> <ul style="list-style-type: none"> <li>• Shutting down equipment that are queued or not in use for 5 minutes or more;</li> <li>• Pre-construction meeting with contractors and project managers to confirm that noise mitigation procedures are in place;</li> <li>• Signs shall be posted at the construction sites that include permitted construction days and hours, a day and evening contact number for the job site, and a contact number in the event of problems;</li> <li>• The public will be kept informed of the construction hours and days;</li> <li>• List contact information for complaints and respond to noise complaints; and</li> <li>• An on-site complaint and enforcement manager shall respond to and track complaints and questions related to noise.</li> </ul> <p><b>NOISE-2 (Same as NOISE-2 in 2019 EIS/EIR: A</b><br/> <b>Blasting Plan for construction shall be prepared and followed that includes the following:</b></p> <ul style="list-style-type: none"> <li>• Identification of blast officer;</li> <li>• Scaled drawings of blast locations, and neighboring buildings, streets, or other locations which could be inhabited;</li> <li>• Blasting notification procedures, lead times, and list of those notified. Public notification to</li> </ul> |   |   |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic | Impact Before Mitigation | Mitigation Measure(s)  | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---------------------|--------------------------|--|---|---|
|                     |                          | <p>potentially affected vibration and nuisance noise receptors describing the expected extent and duration of the blasting;</p> <ul style="list-style-type: none"> <li>• Description of means for transportation and on-site storage and security of explosives in accordance with local, State, and Federal regulations;</li> <li>• Minimum acceptable weather conditions for blasting and safety provisions for potential stray current (if electric detonation);</li> <li>• Traffic control standards and traffic safety measures (if applicable);</li> <li>• Required personal protective equipment;</li> <li>• Minimum standoff distances and description of blast impact zones and procedures for clearing and controlling access to blast danger;</li> <li>• Procedures for handling, setting, wiring, and firing explosives; and procedures for handling misfires per Federal code;</li> <li>• Type and quantity of explosives and description of detonation device;</li> <li>• Methods of matting or covering of blast area to prevent flyrock and excessive air blast pressure;</li> <li>• Description of blast vibration and air blast monitoring programs;</li> <li>• Dust control measures in compliance with applicable air pollution control regulations</li> </ul> |   |   |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic | Impact Before Mitigation | Mitigation Measure(s)  | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---------------------|--------------------------|--|---|---|
|                     |                          | <p>(to interface with general construction dust control plan);</p> <ul style="list-style-type: none"> <li>• Emergency Action Plan to provide emergency telephone numbers and directions to medical facilities;</li> <li>• Procedures for action in the event of injury;</li> <li>• Material Safety Data Sheets for each explosive or other hazardous materials to be used;</li> <li>• Evidence of licensing, experience, qualifications of blasters, and description of insurance for the blasting work;</li> <li>• A sound attenuation plan shall be prepared outlining the sound control measures that would include the use of blasting mats or sound walls;</li> <li>• If vibration results in damage to any nearby structures or utilities, or scenic rock faces, blasting shall immediately cease. The stability of segmental retaining walls, existing slopes, creek canals, etc. shall be monitored and any evidence of instability due to blasting operations shall result in immediate termination of blasting;</li> <li>• Explosive materials shall be delivered in specially built vehicles marked with United Nations (UN) hazardous materials placards. Explosives and detonators shall be delivered in separate vehicles or be separated in compartments meeting the Department of Transportation (DOT) rules within the same vehicle. Vehicles shall have at least two ten-pound Class-A fire extinguishers</li> </ul> |   |   |



Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic | Impact Before Mitigation | Mitigation Measure(s)  | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---------------------|--------------------------|--|---|---|
|                     |                          | <p>and all sides of the vehicles display placards displaying the UN Standard hazard code for the onboard explosive materials. Drivers shall have commercial driver licenses (CDL) with Hazmat endorsements, and drivers shall carry bill-of-landing papers detailing the exact quantities and code dates of transported explosives or detonators;</p> <ul style="list-style-type: none"> <li>The contractor must comply with U.S. Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) table-of-distance requirements (Code of Federal Regulations [CFR] 27, U.S. Department of Justice, Alcohol, Tobacco, Firearms and Explosives Division Part 555) that restrict explosive quantities based on distance from occupied buildings and public roadways. Employees must also comply with the security requirements of the Safe Explosives Act (Title XI, Subtitle C of Public Law 107-296, Interim Final Rule), implemented in March 2003. These requirements require background checks for all persons that use, handle or have access to explosive materials; and responsible persons on a now required Federal explosives license must submit photographs and fingerprints with the application to ATF.</li> </ul> <p><b>NOISE-3 (Same as NOISE-3 in 2019 EIS/EIR):</b> A pre-construction noise survey will be completed during the daytime and nighttime periods at</p> |   |   |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic  | Impact Before Mitigation | Mitigation Measure(s)  | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|--|--------------------------|--|---|---|
|  |                          | multiple locations across the project area, including identified sensitive receptors, to establish background noise levels at those times. During construction, noise will be periodically monitored at these locations to assess any increases in noise levels that exceed the local noise ordinances. If noise levels are recorded exceeding the background noise level by 10 dBA between 6 p.m. and 10 p.m. or by 5 dBA between 10 p.m. and 7 a.m. or if noise complaints are received, an investigation will be conducted to determine the source of the noise. After the investigation, noise will be reduced using all feasible measures, including mitigation at the receiver impacted by the noise. Potential mitigation at the receiver would include building envelope improvements and acoustical window treatments.<br><br>All mitigation requirements will be included in bid documents and construction contracts. |   |   |
| Would the Modified Project result in substantial temporary or periodic increase in ambient noise levels in the Modified Project vicinity above levels existing without the Modified Project? | PS                       | NOISE-1 through NOISE-3 above.   | SU  | No  |
| <b>Traffic and Transportation</b>  |                          |  |   |   |
| Would the Modified Project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous   | PS                       | <b>TR-1 (Same as TR-1 in 2019 EIS/EIR): Construction Traffic Control Plan.</b> The following construction management actions will be documented in a temporary traffic control plan developed by the   | LTS   | No  |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic   | Impact Before Mitigation | Mitigation Measure(s)   | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---|--------------------------|---|---|---|
| intersections) or incompatible uses (e.g., farm equipment)? |                          | contractor as a requirement that will be included in its construction contract. The temporary traffic control plan will be submitted for Caltrans review and approval during the Encroachment Permit process. Construction contractors shall install signage at affected intersections in accordance with the California Manual on Uniform Traffic Control Devices guidelines warning motorists of slow moving construction traffic and lane closures, including SR-152, Basalt Road, Romero Visitor Center access road, and the San Luis Creek Campground Road. Signage shall also be posted at these intersections one month in advance to allow motorists time to plan for delays or alternate routes. Construction contractors shall implement dust abatement and perform proper construction traffic management actions, including signage warning motorists of construction activity and traffic controls like flaggers or temporary traffic lights where construction equipment will be entering roadways, to reduce conflicts during periods of high traffic volume in and around each construction site and to avoid conflicts with emergency responders entering and exiting the area during an emergency. In addition to the temporary traffic control plan, prior to the initiation of any construction actions, construction contractors shall develop and adhere to a health and safety plan outlining all applicable Occupational Safety and Health Administration requirements, important traffic |   |   |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic  | Impact Before Mitigation | Mitigation Measure(s)  | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|--|--------------------------|--|---|---|
|  |                          | safety plans including identification of emergency access routes in and through construction areas that would will need to be kept clear at all times during construction. The health and safety plan shall include coordination with emergency service personnel to ensure adequate mitigation for all impacts.   |   |   |
| Would the Modified Project result in inadequate emergency access?  | PS                       | TR-1 above.  | LTS   | No  |
| <b>Hazards and Hazardous Materials</b>   |                          |  |   |   |
| Would the Modified Project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?  | PS                       | TR-1 above.  | LTS   | No  |
| Would the Modified Project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands? | PS                       | <b>HAZ-1 (Same as HAZ-1 in 2019 EIS/EIR):</b> The construction contractor in coordination with the Lead Agencies shall work with the CDPR and the Central Valley RWQCB to review existing monitoring data of the San Luis Reservoir SRA LUST Cleanup Site to evaluate the potential for interacting with hazardous soil contamination during construction. If the construction contractor and the Lead Agencies (as the responsible party for this potential disturbance) determine that interaction with contaminated soil cannot be avoided and these construction actions could generate a release of this soil to nearby water bodies or elsewhere off site, the construction contractor shall prepare a Contaminated Soil/Groundwater Remediation Plan. | LTS   | No  |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic | Impact Before Mitigation | Mitigation Measure(s)  | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---------------------|--------------------------|--|---|---|
|                     |                          | <p>This remediation plan will detail the nature of the contaminants on site, measures required to avoid interaction with these contaminants including if necessary a pre-construction cleanup of the site, and a response action plan in the event of an inadvertent release of contaminated soils from the construction site. This plan will be submitted to the CDPR and the Central Valley RWQCB for review and approval prior to any construction taking place.</p> <p>In addition, the construction contractor shall also prepare a Spill Prevention and Response Plan for preventing spills and responding to chemical or hazardous substance spills. This plan will include spill prevention management, including employee training, hazardous substance inventory, and spill response equipment. The plan will also include a spill response plan, including evacuation procedures, spill containment and cleanup, and reporting a release.</p> <p>Finally, the construction contractor shall prepare a Fire Prevention Plan to prevent a fire from occurring. The plan must include (Occupational Safety and Health Administration 2018 [as cited in 2019 EIS/EIR]):</p> <ul style="list-style-type: none"> <li>• A list of all major fire hazards, proper handling and storage procedures for hazardous materials, potential ignition sources and their control, and</li> </ul> |   |   |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic | Impact Before Mitigation | Mitigation Measure(s)  | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---------------------|--------------------------|--|---|---|
|                     |                          | <p>the type of fire protection equipment necessary to control each major hazard.</p> <ul style="list-style-type: none"> <li>• Procedures to control accumulations of flammable and combustible waste materials.</li> <li>• Procedures for regular maintenance of safeguards installed on heat-producing equipment to prevent the accidental ignition of combustible materials.</li> <li>• The name or job title of employees responsible for maintaining equipment to prevent or control sources of ignition or fires.</li> <li>• The name or job title of employees responsible for the control of fuel source hazards.</li> </ul> <p>Note that HAZ-1 is identified in the 2019 EIS/EIR and includes additional content that is not required for reduction of significant fire impacts resulting from components of the Modified Project. However, for consistency, the entirety of the mitigation measure is listed here.</p> <p><b>HAZ-3 (Same as HAZ-3 in 2019 EIS/EIR)</b> This measure is eliminated with the SEIR because the San Luis Reservoir Seaplane Base is no longer operational.</p> <p><b>HAZ-4 (Same as HAZ-4 in 2019 EIS/EIR):</b> The Lead Agencies will include requirements in all construction contracts requiring the use of spark arrestors on all construction equipment. The</p> |   |   |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic | Impact Before Mitigation | Mitigation Measure(s)  | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---------------------|--------------------------|--|---|---|
|                     |                          | <p>contract shall also include requirements for the contractor to educate all construction workers about the risk of starting a wildfire and how to avoid it and who to contact in case a wildfire is started. In addition, restrictions shall be placed on smoking and campfires for any personnel utilizing Basalt Campground.</p> <p><b>SEIR-HAZ-1 (New mitigation measure):</b><br/>Maintenance of Modified Project buildings, grounds, and infrastructure, including defensible space areas, shall be conducted using firesafe practices to minimize the potential for wildfire ignitions resulting from equipment use. Firesafe practices shall be consistent with California Public Resources Code Sections 4427, 4428, 4431, and 4442. Maintenance activities shall be ceased during periods of high fire hazard (e.g., red flag warnings), except where necessary to maintain public safety and available water supply for fire suppression purposes.</p> <p><b>SEIR-HAZ-2 (New mitigation measure):</b> Campground operations shall be modified during periods of high fire hazard (e.g., red flag warnings) to reduce the potential for wildfire ignitions. Modifications may include, but are not limited to, banning campfires and open flames, and partially or completely closing the campground to the public.</p> |   |   |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic   | Impact Before Mitigation | Mitigation Measure(s)   | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---|--------------------------|---|---|---|
| <b>Biological Resources</b>   |                          |   |   |   |
| Would the Modified Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as an endangered, threatened, candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW, NMFS, or USFWS? | PS                       | <p><b>TERR-1 (Same as TERR-1 in 2019 EIS/EIR): Special-status Plant Species and Special-Status Natural Communities.</b> Surveys of the project area for special-status plant species will be conducted during the identifiable blooming period prior to commencement of work. Special-status plants include: Arcuate bush-mallow (blooms April through September), big-scale balsamroot (blooms March through June), California alkali grass (blooms March through May), chaparral harebell (blooms May through June), Congdon's tarplant (blooms May through October), Hall's bushmallow (blooms May through September), Hispid bird's beak (blooms June through September), Hospital Canyon larkspur (blooms March through June), Lemmon's jewelflower (blooms February through May), Lime Ridge navarretia (blooms May through June), round-leaved filaree (blooms March through May), shining navarretia (blooms April through July), and spiny-sepaled button-celery (blooms April through June).</p> <p>A qualified DWR biologist (qualified biologist) will be present prior to and during construction to ensure avoidance of impacts on special-status plant species and special-status natural communities by</p> | LTS   | No  |



Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic | Impact Before Mitigation | Mitigation Measure(s)   | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---------------------|--------------------------|---|---|---|
|                     |                          | <p>implementing one, or more, of the following, as appropriate, per the biologist's recommendation:</p> <ul style="list-style-type: none"> <li>a. Flag the population or natural community areas to be protected;</li> <li>b. Allow adequate buffers; and/or,</li> <li>c. Time construction or other activities during dormant and/or non-critical life cycle periods.</li> </ul> <p>For unavoidable impacts to special-status plant species, compensatory mitigation may be required based on recommendations of the qualified biologist. If any impacts occur to listed plant species, consultation with USFWS and/or CDFW will be initiated. If deemed necessary based on the type and extent of special-status plant populations affected, compensatory mitigation will entail:</p> <ul style="list-style-type: none"> <li>a. The protection, through land acquisition or a conservation easement, of a population of equal or greater size and health. Or,</li> <li>b. If it is not feasible to acquire and preserve a known population of a special-status plant to be impacted, suitable unoccupied habitat capable of supporting the species will be acquired, and used to create a new population. For population creation, the following considerations will also be met: <ul style="list-style-type: none"> <li>• Prior to unavoidable and permanent disturbance to a population of a special-status plant species, propagules shall be</li> </ul> </li> </ul> |   |   |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic | Impact Before Mitigation | Mitigation Measure(s)   | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---------------------|--------------------------|---|---|---|
|                     |                          | <p>collected from the population to be disturbed. This may include seed collection or cuttings, and these propagules will be used to establish a new population on suitable, unoccupied habitat as described above. Transplantation may be attempted but will not be used as the primary means of plant salvage and new population creation.</p> <ul style="list-style-type: none"> <li>• Creation of new populations will require identifying suitable locations and researching and determining appropriate and viable propagation or planting techniques for the species. It will also require field and literature research to determine the appropriate seed sampling techniques and harvest numbers for acquisition of seed from existing populations.</li> <li>• A minimum ten-year monitoring plan with adaptive management will be implemented to document the success of creating new plant populations. Adequate funding for compensatory mitigation will be provided on an agreed-to schedule, following a discussion with the appropriate regulatory agencies, to ensure long-term protection and management of lands acquired or placed under conservation easement.</li> </ul> |   |   |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic | Impact Before Mitigation | Mitigation Measure(s)  | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---------------------|--------------------------|--|---|---|
|                     |                          | <p><b>TERR-6 (Same as TERR-6 in 2019 EIS/EIR): Nesting Bird Surveys.</b> A qualified biologist would conduct nesting bird surveys prior to construction and supervise avoidance of nests during construction. The generally accepted nesting season extends from February 1 through September 15. If an active nest of a special-status bird is found, construction within 300 feet of the nest (500 feet for raptor nests, excluding Swainson's hawk) would be postponed until the nest is no longer active.</p> <p><b>TERR-7 (Same as TERR-7 in 2019 EIS/EIR): Preconstruction Surveys for and Avoidance of Swainson's Hawk Nests.</b> Prior to construction, surveys for active Swainson's hawk nests will be conducted in and around all potential nest trees within 0.5 mile of construction areas. If known or active nests are identified through preconstruction surveys or other means, a 0.5 mile no-disturbance buffer shall be established around all active nest sites if construction cannot be limited to occur outside the nesting season (February 15 through September 15). Buffer sizes may be reduced if approved by CDFW and active nest sites are monitored during construction by a qualified biologist.</p> <p>Permanent foraging habitat losses (i.e., grasslands) within one mile of active Swainson's hawk nests shall be compensated by preserving in perpetuity suitable foraging habitat at a ratio of 1:1. This</p> |   |   |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic | Impact Before Mitigation | Mitigation Measure(s)   | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---------------------|--------------------------|---|---|---|
|                     |                          | <p>includes permanently disturbed construction sites. The CDFW shall approve the location and types of habitats preserved.</p> <p><b>TERR-10 (Same as TERR-10 in 2019 EIS/EIR): Tricolored Blackbird.</b> Prior to construction, appropriately timed surveys for tricolored blackbirds would be conducted in areas supporting potentially suitable habitat within 0.25 mile of construction areas. Habitat within 0.25 mile of tricolored blackbird colonies will be avoided during nesting season, which can begin as early as mid-March and extend through August. If colonies cannot be avoided, CDFW shall be consulted to potentially reduce buffer distances with active monitoring during construction by a qualified biologist.</p> <p><b>TERR-11 (Same as TERR-11 in 2019 EIS/EIR): Special-Status Bats.</b> Impacts to special-status bats shall be minimized by performing preconstruction surveys and creating no-disturbance buffers around active bat roosting sites.</p> <p>Before construction activities (i.e., ground clearing and grading, including trees or shrub removal) within 200 feet of trees that could support special-status bats, a qualified bat biologist shall survey for special-status bats. If no evidence of bats (i.e., direct observation, recorded vocalizations, guano,</p> |   |   |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic | Impact Before Mitigation | Mitigation Measure(s)  | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---------------------|--------------------------|--|---|---|
|                     |                          | <p>staining, or strong odors) is recorded, no further mitigation shall be required.</p> <p>If evidence of bats is observed, the following measures shall be implemented to avoid potential impacts on breeding populations:</p> <ul style="list-style-type: none"> <li>• A no-disturbance buffer of 200 feet shall be created around active bat roosts during the breeding season (April 15 through August 15). Bat roosts initiated during construction are presumed to be unaffected by the indirect effects of noise and construction disturbances. However, the direct take of individuals will be prohibited.</li> <li>• Removal of trees showing evidence of active bat activity shall occur during the period least likely to affect bats, as determined and monitored by a qualified bat biologist (generally between February 15 and October 15 for winter hibernacula, and between August 15 and April 15 for maternity roosts). If the exclusion of bats from potential roost sites is necessary to prevent indirect impacts due to construction noise and human activity adjacent, bat exclusion activities (e.g., installation of netting to block roost entrances) shall also be conducted during these periods. If special-status bats are identified in the dam or special allowances must be made to relocate bats, Reclamation will coordinate the effort in advance with CDFW.</li> </ul> |   |   |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic | Impact Before Mitigation | Mitigation Measure(s)  | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---------------------|--------------------------|--|---|---|
|                     |                          | <p><b>TERR-13 (Same as TERR-13 in 2019 EIS/EIR): American Badger.</b> Impacts on badgers within annual grasslands and oak woodland at San Luis Reservoir will be minimized through a combination of worker training, preconstruction surveys, and passively or actively relocating animals. Concurrent with other required surveys, during winter/spring months before new project activities, and concurrent with other preconstruction surveys (e.g., kit fox and burrowing owl), a qualified biologist shall perform a survey to identify the presence of active or inactive American badger dens. If this species is not found, no further mitigation shall be required. If badger dens are identified within the construction footprint during the surveys or afterwards, they shall be inspected and closed using the following methodology:</p> <p>When unoccupied dens are encountered outside of work areas but within 100 feet of proposed activities, vacated dens shall be inspected to ensure they are empty and temporarily covered using plywood sheets or similar materials. If badger occupancy is determined at a given site within the work area, work activities at that site should be halted. Depending on the den type, reasonable and prudent measures to avoid harming badgers will be implemented and may include seasonal limitations on project construction near the site (i.e., restricting the construction period to avoid spring-summer pupping season), and/or establishing a construction exclusion zone around the</p> |   |   |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic | Impact Before Mitigation | Mitigation Measure(s)  | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---------------------|--------------------------|--|---|---|
|                     |                          | <p>identified site, or resurveying the den at a later time to determine species presence or absence. Badgers may be passively relocated using burrow exclusion (e.g., installing one-way doors on burrows) or similar CDFW-approved exclusion methods. In unique situations it might be necessary to actively relocate badgers (e.g., using live traps) to protect individuals from potentially harmful situations. Such relocation would be performed with advance CDFW coordination and concurrence.</p> <p><b>TERR-15 (Same as TERR-15 in 2019 EIS/EIR): Contractor Environmental Awareness Training and Site Protection Measures.</b> All construction personnel working in biologically sensitive areas shall attend an environmental education program delivered by a qualified biologist prior to starting work. The training shall include an explanation as how to best avoid the accidental take of special-status plants and wildlife. The field meeting shall include species identification, life history, descriptions, and habitat requirements. The program shall include an explanation of Federal and State laws protecting endangered species, and avoidance and minimization methods being implemented to protect these species. A qualified biologist will be present on the site at all times during construction. The contractor shall provide closed garbage containers for the disposal of all trash items (e.g., wrappers, cans, bottles, food</p> |   |   |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic | Impact Before Mitigation | Mitigation Measure(s)  | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---------------------|--------------------------|--|---|---|
|                     |                          | <p>scraps). Work sites shall be cleaned of litter before closure each day, and placed in wildlife-proof garbage receptacles. Construction personnel shall not feed or otherwise attract any wildlife. No pets, excluding service animals, shall be allowed on site or in construction areas.</p> <p>Nighttime vehicle traffic shall be kept to a minimum on non-maintained roads with a maximum speed of 15 mph.</p> <p>To minimize disturbance to wildlife, temporary and permanent exterior lighting shall be installed such that:</p> <ul style="list-style-type: none"> <li>• lamps and reflectors are not visible from beyond the project site,</li> <li>• reflective glare will be minimized to the extent feasible;</li> <li>• illumination of the project and its immediate vicinity is minimized;</li> <li>• lighting shall incorporate fixture hoods/shielding, with light directed downward or toward the area to be illuminated;</li> <li>• all lighting shall be of minimum necessary brightness consistent with operational safety and security; lights in areas not occupied on a continuous basis (such as maintenance areas) shall have (in addition to hoods) switches, timer</li> </ul> |   |   |



Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic | Impact Before Mitigation | Mitigation Measure(s)  | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---------------------|--------------------------|--|---|---|
|                     |                          | <p>switches, or motion detectors so that the lights operate only when the area is occupied, and</p> <ul style="list-style-type: none"> <li>the plan complies with local policies and ordinances.</li> </ul> <p><b>SEIR-BIO-1 (Replaces TERR-3 in 2019 EIS/EIR): Special-Status Amphibians.</b> Before and after construction:</p> <ul style="list-style-type: none"> <li>The Modified Project proponent shall submit the name and credentials of a California Department of Water Resources (DWR) biologist qualified to act as construction monitor to the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW) for approval at least 15 days before construction work begins. General minimum qualifications are a 4-year degree in biological sciences and experience in surveying, identifying, and handling California tiger salamanders and California red-legged frogs. The qualified biologist shall be present at all times during construction. Consultation with the USFWS through the Section 7 process may be required to determine avoidance, conservation, and mitigation measures.</li> <li>The USFWS- and CDFW-approved biologist, under the appropriate federal and state authorities (e.g., permitting and consultation), shall survey the work sites 2 weeks before the onset of construction. If</li> </ul> |   |   |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic | Impact Before Mitigation | Mitigation Measure(s)  | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---------------------|--------------------------|--|---|---|
|                     |                          | <p>California tiger salamanders or California red-legged frogs (or their tadpoles or eggs) are found, the approved biologist shall contact USFWS and CDFW to determine whether moving any of these life stages is appropriate. If USFWS and CDFW approve moving the animals, the biologist shall be allowed sufficient time to move frogs and/or salamanders from the work sites before work begins. If these species are not identified, construction can proceed at these sites. The biologist shall use professional judgment to determine whether (and if so, when) the California tiger salamanders and/or California red-legged frogs are to be moved. The biologist shall immediately inform the construction manager that work shall be halted, if necessary, to avert avoidable take of listed species.</p> <ul style="list-style-type: none"> <li>• The known location of California red-legged frogs and Willow Spring, the water source for the perennial frog pond near the borrow area, shall be avoided during construction with a buffer of 250 feet to avoid modifying aquatic habitat that supports the frog population; or as otherwise approved by the resource agencies.</li> <li>• Areas impacted by construction shall be monitored during construction to identify, capture, and relocate special-status amphibians, if present.</li> <li>• Areas beneath construction equipment and vehicles shall be inspected daily, prior to operation,</li> </ul> |   |   |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic | Impact Before Mitigation | Mitigation Measure(s)  | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---------------------|--------------------------|--|---|---|
|                     |                          | <p>for presence of special-status amphibians under tracks/tires and within machinery. If special-status amphibians are found, a qualified biologist shall capture and relocate animals from work sites.</p> <ul style="list-style-type: none"> <li>• Appropriate state and federal permits for handling of special-status species shall be acquired.</li> <li>• If necessary, a detailed amphibian relocation plan shall be prepared at least 3 weeks before the start of groundbreaking and submitted to CDFW and USFWS for review. The purpose of the plan is to standardize amphibian relocation methods and relocation sites.</li> <li>• The USFWS- and CDFW-approved biologist shall be present at the active work sites until special-status amphibians have been removed, and habitat disturbance has been completed. Thereafter, compliance with all minimization measures shall be monitored by an individual who has received training from a CDFW- and USFWS-approved biologist, consistent with USFWS requirements.</li> <li>• The Modified Project proponent and its contractors shall install frog-exclusion fencing (i.e., silt fences) around all construction areas that are within 100 feet of any identified ponds that provide potential special-status amphibian aquatic breeding habitat. During and after rain events, an approved biologist shall monitor work areas for the presence of special-status amphibians.</li> </ul> |   |   |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic | Impact Before Mitigation | Mitigation Measure(s)  | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---------------------|--------------------------|--|---|---|
|                     |                          | <ul style="list-style-type: none"> <li>• DWR shall ensure that compensation is provided for permanent and temporary impacts on California tiger salamander and California red-legged frog aquatic habitat. Compensatory mitigation shall be provided for the loss of aquatic breeding sites that will be filled or otherwise directly affected by the Modified Project, as well as mitigate for any impacts on associated California red-legged frog upland habitat through compensatory mitigation. If possible, compensatory mitigation areas shall be located within a California red-legged Frog Recovery Area, as identified in the 2002 California Red-legged Frog Recovery Plan (USFWS 2002).</li> <li>• The total area, size, and number of California red-legged frog or California tiger salamander mitigation ponds to be created will be based on a comparable loss of breeding sites (e.g., a minimum 1:1 replacement ratio) as a result of the Modified Project. These ponds shall concurrently satisfy wetland mitigation requirements identified in Mitigation Measure TERR-16 in the 2019 EIS/EIR. To the degree possible, new mitigation ponds that are created for California red-legged frog and California tiger salamander shall be hydrologically self-sustaining and shall not require a supplemental water supply.</li> </ul> |   |   |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic | Impact Before Mitigation | Mitigation Measure(s)   | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---------------------|--------------------------|---|---|---|
|                     |                          | <p><b>SEIR-BIO-2 (Replaces TERR-5 in the 2019 EIS/EIR): Special-Status Reptiles.</b> Before construction activities begin, a qualified biologist shall conduct special-status reptile (i.e., San Joaquin whipsnake and coast horned lizard) surveys 2 weeks prior to construction activities within work sites and within 100 feet of disturbance areas. A qualified biologist shall relocate any special-status reptiles to suitable habitat outside of areas of disturbance. There is possibility of special-status reptiles to move into the work sites after preconstruction surveys have checked the area and some individuals could be subject to mortality. If special-status reptiles are detected in work sites during construction, activities and equipment travel shall cease in the immediate area of detection until the special-status reptile has left work site or has been relocated out of the area by a qualified biologist.</p> <p><b>SEIR-BIO-3 (Replaces TERR-9 in the 2019 EIS/EIRS): Burrowing Owl.</b> Prior to construction, surveys for burrowing owls shall be conducted in areas supporting potentially suitable habitat.</p> <p>Breeding season surveys shall be performed to determine the presence of burrowing owls for the purposes of inventory, monitoring, avoidance of take, and determining appropriate mitigation. In California, the breeding season begins as early as February 1 and continues through August 31.</p> |   |   |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic | Impact Before Mitigation | Mitigation Measure(s)   | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---------------------|--------------------------|---|---|---|
|                     |                          | <p>Under the survey guidelines in the California Department of Fish and Wildlife's (CDFW's) Staff Report on Burrowing Owl Mitigation (CDFG 2012)', a biologist shall: 1) perform a habitat assessment to identify essential components of burrowing owl habitat, including artificial nest features; 2) perform intensive burrow surveys in areas that are identified to provide suitable burrowing owl habitat, and; 3) perform at least four appropriately-timed breeding season surveys (four survey visits spread evenly [roughly every 3 weeks] during the peak of the breeding season, from April 15 to July 15) to document habitat use.</p> <p>Preconstruction surveys (referred to as take avoidance surveys in CDFG [2012]) shall be used to assess the owl presence before site modification is scheduled to begin. Generally, initial preconstruction surveys should be conducted within 7 days, but no more than 30 days prior to ground-disturbing activities. Additional surveys may be required when the initial disturbance is followed by periods of inactivity or the development is phased spatially and/or temporally over the Modified Project area. Up to four or more survey visits performed on separate days may be required to assure with a high degree of certainty that site modification and grading will not take owls. The full extent of the preconstruction survey effort shall be described and mapped in detail (e.g., dates, time</p> |   |   |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic | Impact Before Mitigation | Mitigation Measure(s)  | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---------------------|--------------------------|--|---|---|
|                     |                          | <p>periods, area[s] covered, and methods employed) in a biological report that shall be provided for review to CDFW.</p> <p>In addition to the above survey requirements, the following measures shall be implemented to reduce Modified Project impacts to burrowing owls:</p> <ul style="list-style-type: none"> <li>• Construction exclusion areas (e.g., orange exclusion fence or signage) shall be established around occupied burrows, where no disturbance shall be allowed. During the nonbreeding season (September 1 through January 31), the exclusion zone shall extend at least 160 feet around occupied burrows. During the breeding season (February 1 through August 31), exclusion areas shall extend 250 feet around occupied burrows (or farther if warranted to avoid nest abandonment).</li> <li>• If work or exclusion areas conflict with owl burrows, passive relocation of on-site owls could be implemented as an alternative, but only during the nonbreeding season and only with CDFW approval. The approach to owl relocation and burrow closure will vary depending on the number of occupied burrows. Passive relocation shall be accomplished by installing one-way doors on the entrances of burrows within 160 feet of the Modified Project area. The one-way doors shall be left in place for 48 hours to ensure the owls have</li> </ul> |   |   |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic | Impact Before Mitigation | Mitigation Measure(s)  | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---------------------|--------------------------|--|---|---|
|                     |                          | <p>left the burrow. The burrows shall then be excavated with a qualified biologist present. Construction shall not proceed until the Modified Project area is deemed free of owls.</p> <ul style="list-style-type: none"> <li>• Unoccupied burrows within the immediate construction area shall be excavated using hand tools, and then filled to prevent reoccupation. The qualified biologist shall be present during construction to continue examination of burrows. If any burrowing owls are discovered during the excavation, the excavation shall cease and the owl allowed to escape. Excavation shall be completed once the biological monitor confirms the burrow is empty.</li> <li>• Artificial nesting burrows shall be provided as a temporary measure when natural burrows are lacking. To compensate for lost nest burrows, artificial burrows shall be provided outside the 160-foot buffer zone. The alternate burrows shall be monitored daily for 7 days to confirm that the owls have moved in and acclimated to the new burrow.</li> </ul> <p><b>SEIR-BIO-4 (Replaces TERR-12 in the 2019 EIS/EIR): San Joaquin Kit Fox.</b> San Joaquin kit fox would be affected by construction activities if animals are harmed or killed by equipment, their movement is blocked, or their dens or other habitat is altered or destroyed. Consultation with the U.S. Fish and Wildlife Service (USFWS) through the</p> |   |   |



Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic | Impact Before Mitigation | Mitigation Measure(s)  | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---------------------|--------------------------|--|---|---|
|                     |                          | <p>Section 7 process may be required to determine avoidance, conservation, and mitigation measures. Prior to construction, a qualified biologist shall conduct surveys to identify potential dens more than 4 inches in diameter. A multispecies burrow assessment in 2020 located numerous potential San Joaquin kit fox dens in suitable habitat throughout the Modified Project site (Dudek 2020b). If dens are located within the proposed work area and cannot be avoided during construction activities, a USFWS- and California Department of Fish and Wildlife (CDFW)-approved biologist shall determine if the dens are occupied. If occupied dens are present within the proposed work area, their disturbance and destruction shall be avoided. Exclusion zones shall be implemented following the latest USFWS procedures (USFWS 2011b). The Modified Project proponent shall implement San Joaquin kit fox protection measures.</p> <p>The following measures, which are intended to reduce direct and indirect Modified Project impacts on San Joaquin kit foxes, are derived from the San Joaquin Kit Fox Survey Protocol for the Northern Range (USFWS 1999) and the Standardized Recommendations for Protection of the San Joaquin Kit Fox (USFWS 2011b). The following</p> |   |   |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic | Impact Before Mitigation | Mitigation Measure(s)   | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---------------------|--------------------------|---|---|---|
|                     |                          | <p>measures shall be implemented for construction areas at San Luis Reservoir:</p> <ul style="list-style-type: none"> <li>• Preconstruction surveys shall be conducted within 200 feet of work areas to identify potential San Joaquin kit fox dens or other refugia in and surrounding workstations. A qualified biologist shall conduct the survey for potential kit fox dens 14 to 30 days before construction begins. All identified potential dens shall be monitored for evidence of kit fox use by placing an inert tracking medium at den entrances and monitoring for at least 3 consecutive nights. If no activity is detected at these den sites, they shall be closed following guidance established in the USFWS Standardized Recommendations report (USFWS 2011b).</li> <li>• If kit fox occupancy is determined at a given site during the preconstruction surveys or during the construction period, the construction manager should be immediately informed that work should be halted within 200 feet of the den and the USFWS contacted. Depending on the den type, reasonable and prudent measures to avoid effects to kit foxes could include seasonal limitations on Modified Project construction at the site (i.e., restricting the construction period to avoid spring–summer pupping season), and/or establishing a construction exclusion zone around</li> </ul> |   |   |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic | Impact Before Mitigation | Mitigation Measure(s)  | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---------------------|--------------------------|--|---|---|
|                     |                          | <p>the identified site, or resurveying the den 1 week later to determine species presence or absence.</p> <ul style="list-style-type: none"> <li>Off-road vehicle and equipment movement shall be limited to the Modified Project footprint.</li> <li>To compensate for permanent impacts to grassland, which provides habitat for San Joaquin kit fox, lands shall be acquired and covered by conservation easements or mitigation credits shall be purchased at a 2:1 mitigation ratio, or other compensation ratios approved by USFWS and CDFW.</li> </ul> <p><b>SEIR-BIO-6 (New mitigation measure):</b> Avoidance of Bridge-Nesting Birds. Prior to the construction and removal of the temporary haul road under State Route (SR) 152, surface modification treatment (Polytetrafluoroethylene [PTFE] sheeting) shall be applied to the SR-152 bridge to prevent nesting by species such as cliff swallow, black phoebe, and white-throated swift (if weep holes are present). PTFE sheeting shall be installed vertically at the junctures of vertical and overhead surfaces on the sides and underneath the first 75 feet of the SR-152 bridge extending from the southern abutment of the bridge to the north along the bridge. The treatment shall be applied before the nesting season (February 1). In combination with PTFE sheets, broadcast call units playing distress calls from adult cliff swallows may be used to further deter nesting. If used, distress calls</p> |   |   |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic   | Impact Before Mitigation | Mitigation Measure(s)   | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---|--------------------------|---|---|---|
|   |                          | should be played for 26 seconds in duration continuously via broadcast call units installed within the nest exclusion area as described in “Methods for Excluding Cliff Swallows from Nesting on Highway Structures” (UC Davis 2009). During the nesting season, the exclusion treatment shall be supplemented with bi-weekly inspections by a qualified biologist to evaluate treatment integrity, inspect the area for active nests, and subsequently remove any partial nests, as feasible. The 75-foot treatment area has been established as a standard disturbance buffer for cliff swallow, black phoebe, and white-throated swift for work activities that involve heavy machinery and personnel (PG&E 2016). |   |   |
| Would the Modified Project have a substantial adverse effect on any riparian habitat or other sensitive (or special-status) natural community identified in local or regional plans, policies, regulations, or by the CDFW, NMFS, or USFWS? | PS                       | <p><b>SEIR-BIO-5 (Replaces TERR-16 in the 2019 EIS/EIR): Mitigation Measures for Special-Status Communities, including Native Grassland, and Jurisdictional Wetlands or Waters and Streambeds and Banks Regulated by CDFW, RWQCB, and USACE.</b></p> <p><b>SEIR-BIO-5a.</b> Final project design shall avoid and minimize the fill of wetlands and other waters to the greatest practicable extent. The following actions shall be performed to protect jurisdictional wetlands:</p> <p>The distribution of federal and state jurisdictional wetlands and waters; streambeds and banks regulated by the California Department of Fish and</p>   | LTS   | No  |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic | Impact Before Mitigation | Mitigation Measure(s)   | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---------------------|--------------------------|---|---|---|
|                     |                          | <p>Wildlife (CDFW); and sensitive habitat regulated by CDFW, shall be defined and avoided to the greatest possible extent.</p> <p>Prior to construction, a qualified biologist shall delineate the extent of jurisdictional areas to be avoided in the field. The Bureau of Reclamation (Reclamation) shall designate areas to be avoided as “Restricted Areas” and protect them using highly visible fencing, rope, or flagging, as appropriate based on site conditions. No construction activities or disturbance shall occur within restricted areas that are designated to protect wetlands.</p> <p>The removal of riparian and wetland vegetation shall be minimized. The disturbance of riparian and aquatic habitat north of the access road to the dam shall be avoided.</p> <p>The removal or damage to purple needlegrass grassland, gum plant patches and tarweed fields communities within annual grassland, and <i>Baccharis pilularis</i>/(<i>Nassella pulchra</i>–<i>Elymus glaucus</i>–<i>Bromus carinatus</i>), and narrowleaf goldenbush communities within scrub/chaparral shall be minimized. Impacts to these communities in the staging area shall be avoided.</p> <p><b>SEIR-BIO-5b.</b> Where jurisdictional wetlands and other waters cannot be avoided, to offset temporary and permanent impacts that would occur as a result</p> |   |   |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic | Impact Before Mitigation | Mitigation Measure(s)   | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---------------------|--------------------------|---|---|---|
|                     |                          | <p>of the Modified Project, restoration and compensatory mitigation shall be provided as described below. A wetland mitigation and monitoring plan shall be developed in coordination with CDFW, the U.S. Army Corps of Engineers (USACE), and/or the Regional Water Quality Control Board (RWQCB) that details mitigation and monitoring obligations for temporary and permanent impacts to wetlands and other waters as a result of construction activities; and other CDFW-jurisdictional areas. The plan shall quantify the total acreage affected; provide for mitigation as described below to wetland or riparian habitat; annual success criteria; mitigation sites; monitoring and reporting requirements; and site-specific plans to compensate for wetland losses resulting from the Modified Project.</p> <p>Prior to construction, the aquatic structure of wetland and riparian areas to be disturbed shall be photo-documented, and measurements of width, length, and depth shall be recorded. Reclamation shall recontour and revegetate disturbed portions of jurisdictional areas in areas temporarily affected by construction prior to demobilization by the contractor at the end of Modified Project construction. Creek banks shall be recontoured to a more stable condition if necessary.</p> |   |   |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic | Impact Before Mitigation | Mitigation Measure(s)  | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---------------------|--------------------------|--|---|---|
|                     |                          | <p>Revegetation shall include a palette of species native to the watershed area according to a revegetation plan to be developed by Reclamation and submitted to USACE, CDFW, and RWQCB for approval. Following removal, woody trees habitat acreage shall be replanted at a minimum 1:1 ratio, or as determined and agreed upon by the permitting agencies. Interim vegetation or other measures shall be implemented as necessary to control erosion in disturbed areas prior to final revegetation.</p> <p>Wetland and other waters impacts in the construction area shall be compensated at a ratio of 2:1 or at a ratio agreed upon by the wetland permitting agencies. Compensatory mitigation shall be conducted by creating or restoring wetland and aquatic habitat at an agency-approved location on nearby lands or through purchasing mitigation credits at a USACE- and/or CDFW-approved mitigation bank (depending on the resource). If mitigation is conducted on or off-site, a 5-year wetland mitigation and monitoring program for on-site and off-site mitigation shall be developed. Appropriate performance standards may include, but are not limited to a 75% survival rate of restoration plantings; absence of invasive plant species; and a viable, self-sustaining creek or wetland system at the end of 5 years.</p> |   |   |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic  | Impact Before Mitigation | Mitigation Measure(s)   | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|--|--------------------------|---|---|---|
|  |                          | A weed control plan to limit the Modified Project's potential to spread noxious or invasive weeds shall be developed. This plan would be consistent with current integrated pest management plans that are already in practice on lands surrounding San Luis Reservoir. Noxious or invasive weeds include those rated as "high" in invasiveness by the California Invasive Plant Council. The plan shall include a baseline survey to identify the location and extent of invasive weeds in the Modified Project area prior to ground-disturbing activity, a plan to destroy existing invasive weeds in the construction area prior to initiation of ground-disturbing activity, weed-containment measures while the Modified Project is in progress, and monitoring and control of weeds following completion of construction. |   |   |
| Would the Modified Project have a substantial adverse effect on Federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, coast, etc.) through direct removal, filling, hydrological interruption, or other means? | PS                       | SEIR-BIO-5 above.   | LTS   | No  |
| Would the Modified Project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident  | PS                       | <b>SEIR-BIO-7 (New mitigation measure): Elk Avoidance and Minimization.</b> In order to minimize conflicts between construction activities and tule elk within the Modified Project area, a Tule elk site management plan shall be developed to direct control measures. At a minimum, the plan shall specify that Tule elk shall   | LTS   | No  |



Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic  | Impact Before Mitigation | Mitigation Measure(s)  | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|--|--------------------------|--|---|---|
| or migratory wildlife corridors, or impede the use of native wildlife nursery sites?                     |                          | be directed (herded) from the work area(s) such that they are not confined (trapped) between construction activities and landscape features such as fences, buildings, water bodies, and in particular State Route 152. When herding elk, they should always be provided an escape route to the general south. The California Department of Fish and Wildlife (CDFW) indicates that Tule elk are readily herded by people or vehicles and quickly associate the need to move with specific people or vehicles; the plan should specify that particular vehicles (choose red trucks, for example) or personnel shall be tasked with herding activities. Once elk have been herded away from the construction zone, they will generally stay a comfortable distance from activities. If Tule elk do re-enter the construction zone, then additional herding efforts shall be required. Additionally, during the March and April periods, lone females shall be provided additional monitoring because they may be birthing, though they quickly rejoin the herd within a few days after birthing. Once developed, the plan shall be reviewed by CDFW elk biologists. |   |   |
| <b>Recreation</b>  |                          |  |   |   |
| Would Modified Project construction activities substantially reduce access to or close recreation areas? | PS                       | <b>SEIR-REC-1 (Replaces REC-1 in the 2019 EIS/EIR): Campsite and Facilities Replacement.</b> Campsites closed at San Luis Reservoir during construction of the Modified Project shall be replaced at a 1:1 ratio at the San Luis Creek Use Area and then as necessary at the Los Banos Creek Use Area, including six   | LTS   | No  |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic | Impact Before Mitigation | Mitigation Measure(s)   | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---------------------|--------------------------|---|---|---|
|                     |                          | <p>American with Disabilities Act (ADA)-accessible campsites and RV accommodations. These new replacement campsites shall be developed consistent with the new facilities considered in the San Luis Reservoir State Recreation Area Resource Management Plan/General Plan (San Luis Reservoir SRA RMP/GP) and shall not exceed the quantities of new facilities considered in the San Luis Reservoir SRA RMP/GP at each use area. The new campsites shall be constructed concurrent to the crest construction period during a period of low precipitation in order to reduce the risk of accidental leaks or spills, potential for soil contamination, and to minimize erosion of loose materials in construction areas, as per Goal RES-WQ4 in the San Luis Reservoir SRA RMP/GP (Reclamation and CDPR 2013):</p> <ul style="list-style-type: none"> <li>• Design, construct, and maintain buildings, roads, trails, campsites, boat launches and marinas, and associated infrastructure to minimize stormwater runoff, promote groundwater recharge, and prevent soil erosion.</li> </ul> <p>The new campsites shall be constructed within the San Luis Creek Use Area at the SRA on O'Neill Forebay. The Bureau of Reclamation (Reclamation) shall include this mitigation requirement in bid documents and construction contracts.</p> |   |   |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic  | Impact Before Mitigation | Mitigation Measure(s)  | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|--|--------------------------|--|---|---|
|  |                          | <p>In addition, Reclamation shall work with the California Department of Parks and Recreation to implement the following measure:</p> <ul style="list-style-type: none"> <li>The boat launch at the San Luis Creek Use Area shall be expanded by adding a launch lane and a boarding float. In addition, a fish cleaning station, public storage lockers, and shower facilities shall be developed at San Luis Creek Use Area.</li> </ul>  |   |   |
| <b>Cultural Resources</b>  |                          |  |   |   |
| Would the Modified Project result in adverse effects to a cultural resource included in or eligible for inclusion in the NRHP and/or the CRHR? | PS                       | <p><b>SEIR-CR-1 (New mitigation measure): Unanticipated Discovery of Archaeological Resources.</b> Prior to construction, a qualified cultural resources specialist, meeting the Secretary of the Interior's Professional Qualification Standards for Archaeology, shall review the final Modified Project design to confirm impacts to all known cultural resources and/or resources identified to be of importance to consulting Native American tribes, have been considered and addressed. As stipulated by Mitigation Measure CR-1 of the B.F. Sisk Dam Safety of Dams Modification Project Environmental Impact Statement/Environmental Impact Report (2019 EIS/EIR), the Programmatic Agreement Among The Bureau of Reclamation, Interior Region 10 California-Great Basin; and The California State Historic Preservation Officer Regarding Compliance</p> | LTS   | No  |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic | Impact Before Mitigation | Mitigation Measure(s)  | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---------------------|--------------------------|--|---|---|
|                     |                          | with Section 106 of the National Historic Preservation Act Pertaining to the Implementation of the Safety of Dams B.F. Sisk Dam Project (Programmatic Agreement) was prepared. This document, specifically the section pertaining to Treatment of Post Review Discoveries, provides that in the event of a post-review discovery during construction or other Modified Project-related activities, the Bureau of Reclamation (Reclamation) in conjunction with California Department of Water Resources (DWR) shall determine if ongoing construction activities will affect a previously unidentified cultural resource that may be eligible for the National Register of Historic Places and California Register of Historical Resources or affect a known cultural resource in an unanticipated manner, and address the discovery or unanticipated effect in accordance with Title 36, Part 800.13(b) of the Code of Federal Regulations (CFR) (Reclamation and SHPO 2019). There remain areas within the Modified Project that have not been subject to cultural resources survey because no activities are presently planned in these areas with potential to impact cultural resources. As stipulated by Mitigation Measure CR-1 of the 2019 EIS/EIR, should project plans change such that use of these areas could introduce impacts to cultural resources, additional cultural resources survey and evaluation efforts will be performed as stipulated in |   |   |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic | Impact Before Mitigation | Mitigation Measure(s)  | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---------------------|--------------------------|--|---|---|
|                     |                          | <p>the Programmatic Agreement shall act as a guide for additional cultural resources survey and evaluation efforts.</p> <p>All construction crews shall be alerted to the potential to encounter sensitive cultural and tribal cultural material. This may occur through inclusion of a cultural resources component within a Worker Environmental Awareness Program or other preconstruction training. Prior to construction, a communication matrix with primary and secondary cultural resources points of contact from Reclamation, DWR, consulting parties, and other pertinent project personnel shall be developed and circulated. A simple overview guide with roles and responsibilities, cultural resource management protocols, and a list of guiding documents shall be prepared as a companion to this communication matrix prior to construction. In the event that archaeological resources (e.g., sites, features, or artifacts) are exposed during construction activities for the Modified Project, all construction work occurring in the vicinity shall immediately stop until a qualified archaeologist can evaluate its significance and determine whether additional study is warranted. A minimum work exclusion buffer should be assumed to be no less than 100 feet, or as otherwise specified by the approved Programmatic Agreement (Reclamation and SHPO 2019) and its future amendments. This buffer may</p> |   |   |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic | Impact Before Mitigation | Mitigation Measure(s)  | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---------------------|--------------------------|--|---|---|
|                     |                          | be adjusted by the qualified archaeologist in consultation with the lead agency. Prehistoric archaeological deposits may be indicated by the presence of discolored or dark soil, fire-affected material, the presence of imported shell, burned or complete bone, non-local lithic materials, or other characteristics observed to be atypical of the surrounding area. Common prehistoric artifacts may include modified or battered lithic materials; lithic or bone tools that appeared to have been used for chopping, drilling, or grinding; projectile points; fired-clay ceramics or non-functional items; and other items. Historic-age deposits are often indicated by the presence of glass bottles and shards, ceramic material, building or domestic refuse, ferrous metal, or old features such as concrete foundations or privies. Depending on the nature and the significance of the find under the California Environmental Quality Act (14 CCR 15064.5[f]; California Public Resources Code, Section 21082) and/or Section 106 of the National Historic Preservation Act, it may be appropriate for the qualified archaeologist to simply record the find and allow work to continue. Avoidance should be considered the preferred option for treatment of unanticipated cultural resources. Prior to any ground-disturbing investigative techniques, the feasibility of resource avoidance should be considered. If the discovery proves significant, as |   |   |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic | Impact Before Mitigation | Mitigation Measure(s)   | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---------------------|--------------------------|---|---|---|
|                     |                          | <p>determined by the qualified archaeologist in consultation with the lead agency(s) and other consulting parties, additional work, such as testing, data recovery, or other alternatives, may be warranted. The qualified archaeologist shall prepare a report to document compliance with approved mitigation requirements and to DWR/Reclamation standards. This report shall be reviewed by lead agency staff and, once finalized, submitted to a California Historical Resources Information System information center.</p> <p>Reclamation will ensure that any non-Native American Graves Protection and Repatriation Act–related cultural materials and associated records falling under Reclamation’s Scope of Collections Statement (Programmatic Agreement, Appendix F) that result from the identification, evaluation, and treatment of historic properties on Reclamation land conducted under the Programmatic Agreement shall be properly maintained in accordance with 36 CFR 79. If there is an adverse effect determined that requires the development of a Historic Properties Treatment Plan (HPTP) under the Programmatic Agreement, Reclamation shall ensure that documentation of the curation of these materials is prepared and provided to parties named in the HPTP specific to the resolution of effects for that historic property as stipulated within the HPTP. Reclamation’s responsibilities</p> |   |   |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic | Impact Before Mitigation | Mitigation Measure(s)  | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---------------------|--------------------------|--|---|---|
|                     |                          | <p>under the Programmatic Agreement shall continue and shall include follow-up with consulting parties should any changes to the Modified Project occur.</p> <p><b>SEIR-CR-2 (New mitigation measure):</b><br/> <b>Unanticipated Discovery of Human Remains.</b> In the event that Native American human remains, funerary objects, sacred objects, and/or objects of cultural patrimony are inadvertently discovered under or on the surface of Bureau of Reclamation (Reclamation) lands, Reclamation shall follow the procedures outlined in the Native American Graves Protection and Repatriation Act (NAGPRA), as specified in the implementing regulations at Title 43, Section 10.2(d)(1–2) of the Code of Federal Regulations (CFR) and Stipulation X and Appendix E of the Programmatic Agreement Among The Bureau of Reclamation, Interior Region 10 California-Great Basin; and The California State Historic Preservation Officer Regarding Compliance with Section 106 of the National Historic Preservation Act Pertaining to the Implementation of the Safety of Dams B.F. Sisk Dam Project. Reclamation shall ensure that all such NAGPRA cultural items encountered during any undertaking on Reclamation lands are treated in accordance with the requirements at Section 3(c–d) of NAGPRA and the implementing regulations at 43 CFR 10.</p> |   |   |



Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic | Impact Before Mitigation | Mitigation Measure(s)   | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---------------------|--------------------------|---|---|---|
|                     |                          | <p>On State-owned or private lands, in accordance with Section 7050.5 of the California Health and Safety Code, if suspected human remains are found, the county coroner shall be immediately notified of the discovery. No further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains shall occur on either federal or State-owned lands until agency approval is provided. On State-owned or private lands, the county coroner shall determine within 2 working days of notification of the discovery whether the remains are human in origin. If the county coroner determines that the remains are, or are believed to be, Native American, the county coroner shall notify the Native American Heritage Commission (NAHC) in Sacramento within 24 hours. In accordance with California Public Resources Code, Section 5097.98, the NAHC must immediately notify those persons it believes to be the most likely descendant from the deceased Native American. The descendants or authorized representative may, with the permission of the owner of the land, inspect the site of the discovery of the Native American human remains and may recommend to the owner or the person responsible for the excavation work means for treatment or disposition, with appropriate dignity, of the human remains and any associated grave goods. The most likely descendant shall complete inspection of the remains within 48 hours of being granted access to the site.</p> |   |   |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic | Impact Before Mitigation | Mitigation Measure(s)  | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---------------------|--------------------------|--|---|---|
|                     |                          | <p><b>SEIR-CR-3 (New mitigation measure): Archaeological and Native American Monitors and Worker Environmental Awareness Program.</b> The Bureau of Reclamation (Reclamation) has developed a geoarchaeological sensitivity map and supporting summary that identifies areas of elevated potential for encountering buried resources within the area of potential effect; archaeological monitoring shall be required in the higher sensitivity areas identified by this map. Archaeological monitors shall be provided a copy of Reclamation's geoarchaeological sensitivity map and supporting documentation at least 30 days prior to the initiation of ground-disturbing activities. Consulting Native American tribes shall be given the opportunity to monitor in higher sensitivity areas identified as having elevated potential for encountering buried resources. A copy of the geoarchaeological sensitivity map and supporting documentation shall be provided to Native American Monitors at least 30 days prior to the initiation of ground-disturbing activities within areas subject to monitoring. Prior to and during construction, all construction crews shall be alerted to these monitoring requirements and the potential to encounter sensitive cultural and tribal cultural material. This may occur through inclusion of a cultural resources component within a Worker Environmental Awareness Program or other preconstruction training.</p> |   |   |

Table ES-2. Summary of Impacts and Mitigation Measures

| Environmental Topic   | Impact Before Mitigation                                      | Mitigation Measure(s)              | Modified Project – Level of Significance After Mitigation | New Significant Increase in Impact Severity Compared to 2019 EIS/EIR? |
|---|---|------------------------------------|---|---|
| <b><i>Tribal Cultural Resources</i></b>   |   |                                    |   |   |
| <p>Would the Modified Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:</p> <ul style="list-style-type: none"> <li>i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k)?</li> <li>ii. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?</li> </ul> | Determination with regard to impacts to TCRs remains pending. | SEIR-CR-1 through SEIR-CR-3 above. | LTS   | No  |

**Notes:** PS = potentially significant; LTS = less than significant; SU = significant and unavoidable.

References to citations included in this table may not appear in sequential order due to mitigation measures being pulled from individual resource sections in Chapter 3.

INTENTIONALLY LEFT BLANK

# 1 Introduction

---

This supplemental environmental impact report (SEIR) has been prepared by the California Department of Water Resources (DWR) pursuant to the California Environmental Quality Act (CEQA) Statute and State of California CEQA Guidelines (CEQA Guidelines) (California Public Resources Code, Section 21000 et seq.; 14 CCR 15000 et seq.) to analyze and disclose environmental impacts associated with implementation of the B.F. Sisk Dam Safety of Dams Modification Project.

DWR prepared and certified an environmental impact report (EIR) for the B.F. Sisk Dam Safety of Dams Modification Project in 2019, logged as State Clearinghouse No. 2009091004. That document was a joint federal and state environmental review and included an environmental impact statement (EIS) prepared in conformance with the federal National Environmental Policy Act (NEPA) and an EIR prepared pursuant to state CEQA requirements. The Bureau of Reclamation (Reclamation) served as the lead NEPA agency and DWR served as the state lead agency with responsibility for carrying out review in accordance with CEQA. The document, B.F. Sisk Dam Safety of Dams Modification Project Final Environmental Impact Statement/Environmental Impact Report (Reclamation and DWR 2019), is referred to herein as the 2019 EIS/EIR. The 2019 EIS/EIR analyzed and disclosed the environmental impacts of a multiyear construction project aimed at alleviating existing seismic stability concerns at B.F. Sisk Dam, which impounds DWR's San Luis Reservoir, located on land controlled by Reclamation in western unincorporated Merced County, California.

This SEIR is a supplement to the CEQA component of the 2019 EIS/EIR, addressing changes to the project description identified by the joint DWR and Reclamation design team subsequent to DWR's certification of the EIR. In summary, the changes consist of minor additions to the impact area and potential addition of materials excavation sites within the previous study area. The changes associated with proposed modifications are summarized in greater detail in Section 1.3, Proposed Modifications to the Project, and detailed in Chapter 2, Project Description, of this SEIR.

The project addressed in the 2019 EIS/EIR is referred to in this SEIR as the Approved Project; the Approved Project plus proposed modifications identified since certification of the 2019 EIS/EIR is referred to as the Modified Project.

## 1.1 Project Background

The following section presents background on the Approved Project based on material presented in Section 1.2, Project Background, of the 2019 EIS/EIR.

### 1.1.1 B.F. Sisk Dam and San Luis Reservoir

B.F. Sisk Dam is located in western Merced County, on the west side of California's Central Valley, approximately 9 miles west of the City of Los Banos on State Route 152 (Figure 1-1, Project Location). The dam was constructed between 1963 and 1967 to impound San Luis Reservoir, which provides supplemental storage capacity for the Central Valley Project (CVP) and California State Water Project (SWP). It is part of the San Luis Joint-Use Complex, or San Luis Unit of the CVP and SWP, which was authorized by the United States Congress in 1960 under the San Luis Act (Public Law 86-488) and is a joint effort of the federal and State of California governments. The San Luis Unit, including San Luis Reservoir, is owned by Reclamation and operated by DWR. Recreation uses at San Luis Reservoir, including boating, overnight camping, and hiking, are managed by the California Department of Parks and Recreation as part of the larger San Luis Reservoir State Recreation Area (SRA). Figure 1-2 Project Vicinity, shows the location of the Modified Project and identifies San Luis Reservoir, B.F. Sisk Dam, and the boundaries of the San Luis Reservoir SRA.

B.F. Sisk Dam is a zoned earth-fill structure. It is 382 feet high with a crest length of 18,600 feet (approximately 3.5 miles) and a crest width of 30 feet; it contains approximately 77,656,000 cubic yards of material. At a crest elevation of 554 feet above mean sea level, the maximum base width is 2,420 feet (Reclamation 2009). There are 10 zones in a typical cross section of the dam, with zoned materials comprised of clay, shell, filter sands, gravel bedding, and riprap. San Luis Reservoir provides 2,027,840 acre-feet of water storage managed for state (55%) and federal (45%) uses as part of the CVP and SWP, respectively. Typically, during the winter and early spring, water is lifted from O'Neill Forebay into San Luis Reservoir for storage using the pump-turbines in the Gianelli Pumping-Generating Plant (Gianelli Plant). CVP water is pumped into O'Neill Forebay from the Delta–Mendota Canal, and the SWP's California Aqueduct flows into O'Neill Forebay from the north. Later in the year when demand in the CVP and SWP increases, water is released from San Luis Reservoir through O'Neill Forebay and conveyed via the San Luis Canal (an SWP facility) or the Delta–Mendota Canal (a CVP facility) for use by municipal and agricultural water users (Reclamation 2009). As water is released back through the Gianelli Plant, the plant generates hydropower, which is used to offset the energy demand of the project operations. Water is also diverted from the west side of San Luis Reservoir at the Pacheco Pumping Plant to supply the Santa Clara Valley Water District and San Benito County Water District—both CVP contractors (Reclamation 2013).

### 1.1.2 B.F. Sisk Dam Safety of Dams Modification Project and the 2019 EIS/EIR

Reclamation and DWR have conducted several geological investigations at B.F. Sisk Dam because of its location near active faults.<sup>1</sup> A 2006 risk analysis by Reclamation evaluated dam stability in the event of seismic activity and concluded that significant- to high-seismic activity could result in dam failure and that B.F. Sisk Dam did not meet the standards of Reclamation's Public Protection Guidelines (Reclamation 2011). The investigation determined that several sections of B.F. Sisk Dam sit above liquefiable and soft soils, which during a seismic event could cause sections of the dam to slump below the water line or allow cracking to develop through the embankment, which could lead to dam failure.

Reclamation initiated a Corrective Action Study in 2006 that resulted in the evaluation of multiple potential structural modifications and operational changes at B.F. Sisk Dam, which were compiled and further reviewed in a Value Planning Study (Reclamation 2016). A thorough alternatives development and screening process conducted by Reclamation and DWR identified a preferred alternative for rehabilitating the dam that was addressed as the Crest Raise Alternative in the 2019 EIS/EIR, and the project was dubbed the B.F. Sisk Dam Safety of Dams Modification Project.<sup>2</sup> The 2019 EIS/EIR also looked at two other alternatives to ensure compliance with NEPA and CEQA. The No Action/No Project Alternative assumes no action would be taken to address the seismic stability and safety concerns at the dam, allowing decision makers to compare the impacts of approving the project to the impacts of not approving the project. The Reservoir Restriction Alternative would involve no physical improvement to the dam structure, but would restrict the reservoir water level to a lower maximum surface elevation to reduce the risk of dam failure. Reclamation and DWR are proceeding with the Crest Raise Alternative (i.e., Approved Project) because it most effectively addresses the critical problem of dam instability and associated safety risks at B.F. Sisk Dam.

In summary, the Approved Project assessed in the 2019 EIS/EIR involves making improvements to the downstream side of the existing dam to enhance its stability and increasing the dam crest height to reduce the potential that water would overtop the dam if seismic-induced slumping were to occur. This would be accomplished by constructing stability berms and downstream crack filters in select areas, adding additional material over the entire

<sup>1</sup> For information on Reclamation's Dam Safety Program and risk analysis performed at B.F. Sisk Dam that led to initiation of this project, please see Section 1.2.1 of the 2019 EIS/EIR.

<sup>2</sup> For more information on Reclamation and DWR's alternatives development and screening process, see Section 2.1 of the 2019 EIS/EIR.

area of the existing embankment, installing a new filter around the existing spillway conduit, and extending the spillway conduit to meet the resultant downstream edge of the extended embankment. Construction of three foundation shear keys to anchor the proposed stability berms to underlying bedrock is included as part of the Approved Project. While the 2019 EIS/EIR described one of the three foundation shear keys as optional, all three were evaluated. The Approved Project would implement structural stability improvements and would not increase the water storage capacity of San Luis Reservoir. As design has progressed since DWR's certification of the 2019 EIS/EIR, additions and revisions to the Approved Project have been identified by project engineers and planners, and these modifications to the Approved Project are the subject of this SEIR. Figure 1-3, Approved Project and Modified Project Boundaries, provides an overview of the boundaries for the Approved Project in the 2019 EIS/EIR, and a comparison to the boundaries for Modified Project in this SEIR.

### 1.1.3 2019 EIS/EIR Public Review and DWR Certification

In September 2009, DWR issued a Notice of Preparation (NOP) of an EIR for the Approved Project pursuant to CEQA, and Reclamation published a Notice of Intent to prepare an EIS in the Federal Register. The NOP was circulated to responsible agencies under CEQA and comments on the NOP were received for a 30-day period. Reclamation and DWR held one scoping meeting at the San Luis Recreation Area on September 23, 2009.

After completion of the Draft 2019 EIS/EIR, Reclamation and DWR met their respective public review obligations for the 2019 EIS/EIR relative to NEPA and CEQA. A Notice of Availability was published in the Federal Register (Vol. 84, No. 71) on Friday, April 12, 2019, commencing the mandatory public review period that then concluded on May 28, 2019. The Notice of Availability was also published in the Merced Sun-Star newspaper on April 12, 2019, and transmitted to a mailing list of responsible agencies and other interested parties developed during the document scoping period. DWR also published the 2019 EIS/EIR on its website, [water.ca.gov/news/public-notice](http://water.ca.gov/news/public-notice). During the public review period, hard copies of the 2019 EIS/EIR were made available at the Reclamation Mid-Pacific Region Office at 2800 Cottage Way, Sacramento, California 95825; the Los Banos Public Library at 1312 Seventh St Los Banos, California 93635; as well as at the DWR office in Sacramento at 1416 Ninth Street, Room 604-8, Sacramento, California 95814. Public meetings were held on May 7, 2019, in Sacramento, and on May 8, 2019, in Los Banos.

Five written comments on the 2019 EIS/EIR were received during the public review period, from one federal agency, the U.S. Environmental Protection Agency; two state agencies/public organizations, the State Water Contractors and the California Farm Bureau; and two local agencies, the Metropolitan Water District of Southern California and the Kern County Water Agency. Reclamation and DWR provided responses to the comments and prepared a Final EIS/EIR, which included errata pages to identify minor revisions to the text of the public review draft. The Final EIS/EIR was prepared in August 2019 and, in compliance with CEQA, was made available to commenting parties on August 22, 2019. Following distribution of the Final EIS/EIR, DWR's Director, in their capacity as DWR's decision-making body pursuant to CEQA, certified the document on December 5, 2019, and a Notice of Determination was transmitted to the State Clearinghouse on December 6, 2019.

## 1.2 Project Objectives

The project objectives have not changed since certification of the 2019 EIS/EIR. As noted in Section 1.3, Purpose and Need/Project Objectives, of the 2019 EIS/EIR, San Luis Reservoir is an important CVP and SWP facility and a key component of California’s water supply system. Therefore, proper functioning of the reservoir is critical to maintaining water distribution for federal, state, and local uses. Reclamation and DWR have determined that actions to reduce risks from earthquakes to the public downstream of the dam are needed. The Approved Project objectives are as follows:

1. Implement cost-effective measures to prevent destabilization of the dam embankment and to ensure dam stability, in the event of an earthquake
2. Reduce safety concerns of the public downstream of the dam
3. Maintain water supply deliveries to federal and state contractors through the CVP and SWP

## 1.3 Proposed Modifications to the Project

Chapter 2 of this SEIR presents a detailed description of the changes made to the Approved Project since DWR’s certification of the 2019 EIS/EIR, which are summarized in this section for introductory purposes.

The new impact areas are associated with development of a new permanent public campground on the northwestern shore of O’Neill Forebay, which is located downstream and east of San Luis Reservoir, and for implementing minor upgrades to the existing San Luis Creek Day Use Area on the western shore of O’Neill Forebay.<sup>3</sup> These new project components are intended to compensate for the construction-related temporary closure of Basalt Campground and Medeiros Campground, both public campgrounds within the San Luis Reservoir SRA. The campground work was identified as Mitigation Measure REC-1 in the 2019 EIS/EIR, but implementation of that mitigation entails environmental impacts that were not incorporated into the analysis presented in the 2019 EIS/EIR, so they are included in the scope of this SEIR.<sup>4</sup>

Another modification addressed in this SEIR is the consideration by the design team of two alternative on-site borrow areas as sources of earth fill material for the dam rehabilitation, beyond the borrow areas identified in the 2019 EIS/EIR (referred to as Borrow Area 6 and the Basalt Hill Borrow Area). The new alternative sites, referred to as Borrow Area 12 and Borrow Area 14, are entirely located within areas anticipated for contractor staging activity in the 2019 EIS/EIR, specifically in the work area east of B.F. Sisk Dam. The borrow areas do not represent further additions to the Modified Project’s study area; however, the potential scale of construction activity anticipated in these borrow areas represents a change from the Approved Project as disclosed in the 2019 EIS/EIR, and DWR deemed additional environmental impact analysis to be appropriate for compliance with CEQA. Geotechnical investigations and materials testing are planned or are underway at all four prospective borrow areas, and depending on the testing results and the presence of suitable materials, it is possible that some combination of all four borrow areas would be used as materials sources during Modified Project construction.

<sup>3</sup> The 2019 EIS/EIR considered and addressed the work that would be required in the East Dike area of the dam; however, this area was omitted from exhibits and figures in the 2019 EIS/EIR. To correct for this inadvertent mapping omission, the East Dike area is identified and mapped as part of the Approved Project footprint and is not evaluated as a project modification in this SEIR.

<sup>4</sup> Mitigation Measure REC-1 in the 2019 EIS/EIR included the expansion of the boat launch at Dinosaur Point Use Area. Since that time, the California Department of Parks and Recreation has indicated the previously proposed expansion of this boat launch is no longer required, as the existing facility has excess capacity and would accommodate any increase in use due to the closure of the Basalt Campground boat launch for the duration of Modified Project construction. As such, modifications to the Dinosaur Point Use Area are not addressed in this SEIR.



The Modified Project also entails a modification to public campground and day use area closure in the vicinity of San Luis Reservoir and O'Neill Forebay compared to the Approved Project. The 2019 EIS/EIR project description acknowledged closure of Basalt Campground for the duration of Approved Project construction. Analysis presented in the 2019 EIS/EIR also anticipated closure of the Medeiros Use Area for the duration of construction.<sup>5</sup> San Luis Creek Use Area was anticipated to remain open, but under the Modified Project portions of the use area would be temporarily closed while improvements described above are made.

These new Modified Project components are intended to compensate for the construction-related temporary closure of Basalt Campground and Medeiros Campground, both public campgrounds within the San Luis Reservoir SRA. The new campground would be developed in consultation with the California Department of Parks and Recreation.

The Modified Project also includes some minor expansion of the contractor work areas that were not part of the original study area. In general, the overall construction schedule and assumptions regarding personnel and equipment remain unchanged from the Approved Project; however, additional construction assumptions are included in the Modified Project and analyzed in this SEIR.

## 1.4 Purpose and Legal Authority

CEQA requires examination and public disclosure of potential impacts on the environment that may be caused by activities and approvals involving discretionary actions by a public agency. The law applies to actions made by a public agency's decision-making body, so that members of that body may consider the impacts of their decision prior to approving or denying the project. DWR will serve as the CEQA lead agency for the Modified Project.<sup>6</sup> "Lead agency," as defined in Section 15367 of the CEQA Guidelines, means the public agency that has the principal responsibility for carrying out or approving a proposed project. The lead agency is also responsible for preparing the environmental documents on a proposed project pursuant to the full disclosure requirements of CEQA.

"Responsible agency," as defined in Section 15381 of the CEQA Guidelines, means a public agency other than the lead agency that has discretionary approval power over aspects of a proposed project, such as permit issuance. Responsible agencies associated with the Modified Project addressed in this SEIR include, but are not limited to, the California Department of Fish and Wildlife, California Department of Transportation, the California Department of Parks and Recreation, the Central Valley Regional Water Quality Control Board, and the San Joaquin Air Pollution Control District. "Trustee agency," as defined in Section 15386 of the CEQA Guidelines, means a state agency having jurisdiction by law over natural resources affected by a proposed project that are held in trust for the people of the State of California.

<sup>5</sup> The 2019 EIS/EIR assumed that the Medeiros Use Area (and campground) south of O'Neill Forebay would be closed during the entire construction phase of the Approved Project; the 2019 EIS/EIR addressed the potential impacts of this closure. However, the Medeiros Use Area was inadvertently not included in the Approved Project footprint as shown in the exhibits and figures of the 2019 EIS/EIR. As such, the Medeiros Use Area is included in the Modified Project footprint in this SEIR; however, note that impacts resulting from its closure have already been addressed in the 2019 EIS/EIR.

<sup>6</sup> The SEIR is a CEQA-only document prepared by DWR as CEQA lead agency to ensure their compliance with state statutory obligations. Reclamation, as lead agency pursuant to NEPA, will determine the appropriate NEPA action relative to the changes addressed in this SEIR, and is not a participant in the SEIR as they were in the joint 2019 EIS/EIR.

As described in Section 1.5, Scope and Content of the SEIR, DWR, as CEQA lead agency, has identified changes to the Approved Project that affect the content of their previously certified 2019 EIS/EIR and has determined that a supplement to the CEQA component of that document is appropriate to ensure that the EIR adequately addresses the Modified Project in the changed situation. This SEIR has been prepared by DWR in accordance with the CEQA Statute (California Public Resources Code, Section 21000 et seq.) and the CEQA Guidelines (14 CCR 15000 et seq.), as amended, and identifies and discusses potential specific and cumulative environmental impacts that may occur should the proposed modifications be implemented.

## 1.5 Scope and Content of the SEIR

After a CEQA lead agency certifies a Final EIR for a project, CEQA provides for the update of the information in the certified EIR to address changes to the project or to the circumstances under which the project will be implemented. Section 15162 of the CEQA Guidelines (14 CCR 15162) provides that the lead agency may prepare a Subsequent or Supplemental EIR if:

1. Substantial changes are proposed in the project which will require major revisions of the previous EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant impacts;
2. Substantial changes in circumstances under which the project is undertaken will occur which will require major revisions of the previous EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified effects; and
3. New information of substantial importance, which was not known with the exercise of reasonable diligence at the time the previous EIR was certified as complete, shows any of the following:
  - a. A project will have one or more significant effects not discussed in the previous EIR;
  - b. Significant effects previously examined will be substantially more severe than shown in the previous EIR;
  - c. Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or
  - d. Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

Section 15163 of the CEQA Guidelines provides that the lead or responsible agency may choose to prepare a supplement to an EIR, referred to as a Supplemental EIR, rather than a Subsequent EIR if any of the conditions described in Section 15162 would require the preparation of a Subsequent EIR and “only minor additions or changes would be necessary to make the previous EIR adequately apply to the project in the changed situation.” The CEQA Guidelines allow that a Supplemental EIR “need contain only the information necessary to make the previous EIR adequate for the project as revised,” whereas a Subsequent EIR is intended to be a more substantial document that repackages the relevant content of the certified EIR, as revised to reflect the changed project or circumstances.

As applicable to Section 15163 of the CEQA Guidelines, this SEIR describes minor changes that have been proposed to the Approved Project, as presented in the 2019 EIS/EIR, and examines the way in which these changes affect environmental impact analysis and conclusions presented in the 2019 EIS/EIR. The subject of this SEIR is limited to the changes summarized above, as there are no other “substantial changes in circumstances” or other “new information of substantial importance” beyond those changes that must be disclosed or analyzed pursuant to CEQA.

In accordance with Section 15162 and 15163 of the CEQA Guidelines, this SEIR addresses environmental impact categories for which the analysis and conclusions are affected by the Modified Project such that “one or more significant impacts not discussed in the previous EIR,” and/or “significant effects previously examined will be substantially more severe than shown in the previous EIR.” The environmental issues evaluated in specific sections of this SEIR, which follow the section titles and sequence from the 2019 EIS/EIR, are as follows:

- Water Quality
- Air Quality
- Greenhouse Gas Emissions
- Flood Protection
- Visual Resources
- Noise and Vibration
- Traffic and Transportation
- Hazards and Hazardous Materials
- Terrestrial Resources (referred to as Biological Resources in this SEIR)
- Land Use
- Recreation
- Cultural Resources
- Geology, Seismicity, and Soils

DWR has determined that the remaining environmental impact topics addressed in the 2019 EIS/EIR do not warrant a detailed presentation in the SEIR for purposes of CEQA compliance because the proposed modifications to the Approved Project would not result in new or substantially more severe significant impacts. The following topics will be briefly discussed in Chapter 4, Other CEQA Considerations, of the SEIR:

- Surface Water Supply
- Fisheries Resources
- Agricultural Resources
- Public Utilities, Services, and Power
- Population and Housing

In addition, the topics Regional Economics and Environmental Justice and Indian Trust Assets from the 2019 EIS/EIR will not be directly addressed in this SEIR. These topics were addressed for Reclamation’s compliance with NEPA and are not considered environmental impact subjects pursuant to CEQA.

## 1.6 Approved Project Relationship to B.F. Sisk Dam Raise and Reservoir Expansion Project

In May 2020, Reclamation, as NEPA lead agency, and the San Luis & Delta–Mendota Water Authority (SLDMWA), as CEQA lead agency, released an NOP and Notice of Intent to prepare a joint EIR and supplemental EIS (SEIS) to examine the environmental impacts of constructing and operating a dam raise project at B.F. Sisk Dam that would increase the water storage capacity of San Luis Reservoir—referred to as the B.F. Sisk Dam Raise and Reservoir Expansion Project (reservoir expansion project). Since that time, Reclamation and SLDMWA released a Draft EIR/SEIS for the reservoir expansion project in August 2020 for public review and published the Final EIR/SEIS for the reservoir expansion project in December 2020.

The Final EIR/SEIS for the reservoir expansion project is prepared as a subsequent environmental document to the 2019 EIS/EIR that is the subject of this SEIR prepared by DWR for the Modified Project. The Final EIR/SEIS also refers to the reservoir expansion project as a “connected action” to the B.F. Sisk Dam Safety of Dams Modification Project as defined by NEPA Section 1508.25(a). The reservoir expansion project would increase storage to enhance water-supply reliability for south-of-Delta contractors of Reclamation’s federal system that are dependent on water storage at San Luis Reservoir. The increased storage capacity would be achieved by an

additional 10-foot raise of the B.F. Sisk Dam embankment across the entire dam crest above the level proposed for dam safety purposes, as identified in the 2019 EIS/EIR. The increased water storage would expand the footprint of San Luis Reservoir such that new upstream areas would be inundated, including areas requiring modifications to segments of State Route 152.

While the reservoir expansion project addressed in the Final EIR/SEIS would be reliant on the Approved Project because it proposes an additional raise of the B.F. Sisk Dam embankment above what is proposed to be constructed for the safety enhancement, the Approved Project is not at all reliant on the reservoir expansion project. The Approved Project has independent utility from the reservoir expansion project because it can be constructed and operated on its own, regardless of whether Reclamation and SLDMWA move forward with their additional dam raise. Furthermore, as referenced in Section 1.1.2, the Approved Project is intended solely as a safety enhancement project, alleviating seismic stability concerns observed in the existing dam structure, and would not involve increasing water storage capacity at San Luis Reservoir or elsewhere in the SWP or CVP. Therefore, it remains appropriate to consider project-level environmental impacts of the Modified Project separate from those of the reservoir expansion project, as addressed in this SEIR.

The reservoir expansion project was not on the planning horizon when the 2009 NOP was released for the Approved Project, nor during preparation and release of the 2019 EIS/EIR, so it was not considered as part of the cumulative analysis incorporated into the 2019 EIS/EIR. Because the reservoir expansion project has now been identified as a prospective future project within the cumulative impact study area for the Modified Project, the reservoir expansion project has been incorporated into the consideration of cumulative impacts in this SEIR.

## 1.7 Draft SEIR Organization

This Draft SEIR is organized into the following chapters so the reader can easily obtain information about the Modified Project:

- **Chapter 1, Introduction**, describes the purpose and use of the SEIR and outlines the document's organization.
- **Chapter 2, Project Description**, describes the Modified Project location and environmental setting, provides a summary of the Approved Project addressed in the 2019 EIS/EIR, and details the proposed modifications that are the subject of the SEIR.
- **Chapter 3, Environmental Analysis**, presents existing environmental conditions and environmental impact analysis relative to the proposed modifications, and describes proposed mitigation measures that would eliminate or reduce the severity of significant impacts pursuant to CEQA.
- **Chapter 4, Other CEQA Considerations**, includes a discussion of issues required by CEQA that are not covered in other chapters of the SEIR, with a focus on the proposed modifications. This discussion includes effects found not to be significant, growth-inducing impacts, and an energy conservation analysis.
- **Chapter 5, List of Preparers**, lists the individuals involved in preparing this SEIR and the organizations and persons consulted.
- **Chapter 6, References**, provides full citations for the references cited throughout the SEIR.
- **Appendices** present data supporting the analysis or contents of the SEIR.

## 1.8 Availability of the Draft SEIR

In conformance with Section 15087 of the CEQA Guidelines, this Draft SEIR is being made available to interested agencies, organizations, and individuals for a 45-day review period, commencing June 15, 2021, and ending July 29, 2021. DWR provided notice of availability of the Draft SEIR with a Notice of Completion sent to the California Governor's Office of Planning and Research State Clearinghouse, by publication of a notice in the Merced Sun-Star newspaper on June 15, 2021, and by direct notice to the parties identified from the 2019 EIS/EIR distribution list. During the public review period, the Draft SEIR will be available for review electronically on DWR's website, along with hard copies available at DWR's offices, the addresses of which are listed below:

California Department of Water Resources  
San Luis Field Division  
31770 Gonzaga Road  
Gustine, California 95322

California Department of Water Resources  
Operations and Maintenance Headquarters  
1416 9th Street, Room 604  
Sacramento, California 95814

DWR is accepting written comments on the Draft SEIR, which must be received no later than 5:00 p.m. on July 29, 2021, in order to be considered in preparation and publications of a Final SEIR. Comments may be transmitted via email to [swpdamsafety@water.ca.gov](mailto:swpdamsafety@water.ca.gov), indicating "Sisk Dam SEIR" in the subject line, or by standard mail to the following address:

Sara Paiva-Lowry  
California Department of Water Resources  
P.O. Box 942836  
Sacramento, California 94236-0001

DWR will consider and respond to all written comments received by the close of the public review period that address environmental impacts related to the Modified Project, and they will be incorporated into the forthcoming Final SEIR. Pursuant to Section 15092 of the CEQA Guidelines, DWR will consider the following actions: certification of the Final SEIR; adoption of Findings of Fact, Statement of Overriding Considerations, and the Mitigation Monitoring and Reporting Program (MMRP); and either denial or approval of the proposed modifications.

## 1.9 Mitigation Monitoring and Reporting Program

Pursuant to Section 21081.6(a)(1) of CEQA and Section 15097 of the CEQA Guidelines, an MMRP will be prepared to ensure that the mitigation measures identified in the Final SEIR for the Modified Project will be implemented. The MMRP will include all relevant mitigation measures from the 2019 EIS/EIR and any additional or revised measures identified in this SEIR. DWR will consider the MMRP in conjunction with the actions previously mentioned, and the MMRP will be used by DWR staff during the Modified Project's planning, construction, and post-construction phases, as appropriate, to track completion of mitigation measures required by CEQA.

Table 1-1 lists all of the mitigation measures from the 2019 EIS/EIR and their corresponding mitigation measures and identification in this SEIR.

Table 1-1. Mitigation Measures Comparison

| 2019 EIS/EIR Mitigation Measure  | SEIR Mitigation Measure <sup>1</sup>                    | Change from 2019 EIS/EIR to SEIR   |
|--|---|--|
| <b>Air Quality</b>   |   |  |
| AQ-1, Reduce emissions from off-road construction equipment by using Tier 4 construction equipment                                 | Implement AQ-1 from 2019 EIS/EIR                        | No change to mitigation measure.   |
| AQ-2, Reduce exhaust emission from on-road trucks  | Implement AQ-2 from 2019 EIS/EIR                        | No change to mitigation measure.   |
| AQ-3, Implement Best Available Mitigation Measures for Construction Phase  | Implement AQ-3 from 2019 EIS/EIR                        | No change to mitigation measure.   |
| <b>Greenhouse Gas Emissions</b>  |   |  |
| —  | SEIR-GHG-1. Construction GHG Emissions Reductions       | New mitigation measure.  |
| GHG-1, Purchase of carbon offsets  | SEIR-GHG-2, Carbon Offsets – Construction Emissions     | SEIR-GHG-2 in the SEIR revises and replaces GHG-1 from the 2019 EIS/EIR.     |
| <b>Visual Resources</b>  |   |  |
| VIS-1, Light and glare reduction measures  | Implement VIS-1 from 2019 EIS/EIR                       | No change to mitigation measure.   |
| <b>Noise and Vibration</b>   |   |  |
| NOISE-1, Noise Control Plan (construction)   | Implement NOISE-1 from 2019 EIS/EIR                     | No change to mitigation measure.   |
| NOISE-2, Blasting Plan   | Implement NOISE-2 from 2019 EIS/EIR                     | No change to mitigation measure.   |
| NOISE-3, Pre-construction noise survey   | Implement NOISE-3 from 2019 EIS/EIR                     | No change to mitigation measure.   |
| <b>Traffic and Transportation</b>  |   |  |
| TR-1, Construction traffic control plan  | Implement TR-1 from 2019 EIS/EIR                        | No change to mitigation measure.   |
| <b>Hazards and Hazardous Materials</b>   |   |  |
| HAZ-1, Construction hazardous soil monitoring and remediation during construction, spill prevention plan, and fire protection plan | Implement HAZ-1 from 2019 EIS/EIR                       | No change to mitigation measure.   |
| HAZ-2, Construction safety plan  | Implement HAZ-2 from 2019 EIS/EIR                       | No change to mitigation measure.   |
| HAZ-3, Coordination with San Luis Seaplane Base  | —   | Mitigation measure is no longer required. Refer to Section 3.8 of this SEIR. |
| HAZ-4, Wildfire reduction measures   | Implement HAZ-4 from 2019 EIS/EIR                       | No change to mitigation measure.   |
| —  | SEIR-HAZ-1, Defensible space and maintenance            | New mitigation measure.  |
| —  | SEIR-HAZ-2, Campground wildfire risk reduction measures | New mitigation measure.  |

Table 1-1. Mitigation Measures Comparison

| 2019 EIS/EIR Mitigation Measure   | SEIR Mitigation Measure <sup>1</sup>   | Change from 2019 EIS/EIR to SEIR   |
|---|--|--|
| <b>Biological Resources<sup>2</sup></b>   |  |  |
| TERR-1, Special-status plant species and special-status natural communities   | Implement TERR-1 from 2019 EIS/EIR   | No change to mitigation measure.   |
| TERR-2, Valley Elderberry Longhorn Beetle   | Implement TERR-2 from 2019 EIS/EIR   | No change to mitigation measure. Remains applicable to the Modified Project as determined by the 2019 EIS/EIR. |
| TERR-3, Special-status amphibians   | SEIR-BIO-1, Special-Status Amphibians  | SEIR-BIO-1 in the SEIR revises and replaces TERR-3 from the 2019 EIS/EIR.                                      |
| TERR-4, Western Pond Turtle   | Implement TERR-4 from 2019 EIS/EIR   | No change to mitigation measure.   |
| TERR-5, San Joaquin Whipsnake   | SEIR-BIO-2, Special-Status Reptiles  | SEIR-BIO-2 in the SEIR revises and replaces TERR-5 from the 2019 EIS/EIR.                                      |
| TERR-6, Nesting bird surveys  | Implement TERR-6 from 2019 EIS/EIR   | No change to mitigation measure.   |
| TERR-7, Swainson's Hawk   | Implement TERR-7 from 2019 EIS/EIR   | No change to mitigation measure.   |
| TERR-8, Bald and Golden Eagles, and California Condor   | Implement TERR-8 from 2019 EIS/EIR   | No change to mitigation measure.   |
| TERR-9, Burrowing Owl   | SEIR-BIO-3, Burrowing Owl  | SEIR-BIO-3 in the SEIR revises and replaces TERR-9 from the 2019 EIS/EIR.                                      |
| TERR-10, Tricolored Blackbird   | Implement TERR-10 from 2019 EIS/EIR  | No change to mitigation measure.   |
| TERR-11, Special-status bats  | Implement TERR-11 from 2019 EIS/EIR  | No change to mitigation measure.   |
| TERR-12, San Joaquin Kit Fox  | SEIR-BIO-4, San Joaquin Kit Fox  | SEIR-BIO-4 in the SEIR revises and replaces TERR-12 from the 2019 EIS/EIR.                                     |
| TERR-13, American Badger  | Implement TERR-13 from 2019 EIS/EIR  | No change to mitigation measure.   |
| TERR-14, Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp  | Implement TERR-14 from 2019 EIS/EIR  | No change to mitigation measure.   |
| TERR-15, Contractor environmental awareness training and site protection measures   | Implement TERR-15 from 2019 EIS/EIR  | No change to mitigation measure.   |
| TERR-16, Mitigation measures for special-status communities, including jurisdictional wetlands or waters, and streambeds and banks regulated by the CDFW, RWQCB, and United States Army Corps of Engineers (USACE), and native grassland. | SEIR-BIO-5, Mitigation Measures for Special-Status Communities, including Native Grassland, and Jurisdictional Wetlands or Waters and Streambeds and Banks Regulated by CDFW, RWQCB, and USACE | SEIR-BIO-5 in the SEIR revises and replaces TERR-16 from the 2019 EIS/EIR.                                     |

Table 1-1. Mitigation Measures Comparison

| 2019 EIS/EIR Mitigation Measure  | SEIR Mitigation Measure <sup>1</sup>  | Change from 2019 EIS/EIR to SEIR   |
|--|---|--|
| —  | SEIR-BIO-6, Avoidance of Bridge-Nesting Birds   | New mitigation measure.  |
| —  | SEIR-BIO-7 Elk Avoidance and Minimization   | New mitigation measure.  |
| <b>Recreation</b>  |   |  |
| REC-1, Campsite and facilities replacement   | SEIR-REC-1, Campsite and Facilities Replacement   | SEIR-REC-1 in the SEIR revises and replaces REC-1 from the 2019 EIS/EIR. |
| <b>Cultural Resources</b>  |   |  |
| CR-1, Implement a formal agreement document to govern National Historic Preservation Act (NHPA) Section 106 compliance and resolve any adverse effects/significant impacts to cultural resources | Implement CR-1 from 2019 EIS/EIR  | No change to mitigation measure.   |
| —  | SEIR-CR-1, Unanticipated Discovery of Archaeological Resources                                    | New mitigation measure.  |
| —  | SEIR-CR-2, Unanticipated Discovery of Human Remains   | New mitigation measure.  |
| —  | SEIR-CR-3, Archaeological and Native American Monitors and Worker Environmental Awareness Program | New mitigation measure.  |

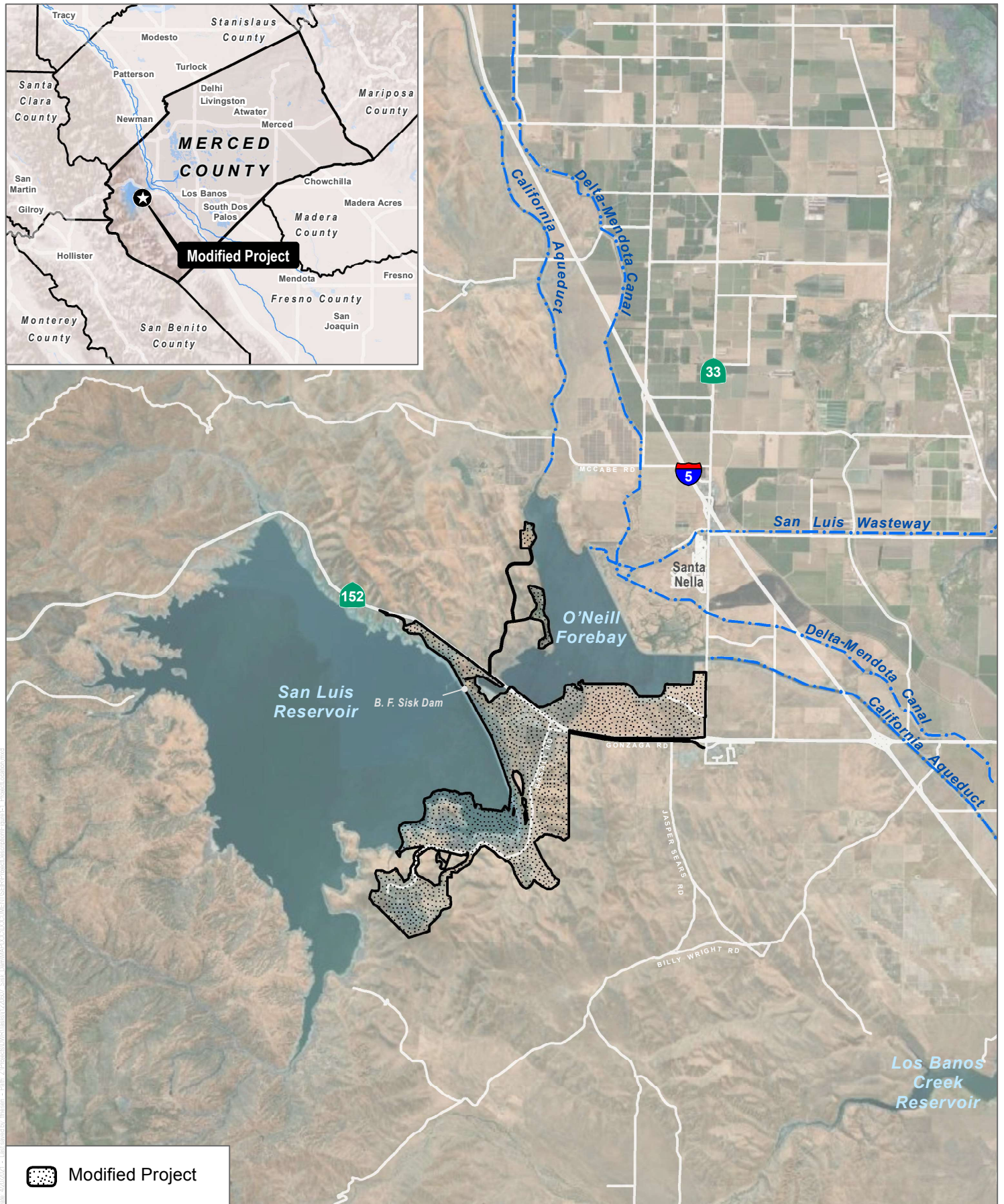
**Notes:** 2019 EIS/EIR = B.F. Sisk Dam Safety of Dams Modification Project Environmental Impact Statement/Environmental Impact Report; SEIR = supplemental environmental impact report.

- <sup>1</sup> Mitigation measures identified in this column apply to additional project components evaluated within the SEIR. Blank cells indicate that measures identified in the 2019 EIS/EIR are not necessary to reduce impacts from the project components added with the SEIR. These mitigation measures remain applicable to the Modified Project overall.
- <sup>2</sup> The 2019 EIS/EIR evaluated biological resources in separate Terrestrial Resources and Fisheries Resources sections. This SEIR evaluates all biological resources in Section 3.9, Biological Resources.

## 1.10 Incorporation by Reference

This document incorporates by reference all text and analysis presented in the 2019 EIS/EIR, along with the original Findings of Fact, Statement of Overriding Considerations, and MMRP that were adopted by DWR for the Approved Project (Reclamation and DWR 2019). These documents are available for review at DWR's office, at the address identified in Section 1.8, Availability of the Draft SEIR.





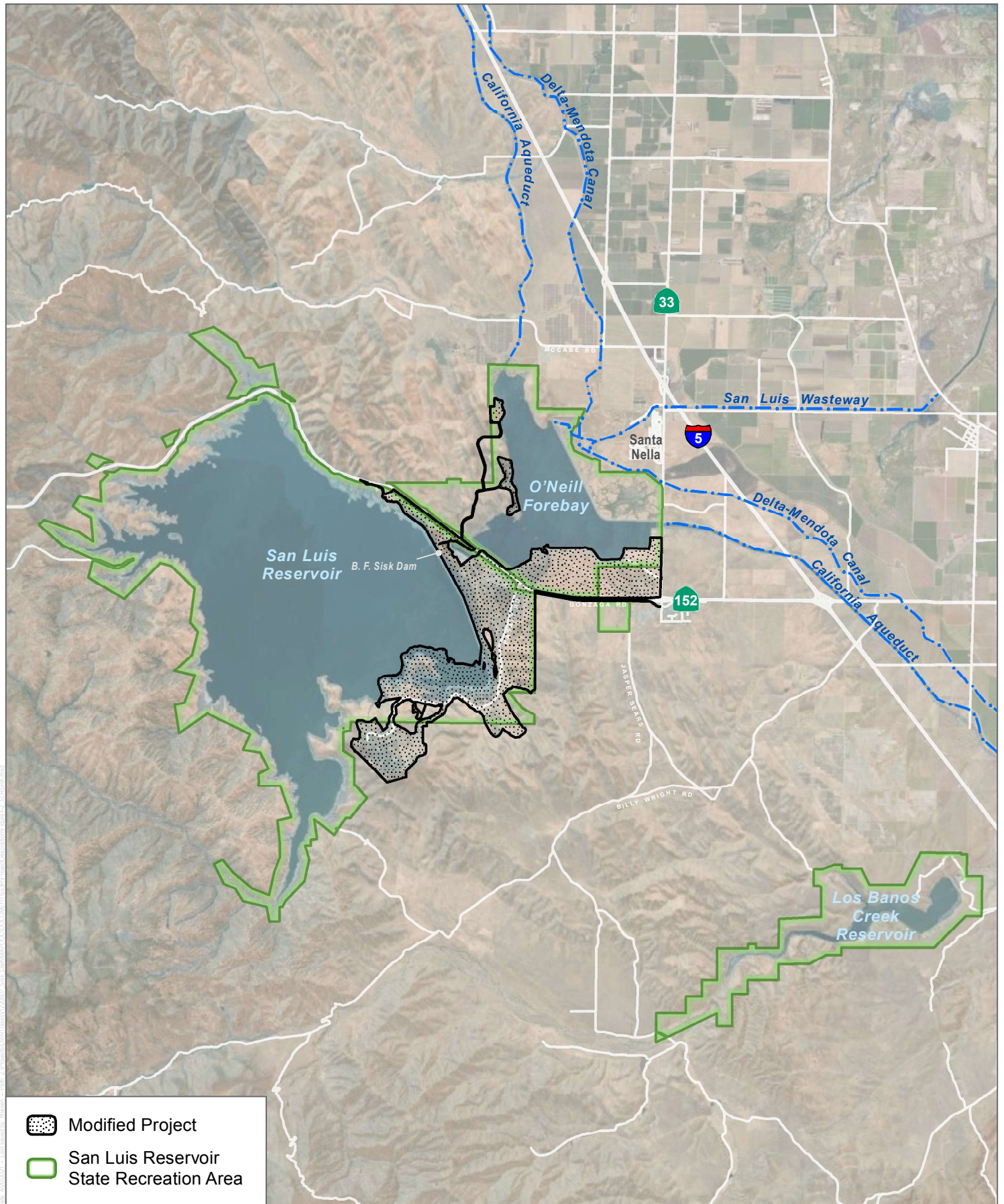
**FIGURE 1-1**

**Project Location**

B.F. Sisk Dam Safety of Dams Modification Project SEIR

INTENTIONALLY LEFT BLANK



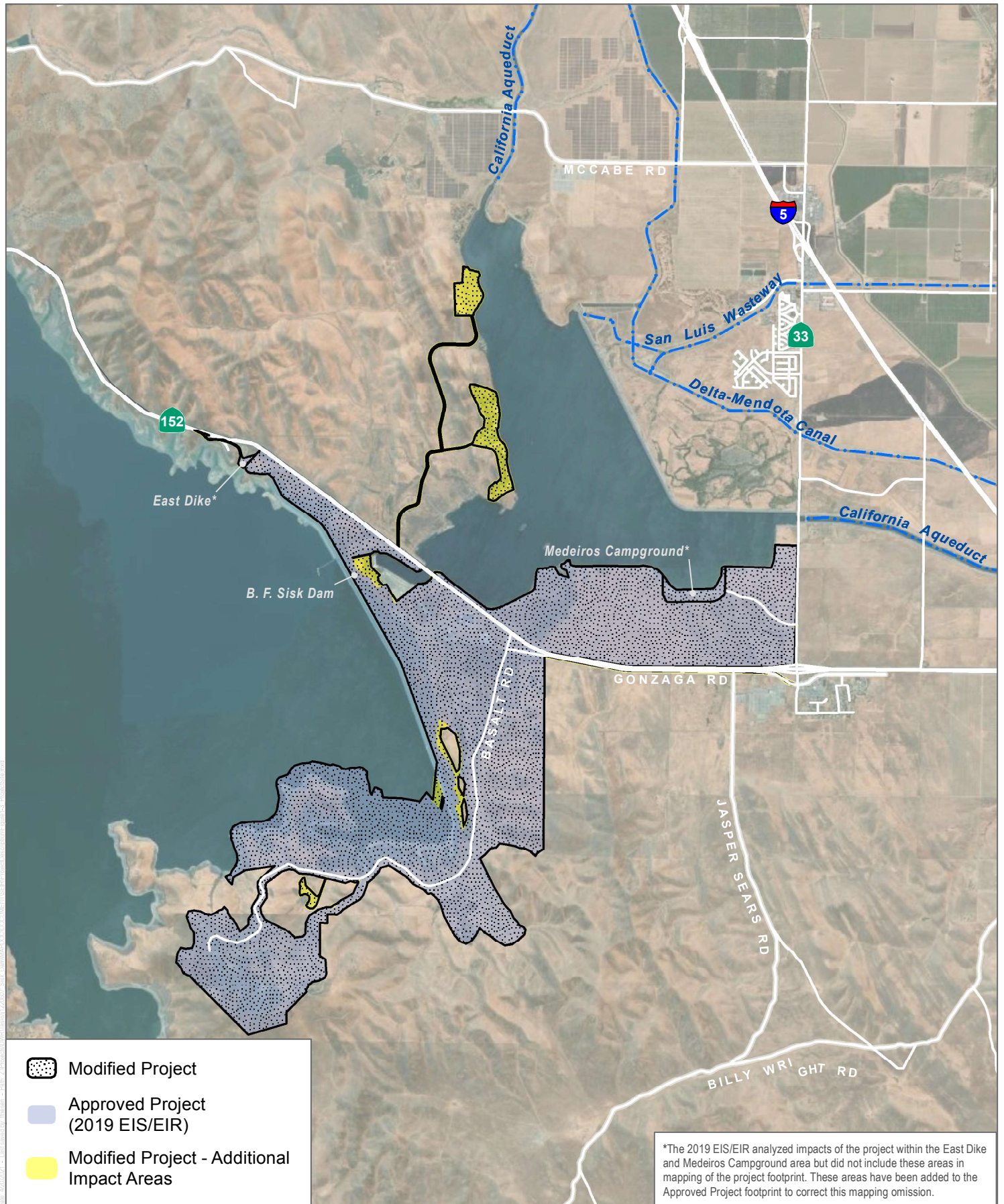


SOURCE: Basemap: ESRI World Imagery  
Project Boundary: Reclamation, 9/2/20

**FIGURE 1-2**  
**Project Vicinity**

INTENTIONALLY LEFT BLANK





SOURCE: Basemap: ESRI World Imagery  
Project Boundary: Reclamation, 3/14/20  
Previous Boundary: DWR, 4/2019

**FIGURE 1-3**  
**Approved Project and Modified Project Boundaries**  
B.F. Sisk Dam Safety of Dams Modification Project SEIR

INTENTIONALLY LEFT BLANK

## 2 Project Description

---

### 2.1 Introduction

This chapter presents a description of the B.F. Sisk Dam Safety of Dams Modification Project currently proposed for implementation by the California Department of Water Resources (DWR) and Bureau of Reclamation (Reclamation), with an emphasis on defining the proposed changes to the Approved Project since certification of the B.F. Sisk Dam Safety of Dams Modification Project Environmental Impact Statement/Environmental Impact Report (2019 EIS/EIR).<sup>1</sup> The impacts of proposed changes included under the Modified Project are the subject of the environmental impact analysis presented in Chapter 3. The intent is to provide sufficient detail on the Modified Project for the reader to understand the whole of the action that would be undertaken and to appropriately frame the proposed project modifications subject to this supplemental environmental impact report (SEIR).

Because the 2019 EIS/EIR was a joint National Environmental Policy Act/California Environmental Quality Act (CEQA) document, it included project-level analysis of three alternatives—the No Action/No Project Alternative, the Reservoir Restriction Alternative, and the Crest Raise Alternative. Those alternatives are described in Section 2.2 of the 2019 EIS/EIR. As discussed in Section 1.1.2 of this SEIR, Reclamation and DWR are proceeding with the Crest Raise Alternative, because the 2019 EIS/EIR determined that it was the only alternative identified with the ability to achieve all project objectives while balancing adverse environmental effects. The modifications to the project being considered and evaluated by this SEIR are therefore modifications specific to the Crest Raise Alternative. There are no changed circumstances or other significant new information pursuant to Section 15162 of the State of California CEQA Guidelines that affect the No Action/No Project Alternative or the Reservoir Restriction Alternative to consider in this SEIR. As a result, the project description included in this chapter of the SEIR focuses solely on changes relative to the Crest Raise Alternative.

### 2.2 Existing B.F. Sisk Dam Features and Stability Concerns

B.F. Sisk Dam, constructed between 1963 and 1967, is a zoned compacted earth-fill embankment structure that impounds over 2 million acre-feet of water in San Luis Reservoir. B.F. Sisk Dam was constructed by and is under the ownership of Reclamation, though the facility is operated by DWR. The dam is split into sections for locational reference, as depicted in Figure 2-1. B.F. Sisk Dam sections run from north to south and include the left abutment; the valley section, which includes the north valley section (NVS) and the south valley section (SVS); and the right abutment. The abutments are primarily founded on bedrock (sandstone, shale, and conglomerate), which is covered by clayey slopewash<sup>2</sup> in some locations. The NVS and SVS are the alluvial channels of San Luis Creek and Cottonwood Creek impounded by B.F. Sisk Dam and consist of deposits of sands and gravels with clayey or silty fines.

The dam embankment consists of multiple zones, including a rolled earth section of clay, sand, and gravel; a 3-foot-thick layer of rock riprap protecting the upstream face; and a 2-foot-thick rockfill section on the downstream face, as shown in Figure 2-2, Existing Dam Cross-Section.

---

<sup>1</sup> The project addressed in the 2019 EIS/EIR is referred to in this SEIR as the Approved Project; the Approved Project plus proposed modifications identified since certification of the 2019 EIS/EIR is referred to as the Modified Project.

<sup>2</sup> Slopewash consists of particles of rock and soil washed downslope by precipitation in the process of sheet erosion and is much weaker than the underlying bedrock material.

The dam has a maximum structural height of 382 feet, a crest width of 30 feet, and a crest length of 18,600 feet at elevation 554 feet. A 200-foot-long, 25-foot-high saddle dike is present along the north rim of the reservoir, separated from the main dam by approximately 1,300 feet. San Luis Reservoir provides 2,027,840 acre-feet of water storage.

B.F. Sisk Dam features a spillway conduit with intake/outlet works leading to a vertical conduit that transitions to a horizontal tunnel pipe for outlet to the open chute leading to O'Neill Forebay. Downstream of the central section of the dam and just south of O'Neill Forebay is a complex of offices, which include Reclamation, DWR, and the California Department of Parks and Recreation (CDPR) office facilities. DWR operates the Romero Visitor's Center, located just northwest of B.F. Sisk Dam's left abutment, along State Route (SR) 152.

The dam is in an area with potential for severe seismic activity from known faults, primarily the Ortigalita Fault, which crosses the reservoir. Studies of the seismic safety of B.F. Sisk Dam completed by Reclamation and DWR beginning in the 1980s determined that less-dense soils under the dam and in the dam abutments could undergo liquefaction during a seismic event and result in significant deformation (i.e., crest settlement) of the dam in the sections built on the alluvium and clayey slopewash, particularly at the NVS and SVS (Reclamation 2013). Seismic analysis and modeling carried out on the dam determined that the predicted settlement of the dam crest as a result of a severe seismic event could result in the dam crest height settling below the surface level of the reservoir, which would allow water to overtop and erode the dam embankment. Settling of the dam embankment also has the potential to result in cracks in the dam embankment that could result in leaks and erosion of the embankment material. Reclamation and DWR completed a probabilistic risk analysis to determine the likelihood of events that could lead to dam failure. The probabilistic risk analysis determined that failure of the dam is very unlikely, but that consequences of a dam failure would be severe and therefore do not meet Reclamation's Public Protection Guidelines (Reclamation 2011) and warrant corrective action. Corrective actions studies were carried out by Reclamation with participation by DWR (Reclamation 2019).

The corrective actions studies indicated that deformation potential would be addressed by removing the alluvium and clayey slopewash, constructing downstream stability berms keyed into the underlying bedrock, and raising the dam crest 12 feet to increase the reservoir's freeboard, or the distance between the water surface and the dam crest (Reclamation 2013). Raising the dam would be accomplished by placing additional material on the downstream face of the embankment, which would also serve to strengthen the embankment; no additional water storage would be provided by the increase in dam height. These measures to alleviate risk associated with a seismic event would be implemented as part of the Approved Project evaluated in the 2019 EIS/EIR.

## 2.3 Description of the Approved Project

The following section provides a description of the Approved Project as it was presented in Section 2.2.3 of the 2019 EIS/EIR. In summary, the Approved Project—referred to as the Crest Raise Alternative in the 2019 EIS/EIR—involves making improvements to the downstream side of the existing dam to enhance its stability, and increasing the dam crest height to reduce the potential that water would overtop the dam if seismic-induced slumping were to occur. These improvements would be accomplished by (1) constructing stability berms and downstream crack filters in select areas, (2) adding additional material over the entire area of the existing embankment, (3) installing a new filter around the existing spillway conduit, and (4) extending the spillway conduit to meet the resultant downstream edge of the extended embankment. Construction of three foundation shear keys to anchor the proposed stability berms to underlying bedrock is also part of the Crest Raise Alternative. One of the three locations for a proposed shear key is described as optional but was analyzed by the 2019 EIS/EIR as if part of the Approved Project. Features



of the Approved Project are shown in Figure 2-3, Approved and Modified Project Footprints.<sup>3</sup> Details of individual Approved Project features and aspects of Approved Project construction are provided below.

### 2.3.1 Project Features

This section describes the features of the Approved Project, as identified in the 2019 EIS/EIR. The approach to constructing these features, as described in the 2019 EIS/EIR, is summarized in Section 2.3.2, Project Construction. Please note that the description provided below is based on the level of design available at the time the 2019 EIS/EIR was prepared and that minor modifications have been made to refine the Approved Project design to respond to further investigations of site-specific conditions and constraints. Minor changes to the Approved Project are noted below; more substantial changes to the Approved Project made subsequent to the 2019 EIS/EIR, and which are the subject of this SEIR, are described in Section 2.4, Proposed Project Modifications and Clarifications. The latest set of project plans is provided in Appendix A.

#### 2.3.1.1 Stability Berms and Foundation Shear Keys

The Approved Project would address the dam's crest-settlement potential by removing the weak alluvium and clayey slopewash located beneath parts of the dam and extending the excavations into firm, unweathered bedrock foundation material comprised of the underlying Panoche formation. These excavations would be extended beyond the toe of the existing dam berm to provide a firm foundation for additional material that would be added to construct stability berms on the downstream side of the existing dam as part of the Approved Project. The problematic weak material excavated from under the dam and abutments would be replaced with material less susceptible to liquefaction and consistent with materials in the existing dam berm. The existing rock blanket on the downstream face of the dam would be stripped and stockpiled for reuse and material would be added to the existing berm to strengthen the dam and to ensure more uniform crest settlement, reduce deformation, and minimize internal movement, cracking, and erosion in the event of a severe seismic event.

The stability berms included in the Approved Project are designed and would be constructed based on the results of deformation and risk analyses conducted by Reclamation. The design and materials for stability berms would be specific to the location of the berm along the existing dam embankment. In general, the stability berms would be constructed of layers of compacted boulders, cobbles, gravel, sand, and topsoil to provide appropriate strength and drainage characteristics. Foundation shear keys consisting of large rockfill (up to 15 inches in diameter) would be constructed in several locations at the base of the stability berms at the contact with the underlying bedrock. The shear keys would provide additional stability and protection against movement during a seismic event and would be constructed beneath stability berms in slopewash sections of the abutments and the NVS berm. A shear key at the SVS berm was assessed as an optional feature in the 2019 EIS/EIR; however, due to significant depth to bedrock, a shear key at the SVS berm will not be constructed. Longitudinal drains, filter chimneys, and toe drains would be installed in the stability berms to provide internal drainage and protect against soil migration and erosion of the embankment.

Reinforcement of the dam under the Approved Project as described above would occur by expanding the embankment and constructing downstream stability berms over the length of the dam within the left abutment, NVS, SVS, and right abutment. A typical cross-section of the dam embankment is shown in Figure 2-2. The largest area of proposed reinforcement would be within the SVS. It is anticipated that modifications to the dam

---

<sup>3</sup> The 2019 EIS/EIR considered and addressed the work that would be required in the East Dike area of the dam; however, this area was omitted from exhibits and figures within the 2019 EIS/EIR. To correct for this inadvertent mapping omission, the East Dike area is identified and mapped as part of the Approved Project footprint and is not evaluated as a proposed modification to the Approved Project in this SEIR.

embankment would require up to 5 million cubic yards of earth material, which would be sourced from a borrow area north of SR-152 (Borrow Area 6) and from Basalt Hill Quarry southeast of the dam. Both areas identified for source material are within lands owned by Reclamation.

### 2.3.1.2 Dam Crest Raise

The Approved Project includes placing earth material over the existing downstream embankment and over the existing crest of B.F. Sisk Dam to increase the crest elevation of the dam by up to 12 feet. Areas where the embankment would be expanded are shown in Figure 2-3. Materials for the expanded embankment would be sourced from Borrow Area 6 and Basalt Hill Quarry. This crest raise would increase the reservoir freeboard to prevent overtopping in the event of seismic-induced dam deformation. This crest raise is intended as a safety measure and would not increase the reservoir's storage capacity. The embankment would be raised to an elevation of 566 feet along the central portion of the dam alignment and would transition back to the existing crest elevation at the left and right abutments. Raising the crest would also involve reconstructing the existing maintenance road over the top of the dam, which would involve applying compacted base material and asphalt paving along the dam crest.

### 2.3.1.3 Spillway Conduit Filter

The existing B.F. Sisk Dam spillway is located in the dam's left abutment and west of the outlet to O'Neill Forebay. The spillway features a circular intake structure at the dam crest leading to a vertical conduit that then transitions to a horizontal tunnel pipe for outlet to the open chute leading to O'Neill Forebay. The Approved Project includes installing a new filter around the inlet to the existing spillway conduit to O'Neill Forebay. Because the Approved Project would not change the surface elevation of the reservoir, the vertical intake conduit would not be affected by the Approved Project. The Approved Project includes extending the horizontal portion of the spillway conduit to meet the new downstream edge of the expanded embankment in this location.

## 2.3.2 Project Construction

### 2.3.2.1 Stability Berms and Foundation Shear Keys

The shear keys and downstream stability berms would be constructed by first excavating the existing liquefiable and soft-foundation soils to bedrock beneath the shear key and berm locations. Excavation would extend to a depth of approximately 55 feet in the NVS alluvium and 50 feet in the abutment sections. Shear key excavations would encounter shallow groundwater and dewatering measures would be employed to maintain a dry work area suitable for excavation with heavy equipment. The downstream rock blanket or slope protection in the affected area of the embankment would also be removed to the top elevation of the embankment and stockpiled downstream of the toe. Next, the existing toe drain of the embankment would be removed by excavation. These two operations would expose the existing blanket drain and surrounding filter materials in the downstream face of the dam. Above the blanket drain, the existing Zone 3 shell would be exposed.

Dewatering for shear key excavations is anticipated to entail installation of temporary deeper wells along with shallower well points that would be installed around each work area requiring dewatering. Water removed from the excavation during this period would be pumped into temporary settling ponds or portable tanks to allow sediment to drop out and meet permit water quality standards before being discharged into the reservoir or forebay. Dewatering will be subject to permitting approval by the Central Valley Regional Water Quality Control Board.

After completing the excavations, the existing filters/drains located at the downstream toe would be re-established and a replacement toe drain seepage collection system would be installed. Sections of the embankment that are not receiving a stability berm would not require further excavation at the downstream toe. Stronger material would be placed as backfill and compacted in the excavated areas and additional embankment material would be added to extend the various zones of the existing embankment to their higher elevations.<sup>4</sup> Earth materials for this construction are discussed under Construction Material Borrow Areas in the 2019 EIS/EIR.

### 2.3.2.2 Dam Crest Raise

The dam crest raise component of the Approved Project is referred to as an “overlay raise,” as it is accomplished by overlaying material on top of the existing embankment to achieve the new elevation. This would be performed over the entire length of the dam, including sections receiving stability berms and sections not receiving stability berms. The overlay raise would require excavating approximately 8 feet from the top of the dam and removing the 2-foot-thick rock blanket on the downstream slope of the dam. Removing the top of the dam would expose an approximately 40- to 50-foot-wide surface of the existing low-plasticity clay core (Zone 1) material and provide a working surface for connecting the new zones of the dam overlay to the existing embankment. Raising the crest would also involve reconstructing the existing maintenance road on top of the dam, which would include applying base material, compacting the base material, and paving with asphalt.

### 2.3.2.3 Construction Material Borrow Areas and Conveyance

Most fill materials for the new enlarged dam embankment, including the stability berms and the crest raise, would be sourced from two on-site borrow areas. These sites, referred to as the Basalt Hill Borrow Area and Borrow Area 6, shown on Figure 2-3, are within Reclamation property. The only fill materials that would be imported to the site are the filter sands that would be used in Zones 6, 9a, and 9b of the stability berms (see Figure 2-2).

#### **Basalt Hill Borrow Area**

The Basalt Hill Borrow Area, located approximately 1.5 miles southwest of the dam’s right abutment, was used to provide materials for the original construction of the dam in the 1960s; it would again be used to supply rock materials for the Approved Project, including gravel, riprap, and cobble slope protection. These materials would be produced on site by blasting and crushing source material present at the Basalt Hill Borrow Area. Hauling materials from the Basalt Hill Borrow Area and the downstream construction site would occur on Basalt Road and two haul roads connecting the borrow area to Basalt Road, one for inbound trucks and one for outbound trucks. An additional existing access road providing a shorter haul route from the Basalt Hill Borrow Area to the dam site crosses through San Luis Reservoir’s maximum reservoir water surface elevation and is submerged in the reservoir during much of the year. This road would be used during periods when the reservoir level is low enough to expose the road.<sup>5</sup>

---

<sup>4</sup> Additional detail on installing materials in the various embankment zones is provided in Section 2.2.3.2 of the 2019 EIS/EIR.

<sup>5</sup> Use of this road was not explicitly stated in the 2019 EIS/EIR, but the roadway alignment is largely within the study area defined by the 2019 EIS/EIR. A small portion of the work area planned for operation of this road, just west of the dam’s right abutment, extends beyond the 2019 EIS/EIR study area and has been added as an additional impact area considered in this SEIR.

### Borrow Area 6

Borrow Area 6 is located east of B.F. Sisk Dam, north of SR-152, and immediately south of O'Neill Forebay. This borrow area is anticipated to supply material suitable for expanding the dam's Zone 1 core and for materials that would be used in downstream berms.

Hauling materials from Borrow Area 6 would require crossing SR-152 to access the dam site. The 2019 EIS/EIR indicates that the preferred method of transporting materials to the dam site from north of SR-152 would be by crossing under the existing bridge that crosses O'Neill Forebay via either a temporary conveyor system or by constructing a roadway to accommodate low-profile haul trucks (see Figure 2-3). As identified in the 2019 EIS/EIR, other potential options for hauling access to the site from north of SR-152 include installing an at-grade, signalized crossing of SR-152 at Basalt Road, and constructing a tunnel under SR-152 at Basalt Road. The tunnel would be constructed from 15-foot-high by 30-foot-wide concrete box culverts to accommodate a conveyor system to transport materials under the highway. Additional options for transporting materials across SR-152 identified in the 2019 EIS/EIR include constructing a temporary bridge over SR-152 at the Basalt Road location, over which a materials conveyor system would be operated, and transporting materials on existing roadways, including Gonzaga Road and the existing Santa Nella Boulevard/SR-33 underpass southeast of Borrow Area 6.

The Approved Project assumed that if the preferred O'Neill Forebay bridge undercrossing were used for transporting materials from Borrow Area 6, a temporary roadbed would be constructed below the bridge by placing clean riprap and rockfill-sized cobbles and boulders in the water between the second bridge column and the south abutment (approximately 60 feet in width) and surfacing with clean gravel (no fine materials). This temporary roadway would be used to allow for transporting materials between Borrow Area 6 and the dam work site without impacting traffic on SR-152. The temporary roadway would be removed and the area would be returned to preconstruction conditions upon Approved Project completion.

#### 2.3.2.4 Staging and Access Roads

Staging areas anticipated in the 2019 EIS/EIR are shown in Figure 2-3. The Approved Project assumed contractor staging and materials stockpiling would occur throughout much of the area downstream of B.F. Sisk Dam, roughly bound by SR-152 on the north, the Reclamation property boundary on the east, and Basalt Road and Basalt Campground on the south. This includes 120 acres north of the Gianelli Pumping-Generating Plant and approximately 1,000 acres south of the plant. Two small areas downstream of the dam's right abutment were excluded from staging, presumably because of the presence of wetlands. As indicated in the 2019 EIS/EIR, available areas around the dam would be used as staging for the full duration of construction and would be returned to preconstruction conditions after completion of the Approved Project.

The footprint of the Approved Project, as shown in Figure 2-3 and defined by the 2019 EIS/EIR, includes Basalt Campground as a contractor staging area. Basalt Campground would be closed to the public for the duration of the Approved Project and would provide lodging to construction crews during the multiyear construction period. Impacts on the existing campground facilities at Basalt Campground are not anticipated, but this area was included in the impact area because it would be a contractor use area and subject to long-term closure. An additional staging area shown in Figure 2-3 is located on the south shore of San Luis Reservoir and north of Basalt Road and includes the Basalt Day Use Area and boat ramp. Existing disturbed and developed areas in this staging area could be used for equipment and materials staging during construction.

The 2019 EIS/EIR noted the access route to the two main staging areas would be via SR-152 to Basalt Road and that temporary traffic signals would be installed at the current left-turn crossing on SR-152 at Basalt Road and at the access road to Romero Visitor Center during Approved Project construction. Temporary traffic signals for crossing SR-152 are no longer being considered as part of the Approved Project at this time. The description provided in the 2019 EIS/EIR estimated that up to 59 large deliveries or off-site waste material transports to local landfills and regional hazardous waste landfills per day could be expected, along with regular commuting of construction personnel.

The Approved Project entails developing new temporary roads and improving existing roads for hauling and construction access. New roads would be cleared and existing roads would be improved and would be either paved or treated to prevent dust. Roads would be approximately 30 feet wide with approximately 100 feet of clearance.

### 2.3.2.5 Restriction of Reservoir Level and Seasonal Timing

The water elevation at San Luis Reservoir fluctuates seasonally as water is pumped in for storage and out for transmission to the Central Valley Project and California State Water Project. As stated in the 2019 EIS/EIR, any work that would reduce the dam embankment strength, such as foundation or embankment excavation, would be timed to occur when pressure on the dam is at a minimum (i.e., during periods of the year when the reservoir is drawn down to low storage levels as part of normal reservoir operations). Such work would be completed each year prior to refilling the reservoir. To the extent possible, work would be scheduled each year to be completed during one drawdown season to allow the reservoir to be refilled to seasonally high storage levels and ensure minimal disruption to water deliveries.

Excavation of the berm foundation down to bedrock to construct the SVS shear key would require limits on the maximum surface elevation in San Luis Reservoir that would extend across two reservoir-filling seasons. This reduction in surface elevation would reduce storage capacity in the reservoir and could limit Central Valley Project and California State Water Project deliveries during this prolonged limited storage period.

### 2.3.3 Construction Schedule and Assumptions

As stated in the 2019 EIS/EIR, construction of the Approved Project is expected to last approximately 8 to 10 years, assuming no funding constraints are encountered. The 2019 EIS/EIR assumed work would commence in 2020 and would likely be completed within 10 to 12 years and up to 20 years if funding constraints are encountered; note that actual construction will occur later than originally assumed.

Work would be performed 24 hours per day, 7 days per week, 12 months per year. The 24-hour workday would consist of two 10-hour work shifts, with one 30-minute lunch break each shift, plus a 3-hour maintenance period. It was assumed in the 2019 EIS/EIR that 46 workers would be on site during the dayshift and 30 workers would be on site during the nightshift. Blasting operations at the Basalt Hill Borrow Area would be limited to the hours between 6:00 a.m. and 6:00 p.m.

As indicated in the 2019 EIS/EIR, the following equipment would be used to construct the Approved Project:

- Three excavators
- Four bulldozers
- Five cranes/lifts
- Five compactors
- Two graders
- Two scrapers
- Five loaders (2 small, 3 large)
- Nine dump trucks
- Five water trucks
- Truck-mounted drill rig

The total acreage of disturbed ground is estimated in the 2019 EIS/EIR at up to approximately 3,905 acres, including the crest of the dam, the entire downstream slope of the dam, borrow areas, haul routes, site access, and potential construction use areas.

### 2.3.4 Project Operation

As noted in the 2019 EIS/EIR, following completion of construction of the Approved Project, operation of San Luis Reservoir will continue consistent with the existing configuration with no change in storage capacity at the reservoir. No changes in facility maintenance are identified in the 2019 EIS/EIR that could occur as a result of the Approved Project.

## 2.4 Proposed Project Modifications and Clarifications

This section describes the modifications to the Approved Project since certification of the 2019 EIS/EIR, which are the subject of this SEIR as described in Chapter 1, Introduction. Features of the Modified Project are shown in Figures 2-4A and 2-4B, Modified Project Detail, and a comparison to the work area and features of the Approved Project are shown in Figure 2-3.

The dam stability features detailed in Section 2.3, Description of the Approved Project, including the stability berms, foundation shear keys, and dam crest raise, remain largely unchanged in the Modified Project, as do overall assumptions of equipment, personnel, workday schedules, and overall construction schedule. In certain cases, supplemental details or clarification regarding components of the Approved Project, such as eliminating the shear key at the SVS and reducing the depth of other shear keys, are presented to ensure that minor changes in the Approved Project are appropriately defined, but these changes are minor and within the scope of the analysis conducted in the 2019 EIS/EIR and are not subject to analysis in the SEIR. The focus of the modifications to the Approved Project addressed in this SEIR are additions of project-related impacts outside the prior study area and the addition of materials excavation sites within the previous study area—referred to collectively in this SEIR as additional impact areas. The latest set of project plans is provided in Appendix A. It should be noted, however, that Reclamation is currently working with CDPR to design the proposed campground and improvements to the San Luis Creek Day Use Area, as described below in Section 2.4.1; therefore, detailed plans for these facilities are not available and are not included in Appendix A.

### 2.4.1 Additional Impact Areas – Campground Construction and Day Use Area Improvements

The Modified Project addressed in this SEIR would entail construction activity on the western shore of O'Neill Forebay, in the areas shown on Figure 2-4A, associated with development of a new public campground and minor upgrades to the existing San Luis Creek Day Use Area. This work was identified in the 2019 EIS/EIR as part of Mitigation Measure REC-1, but implementation of that mitigation entails environmental impacts that were not incorporated into the analysis presented in the 2019 EIS/EIR, so they are included in the scope of this SEIR. Mitigation Measure REC-1 in the 2019 EIS/EIR included the expansion of the boat launch at Dinosaur Point Use Area. Since that time, CDPR has indicated the previously proposed expansion of this boat launch is no longer required, as the existing facility has excess capacity and would accommodate any increase in use due to the closure of the Basalt Campground boat launch for the duration of Modified Project construction (CDPR 2020). As such, changes to the Dinosaur Point Use Area boat launch facility are not part of the Modified Project addressed in this SEIR.

DWR, in consultation with CDPR, has agreed to construct a new permanent campground on the northwestern shore of O'Neill Forebay to compensate for the long-term temporary closure of Basalt Campground and the Medeiros Use Area during Modified Project construction. Basalt Campground will be closed to avoid disruption to campground users that could result from blasting operations at the Basalt Hill Borrow Area during Modified Project construction, and to allow for use of the campground facility for equipment and materials staging and lodging for construction personnel. The 2019 EIS/EIR assumed that the Medeiros Use Area (and campground) south of O'Neill Forebay would be closed during the entire construction phase of the Approved Project; the 2019 EIS/EIR addressed the potential impacts of this closure. However, the Medeiros Use Area was inadvertently not included in the Approved Project footprint as shown in the exhibits and figures of the 2019 EIS/EIR. As such, the Medeiros Use Area is included in the Modified Project footprint in this SEIR; however, note that impacts resulting from its closure have already been addressed in the 2019 EIS/EIR.

The proposed site for the new campground is an undeveloped grassland area bisected by an existing paved road on the west side of O'Neill Forebay that provides access to recreational facilities along the west side of O'Neill Forebay and to the San Luis Creek RV Campsite north of the proposed campground area.

The new campground proposed as part of the Modified Project is in the conceptual design stage. The site, which is shown on Figures 2-3 and Figure 2-4A, is approximately 40 acres (24 acres for the campsite areas and 16 acres for utilities) and would include 79 campsites, including 73 tent sites and 6 hookup sites compliant with the Americans with Disabilities Act. Two restroom and shower buildings would be constructed, along with a campfire center, overflow parking, and realignment of the existing bike path along the shoreline. Shore access for fishing would also be provided. The work to construct the campground would include vegetation removal and site grading; installation of utilities including sewer/septic (including a lift station), water, and electrical; surfacing roadways and vehicle parking areas with asphalt; and constructing restrooms and associated campground and campsite amenities (e.g., picnic tables, fire rings). The facilities would be managed by CDPR as part of the San Luis Reservoir State Recreation Area. The new campground would operate similarly to existing campgrounds in the San Luis Reservoir State Recreation Area; anticipated visitation rates, campsite usage, and demand for utilities are estimated from existing campgrounds.

To compensate for Modified Project-related closure of the Basalt Day Use Area for the duration of construction, DWR and Reclamation would also make improvements to the existing San Luis Creek Day Use Area, a developed facility that is located south of the newly proposed campground. Improvements made as part of the Modified Project would be within the existing developed facility and would include provision of an additional boat launch lane and boarding float, a fish-cleaning station, and a new replacement restroom facility. The existing San Luis Creek Day Use Area has been added to the SEIR study area, but Modified Project-related disturbance would not occur throughout the entire facility and would be limited to areas receiving the improvements, as subject to additional planning and design by DWR and CDPR. Disturbance associated with these improvements would be limited to minor site preparation for improvements. The existing access road immediately adjacent to the main access to the San Luis Creek Day Use Area would be resurfaced. Staging areas for construction would be within existing paved parking lots in the use area. The schedule for construction of the proposed improvements is estimated to start in 2022 and take 12 to 18 months to complete.

### 2.4.2 Changes in Borrow Area Location

The Modified Project includes materials extraction for dam construction from two more borrow areas, in addition to those identified as part of the Approved Project in the 2019 EIS/EIR (Borrow Area 6 and the Basalt Hill Borrow Area). The additional borrow areas, referred to as Borrow Area 12 and Borrow Area 14, are shown on Figures 2-3

and 2-4B. Geotechnical investigations and materials testing are underway at all four prospective borrow areas, and depending on the testing results and the presence of suitable materials, it is possible that some combination of all four borrow areas would be used for sourcing materials during Modified Project construction. Borrow Area 12 and Borrow Area 14 are within the overall construction footprint identified in the 2019 EIS/EIR, but were identified in that document and analyzed as anticipated contractor staging areas. Additional environmental impact analysis and disclosure is warranted due to the potential scale of Modified Project-related activity at these sites, including excavation, export of materials, and changes to the existing landform that would occur as a result of removing materials from these additional borrow areas.

Borrow Area 12 is approximately 28 acres in size. It includes a grassland-covered hill east of the dam's SVS that is approximately 100 feet higher than the surrounding lower-lying area. The top of the hill is flat, having been used in the past as a borrow area for initial construction of B.F. Sisk Dam, with two unpaved roads leading to the top. Borrow Area 14 is approximately 200 acres in size. It is located south of Borrow Area 12 and is situated around four low hills within grassland. One of the hills has a road leading to the top. Utility lines and poles in the area would not require relocation as part of the Modified Project.

Borrow Areas 12 and 14 are closer to the dam construction site than Borrow Area 6, and existing roads allow for access from these borrow areas to the dam. Hauling materials from these borrow areas would be preferable for construction because it would reduce the length of haul trips and would not require crossing SR-152 to deliver fill to the dam site. If testing determines that materials from these borrow areas are suitable, their use would reduce or avoid the need for longer haul trips across SR-152.

Materials extraction at Borrow Areas 12 and 14 is intended to preserve the existing topographic contours of the borrow areas to the greatest extent practicable, with the elevation of the existing hills and ridges being lowered up to 25 feet from their current elevations. If Borrow Area 14 is used, excavation would be minimized at the lower elevations and defined drainage areas between the hills. Up to 7 million cubic yards of material would be removed from these borrow areas if the materials testing determines that they contain suitable material for construction. As part of the Modified Project, a remediation plan would be prepared and implemented for Borrow Area 6, Borrow Area 12, and Borrow Area 14. The restoration plan would include measures to revegetate and perform final grading to achieve a naturalized appearance and topography.

Near the Basalt Hill Borrow Area, the Modified Project also includes addition of a new work area proposed for stockpiling extracted materials prior to transporting the materials to the dam construction zone. Like the larger Basalt Hill Borrow Area, this area, shown on Figure 2-4B, was used to extract materials for the original dam construction. An existing access road from Basalt Road would be widened and improved for hauling use as part of the Modified Project.

### 2.4.3 Minor Additions to Contractor Work Area

The Modified Project boundary includes some minor expansion of contractor work areas downstream of the dam that were not part of the original study area addressed in the 2019 EIS/EIR. These additions, which are based on recent planning refinement conducted by Reclamation and DWR, are shown in Figures 2-4A and 2-4B and total approximately 41 acres.

Another small area of less than 1 acre has been added to the original Approved Project study area immediately west of the dam's right abutment. This area, shown in Figure 2-4B, is a portion of the footprint of the alignment of an existing road that crosses San Luis Reservoir and is exposed when the reservoir is at a low water level. The



existing road would be used to transport materials from the Basalt Hill Borrow Area to the dam construction zone during periods when the reservoir water level is low enough to expose the road. Most of the road alignment is within the 2019 EIS/EIR study area, but a small area was excluded, and is considered under the Modified Project and addressed in this SEIR.

In total, the Modified Project's impact area is estimated at approximately 4,243 acres, an increase of 338 acres from the 3,905 acres identified in the 2019 EIS/EIR. It should be noted that the acreage of Borrow Areas 12 and 14 were included in the area of impact identified in the 2019 EIS/EIR, but these areas were identified in that document as contractor use areas and not envisioned to be used for quarrying materials for dam construction. As analyzed in this SEIR, most impacts of the Modified Project would be temporary, with borrow areas and staging areas subject to remediation to a naturalized condition following completion of construction work. Permanent impacts would occur in areas at the foot of the dam that would be covered by new downstream stability berms and the expanded dam embankment, areas of widened access roads, and within the footprint of the proposed new campground and new San Luis Creek Day Use Area facilities west of O'Neill Forebay. While Borrow Areas 12 and 14 would be remediated to a naturalized condition and are considered temporary impact areas, excavating and exporting materials would result in a permanent change in the landform and topography of the borrow areas. It should also be acknowledged that efforts are being made to reduce unnecessary disturbance and habitat impacts and that the overall disturbance area will likely be less than the conservative estimates provided above.

### 2.4.4 Additional Construction Assumptions

As noted above, the overall construction schedule and assumptions regarding personnel and equipment remain unchanged by the Modified Project. With respect to the new features included in the Modified Project, campground development and improvements are anticipated to take 18 months and be accomplished by up to 20 construction personnel working standard 8-hour dayshifts. Equipment to be used for the campground and improvements work would include equipment as identified in the 2019 EIS/EIR (see Section 2.3.3, Construction Schedule and Assumptions).

Construction would use water from the reservoir and forebay for proposed construction purposes and dust suppression. It is anticipated that submersible pumps would be mounted to a floating platform and powered either through generators or grid power. These pumps would be screened per National Marine Fisheries Service standards to avoid impacts to fish.

With respect to timing of dam improvement construction, the 2019 EIS/EIR mentioned restrictions based on water level for certain work that would occur at the base of the dam with potential to affect the structural integrity of the dam, but the description of the Approved Project did not go into detail on this subject. For clarification purposes in this SEIR, this work at the base of the dam would occur during periods when the reservoir is naturally below elevation of 480 feet. The elevation of the reservoir typically falls below 480 feet in June or July and remains below this level through November or December, depending on weather. Construction may occur at other times of the year, provided the surface level of the reservoir is below an elevation of 480 feet, but the surface level would not be manipulated to achieve or maintain that elevation. Work that does not affect the stability of the dam may occur outside of this timeframe and at surface elevations at or above 480 feet.

## 2.4.5 Mitigation Site(s)

Potentially significant impacts to sensitive biological resources and regulated aquatic resources resulting from the Approved Project were identified in the 2019 EIS/EIR. Mitigation measures were incorporated into the Approved Project that required compensatory mitigation for impacts to special-status plants (Mitigation Measure TERR-1), special-status amphibians (Mitigation Measure TERR-3), Swainson's hawk (*Buteo swainsoni*) (Mitigation Measure TERR-7), golden eagle (*Aquila chrysaetos*) and California condors (*Gymnogyps californianus*) (Mitigation Measure TERR-8), San Joaquin kit fox (*Vulpes macrotis mutica*) (Mitigation Measure TERR-12), vernal pool fairy shrimp (*Branchinecta lynchi*) or vernal pool tadpole shrimp (*Lepidurus packardii*) habitat (Mitigation Measure TERR-14), and jurisdictional wetlands or waters (Mitigation Measure TERR-16). With the exception of compensatory mitigation to special-status amphibian aquatic habitat (California tiger salamander [*Ambystoma californiense*] and California red-legged frog [*Rana draytonii*]), which recommended that mitigation areas be located within a California red-legged frog recovery area, as identified in the California Red-legged Frog Recovery Plan (USFWS 2002), no specific mitigation sites were identified as part of the 2019 EIS/EIR mitigation measures.

The Modified Project would purchase mitigation lands at mitigation banks approved by the permitting agencies to satisfy the compensatory mitigation requirements of the 2019 EIS/EIR. The purchase of lands in established mitigation banks for the purpose of preservation would not otherwise require additional changes to the physical environment.

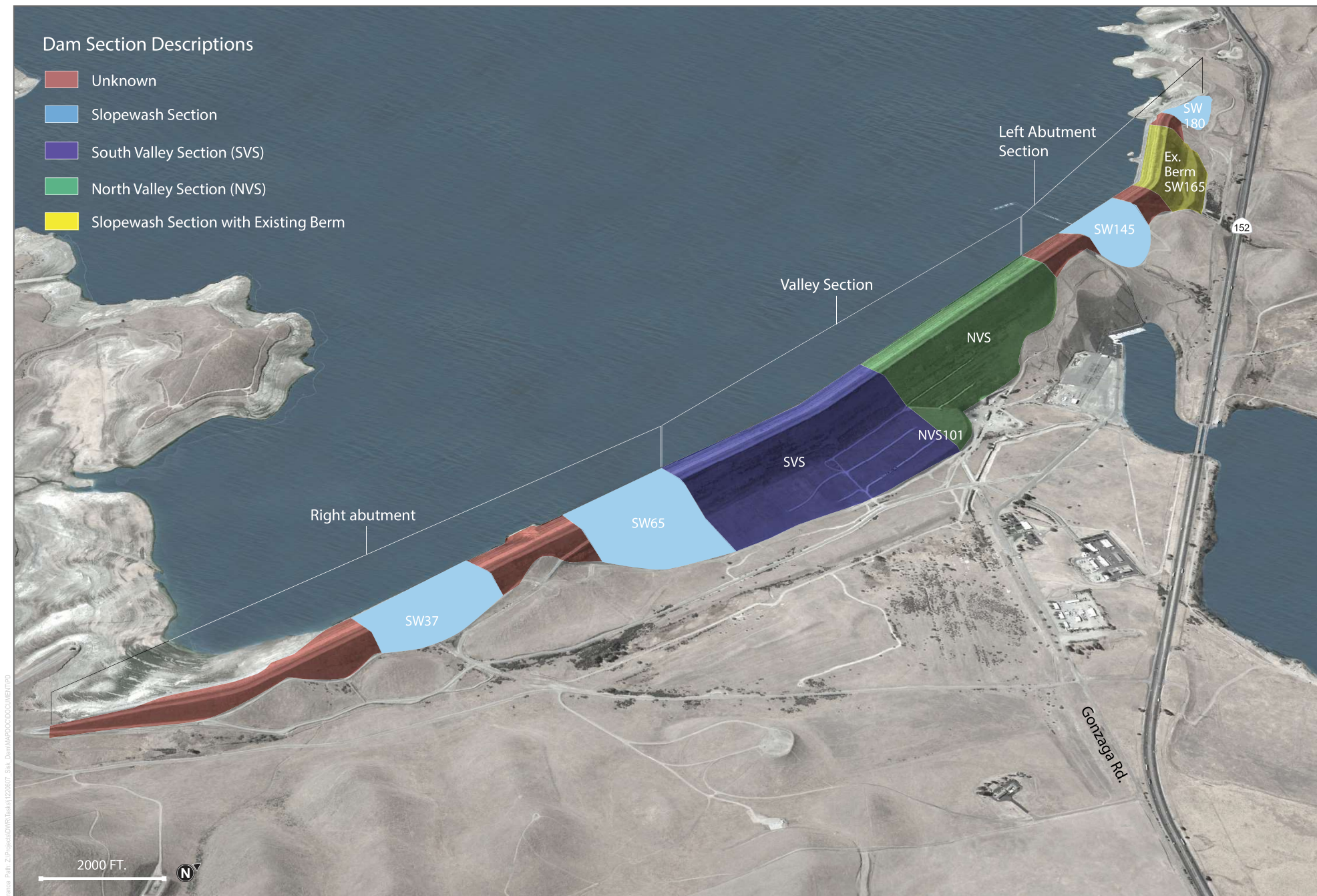
## 2.5 Discretionary Actions

A list of permits anticipated for the Approved Project is presented as Table 1-1 of the 2019 EIS/EIR. An updated list for the Modified Project is shown in Table 2-1.

**Table 2-1. Anticipated Permits or Approvals for the Modified Project**

| Approving Agency(s) | Permit or Approval  | Applying Agency |
|---------------------|---|-----------------|
| USFWS               | Federal Endangered Species Act Formal Consultation                                      | Reclamation     |
| CVRWQCB             | Clean Water Act Section 401 Certification   | Reclamation/DWR |
| USACE               | Clean Water Act Section 404 Permit  | Reclamation     |
| CDFW                | California Fish and Game Code Section 2081 (b) Incidental Take Permit                   | Reclamation/DWR |
| CDFW                | California Fish and Game Code Section 1602 Lake and Streambed Alteration Agreement      | Reclamation/DWR |
| SHPO and/or ACHP    | NHPA Section 106 Compliance   | Reclamation     |
| CVRWQCB             | NPDES Permit for General Construction   | Reclamation/DWR |
| CVRWQCB             | NPDES/WDR Individual Permit for Discharge   | Reclamation/DWR |
| SJAPCD              | Clean Air Act Fugitive Dust Control Plan & Indirect Source Review Air Impact Assessment | Reclamation/DWR |
| Caltrans            | Encroachment Permit for work in State Route 152 right-of-way                            | Reclamation/DWR |
| CVRWQCB             | Construction dewatering discharge permit  | Reclamation/DWR |

**Notes:** USFWS = U.S. Fish and Wildlife Service; Reclamation = Bureau of Reclamation; CVRWQCB = Central Valley Regional Water Quality Control Board; DWR = California Department of Water Resources; USACE = U.S. Army Corps of Engineers; CDFW = California Department of Fish and Wildlife; SHPO = State Historic Preservation Officer; ACHP = Advisory Council on Historic Preservation; NHPA = National Historic Preservation Act; NPDES = National Pollutant Discharge Elimination System; WDR = water discharge requirement; SJAPCD = San Joaquin Air Pollution Control District; Caltrans = California Department of Transportation; WAPA = Western Area Power Administration.



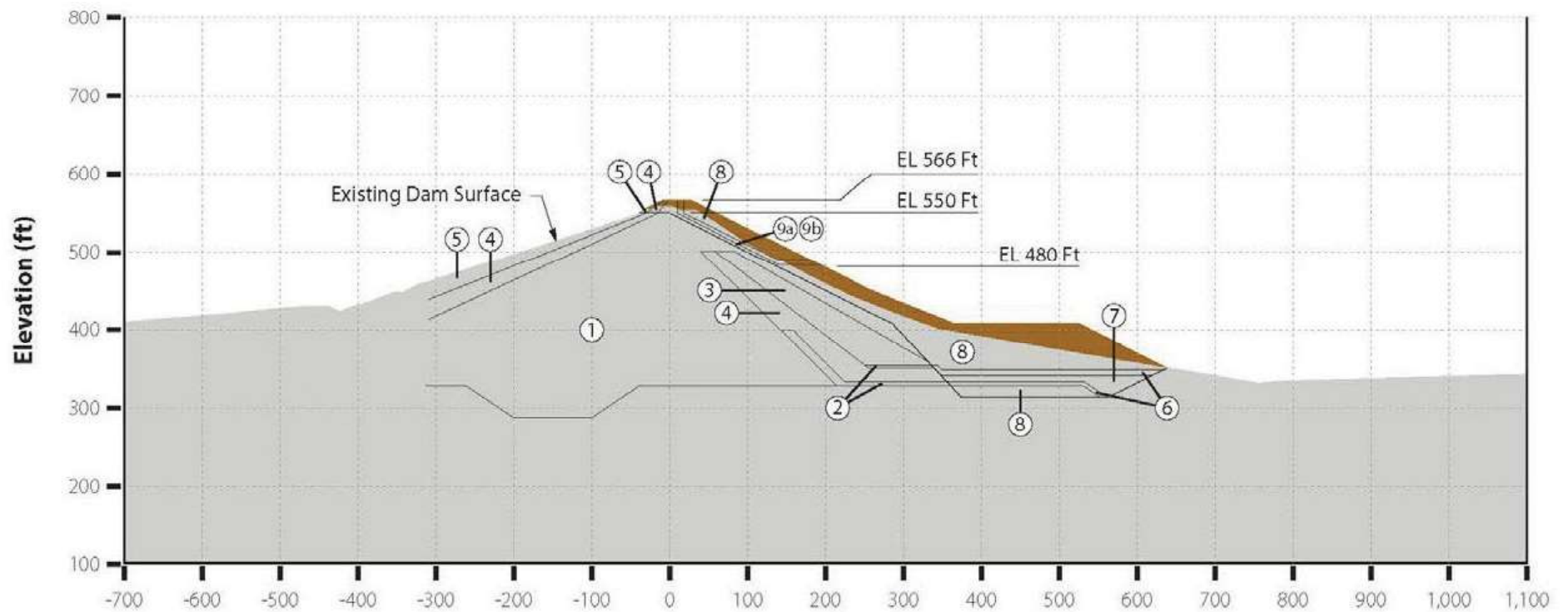
SOURCE: Reclamation 2019, Google Earth

**FIGURE 2-1**

**B.F. Sisk Dam Sections**

B.F. Sisk Dam Safety of Dams Modification Project SEIR

INTENTIONALLY LEFT BLANK



- Zone 1 (central zone): clay
- Zone 2: embankment filter
- Zone 3: shell
- Zone 4: upstream bedding
- Zone 5: upstream rip rap
- Zone 6: filter sand
- Zone 7: miscellaneous fill
- Zone 8: downstream shell
- Zones 9a and 9b: filter sands



SOURCE: Reclamation 2019

FIGURE 2-2

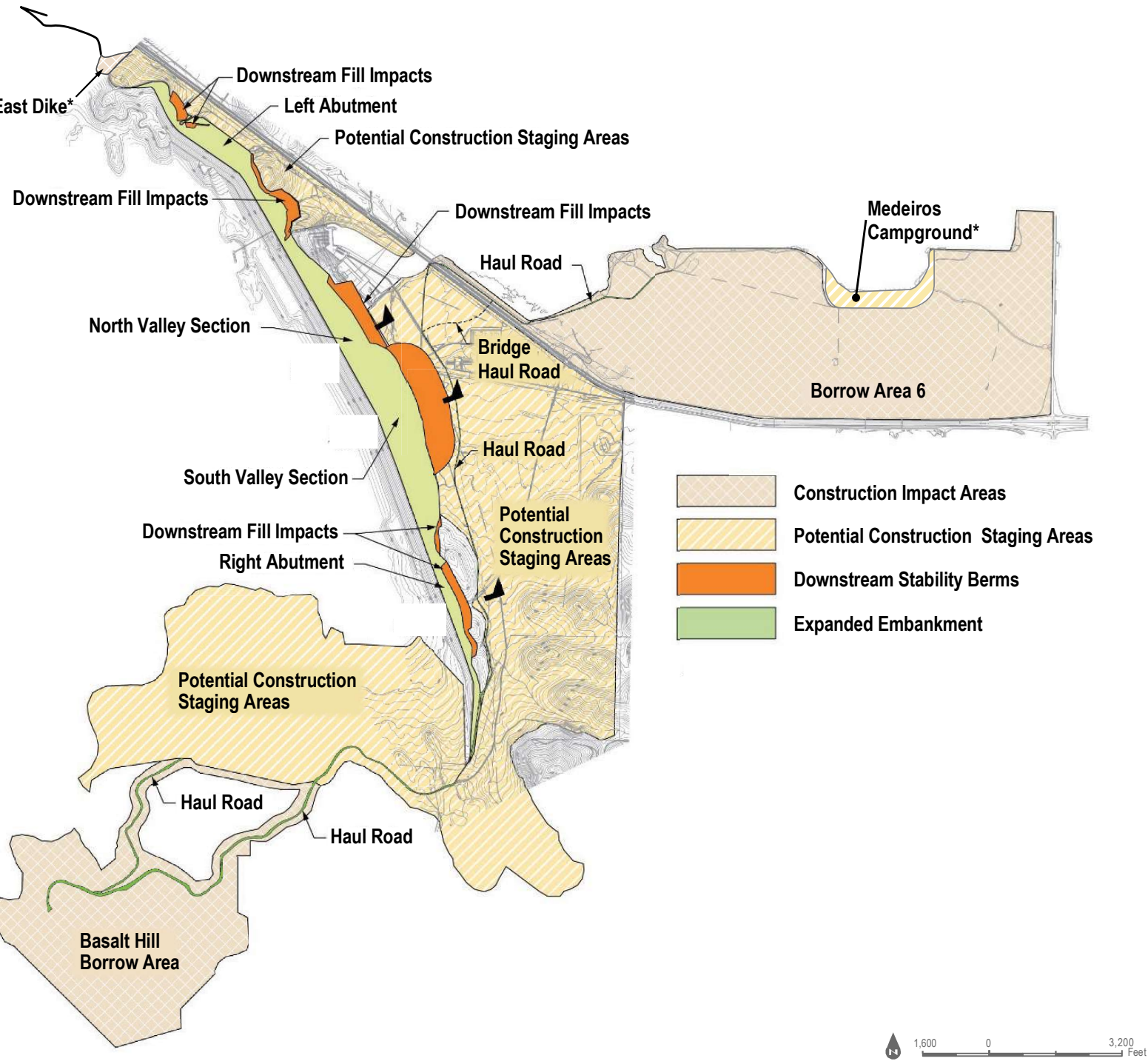
Existing Dam Cross-Section

B.F. Sisk Dam Safety of Dams Modification Project SEIR

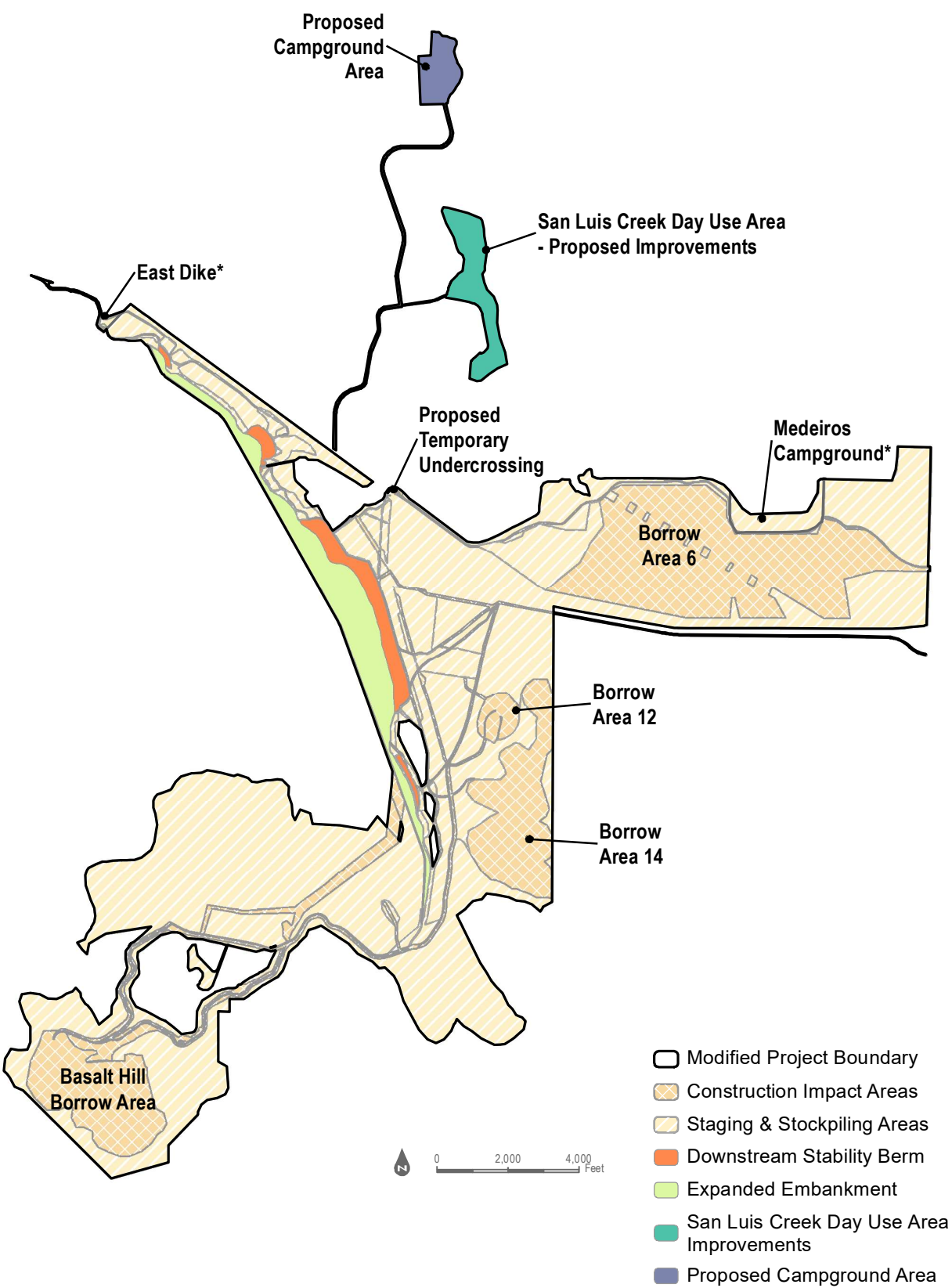
INTENTIONALLY LEFT BLANK



Approved Project Footprint



Modified Project Footprint



\*The 2019 EIS/EIR analyzed impacts of the project within the East Dike and Medeiros Campground area but did not include these areas in mapping of the project footprint. These areas have been added to the Approved Project footprint to correct this mapping omission.

SOURCE: Approved Project: Figure 2-2, 2019 EIS/EIR, Revised Project Boundary & Features: USBR, 6/4/20

INTENTIONALLY LEFT BLANK





SOURCE: Basemap: ESRI World Imagery  
 Project Boundary: Reclamation, 3/14/20  
 Previous Boundary: DWR, 4/2019

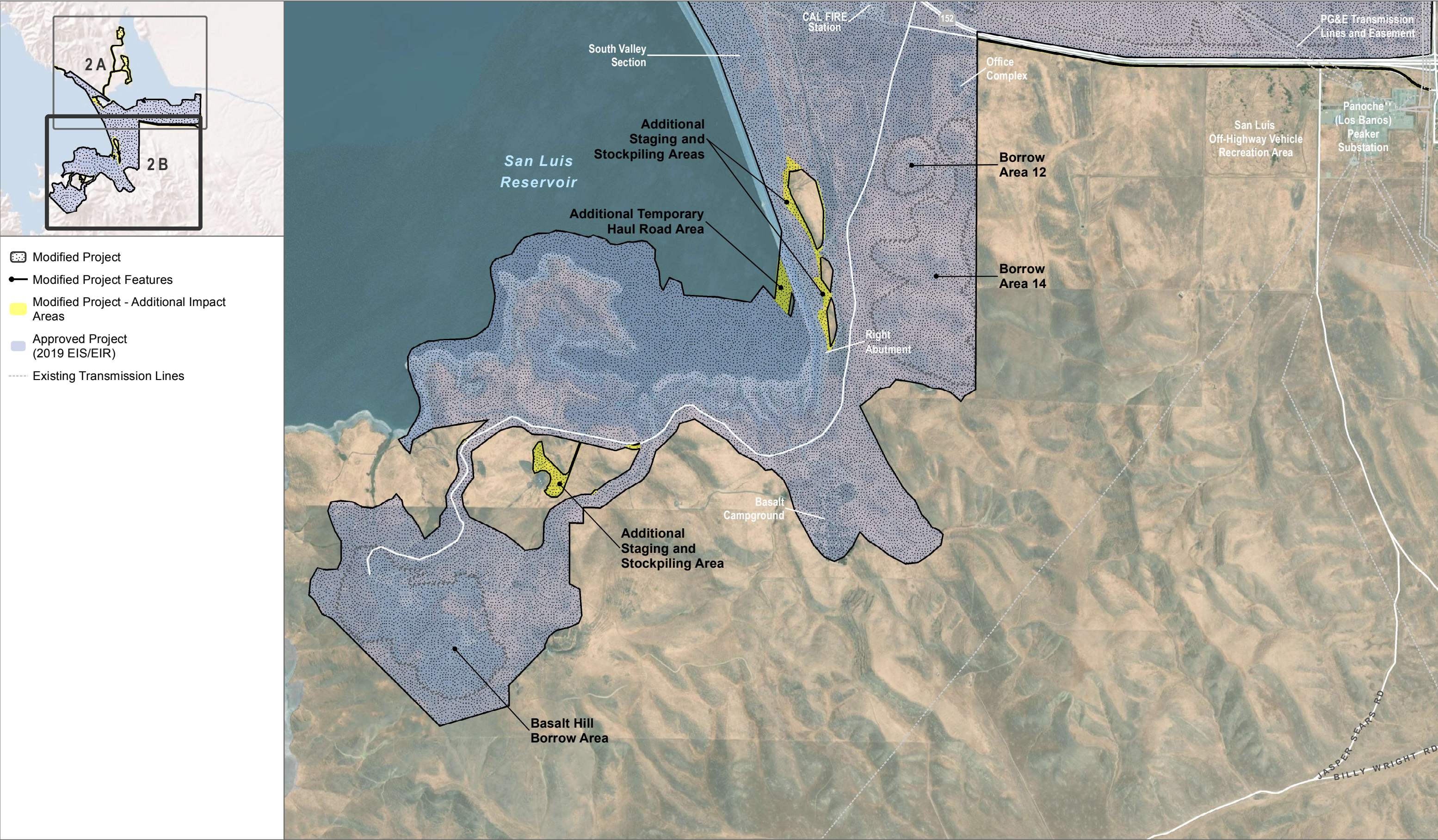


**FIGURE 2-4A**  
**Modified Project Detail**  
 B.F. Sisk Dam Safety of Dams Modification Project SEIR



INTENTIONALLY LEFT BLANK



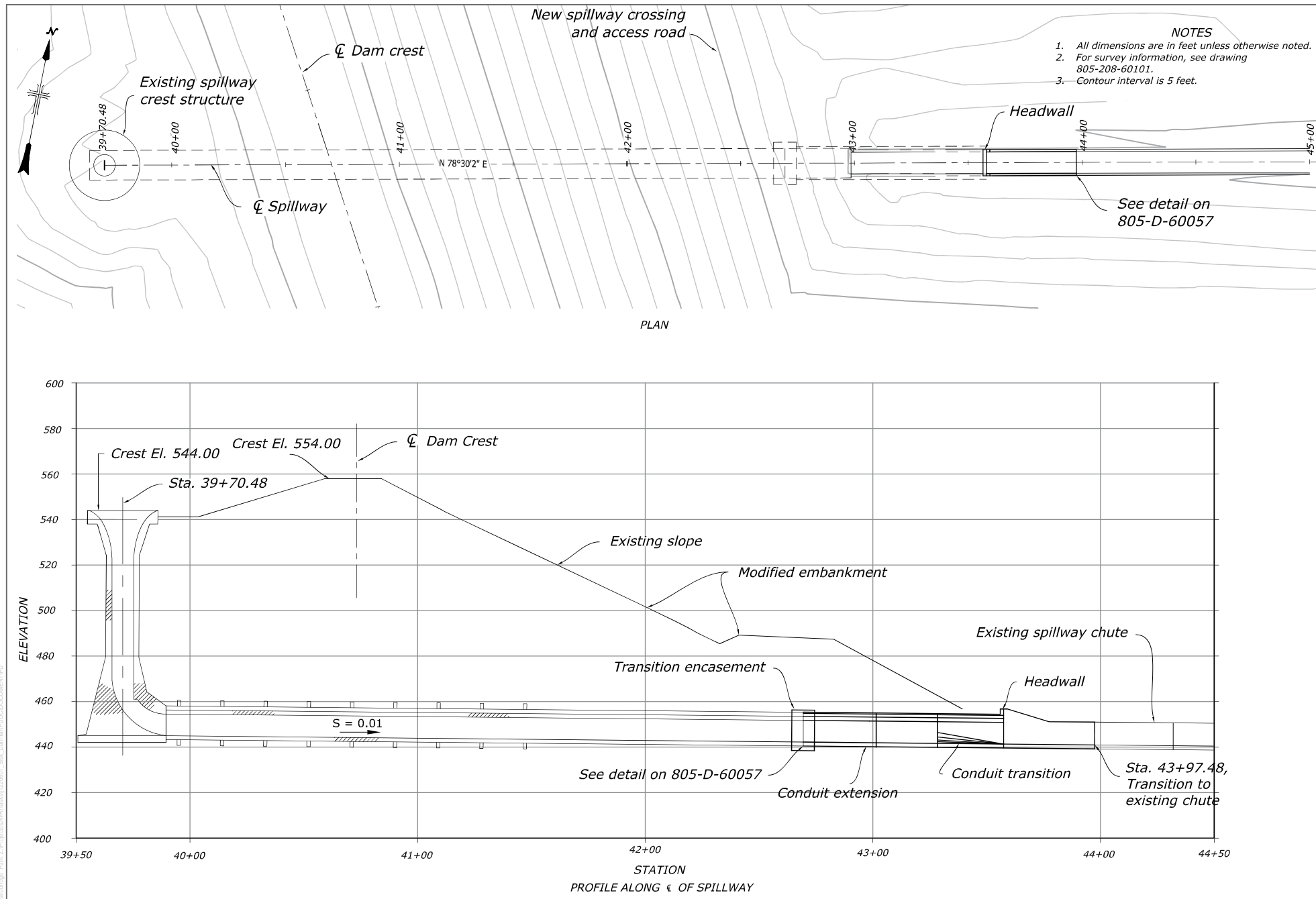


SOURCE: Basemap: ESRI World Imagery  
Project Boundary: Reclamation, 3/14/20  
Previous Boundary: DWR, 4/2019

**FIGURE 2-4B**  
**Modified Project Detail**  
B.F. Sisk Dam Safety of Dams Modification Project SEIR



INTENTIONALLY LEFT BLANK



SOURCE: Reclamation 2/26/20

**DUDEK**

**FIGURE 2-5**  
 Proposed Spillway Conduit Extension  
 B.F. Sisk Dam Safety of Dams Modification Project SEIR

INTENTIONALLY LEFT BLANK

# 3 Environmental Analysis

---

This supplemental environmental impact report (SEIR) addresses proposed modifications to the B.F. Sisk Dam Safety of Dams Modification Project, which was previously evaluated in the B.F. Sisk Dam Safety of Dams Modification Project Environmental Impact Statement/Environmental Impact Report (2019 EIS/EIR). The project addressed in the 2019 EIS/EIR is referred to herein as the Approved Project; the Approved Project with proposed modifications identified since certification of the 2019 EIS/EIR is referred to herein as the Modified Project.

## Organization of Environmental Analysis

Each issue analysis section of Chapter 3 of this SEIR is organized under the following major headings:

- Existing Conditions. This section describes the existing environmental conditions relative to each issue area.
- Relevant Plans, Policies, and Ordinances. This section outlines relevant plans, policies, and ordinances applicable to the Modified Project, issue area, and analysis.
- Thresholds of Significance. This section lists the thresholds of significance by which the Modified Project was analyzed.
- Impacts Analysis. This section discusses and analyzes in detail the potential environmental impacts, including cumulative impacts, of the Modified Project related to each threshold of significance and provides a comparison to the 2019 EIS/EIR.
- Mitigation Measures. This section identifies mitigation measures necessary to reduce potentially significant impacts.
- Level of Significance After Mitigation. This section discusses the level of impact after incorporation of the identified mitigation measures.

## Terminology Used in this Supplemental Environmental Impact Report

The level of significance is identified for each impact in this SEIR. Although the criteria for determining significance is unique for each issue area, the environmental analysis applies a uniform classification of the impacts based on the following definitions, consistent with the California Environmental Quality Act (CEQA) and the State of California CEQA Guidelines (CEQA Guidelines):

- No impact. The Modified Project would not change the environment.
- Less than significant. The Modified Project would not cause any substantial, adverse change in the environment.
- Less than significant with mitigation incorporated. The Modified Project could result in a significant impact on the environment, but incorporation of mitigation would reduce the impact to less than significant.
- Significant and unavoidable. The Modified Project would cause a substantial adverse effect on the environment, and no feasible mitigation measures are available to reduce the impact to less than significant.

## Cumulative Effects

Section 15355 of the CEQA Guidelines defines cumulative impacts as “two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.” CEQA Guidelines Section 15130(b) states that “the discussion [of cumulative impacts] need not provide as great detail as is provided for the effects attributable to the project alone.” Section 15130(b) further states that a cumulative impacts discussion “should be guided by standards of practicality and reasonableness.”

Cumulative impacts can occur from the interactive effects of a single project. For example, the combination of noise and dust generated during construction activities can be additive and can have a greater impact than either noise or dust alone. However, substantial cumulative impacts more often result from the combined effects of past, present, and future projects located in proximity to a proposed project. Thus, it is important for a cumulative impacts analysis to be viewed over time and in conjunction with other related past, present, and reasonably foreseeable future projects, the impacts of which might compound or interrelate with those of the project under review.

As provided by Section 15130(b)(1) of the CEQA Guidelines, the evaluation of cumulative impacts is to be based on either of the following:

- A list of past, present, and reasonably anticipated future projects producing related or cumulative impacts, including those projects outside the control of the agency; or
- A summary of projections contained in an adopted general plan or related planning document that is designed to evaluate regional or area-wide conditions. Any such planning document shall be referenced and made available to the public at a location specified by the lead agency.

Pursuant to Section 15130(d) of the CEQA Guidelines, cumulative impact discussions may rely on previously approved land use documents—such as general plans, specific plans, plans for the reduction of greenhouse gas emissions, and local coastal plans—which may be incorporated by reference. In addition, no further cumulative impact analysis is required when a project is consistent with such plans and the lead agency determines that the regional or area-wide cumulative impacts of the proposed project have already been adequately addressed in a certified EIR for that plan. In addition, Section 15130(e) of the CEQA Guidelines states that “if a cumulative impact was adequately addressed in a prior EIR for a community plan, zoning action, or general plan, and the project is consistent with that plan or action, then an EIR for such a project should not further analyze that cumulative impact as provided in Section 15183(j).”

If the combined cumulative impact associated with a proposed project’s incremental effects and the effects of other projects would not be significant, an EIR should briefly indicate why the cumulative impact is not significant (CEQA Guidelines Section 15130[a][2]).

Additionally, an EIR can determine that a project’s contribution to a significant cumulative impact will be less than cumulatively considerable and therefore not significant. A project’s contribution can also be less than cumulatively considerable if the project is required to implement or fund its fair share of a mitigation measure or measures designed to alleviate the cumulative impact. The lead agency must identify facts supporting this conclusion (CEQA Guidelines Section 15130[a][3]).

#### ***Cumulative Projects***

Table 3-1, Cumulative Projects, describes the past, present, and reasonably foreseeable future cumulative actions and projects considered in this SEIR.

The 2019 EIS/EIR underwent public scoping and public review periods and received a variety of comment letters addressing the Approved Project. During the public review period of the 2019 EIS/EIR, the California Department of Water Resources received the following comment relative to cumulative analysis:

- Public review comment from the U.S. Environmental Protection Agency: The commenter requested the inclusion of the San Luis Low Point Improvement Project in the cumulative project list and analysis.



In response to this public review comment, the 2019 EIS/EIR was revised to include the requested project. This project is also included in Table 3-1. The 2019 EIS/EIR also included the Bay Delta Conservation Plan; this project is not included in Table 3-1 herein because the scope of analysis within this SEIR of the proposed modifications and changes to the Approved Project has narrowed compared to the 2019 EIS/EIR.

Additionally, the B.F. Sisk Dam Raise and Reservoir Expansion Project (reservoir expansion project) proposed by the San Luis & Delta–Mendota Water Authority has been included in the cumulative projects list for this SEIR. Although the reservoir expansion project relates directly to B.F. Sisk Dam, it has separate utility to the Modified Project analyzed in this SEIR. As such, it is included as a cumulative project for the purposes of analysis.

Each resource area addressed in Chapter 3 of this SEIR includes an analysis of cumulative impacts in the context of the cumulative projects listed in Table 3-1.

**Table 3-1. Cumulative Projects**

| Project Name   | Project Proponent/<br>Agency   | Project Description  | Project Status  |
|--|--|--|---|
| California High-Speed Rail Project EIR/EIS: Merced to Fresno   | California High Speed Rail Authority   | The Merced to Fresno High-Speed Rail Project would connect a Merced station to a Fresno station. The approximately 35-mile-long corridor between Merced and Fresno is an essential part of the statewide high-speed train system.  | Began in 2012, estimated to occur over approximately 20 years |
| Central Valley Project Municipal & Industrial Water Shortage Policy Environmental Impact Statement                               | Bureau of Reclamation  | This project is intended to provide detailed, clear, and objective guidelines for the distribution of Central Valley Project water supplies during water shortage conditions.  | Began in 2015, estimated to occur over approximately 20 years |
| San Luis Reservoir State Recreation Area, Resource Management Plan/General Plan, Environmental Impact Statement/Report-Park Plan | Bureau of Reclamation and California Department of Parks and Recreation                                    | Improvements to 27,000 acres of federally owned and state-run property, including the water surfaces of San Luis Reservoir, O'Neill Forebay, Los Banos Reservoir, and adjacent recreation lands.   | Began in 2013, estimated to occur over approximately 25 years |
| San Luis Transmission Project Final EIS/EIR  | Western Area Power Administration, U.S. Department of Energy, and San Luis & Delta–Mendota Canal Authority | Western Area Power Administration (Western) would construct, own, maintain, and operate new transmission lines that would be located mostly adjacent to existing lines in Alameda, San Joaquin, Stanislaus, and Merced Counties in California. Additional components of the San Luis Transmission Project would include new 230 kV line terminal bays at Western's San Luis and Dos Amigos Substations, as well as a new 230/70 kV transformer bank and interconnection facilities at the San Luis Substation. | Began in 2016, estimated to occur from 2017 to 2021           |

Table 3-1. Cumulative Projects

| Project Name   | Project Proponent/<br>Agency                                | Project Description   | Project Status  |
|--|---|---|---|
| San Luis Solar Project<br>Final Environmental<br>Assessment and Plan of<br>Development | Bureau of Reclamation                                       | 30-year Land Use Authorization to access, install, operate, maintain, and remove a 26-megawatt solar photovoltaic energy generating project in and adjacent to the State Recreation Area.   | Began in 2018, estimated to occur over 30 years               |
| Merced County General Plan   | County of Merced  | General Plan covering future planning horizons for Merced County.   | Released in 2013 with projections to 2030                     |
| San Luis Reservoir Low Point Improvement Project<br>Draft Feasibility Report           | Bureau of Reclamation and Santa Clara Valley Water District | The Pacheco Reservoir Expansion Alternative Plan includes construction of a new dam and reservoir on Pacheco Creek 0.5 miles upstream from the existing North Fork Dam and would inundate most of the existing Pacheco Reservoir. | Began in 2019, estimated to occur over approximately 20 years |
| B.F. Sisk Dam Raise and Reservoir Expansion Project                                    | San Luis & Delta–Mendota Canal Authority                    | The project would increase storage capacity in San Luis Reservoir, achieved by an additional 10-foot raise of the B.F. Sisk Dam embankment across the entire dam crest.   | Environmental analysis began in 2020                          |
| Del Puerto Canyon Reservoir and Dam  | Del Puerto Water District                                   | Located in Del Puerto Canyon, construction of a dam would create an 800-acre reservoir and water would be delivered from the Delta–Mendota Canal.   | Approved, construction anticipated to begin in 2022           |

**Notes:** EIR/EIS = environmental impact report/environmental impact statement; kV = kilovolt.

## 3.1 Water Quality and Groundwater Resources

This supplemental environmental impact report (SEIR) addresses proposed modifications to the B.F. Sisk Dam Safety of Dams Modification Project, which was previously evaluated in the B.F. Sisk Dam Safety of Dams Modification Project Environmental Impact Statement/Environmental Impact Report (2019 EIS/EIR). The project addressed in the 2019 EIS/EIR is referred to herein as the Approved Project; the Approved Project with proposed modifications identified since certification of the 2019 EIS/EIR is referred to herein as the Modified Project.

This section describes the existing hydrology, groundwater, and water quality conditions of the Modified Project site and vicinity, identifies associated regulatory requirements, evaluates potential impacts, and identifies any applicable mitigation measures related to the implementation of the Modified Project.

### Public Scoping and Review Comments Received on 2019 EIS/EIR

The SEIR must consider comments received during public scoping and public review of the 2019 EIS/EIR prepared for the Approved Project. The following comment related to water quality and groundwater resources was provided on the 2019 EIS/EIR during public scoping and was summarized in the 2019 EIS/EIR as follows:

- Scoping comment from the Santa Nella County Water District, which purchases water from the San Luis Water District, pumps raw water from the California Aqueduct/San Luis Canal, and treats the water prior to providing potable water to the town of Santa Nella. The District struggles to meet California Department of Public Health drinking water regulations. The commenter expressed concern over water quality before, during, and after construction. Additionally, the commenter asked if the Approved Project would aid in the correction of raw water quality issues.

The Modified Project includes changes to the Approved Project that would result in impacts outside the study area identified by the 2019 EIS/EIR and would change uses to include the addition of materials excavation sites or borrow areas within the study area identified by the 2019 EIS/EIR. The following impact analysis addresses potential construction-related water quality issues, but does not address correction of raw water quality issues of water managed by the San Luis Water District, as it is beyond the scope of the Modified Project. Any changes identified subsequent to the 2019 EIS/EIR would have no bearing on the quality of raw water delivered via the California Aqueduct/San Luis Canal.

### 3.1.1 Existing Conditions

#### 3.1.1.1 Regional Watershed

The Modified Project site is located within the San Joaquin River watershed, an approximately 15,600 square mile region that is bordered to the north by the Sacramento River watershed, to the south by the Tulare Basin watershed, to the east by the Sierra Nevada, and to the west by the Pacific Coast Ranges (EPA 2020).

The primary tributary for the San Joaquin River watershed is the San Joaquin River, which originates in the Sierra Nevada and generally flows north through the Central Valley before merging with the Sacramento River. Tributary rivers that flow into the San Joaquin River include (from south to north) the Fresno, Chowchilla, Merced, Tuolumne, Stanislaus, Calaveras, Mokelumne, and Cosumnes Rivers (Figure 3.1-1, San Joaquin River Watershed) (EPA 2020).

Water flows in the San Joaquin River have been substantially modified by dams and diversions that collectively remove 95% of the water from the river. These diversions cause the San Joaquin River to be dry for more than 60 miles. However, water diversion structures, such as the Delta–Mendota Canal (DMC), have been constructed to replenish some of the water diverted from the San Joaquin River by transporting Sacramento River water to the depleted river channel as well as to agricultural users with the watershed (EPA 2020).

The land area in the San Joaquin River watershed is diverse, ranging from snow-covered peaks to sub-sea level agricultural areas. Extensive forest areas cover the mountain slopes; more than 3,000 square miles of agriculture are present in the Central Valley; and 2 million people live in the major urban centers of Stockton and Fresno, small towns, and rural communities within the watershed (EPA 2020).

### 3.1.1.2 Site Topography and Drainage

The additional impact areas of the Modified Project are located (1) immediately downstream of the central and southern base of the dam (i.e., the additional staging and stockpiling areas); (2) within approximately 0.5 miles downstream of the southern portion of the dam (i.e., Borrow Areas 12 and 14); and (3) on the west shore of O'Neill Forebay (i.e., the proposed campground and existing San Luis Creek Day Use Area) (Figures 2-4A and 2-4B, Modified Project Detail). The embankment of the dam is steeply to moderately sloped and sparsely vegetated. A concrete-lined spillway conduit of the dam is located within the northern portion of the embankment, immediately east of the Gianelli Pumping-Generating Plant.

Near the southern shoreline of San Luis Reservoir, south of Basalt Road, the Modified Project site consists of moderately to steeply sloped, undulated, and sparsely vegetated hillsides. North of Basalt Road, near the southeastern shoreline of the reservoir, the Modified Project site consists of low-lying flat topography (Figure 2-4B). Runoff in this region infiltrates into the underlying sediment and/or sheet flows directly into San Luis Reservoir.

Southeast of the dam embankment, Borrow Area 12 (Figure 2-4B) consists of an approximately 28-acre grassland hillside that is about 100 feet higher than the surrounding lower-lying area. The top of Borrow Area 12 is relatively flat, having been used in the past as a borrow area for the initial construction of the dam. The adjoining (to the south) 200-acre Borrow Area 14 encompasses four low grassland hills, which are up to 200 feet higher than the downstream base of the dam. Runoff within this area infiltrates into the underlying, pervious soils and/or sheet flows into the low-lying alluvial areas before infiltrating or being transported in drainages toward O'Neill Forebay to the north.

The northwestern and western shoreline of O'Neill Forebay, in the vicinity of the proposed campground and existing San Luis Creek Day Use Area, consists of relatively flat-lying areas adjacent to the shoreline, with gentle to moderately sloping hillsides along the western portions of these additional impact areas. Except for a paved road traversing the site, the proposed campground area is unpaved and undeveloped. The existing San Luis Creek Day Use Area includes paved parking lots, boat ramps, roadways, and recreational structures (e.g., gazebos, public restrooms, campsites). However, pervious unpaved areas are present throughout the day use area. This portion of the Modified Project site is moderately vegetated with trees, brush, and grasses (Figure 2-4A). Stormwater from paved areas either sheet flows directly into O'Neill Forebay or flows into unpaved areas within the day use area. Stormwater runoff from these pervious unpaved areas infiltrates into the underlying sediments and/or sheet flows into the forebay.

### 3.1.1.3 Groundwater

Portions of the proposed campground and the San Luis Creek Day Use Area are underlain by the Delta–Mendota Subbasin (defined by California Department of Water Resources [DWR] in Bulletin 118 as Subbasin No. 5-022.07), one of nine subbasins located within the larger San Joaquin Valley Groundwater Basin (Figure 3.1-2, Delta–Mendota Groundwater Subbasin). DWR Bulletin 118, California’s Groundwater, is the State’s official publication on the occurrence and nature of groundwater in California. The publication defines the boundaries and describes the hydrologic characteristics of groundwater basins within California. Bulletin 118 also provides information on groundwater management and recommendations for the future (DWR 2020a; CVRWQCB 2006). The San Joaquin Valley Delta–Mendota Subbasin is approximately 1,170 square miles in size and is bound geologically and topographically to the west by the Tertiary and older marine sediments of the Coast Ranges, and to the east generally by the San Joaquin River (DWR 2006). Jurisdictional boundaries of water purveyors dictate the northern, central, and southern portion of the eastern boundary within the Delta–Mendota Subbasin. The Modified Project site is located within the central portion of this subbasin (SLDMWA 2019). DWR has not identified a groundwater basin underlying the remaining portions of the Modified Project site (DWR 2020b).

Two primary aquifers comprise the Delta–Mendota Subbasin, each of which consists of alluvial deposits and is separated by Corcoran Clay: 1) a semi-confined Upper Aquifer zone (generally the ground surface to the top of Corcoran Clay), and 2) a confined Lower Aquifer zone starting at the bottom of Corcoran Clay to the base of freshwater. However, the localized presence of clay layers in the southern portion of the subbasin, absence of Corcoran Clay at the western margin of the subbasin, and local hydrostratigraphy, result in differing shallow groundwater conditions and/or perched groundwater conditions in some portions of the subbasin (SLDMWA 2019).

#### **Groundwater Management**

In accordance with the Sustainable Groundwater Management Act (SGMA), DWR has classified the Delta–Mendota Subbasin as a high priority in regard to completion of a Groundwater Sustainability Plan (GSP). As such, in June 2017, 24 Groundwater Sustainability Agencies (GSAs) formed within the subbasin to oversee the development and implementation of regional GSPs, with the ultimate goal of achieving sustainable management of the Delta–Mendota Subbasin (Delta–Mendota SGMA 2020). As of 2019, a GSP has been completed for the northern and central portions of the subbasin, which includes portions of the proposed campground and existing San Luis Creek Day Use Area (Figure 3.1-2) (SLDMWA 2019).

#### **Groundwater Beneficial Uses**

The Delta–Mendota Subbasin is in the San Joaquin Valley, one of the most agriculturally productive regions in California and the United States. Groundwater is one of the primary sources of water supply for agricultural uses within the subbasin and is typically used to offset demands not met by surface water from the San Joaquin River, Central Valley Project, and California State Water Project. Groundwater is also the sole source of supply for many communities and cities throughout the Delta–Mendota Subbasin. In general, most irrigation wells and many private domestic supply wells are screened in the Upper Aquifer of the subbasin. Most municipal production wells and many larger irrigation production wells in the Northern and Central Delta–Mendota Subbasin are screened in the Lower Aquifer, below the Corcoran Clay (SLDMWA 2019).

### Groundwater Quality

Groundwater quality is a primary factor in groundwater supply reliability. No known groundwater contamination sites or plumes are present within the Northern and Central Delta–Mendota Subbasin. Groundwater quality concerns within the subbasin are primarily related to non-point sources and/or naturally occurring constituents. Constituents of concern, both natural and anthropogenic, can impact human health and agricultural production (SLDMWA 2019).

Primary constituents of concern within the Northern and Central Delta–Mendota Subbasin are nitrate, total dissolved solids, and boron, which all have anthropogenic as well as natural sources. Other known constituents of concern within the subbasin include arsenic, selenium, and hexavalent chromium. These constituents are naturally occurring in the Delta–Mendota Subbasin and have been detected at concentrations above the water quality objective levels at various locations throughout the subbasin. Concentrations of these constituents do not appear to be linked to groundwater elevations, and as such, these constituents (and their associated concentrations) are considered to be existing conditions. No specific projects and/or management practices are available that can be implemented to mitigate these constituents (other than groundwater treatment) that are not currently being implemented through regulatory programs. Therefore, these constituents are not considered manageable as part of the Northern and Central Delta–Mendota GSP, other than through the coordination of GSP implementation with existing and anticipated future regulatory programs (SLDMWA 2019).

#### 3.1.1.4 Subsidence

Several types of subsidence occur in the San Joaquin Valley, including subsidence related to hydrocompaction of moisture-deficient deposits above the water table; subsidence related to fluid withdrawal from oil and gas fields; subsidence caused by deep-seated tectonic movements; and subsidence caused by oxidation of peat soils, which is a major factor in the Sacramento–San Joaquin River Delta. However, aquifer-system compaction caused by groundwater pumping causes the largest magnitude and areal extent of land subsidence in the San Joaquin Valley (SLDMWA 2019).

Land subsidence is a prevalent issue in the Delta–Mendota Subbasin as it has impacted prominent infrastructure of statewide importance, namely the DMC and the California Aqueduct, as well as local canals, causing serious operational, maintenance, and construction-design issues. Reduced freeboard and flow capacity for the DMC and California Aqueduct have rippling effects on imported water availability throughout California. Even small amounts of subsidence in critical locations, especially where canal gradients are small, can impact canal operations. Differential land subsidence can also result in piping ruptures, resulting in loss of water or other substances. While some subsidence is reversible (referred to as elastic subsidence), inelastic or irreversible subsidence is caused mainly by pumping groundwater from below Corcoran Clay, thus causing compaction and reducing storage in the lower confined aquifer, as well as damaging well infrastructure. As a result, important and extensive damage and repairs have resulted in the loss of conveyance capacity in canals that deliver water or remove floodwaters; the realignment of canals as their constant gradient becomes variable; the raising of infrastructure such as canal check stations; and the releveled of furrowed fields (SLDMWA 2019).

Based on subsidence rates observed over the last decade, it is anticipated that subsidence will continue to impact operations of the DMC and California Aqueduct without mitigation. For example, recently, the San Joaquin River near Dos Palos (at the lower end of the Northern and Central Delta–Mendota Regions, where most land subsidence has historically occurred) experienced between 0.38 and 0.42 feet per year in subsidence between 2008 and 2016. As a result of subsidence, ground elevations are projected to be lowered by 0.5 foot by 2026, as compared to 2016, resulting in a 50% reduction in designed flow capacity. Reduced flow capacities in the California Aqueduct will impact deliveries and transfers throughout California and result in the need to pump more groundwater, thus contributing to further subsidence (SLDMWA 2019).

While subsidence is poised to be a long-lasting issue for the San Joaquin Valley, recorded subsidence rates for portions of the Modified Project site located within the Delta–Mendota Subbasin were less than 0.15 feet per year, from December 2011 to December 2014 (SLDMWA 2019). Moreover, according to Figure 10-3, Areas of Ground Subsidence Within Merced County, of the 2030 Merced County General Plan Draft Background Report (Merced County 2013a), and the U.S. Geological Survey Areas of Land Subsidence in California map (USGS 2020), no recorded instances of subsidence have occurred within the Modified Project area as a result of groundwater pumping, peat loss, or oil extraction. The lower subsidence rates in the Modified Project area are likely due to its location along the western boundary of the Delta–Mendota Subbasin (Figure 3.1-2). As such, there is a low potential for subsidence to occur within the Modified Project site.

### 3.1.1.5 Surface Water Quality

In accordance with State policy for water quality control, the Central Valley Regional Water Quality Control Board (CVRWQCB), among various other agencies, regulates water quality within the San Joaquin River watershed. Water quality objectives, plans, and policies for the surface waters within this region are established in the Water Quality Control Plan for the Sacramento River Basin and the San Joaquin River Basin (Basin Plan) (CVRWQCB 2018). In the Basin Plan, CVRWQCB identifies existing and potential beneficial uses supported by key water drainages within the San Joaquin River watershed. The existing beneficial uses of San Luis Reservoir, O'Neill Reservoir, and Sacramento–San Joaquin River Delta are shown in Table 3.1-1.

**Table 3.1-1. Beneficial Uses**

| Beneficial Use Designation                              | San Luis Reservoir | O'Neill Reservoir | Sacramento–San Joaquin River Delta |
|---|--------------------|-------------------|------------------------------------|
| Municipal and Domestic Supply (MUN)                     | E                  | E                 | E                                  |
| Agricultural Supply (AGR)                               | E                  | E                 | E                                  |
| Industrial Process Supply (PRO)                         | —                  | E                 | E                                  |
| Industrial Service Supply (IND)                         | E                  | —                 | E                                  |
| Hydropower Generation (POW)                             | E                  | —                 | —                                  |
| Water Contact Recreation (REC-1)                        | E                  | E                 | E                                  |
| Non-Contact Water Recreation (REC-2)                    | E                  | E                 | E                                  |
| Warm Freshwater Habitat (WARM)                          | E                  | E                 | E                                  |
| Cold Freshwater Habitat (COLD)                          | —                  | —                 | E                                  |
| Migration of Aquatic Organisms (MIGR)                   | E                  | —                 | E                                  |
| Spawning, Reproduction, and/or Early Development (SPWN) | E                  | —                 | E                                  |
| Wildlife Habitat (WILD)                                 | E                  | E                 | E                                  |
| Navigation (NAV)  | —                  | —                 | E                                  |

**Source:** CVRWQCB 2018.

**Note:** E = Existing Beneficial Uses.

### Surface Water Quality Impairment and Total Maximum Daily Loads

Receiving water quality in the San Joaquin River watershed is threatened by urbanization, stormwater runoff, and legacy pollutants. Stream channels have been altered for water storage purposes, been converted to urban land uses, and impervious surfaces have been constructed, limiting the opportunities for stormwater infiltration, and increasing peak rates of runoff. Stormwater runoff may convey trash, sediments, nutrients, pesticides, and metals directly into receiving waters. According to the 2030 Merced County General Plan Draft Program EIR, activities that impact surface water quality in the region include agricultural irrigation and animal confinement operations, forest management, municipal and industrial uses, stormwater, mineral exploration and extraction, hazardous and non-hazardous waste disposal, and dredging (Merced County 2012).

According to a water quality assessment by the U.S. Geological Survey of the San Joaquin Valley, water quality is generally poor compared to other areas in California due, in part, to the following factors (Merced County 2012):

- A large variety of pesticides occur in the San Joaquin River and the tributaries of the San Joaquin River, with some at high enough concentrations to adversely impact aquatic organisms
- Long-banned organochlorine insecticides continue to be transported to streams via erosion of contaminated soils
- Nitrate and ammonia levels exceed criteria in some of the tributaries, but not yet in the main stem of the San Joaquin River

Land use activities that cause erosion have also increased the delivery of toxic substances into local waterways. As defined in the Clean Water Act (CWA) Section 303(d), water quality impairments for the San Joaquin River watershed are identified in Table 3.1-2. These impaired bodies are listed as Category 5 in the State Water Resources Control Board (SWRCB) Integrated Report, which includes waters where at least one beneficial use is not supported, and a total maximum daily load is required. Waters in Merced County are impaired with a wide variety of point-source (e.g., industrial process water discharges, cleanup sites, sewer system overflows) and nonpoint-source (e.g., agricultural runoff, urban runoff/storm sewers, construction/land development) pollutants.

**Table 3.1-2. Water Quality Impairments for the San Joaquin River Watershed**

| Water Body                         | 2014 and 2016 303(d) List of Water Quality Impairments <sup>1</sup>  |
|------------------------------------|--|
| San Luis Reservoir                 | Chlordane; Mercury; PCBs; Total DDT (sum of 4,4'- and 2,4'- isomers of DDT, DDE, and DDD)  |
| O'Neill Forebay                    | Mercury; PCBs  |
| Sacramento–San Joaquin River Delta | Chlordane; DDT; Dieldrin; Dioxin compounds (including 2,3,7,8-TCDD); Furan Compounds; Invasive Species; Mercury; PCBs; PCBs (dioxin-like)  |
| San Joaquin River                  | alpha.-BHC; Arsenic; Boron; Chlorpyrifos; Diazinon; DDE; DDT; Diuron; Group A Pesticides; Electrical Conductivity; Indicator Bacteria; Invasive Species; Mercury; pH; Selenium; Specific Conductivity; Temperature, water; Total Dissolved Solids; Toxaphene; Toxicity |
| Chowchilla River                   | N/A  |
| Merced River                       | Chlorpyrifos; Group A Pesticides; Mercury; Temperature, water; Toxicity  |
| Stanislaus River                   | Chlorpyrifos; Diazinon; Group A Pesticides; Mercury; Temperature, water; Toxicity  |
| Mokelumne River                    | Chlorpyrifos; Copper; Mercury; Oxygen, Dissolved; Toxicity; Zinc   |
| Cosumnes River                     | Indicator Bacteria; Invasive Species; Toxicity   |

**Source:** SWRCB 2017.

**Notes:** PCBs = polychlorinated biphenyls; DDT = dichlorodiphenyltrichloroethane; DDD = dichlorodiphenyldichloroethane; DDE = dichlorodiphenyldichloroethylene; alpha-BHC = benzenehexachloride or alpha-HCH.

<sup>1</sup> Included under State Water Resources Control Board Integrated Report Category 5.



Sedimentation/siltation (e.g., high turbidity) has been included as a water quality impairment under the CWA Section 303(d). Erosion, sediment transport, and sedimentation are natural fluvial processes and are only considered a water quality issue when anthropogenic activities cause excessively high erosion and turbidity beyond natural background levels (i.e., to the degree that they cause the loss or impairment of beneficial uses). In earthen-engineered channels, urbanization and channelization have increased the quantity of sediment transported and sediment buildup in maintained flood control facilities. However, such sediment buildup is managed through routine maintenance and natural processes. Sedimentation basins capture sediment-laden runoff from upstream sources and filter out sediment loads in surface runoff, thus decreasing the turbidity of stormwater flows downstream. Generally, issues related to increased surface water flow and sedimentation include increased stream erosion, which has threatened homes, utilities, and other structures; impacts to biological species and habitats; and loss of channel hydraulic capacity.

### 3.1.2 Relevant Plans, Policies, and Ordinances

#### 3.1.2.1 Federal

##### **Clean Water Act**

Increasing public awareness and concern for controlling water pollution led to the enactment of the Federal Water Pollution Control Act Amendments of 1972. As amended in 1977, this law became commonly known as the CWA (33 USC 1251 et seq.). The objective of the CWA is to restore and maintain the chemical, physical, and biological integrity of the waters of the United States. The CWA established basic guidelines for regulating discharges of pollutants into the waters of the United States. The CWA requires that states adopt water quality standards to protect public health, enhance the quality of water resources, and ensure implementation of the CWA.

##### **Section 402 of the Clean Water Act (National Pollutant Discharge Elimination System)**

The CWA was amended in 1972 to provide that the discharge of pollutants to waters of the United States from any point source is unlawful unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) Permit. The NPDES Permit Program, as authorized by Section 402 of the CWA, was established to control water pollution by regulating point sources that discharge pollutants into waters of the United States (33 USC 1342). In the State of California, the U.S. Environmental Protection Agency (EPA) has authorized the SWRCB with permitting authority to implement the NPDES Program.

Regulations (Phase II Rule) that became final on December 8, 1999, expanded the existing NPDES Program to address stormwater discharges from construction sites that disturb land equal to or greater than 1.0 acre and less than 5.0 acres (small construction activity). The regulations also require that stormwater discharges from small Municipal Separate Storm Sewer Systems (MS4) be regulated by a NPDES General Permit for Stormwater Discharges Associated with Construction Activity, Order No. 99-08-DWQ. The Construction General Permit requires the development and implementation of a Stormwater Pollution Prevention Plan (SWPPP), which describes best management practices (BMPs) the discharger would use to protect stormwater runoff. The SWPPP must contain a visual monitoring program, a chemical monitoring program for “non-visible” pollutants to be implemented if there is a failure of BMPs, and a sediment-monitoring plan if the site discharges directly to a water body listed on the 303(d) list for sediment. Routine inspection of all BMPs is required under the provisions of the Construction General Permit. On September 2, 2009, the SWRCB issued a new NPDES General Permit for Stormwater Associated with Construction Activities (Order No. 2009-0009-DWQ, NPDES No. CAS000002), which became effective July 1, 2010, and is also known as the Construction General Permit.

### Federal Antidegradation Policy

The Federal Antidegradation Policy (40 CFR 131.12) requires states to develop statewide antidegradation policies and identify methods for implementing those policies. Pursuant to the Code of Federal Regulations, state antidegradation policies and implementation methods shall, at a minimum, protect and maintain (1) existing in-stream water uses; (2) existing water quality where the quality of the waters exceeds levels necessary to support existing beneficial uses unless the State of California finds that allowing lower water quality is necessary to accommodate economic and social development in the area; and (3) water quality in waters considered an outstanding national resource.

#### 3.1.2.2 State

##### Section 303 of the Clean Water Act (Beneficial Uses and Water Quality Objectives)

The CVRWQCB is responsible for the protection of the beneficial uses of waterways within their jurisdiction. The Modified Project is located within the CVRWQCB Basin Plan area. The CVRWQCB uses its planning, permitting, and enforcement authority to meet its responsibilities adopted in the Basin Plan to implement plans, policies, and provisions for water quality management.

In accordance with state policy for water quality control, the CVRWQCB employs a range of beneficial use definitions for surface waters, groundwater basins, marshes, and mudflats that serve as the basis for establishing water quality objectives and discharge conditions and prohibitions. The Basin Plan for the Central Valley has identified existing and potential beneficial uses supported by key surface water drainages throughout its jurisdiction. Under CWA Section 303(d), the State of California is required to develop a list of impaired water bodies that do not meet water quality standards and objectives. A total maximum daily load defines how much of a specific pollutant/stressor a given water body can tolerate and still meet relevant water quality standards. The CVRWQCB has developed total maximum daily loads for select reaches of water bodies.

##### Section 319 of the Clean Water Act (Nonpoint Source Management Programs)

Section 319 was added to the Clean Water Act by Public Law 100-4. The purpose of Section 319 is to allow the states to establish nonpoint source management plans that are designed to address nonpoint source pollution issues within each state. Section 319(k) requires each federal department and agency to allow states to review individual development projects and assistance applications, as well as accommodate, in accordance with Executive Order 12372, the concerns of the state regarding the consistency of these applications or projects with the state nonpoint source pollution management program.

### Sustainable Groundwater Management Act

On September 16, 2014, Governor Jerry Brown signed into law a three-bill legislative package—Assembly Bill 1739, Senate Bill 1168, and Senate Bill 1319—collectively known as SGMA, which requires governments and water agencies of high- and medium-priority basins to halt overdraft and bring groundwater basins into balanced levels of pumping and recharge. Under SGMA, these basins should reach sustainability within 20 years of implementing their sustainability plans. For critically over-drafted basins, sustainability should be achieved by 2040. For the remaining high- and medium-priority basins, 2042 is the deadline. Through SGMA, DWR provides ongoing support to local agencies through guidance, financial assistance, and technical assistance. SGMA empowers local agencies to form GSAs to manage basins sustainably and requires those GSPs for crucial (i.e., medium- to high-priority) groundwater basins in California.

### **California Porter–Cologne Water Quality Control Act**

Since 1973, the SWRCB and its nine Regional Water Quality Control Boards (RWQCBs) have been delegated the responsibility of administering permitted discharge into the waters of California. The Porter–Cologne Water Quality Control Act (Porter–Cologne Act) (California Water Code Section 13000 et seq.; 23 CCR Chapters 3 and 15) provides a comprehensive water quality management system to protect California waters. Under the act, “any person discharging waste, or proposing to discharge waste, within any region that could affect the quality of the waters of the State” must file a report of the discharge with the appropriate RWQCB. Pursuant to the act, the RWQCB may then prescribe “waste discharge requirements” that add conditions related to control of the discharge. The Porter–Cologne Act defines “waste” broadly, and the term has been applied to a diverse array of materials, including non-point source pollution. When regulating discharges that are included in the federal CWA, California essentially treats Waste Discharge Requirements and NPDES as a single permitting vehicle. In April 1991, the SWRCB and other state environmental agencies were incorporated into the EPA.

The RWQCB regulates urban runoff discharges under the NPDES permit regulations. NPDES permitting requirements cover runoff discharged from point (e.g., industrial outfall discharges) and non-point (e.g., stormwater runoff) sources. The RWQCB implements the NPDES Program by issuing construction and industrial discharge permits. Under the NPDES permit regulations, BMPs are required as part of a SWPPP. The EPA defines BMPs as “schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of Waters of the United States.” BMPs include treatment requirements, operating procedures, and practices to control site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage (40 CFR 122.2).

### **California Antidegradation Policy**

The California Antidegradation Policy, otherwise known as the Statement of Policy with Respect to Maintaining High-Quality Water in California, was adopted by the SWRCB (State Board Resolution No. 68-16) in 1968. Unlike the Federal Antidegradation Policy, the California Antidegradation Policy applies to all waters of the state (e.g., isolated wetlands and groundwater), not just surface waters. The policy states that whenever the existing quality of a water body is better than the quality established in individual basin plans, such high quality shall be maintained, and discharges to that water body shall not unreasonably affect present or anticipated beneficial use of such water resources.

### **California Toxics Rule**

The EPA has established water quality criteria for certain toxic substances via the California Toxics Rule. The California Toxics Rule established acute (i.e., short-term) and chronic (i.e., long-term) standards for bodies of water (e.g., inland surface waters and enclosed bays and estuaries) that are designated by each RWQCB as having beneficial uses protective of aquatic life or human health.

### **San Luis Reservoir State Recreation Area Resource Management Plan/General Plan**

The San Luis Reservoir State Recreation Area Resource Management Plan/General Plan (San Luis Reservoir SRA RMP/GP) was prepared to set forth goals and guidelines for management of the San Luis Reservoir State Recreation Area (SRA) and adjacent lands (known as the Plan Area) for the next 25 years. The 27,000-acre Plan Area includes the water surfaces of San Luis Reservoir, O’Neill Forebay, and Los Banos Creek Reservoir, as well as adjacent recreation lands. The California Department of Parks and Recreation (CDPR), DWR, and the California Department of Fish and Wildlife manage the Plan Area lands, which are owned by the Bureau of Reclamation (Reclamation).

The San Luis Reservoir SRA RMP/GP was developed through an agreement between Reclamation and CDPR to provide coordinated direction for recreation and resource management of the Plan Area lands, while continuing to serve the primary purpose of water storage, water distribution, and power generation. The San Luis Reservoir SRA RMP/GP sets forth Plan Area-wide management goals and guidelines that will be used to implement Plan Area use and future actions and to measure its success (Reclamation and CDPR 2013).

### 3.1.2.3 Local

#### **Merced County Ordinance No. 1923: Stormwater Ordinance**

Merced County Ordinance No. 1923: Stormwater Ordinance outlines water quality policies for Merced County (County) to ensure the health, safety, and general welfare of its citizens and the protection and enhancement of the water quality of watercourses and water bodies in a manner pursuant to and consistent with the CWA. This ordinance would apply to other projects in the area within the jurisdiction of Merced County and is therefore considered in the cumulative impact analysis. Although this ordinance would not regulate federal lands comprising the San Luis Reservoir SRA, the San Luis Reservoir SRA RMP/GP calls for local standards and ordinances to be considered during design and construction of projects within the San Luis Reservoir SRA.

Implementation of the Stormwater Ordinance would protect and enhance water quality by reducing pollutants in stormwater discharges to the maximum extent practicable and by prohibiting non-stormwater discharges to the storm drain system. In compliance with this ordinance, prior to soil disturbance, operators of a construction activity project shall prepare and submit a Sediment Control Plan to the Merced County Department of Public Works for review and approval. However, if a Construction General Permit is required for any given project, the SWPPP may substitute for the required Sediment Control Plan. In that case, the operator of the construction activity project shall submit a copy of the SWPPP to the County for review and approval.

Projects that create and/or replace 5,000 square feet or more of impervious surfaces are considered Regulated Projects. Where a redevelopment project results in an increase of more than 50% of the impervious surface of a previously existing development, the entire site is considered a Regulated Project. Where development results in an increase of less than 50% of impervious surfaces, only runoff from the new and/or replaced impervious surface of the project is considered to be part of a Regulated Project. Operators of Regulated Projects with pollutant generating activities and sources shall implement permanent and/or operation source control BMPs, as applicable. All Regulated Projects shall implement Low Impact Development (LID) standards designed to reduce runoff, treat stormwater, and provide baseline hydromodification management (Merced County 2014).

#### **Northern and Central Delta–Mendota Region GSP**

DWR has identified the Delta–Mendota Groundwater Subbasin as being in a state of critical overdraft. GSAs in the subbasin were therefore tasked with developing and submitting one or more GSPs to DWR by no later than January 31, 2020. Six coordinated GSPs have been prepared for the Delta–Mendota Subbasin, including a GSP for the central portion of the subbasin, where the Modified Project site is located. The Northern and Central Delta–Mendota GSP was prepared by the Northern and Central Delta–Mendota Region GSP Group to meet SGMA regulatory requirements while reflecting local needs and preserving local control over water resources. The San Luis & Delta–Mendota Water Authority provides a path to achieve and document sustainable groundwater management within 20 years following GSP adoption, as well as promoting the long-term sustainability of locally managed groundwater resources now and into the future (SLDMWA 2019).

While the Northern and Central Delta–Mendota Region GSP offers a new and significant framework for groundwater resource protection and management, it was developed within an existing framework of comprehensive planning efforts. Throughout the Delta–Mendota Subbasin, several separate yet related planning efforts are concurrently proceeding, including the Integrated Regional Water Management program, Urban Water Management requirements, Agricultural Water Management requirements, Irrigated Lands Regulatory Program, and California Statewide Groundwater Elevation Monitoring program. This GSP has been developed to coordinate with these other planning efforts, building on existing local management and basin characterization (SLDMWA 2019).

### **Merced Vision 2030 General Plan**

As required by state law, Merced County has adopted a general plan to guide land use decisions within the county. The general plan provides goals, policies, standards, and implementation programs to guide the physical development of a county. At a minimum, the general plan must address the topics of land use, transportation, housing, conservation, open space, noise, and safety. The Merced Vision 2030 General Plan (Merced County General Plan), adopted in 2013, has established the year 2030 as the plan's time horizon. The Natural Resource Element contains goals and policies related to erosion control, the Water Element contains goals and policies related to water quality protection, and the Public Facility and Service Funding Element contains goals and policies related to stormwater infrastructure. The following goals and policies would apply to the Modified Project (Merced County 2013b):

### ***Natural Resources Element***

**Goal NR-3:** Facilitate orderly development and extraction of mineral resources while preserving open space, natural resources, and soil resources and avoiding or mitigating significant adverse impacts.

- **Policy NR-3.1:** Soil Protection. Protect soil resources from erosion, contamination, and other effects that substantially reduce their value or lead to the creation of hazards.
- **NR-3.2:** Soil Erosion and Contamination. Require minimal disturbance of vegetation during construction to improve soil stability, reduce erosion, and improve stormwater quality.
- **Policy NR-3.8:** Habitat Restoration and Buffer Incentives. Support and encourage property owners and surface mining operators to pursue one or more of the following incentives:
  - State and Federal habitat restoration funding for restoring wildlife habitat;
  - Conservation easements following reclamation for restoring wildlife habitat; and
  - Other local, State, and Federal incentives.
- **Policy NR-3.9:** Riparian and Critical Habitat Protection. Protect or mitigate, in compliance with local, State, and Federal requirements, areas of riparian vegetation along rivers, streams, and other habitats that support threatened, endangered, or otherwise sensitive species. This shall include:
  - Requiring mining operators that propose mining operations that will have a significant adverse impact on these resources to mitigate to the fullest extent that the California Environmental Quality Act (CEQA) requires for such impacts and obtain the necessary State and Federal permits prior to operation.
  - Encouraging mining operators that impact natural resources to propose an end use that will result in minimal loss of resources

### ***Water Element***

**Goal W-2:** Protect the quality of surface and groundwater resources to meet the needs of all users.

- **Policy W-2.1:** Water Resource Protection. Ensure that land uses and development on or near water resources will not impair the quality or productive capacity of these water resources.
- **Policy W-2.2:** Development Regulations to Protect Water Quality. Prepare updated development regulations, such as best management practices, that prevent adverse effects on water resources from construction and development activities.
- **Policy W-2.3:** Natural Drainage Channels. Encourage the use of natural channels for drainage and flood control to benefit water quality and other natural resource values.
- **Policy W-2.7:** NPDES Enforcement Monitor and enforce provisions of the USEPA [U.S. Environmental Protection Agency] NPDES program to control non-point source water pollution.
- **Policy W-2.8:** Water Contamination Protection. Coordinate with the SWRCB, RWQCB, and other responsible agencies to ensure that sources of water contamination (including boron, salt, selenium and other trace element concentrations) do not enter agricultural or domestic water supplies, and will be reduced where water quality is already affected.

#### ***Public Facility and Service Funding Element***

**Goal PFS-3.** Ensure the management of stormwater in a safe and environmentally sensitive manner through the provision of adequate storm drainage facilities that protect people, property, and the environment.

- **Policy PFS-3.1:** Stormwater Management Plans. Require stormwater management plans for all Urban Communities to reduce flood risk, protect soils from erosion, control stormwater runoff, and minimize impacts on existing drainage facilities.
- **Policy PFS-3.2:** Stormwater Facilities in New Development. Require that new development in unincorporated communities includes adequate stormwater drainage systems. This includes adequate capture, transport, and detention/retention of stormwater.
- **Policy PFS-3.3:** Community Drainage Systems. Encourage the development of community drainage systems rather than individual project level systems in order to use land more efficiently and protect people, property and the environment in a more comprehensive manner.
- **Policy PFS-3.4:** Agency Coordination. Coordinate with the U.S. Army Corps of Engineers and other appropriate agencies to develop stormwater detention/retention facilities and recharge facilities that enhance flood protection and improve groundwater recharge.
- **Policy PFS-3.5:** Pre-Development Storm Flows. Require on-site detention/retention facilities and velocity reducers when necessary to maintain pre-development storm flows and velocities in natural drainage systems.
- **Policy PFS-3.6:** Retention/Detention Facility. Encourage stormwater detention/retention project designs that minimize drainage concentrations and impervious coverage, avoid floodplain areas, are visually unobtrusive and, where feasible, provide a natural watercourse appearance and a secondary use, such as recreation.

**Goal W-4.** Enhance and protect County watersheds through responsible water and land use management practices that address water bodies, open spaces, soils, recreation, habitat, vegetation, groundwater recharge, and development.

- **Policy W-4.1:** Water Resource Protection and Replenishment. Encourage the protection of watersheds, aquifer recharge areas, and areas susceptible to ground and surface water contamination by identifying such areas such as:

- Consider the implementation of zoning and development regulations to protect water resources;
- Encourage community drainage systems and contaminant control measures; and
- Coordinate with other agencies and entities with responsibilities for water quality and watershed protection.
- **Policy W-4.2:** Watershed Program Funding. Support efforts to obtain grant funding for locally sponsored watershed programs, planning efforts, and projects that enhance and protect the watersheds of the County.

### 3.1.3 Thresholds of Significance

The following significance criteria from the 2019 EIS/EIR are used for the purposes of analysis in this SEIR. These criteria, which have not changed from the 2019 EIS/EIR, are identified in Chapter 4, Water Quality, Chapter 6, Groundwater Resources, and Chapter 9, Flood Protection, of the 2019 EIS/EIR. A significant impact related to water quality and groundwater resources would occur if the Modified Project would:

1. Violate existing water quality standards or waste discharge requirements;
2. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on or off-site;
3. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;
4. Result in increases in groundwater use that generates a net reduction in groundwater levels that would result in adverse environmental effects;
5. Result in the degradation in groundwater quality such that it would exceed regulatory standards or would substantially impair reasonably anticipated beneficial uses of groundwater;
6. Result in increases in groundwater use that generates permanent/inelastic land subsidence caused by water level declines such that it causes saltwater intrusion that degrades groundwater quality and flooding that damages buildings and infrastructure;
7. Otherwise, substantially degrade existing water quality conditions; or
8. Result in substantial effects on water quality-related beneficial uses.

### 3.1.4 Impacts Analysis

#### Threshold 1

***Would the Modified Project violate existing water quality standards or waste discharge requirements?***

| 2019 EIS/EIR Impact Determination | Modified Project Impact Determination | New Significant Increase in Impact Severity? |
|-----------------------------------|---------------------------------------|--|
| Less than Significant             | Less than Significant                 | No   |

### Campground Construction and Day Use Area Improvements

#### *Construction*

Modified Project development would, in part, involve the construction of a new permanent campground on the northwestern shoreline of O'Neill Forebay, as well as improvements to the existing San Luis Creek Day Use Area along the western shoreline. Construction activities associated with these improvements would include vegetation removal and approximately 15 acres of site grading; installation of utilities including sewer, water, and electrical; surfacing roadways and vehicle parking areas with asphalt (less than 1 acre total); and constructing restrooms and associated campground and campsite amenities (e.g., picnic tables, fire rings). As such, the implementation of the Modified Project would result in more intensive use of land compared to existing conditions.

The analysis of potential impacts of construction activities, construction materials, and non-stormwater runoff on water quality during the demolition and construction phase focuses primarily on sediment and certain non-sediment-related pollutants. Construction-related activities that primarily result in sediment releases are related to exposing previously stabilized soils to potential mobilization by rainfall/runoff and wind. Such activities include grading, excavations, and temporary stockpiling of soil. Environmental factors that affect erosion include topographic, soil, and rainfall characteristics.

Erosion and sedimentation affect water quality and interferes with photosynthesis; oxygen exchange; and the respiration, growth, and reproduction of aquatic species. Additionally, other pollutants, such as nutrients, trace metals, and hydrocarbons, can attach to sediment and be transported to downstream drainages, which could contribute to the degradation of water quality. Furthermore, during grading and temporary soil storage, there is the potential for soil migration off-site via wind (see Section 3.2, Air Quality, for further discussion of construction generated air quality impacts).

Non-sediment-related pollutants that are also of concern during construction relate to construction materials and non-stormwater flows and include construction materials (e.g., paint, stucco); chemicals, liquid products, and petroleum products used in building construction or the maintenance of heavy equipment; and concrete-related pollutants.

Because ground disturbance at the proposed campground and existing day use area would exceed 1.0 acre, grading and construction would be completed in accordance with a Construction General Permit. The Construction General Permit would include a number of design, management, and monitoring requirements for protecting water quality and reducing construction phase impacts related to stormwater (and some non-stormwater) discharges. Permit requirements would include preparing a SWPPP, implementing and monitoring BMPs, implementing the best available technology for toxic and non-conventional pollutants, implementing the best conventional technology for conventional pollutants, and periodic submittal of performance summaries and reports to the CVRWQCB. The SWPPP would include references to major construction areas, materials staging areas, and haul roads. Typical BMPs that could be incorporated into the SWPPP to protect water quality include the following:

- Diverting off-site runoff away from the construction site
- Vegetating landscaped/vegetated swale areas as soon as feasible following grading activities
- Placing perimeter straw wattles to prevent off-site transport of sediment
- Using drop inlet protection (filters and sandbags or straw wattles), with sandbag check dams within paved areas
- Regular watering of exposed soils to control dust during demolition and construction



- Implementing specifications for demolition/construction waste handling and disposal
- Using contained equipment wash-out and vehicle maintenance areas
- Maintaining erosion and sedimentation control measures throughout the construction period
- Stabilizing construction entrances to avoid trucks from imprinting soil and debris onto adjoining roadways
- Training, including for subcontractors, on general site housekeeping

Incorporating required BMPs for materials and waste storage and handling, and equipment and vehicle maintenance and fueling would reduce the potential discharge of polluted runoff from the Modified Project, consistent with the NPDES General Construction Permit. Compliance with existing regulations would prevent violation of water quality standards and minimize the potential for contributing sources of polluted runoff. Therefore, compliance with existing regulations would ensure that demolition and construction activities associated with the proposed campground and redevelopment of the day use area would not violate any water quality standards or waste discharge requirements or substantially degrade surface water quality. Similar to the Approved Project, water quality impacts associated with the Modified Project would be **less than significant**.

#### ***Operations***

The proposed campground area currently consists of undeveloped grasslands, while the day use area is currently developed as a recreational facility. Implementation of the Modified Project would, in part, result in the development of a new campground, which would consist of 79 campsites, including 73 tent sites and 6 that are Americans with Disabilities Act (ADA) accessible; two restroom and shower buildings; a campfire center along the northwest shoreline of O'Neill Forebay; and realignment of the bike path along the shore. Comparatively, the improvements to the day use area would result in the development of an additional boat launch lane and boarding float, a fish-cleaning station, and six restroom stalls. Approximately 15 acres would be graded for the campground and day use area combined.

During storm events, pollutants from proposed paved areas (totaling less than 1 acre) without proper stormwater controls and BMPs could be conveyed off site and directly discharged into O'Neill Forebay. Most pollutants flowing off site in this manner would be dust, litter, and possibly residual petroleum products (e.g., motor oil, gasoline, diesel fuel). Certain metals, along with nutrients and pesticides from landscape areas, can also be present in stormwater runoff. Between periods of rainfall, surface pollutants tend to accumulate, and runoff from the first significant storm of the year ("first flush") would likely have the largest concentration of pollutants. Untreated runoff could be transported to O'Neill Forebay and could contribute to the degradation of water quality and impair established beneficial uses. As indicated in Table 3.1-2, Water Quality Impairments for the San Joaquin River watershed, O'Neill Forebay is currently impaired with mercury and polychlorinated biphenyls (PCBs).

Proposed campground and day use area improvements would be designed and constructed in accordance with guidelines and objectives outlined in the San Luis Reservoir SRA RMP/GP to achieve identified goals (Reclamation and CDPR 2013). The following goals and guidelines would be implemented to reduce potential water quality impacts associated with operations of the proposed campground and improved day use area (Reclamation and CDPR 2013):

**Goal RES-WQ1:** Ensure that existing, new, or increased visitor uses do not adversely affect water quality.

**Guideline:**

- If DWR water quality monitoring shows exceedances of state water quality standards that are clearly associated with visitor uses, suspend or limit the visitor uses until the water quality standards are met.

**Goal RES-WQ2:** Avoid access to sensitive watercourses to prevent degradation related to trampling, surface runoff, and sedimentation.

**Guidelines:**

- Provide key, well-marked visitor access points to wetlands and streams and provide interpretive signage to educate visitors about habitat sensitivity.
- Establish appropriate buffers and site-specific guidelines for siting future campsites and associated facilities away from wetlands and watercourses.
- Provide native plantings for erosion control near degraded shorelines and riparian corridors.

**Goal RES-WQ4:** Design, construct, and maintain buildings, roads, trails, campsites, boat launches and marinas, and associated infrastructure to minimize stormwater runoff, promote groundwater recharge, and prevent soil erosion.

**Guidelines:**

- Limit impervious surfaces to minimize runoff; consider the use of permeable materials for new or expanded pedestrian and vehicular surfaces.
- Schedule construction activities, particularly those resulting in substantial soil disturbance, during periods of low precipitation and low groundwater, when feasible, to reduce the risk of accidental hydrocarbon leaks or spills reaching surface and/or groundwater, to reduce the potential for soil contamination, and to minimize erosion of loose materials in construction areas.
- Use silt fences, sedimentation basins, and other control measures to reduce erosion, surface scouring, and discharge to water bodies.

Incorporating LID features and BMPs consistent with CDPR goals and guidelines would ensure that the development of the new campground and day use area improvements would not violate any water quality standards or waste discharge requirements or substantially degrade surface quality from Modified Project operations. Similar to the Approved Project, water quality impacts associated with the Modified Project would be **less than significant**.

#### **Changes in Borrow Area Location**

##### ***Construction***

The Modified Project has identified two additional borrow areas, Borrow Area 12 and Borrow Area 14, in addition to Borrow Area 6 and the Basalt Hill Borrow Area that were identified as part of the Approved Project in the 2019 EIS/EIR. Borrow Area 12 and Borrow Area 14 are within the overall construction footprint identified by the 2019 EIS/EIR, but were identified in that document and analyzed as anticipated contractor staging areas. Near the

Basalt Hill Borrow Area, the Modified Project also includes the addition of a new work area proposed for stockpiling extracted materials prior to transporting the materials to the dam construction zone. Like the larger Basalt Hill Borrow Area, this area, shown in Figure 2-4B, was used to extract materials for the original dam construction. In addition, an existing access road from Basalt Road would be widened and improved for hauling use as part of the Modified Project.

Excavation, grading, restoration, and stockpiling activities could result in sediment releases related to exposing previously stabilized soils to potential mobilization by rainfall/runoff and wind. As such, the potential for water quality degradation at these sites would be like that described for the construction component of campground construction and day use area improvements. Because ground disturbance at the borrow areas would exceed 1.0 acre, grading and construction would be completed in accordance with a Construction General Permit, which would include preparing a SWPPP, implementing and monitoring BMPs, implementing the best available technology for toxic and non-conventional pollutants, implementing the best conventional technology for conventional pollutants, and periodic submittal of performance summaries and reports to the CVRWQCB. The SWPPP would include references to major construction areas, materials staging areas, and haul roads. For the reasons described above, this element of the Modified Project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface quality from demolition and construction activities. Similar to the Approved Project, water quality impacts associated with the Modified Project would be **less than significant**.

#### ***Operation***

Borrow Area 12 consists of an approximately 28-acre grassland hillside about 100 feet higher than the surrounding lower-lying area, while Borrow Area 14 consists of a 200-acre zone situated around four low grassland hills. As previously discussed, the top of Borrow Area 12 is flat, having been used in the past as a borrow area for the initial construction of the dam. Materials extraction at Borrow Areas 12 and 14 are intended to preserve the existing topographic contours of the borrow areas to the greatest extent practicable, with the elevation of the existing hills and ridges being lowered up to 25 feet from their current elevation. If Borrow Area 14 is used, excavation would be minimized at the lower elevations and defined drainage areas between the hills. Up to 7 million cubic yards of material would potentially be removed from these borrow areas. As part of the Modified Project, a remediation plan would be prepared and implemented for these borrow areas, including measures to revegetate and perform final grading to achieve a naturalized appearance and topography and restore impacted drainages to preconstruction conditions. Once construction activities have ceased, use of Borrow Area 12, Borrow Area 14, and the new staging areas would be similar to existing conditions. Therefore, this Modified Project element would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface quality during Modified Project operational activities. Similar to the Approved Project, water quality impacts associated with the Modified Project would be **less than significant**.

#### **Minor Additions to Contractor Work Area**

#### ***Construction***

The Modified Project includes minor temporary and permanent expansions of contractor work areas downstream of the dam that were not part of the original study area addressed in the Approved Project. These areas include several staging/soil stockpiling areas downstream of B.F. Sisk Dam that would later be covered by the stability berms and expanded dam embankment, as well as another small area of less than 1 acre immediately west of the dam's right abutment, where a haul road would be widened (Figures 2-4A and 2-4B). Construction activities, including minor grading activities (estimated 2 to 10 acres of grading), use of heavy machinery, and stockpiling of

soils in the expanded contractor work areas could result in the inadvertent release of pollutants into the neighboring environment. Like that described for campground construction and day use area improvements, this element of the Modified Project would comply with existing regulations to ensure that the expansion of the contractor work areas would not violate any water quality standards or waste discharge requirements or substantially degrade surface quality from construction activities. Grading would be completed in accordance with a Construction General Permit, which would include preparing a SWPPP, implementing and monitoring BMPs, implementing the best available technology for toxic and non-conventional pollutants, implementing the best conventional technology for conventional pollutants, and periodic submittal of performance summaries and reports to the CVRWQCB. Similar to the Approved Project, water quality impacts associated with the Modified Project would be **less than significant**.

#### ***Operation***

Contractor work areas would predominately be used for soil stockpiling and overnight parking, fueling, and heavy equipment maintenance. While minor grading may be necessary at some of these sites, no structures are proposed to be built at these locations. As such, the potential for inadvertent release of pollutants during operational activities within these areas would be like that described for changes in borrow area location. Similar to the Approved Project, water quality impacts associated with the Modified Project would be **less than significant**.

#### **Additional Construction Assumptions**

##### ***Construction***

Stability berms would be constructed along the downstream side of the dam to raise the dam crest 12 feet and increase the reservoir's freeboard, or the distance between the water surface and the dam crest. Construction of these stability berms would initially require excavations so that the berm would be keyed into the underlying bedrock. Dewatering is anticipated to entail installing temporary deeper wells and shallower well points installed around each work area requiring dewatering. Water removed from the excavation during this period would be pumped into temporary settling ponds or portable tanks to allow sediment to drop out and meet permit water quality standards before being discharged into the reservoir or forebay. Dewatering would be subject to permitting approval by the CVRWQCB. Any potentially contaminated groundwater in dewatering wells associated with incidental spills from heavy equipment would not be discharged into the reservoir or forebay (See Section 3.8, Hazards and Hazardous Materials, for additional information regarding groundwater contamination). As a result, this element of the Modified Project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface quality from construction activities. These additional construction assumptions, which were not included in the Approved Project, would result in **less-than-significant** impacts related to Modified Project water quality.

##### ***Operations***

The stability berms would be finished upon Modified Project operations and no permanent dewatering would be required. As such, this element of the Modified Project would not violate any water quality standards or waste discharge requirements or substantially degrade surface quality. These additional construction assumptions, which were not included in the Approved Project, would result in **no impacts** related to Modified Project water quality.

### Cumulative Impacts

Potential soil erosion from each cumulative project site could combine to cause potentially significant cumulative water quality impacts due to sedimentation of downstream water bodies. Cumulative development and redevelopment within the San Joaquin River watershed would potentially result in short-term erosion-related impacts during construction and long-term erosion related to denuded soil, improper drainage, and lack of erosion control features at each cumulative project site. Similarly, incidental spills of petroleum products and hazardous materials during construction at each cumulative project site could occur during construction, resulting in cumulative water quality impacts.

Short-term and long-term erosion BMPs and spill control BMPs would be employed at each cumulative site consistent with NPDES stormwater quality regulations, including the Construction General Permit and local MS4 permits. Per the Post-Construction Program, cumulative Regulated Projects within Merced County jurisdiction would be required to incorporate Source Control LID features to reduce on- and off-site runoff, treat stormwater, and provide a baseline for hydromodification management. Cumulative Regulated Projects would be required to incorporate LID BMPs that would evapotranspire, infiltrate, harvest and use, and/or biotreat stormwater to satisfy the point source, volumetric, and flow-based specifications outlined in Ordinance No. 1923, such that impacts would not be cumulatively considerable. In addition, cumulative projects within the San Luis Reservoir SRA would be designed and operated in accordance with CDPR goals and guidelines regarding post-construction stormwater quality. Implementation of these guidelines would minimize off-site transport of pollutants into downstream water bodies. As a result, similar to the Approved Project, cumulative water quality impacts associated with Modified Project soil erosion, incidental spills of hazardous materials, and paving of currently pervious areas would be **less than significant**.

### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant.

### Threshold 2

***Would the Modified Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on or off-site?***

| 2019 EIS/EIR Impact Determination | Modified Project Impact Determination | New Significant Increase in Impact Severity? |
|-----------------------------------|---------------------------------------|--|
| Less than Significant             | Less than Significant                 | No   |

### Campground Construction and Day Use Area Improvements

Runoff from the undeveloped campground site infiltrates directly into the underlying permeable soils or sheet flows into O'Neill Forebay. Runoff from the San Luis Creek Day Use Area is conveyed along impermeable surfaces directly into O'Neill Forebay or into unpaved areas, where stormwater is infiltrated. Improvements to the day use area would not substantially alter the existing drainage pattern of the site, as grading would likely be minimal for construction

of an additional boat launch lane and boarding float, a fish-cleaning station, and a restroom facility. Modified Project-related disturbance would not occur throughout the entire facility and would be limited to areas receiving the improvements. Although grading for the proposed campground would somewhat alter the internal drainage patterns of the site, substantial alteration of the existing drainage pattern would not occur, as the site would be graded with drainage features (e.g., swales, subsurface drain pipes) that mimic overall existing drainage patterns.

As the proposed campground site is currently undeveloped, development would result in an increase in impervious area (totaling less than 1 acre). This increase in impervious surfaces could increase localized on- and off-site runoff into unpaved areas, potentially resulting in an increase in on-site erosion and associated siltation of the forebay. However, incorporating CDPR's Standard Project Requirements would reduce stormwater runoff volumes and flow rates from the Modified Project site, which in turn would prevent soil erosion and siltation of the forebay. Specifically, energy dissipators would be installed at water discharge points to reduce off-site stormwater runoff rates, thus minimizing erosion (CDPR 2015).

In addition, as discussed for Threshold 1, incorporating LID features and BMPs consistent with CDPR goals and guidelines would reduce stormwater runoff volumes and flow rates from the Modified Project site. Specifically, Goal RES-WQ4 outlined in the San Luis Reservoir SRA RMP/GP requires that CDPR design, construct, and maintain buildings, roads, trails, campsites, boat launches, and associated infrastructure to minimize stormwater runoff, promote groundwater recharge, and prevent soil erosion (Reclamation and CDPR 2013). And the guidelines include limiting impervious surfaces to minimize runoff; considering the use of permeable materials for new or expanded pedestrian and vehicular surfaces; and using silt fences, sedimentation basins, and other control measures to reduce erosion, surface scouring, and discharge to water bodies. In addition, Reclamation's Recreation Facility Design Guidelines (Reclamation 2013) include recommendations to minimize erosion when designing campground layout and creating new trails.

Therefore, compliance with CDPR's Standard Project Requirements, CDPR goals and guidelines, and Reclamation's Recreation Facility Design Guidelines would ensure that the development of the new campground and day use area improvements would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on or off site. Similar to the Approved Project, drainage and water quality impacts associated with the Modified Project would be **less than significant**.

#### **Changes in Borrow Area Location**

Currently, runoff from Borrow Area 12, Borrow Area 14, and the newly identified staging area near Basalt Hill directly infiltrates into the underlying permeable soils. Precipitation that does not infiltrate into on-site soils generates sheet flow runoff into adjacent areas before eventually draining to O'Neill Forebay or San Luis Reservoir. Borrow Area 12 is approximately 28 acres and Borrow Area 14 is approximately 200 acres. Although no impervious surfaces are proposed within Borrow Area 12, Borrow Area 14, or the staging area as part of the Modified Project, removal of vegetation in these broad areas would result in an increase in stormwater runoff during the construction period, as existing vegetation reduces runoff velocities, allowing runoff to infiltrate into underlying soils. However, as described for Threshold 1, the Modified Project would implement a SWPPP to establish erosion and sediment control BMPs for construction-related activities. In addition to erosion and sediment control, these BMPs would reduce stormwater runoff velocities, which in turn would minimize the potential for an increase in on- and off-site erosion and siltation rates during the construction period. Typical examples of velocity-inhibiting BMPs include silt fences, gravel bags, and fiber rolls installed around the perimeter and downslope of work areas. These measures would reduce stormwater runoff velocities to the maximum extent practical.

In addition, as part of the Modified Project, a remediation plan would be prepared and implemented for these borrow areas, including measures to revegetate and perform final grading to achieve a naturalized appearance and topography. Revegetation and restoration of the topography similar to the existing slope gradients would result in stormwater runoff velocities and volumes similar to existing conditions. While this element of the Modified Project would somewhat alter the internal drainage patterns of Borrow Areas 12 and 14 as a result of removal of large quantities of soil and bedrock, such activities would not result in a substantial increase in the rate or amount of runoff, such that substantial erosion or siltation would occur. Similar to the Approved Project, drainage and water quality impacts associated with the Modified Project would be **less than significant**.

#### Minor Additions to Contractor Work Area

These additional impact areas are unpaved, pervious areas. Precipitation that does not infiltrate into on-site soils generates stormwater runoff that sheet flows into adjacent areas, before eventually draining to O'Neill Forebay. These areas include several staging/soil stockpiling areas downstream of B.F. Sisk Dam that would later be covered by the stability berms and expanded dam embankment, as well as another small area of less than 1 acre immediately west of the dam's right abutment, where a haul road would be widened (Figures 2-4A and 2-4B).

Creation of staging/stockpiling areas involves minimal grading and no paving. However, as described for Borrow Areas 12 and 14, removal of existing vegetation would increase runoff during the construction period. As previously discussed for Threshold 1, a SWPPP would be incorporated into Modified Project development, which would establish erosion and sediment control BMPs, thereby reducing stormwater runoff velocities and minimizing the potential for off-site erosion siltation during the construction period. These measures would reduce stormwater runoff velocities to the maximum extent practical. Revegetation following construction would not be required, as proposed stability berms would be constructed over these additional impact areas. This element of the Modified Project would not substantially alter the drainage patterns of these staging/stockpiling areas, and it would not result in a substantial increase in the rate or amount of runoff, such that substantial erosion or siltation occurs. Similar to the Approved Project, drainage and water quality impacts associated with the Modified Project would be **less than significant**.

#### Additional Construction Assumptions

Additional construction assumptions include changes to the construction schedule, equipment and personnel specifications, and dewatering specifications for proposed excavations at the base of the dam. These Modified Project components would have no relevance to increased runoff, erosion, and/or siltation. As such, this element of the Modified Project would not substantially alter the drainage patterns of the Modified Project site or area, or result in a substantial increase in erosion or siltation rates. These additional construction assumptions, which were not included in the Approved Project, would result in **no impacts** related to Modified Project drainage and water quality.

#### Cumulative Impacts

Potential increased stormwater runoff from each cumulative project site could combine to cause potentially significant cumulative water quality impacts due to erosive scour and sedimentation of downstream water bodies. Cumulative development and redevelopment within the San Joaquin River watershed would potentially result in long-term erosion related to denuded soil, improper drainage, and lack of LID features at each cumulative project site. However, construction projects in excess of 1.0 acre would require implementation of a SWPPP, thus reducing off-site runoff velocities during construction. In addition, per the Merced County Post-Construction Program, cumulative Regulated Projects within Merced County jurisdiction would be required to incorporate Source Control

LID features to reduce on- and off-site runoff, thus reducing erosive scour and sedimentation of downstream water bodies. Cumulative Regulated Projects would be required to incorporate LID BMPs that would evapotranspire, infiltrate, harvest and use, and/or biotreat stormwater to satisfy the point source, volumetric, and flow-based specifications outlined in Ordinance No. 1923, such that impacts would not be cumulatively considerable. Similarly, cumulative projects located outside of Merced County jurisdiction would be subject to local MS4 regulations, which include incorporation of LID features to minimize increased runoff due to new impervious areas. In addition, cumulative projects within the San Luis Reservoir SRA, would be designed and operated in accordance with CDPR's Standard Project Requirements, CDPR goals and guidelines, and Reclamation's Recreation Facility Design Guidelines regarding post-construction stormwater runoff and associated erosion. Implementation of these guidelines would minimize off-site transport of sediments into downstream water bodies. As a result, similar to the Approved Project, cumulative water quality impacts related to Modified Project increased runoff and associated soil erosion would be **less than significant**.

#### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant.

#### Threshold 3

***Would the Modified Project create or contribute runoff water, which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?***

| 2019 EIS/EIR Impact Determination | Modified Project Impact Determination | New Significant Increase in Impact Severity? |
|-----------------------------------|---------------------------------------|--|
| Less than Significant             | Less than Significant                 | No   |

#### Campground Construction and Day Use Area Improvements

As previously discussed for Threshold 2, the proposed new campground and improvements at the San Luis Creek Day Use Area would increase impervious surfaces (up to 1.0 acre combined), which could result in an increase in localized on-site runoff into unpaved areas within the Modified Project site and O'Neill Forebay. Because runoff would drain directly into the forebay, the proposed new campground and improved day use area would not create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems. With respect to sources of polluted runoff, an increase in runoff could result in erosion in unpaved areas and associated siltation of the forebay. However, incorporating required LID features would reduce stormwater runoff volumes and flow rates from Modified Project sites, consistent with CDPR's Standard Project Requirements, CDPR goals and guidelines, and Reclamation's Recreation Facility Design Guidelines. Compliance with these goals and guidelines would prevent increased runoff, soil erosion, and siltation of the forebay associated with an increase in impervious surfaces. Therefore, development of the new campground and improved day use area would not create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. Similar to the Approved Project, drainage and water quality impacts associated with the Modified Project would be **less than significant**.



### Changes in Borrow Area Location

As previously described for Threshold 2, although no impervious surfaces are proposed within Borrow Area 12, Borrow Area 14, or the staging area as part of the Modified Project, removal of vegetation in these large areas would result in an increase in stormwater runoff during the construction period. However, in compliance with Construction General Permit requirements, a SWPPP would reduce stormwater runoff velocities, which in turn would minimize the potential for impacts to downstream planned stormwater drainage systems between the borrow areas and O'Neill Forebay during the construction period. These measures would reduce stormwater runoff velocities to the maximum extent practical.

In addition, as part of the Modified Project, a remediation plan would be prepared and implemented for these borrow areas, including measures to revegetate and perform final grading to achieve a naturalized appearance and topography. Revegetation and restoration of the topography similar to the existing slope gradients would result in stormwater runoff velocities and volumes similar to existing conditions. While this element of the Modified Project would temporarily alter the drainage patterns of the borrow areas as a result of removal of large quantities of soil and bedrock, such activities would not result in the creation or contribution of runoff water that would exceed the capacity of existing or planned stormwater drainage systems. Moreover, no additional sources of pollutants would be introduced from this element of the Modified Project. Similar to the Approved Project, drainage and water quality impacts associated with the Modified Project would be **less than significant**.

### Minor Additions to Contractor Work Area

As previously discussed for Threshold 2, these additional impact areas are unpaved, pervious areas. Creation of staging/stockpiling areas involves minimal grading and no paving. However, as described for Borrow Areas 12 and 14, removal of existing vegetation would result in an increase in runoff during the construction period. In compliance with Construction General Permit requirements, a SWPPP would establish erosion and sediment control BMPs, which would also reduce stormwater runoff velocities and minimize the potential for adverse impacts to downstream stormwater drainage systems between the borrow areas and O'Neill Forebay during the construction period. These measures would reduce stormwater runoff velocities to the maximum extent practical. Revegetation following construction would not be required, as proposed stability berms would be constructed over these additional impact areas. Therefore, this element of the Modified Project would not result in the creation or contribution of runoff water that would exceed the capacity of existing or planned stormwater drainage systems. Moreover, no additional sources of pollutants would be introduced from this element of the Modified Project. Similar to the Approved Project, drainage and water quality impacts associated with the Modified Project would be **less than significant**.

### Additional Construction Assumptions

Additional construction assumptions include changes to the construction schedule, equipment and personnel specifications, and dewatering specifications for proposed excavations at the base of the dam. These Modified Project components would have no relevance to increased runoff and impacts to downstream storm drains. As such, this element of the Modified Project would not result in the creation or contribution of runoff water that would exceed the capacity of existing or planned stormwater drainage systems. These additional construction assumptions, which were not included in the Approved Project, would result in **no impacts** related to Modified Project drainage and water quality.

### Cumulative Impacts

Potential increased stormwater runoff from each cumulative project site could combine to cause flooding within downstream drainages and water bodies. However, construction projects in excess of 1.0 acre would require implementation of a SWPPP, thus reducing off-site runoff velocities during construction. Per the Post-Construction Program, cumulative Regulated Projects within Merced County jurisdiction would be required to incorporate Source Control LID features to reduce on- and off-site runoff, thereby reducing the potential for flooding within downstream drainages and water bodies. Cumulative Regulated Projects would be required to incorporate LID BMPs that would evapotranspire, infiltrate, harvest and use, and/or biotreat stormwater to satisfy the point source, volumetric, and flow-based specifications outlined in Ordinance No. 1923, such that impacts would not be cumulatively considerable. Similarly, cumulative projects located outside of Merced County jurisdiction would be subject to local MS4 regulations, which include incorporation of LID features to minimize increased runoff due to new impervious areas. In addition, cumulative projects within the San Luis Reservoir SRA, as well as adjacent lands owned by Reclamation and managed by CDPR, would be designed and operated in accordance with CDPR's Standard Project Requirements, CDPR goals and guidelines, and Reclamation's Recreation Facility Design Guidelines regarding post-construction stormwater runoff and associated water quality impacts. Implementation of these guidelines would minimize off-site transport of pollutants and sediments into downstream water bodies. As a result, similar to the Approved Project, cumulative drainage impacts related to Modified Project increased runoff would be **less than significant**.

### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant.

### Threshold 4

***Would the Modified Project result in increases in groundwater use that generates a net reduction in groundwater levels that would result in adverse environmental effects?***

| 2019 EIS/EIR Impact Determination | Modified Project Impact Determination | New Significant Increase in Impact Severity? |
|-----------------------------------|---------------------------------------|--|
| Less than Significant             | Less than Significant                 | No   |

### Campground Construction and Day Use Area Improvements

As previously discussed, portions of the proposed campground and existing day use area are underlain by the northern and central portion of the Delta–Mendota Groundwater Subbasin (Figure 3.1-2). In accordance with SGMA, DWR has classified the Delta–Mendota Subbasin as a high priority in regard to prioritizing the completion of a GSP. As such, in June 2017, 24 GSAs formed within the subbasin to oversee the development and implementation of regional GSPs, with the ultimate goal of achieving sustainable management of the Delta–Mendota Subbasin. As of 2019, a GSP has been completed for the northern and central portions of the subbasin, which includes portions of the proposed campground area and existing San Luis Creek Day Use Area.

The existing San Luis Creek Day Use Area uses surface water for daily operations. The water is treated at an on-site water treatment plant prior to use. Water demand would not likely increase as a result of the Modified Project, as the proposed restrooms would replace existing restrooms. In addition, replacement of existing toilets and sinks with modern, more water-efficient toilets and sinks could result in an overall water savings.

The water demand for the existing San Luis Creek Day Use Area and other campgrounds adjacent to San Luis Reservoir is approximately 1.0 million gallons per month. Based on this water use, the estimated water demand for the proposed campground would be 310,000 gallons per month. It is unclear whether the existing water system would be able to provide this additional water demand. A concept study will be completed by May 2021 to determine if the existing water system would be capable of accommodating the proposed campground water demand. In the event that an additional water supply is required, a groundwater supply well would be completed for the proposed campground (Heberling, pers. comm. 2020).

In the event that groundwater is used to supplement the water supply for the proposed campground, such groundwater extractions would be completed under the guidance of the Delta–Mendota Subbasin GSP, which would ensure sustainability of the basin. DWR has identified sustainability indicators, which refer to adverse effects caused by groundwater conditions occurring throughout the subbasin that, when significant and unreasonable, cause undesirable results. The six sustainability indicators identified by DWR are as follows:

- |   |   |
|---|---|
| 1. Chronic lowering of groundwater levels | 4. Degraded water quality                     |
| 2. Reduction of groundwater storage       | 5. Land subsidence                            |
| 3. Seawater intrusion                     | 6. Depletions of interconnected surface water |

Minimum thresholds have been established for each above listed sustainability indicator to define when undesirable results occur. In addition, the Delta–Mendota Subbasin GSP establishes measurable objectives (i.e., a specific set of quantifiable goals for the maintenance or improvement of groundwater conditions) for the Delta–Mendota Subbasin. Representative monitoring wells have been identified throughout the subbasin to provide a basis for measuring groundwater conditions and identifying potentially undesirable results. A total of 35 representative wells (17 in the Upper Aquifer and 18 in the Lower Aquifer) have been identified for measurement of groundwater levels, change in groundwater storage, and groundwater quality, with two representative wells selected for measurement of depletions of interconnected surface water. A total of 31 representative sites were selected for the measurement of land subsidence (SLDMWA 2019).

The Northern and Central Delta–Mendota Region GSP has identified projects that can either replace (offset) or supplement (recharge) groundwater to aid in reaching sustainability by 2040. Currently, no pumping restrictions have been proposed for the Northern and Central Delta–Mendota Regions; however, GSAs maintain the flexibility to implement such demand-side management actions in the future if needed. Management activities identified in the Northern and Central Delta–Mendota GSP include a variety of strategies, from implementing rules to limit pumping that may result in undesirable results, to maximizing the use of other water supplies and incentivizing the use of those supplies over groundwater. A list of 25 potential projects and management actions is included in the GSP, representing a variety of projects, including recharge and recovery, demand-side management, recycled water development and use, and reservoir expansion (SLDMWA 2019).

As such, groundwater extraction in this region would be actively monitored to ensure that a substantial net reduction in groundwater levels does not occur. In the event that groundwater is used to supplement the water supply for the proposed campground, such groundwater extractions would be completed under the guidance of the Delta–Mendota Subbasin GSP. Therefore, this element of the Modified Project would not result in an increase in

groundwater use that generates a net reduction in groundwater levels that would result in adverse environmental effects. Similar to the Approved Project, groundwater impacts associated with the Modified Project would be considered **less than significant**.

### Changes in Borrow Area Location

As previously discussed, the Modified Project may include soil and bedrock extraction from Borrow Areas 12 and 14, as well as use of a new soil stockpiling area near the Basalt Hill Borrow Area. No groundwater would be used for construction or operational activities at Borrow Area 12, Borrow Area 14, or the new stockpiling area. Surface water would be used for dust control purposes. Therefore, this element of the Modified Project would not result in an increase in groundwater use that generates a net reduction in groundwater levels that would result in adverse environmental effects. Similar to the Approved Project, groundwater impacts associated with the Modified Project would be **less than significant**.

### Minor Additions to Contractor Work Area

The Modified Project includes minor temporary and permanent expansions of contractor work areas downstream of the dam that were not part of the original study area addressed in the Approved Project. These areas include several staging/soil stockpiling areas downstream of B.F. Sisk Dam that would later be covered by the stability berms and expanded dam embankment, as well as another small area of less than 1 acre immediately west of the dam's right abutment, where a haul road would be widened (Figures 2-4A and 2-4B). No groundwater would be used in the additional impact areas of the contractor work areas. Surface water would be used for dust control purposes. Therefore, this element of the Modified Project would not result in an increase in groundwater use that generates a net reduction in groundwater levels that would result in adverse environmental effects. Similar to the Approved Project, groundwater impacts associated with the Modified Project would be **less than significant**.

### Additional Construction Assumptions

As previously discussed, stability berms would be constructed along the downstream side of the dam to raise the dam crest 12 feet and increase the reservoir's freeboard, or the distance between the water surface and the dam crest. Construction of these stability berms would initially require excavations so that the berm would be keyed into the underlying bedrock. Dewatering would be required in these excavations at the base of the dam. Dewatering activities would be temporary, limited in scope, and negligible on a regional aquifer scale. Therefore, this element of the Modified Project would not result in an increase in groundwater use that generates a net reduction in groundwater levels that would result in adverse environmental effects. These additional construction assumptions, which were not included in the Approved Project, would result in **less-than-significant** impacts related to Modified Project groundwater conditions.

### Cumulative Impacts

As previously discussed, SGMA requires governments and water agencies of high- and medium-priority basins to halt overdraft and bring groundwater basins into balanced levels of pumping and recharge. Under SGMA, these basins should reach sustainability within 20 years of implementing their sustainability plans. For critically over-drafted basins, sustainability should be achieved by 2040. For the remaining high- and medium-priority basins, 2042 is the deadline. SGMA empowers local agencies to form GSAs to manage basins sustainably and requires GSPs for crucial (i.e., medium- to high-priority) groundwater basins in California. In the event that groundwater is used to support cumulative projects in a basin that has been identified as high or medium priority, such groundwater extractions would be completed under the guidance of a GSP, which would ensure sustainability of the underlying

groundwater basin. DWR has identified sustainability indicators that, when significant and unreasonable, cause undesirable results; these indicators include chronic lowering of groundwater levels. Minimum thresholds would be (or have been) established for groundwater levels to define when undesirable results occur within basins underlying each cumulative project. In addition, measurable objectives (i.e., a specific set of quantifiable goals for the maintenance or improvement of groundwater conditions) would be (or have been) established for each high- and medium-priority basin. Specific to the Delta–Mendota Subbasin, cumulative groundwater level impacts would only potentially occur for cumulative projects that similarly draw groundwater from the same subbasin. However, because groundwater extractions for those projects would similarly be completed under the guidance of the GSP, cumulatively considerable impacts would not occur with respect to groundwater levels. Similarly, with implementation of the SGMA process throughout each of the groundwater basins underlying cumulative project areas, impacts associated with potential chronic lowering of groundwater levels would not be cumulatively considerable. As a result, similar to the Approved Project, cumulative groundwater impacts associated with the Modified Project would be **less than significant**.

#### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant.

#### Threshold 5

***Would the Modified Project result in the degradation in groundwater quality such that it would exceed regulatory standards or would substantially impair reasonably anticipated beneficial uses of groundwater?***

| 2019 EIS/EIR Impact Determination | Modified Project Impact Determination | New Significant Increase in Impact Severity? |
|-----------------------------------|---------------------------------------|--|
| Less than Significant             | Less than Significant                 | No   |

#### Campground Construction and Day Use Area Improvements

As previously discussed for Threshold 4, the newly proposed campground and existing San Luis Creek Day Use Area are in the Northern and Central Delta–Mendota GSP jurisdictional boundaries. According to the GSP, this subbasin is used to offset water demands for the area not met by surface water from the San Joaquin River, Central Valley Project, and California State Water Project, as well as is the primary water supply for many communities in the region. Primary constituents of concern within the Northern and Central Delta–Mendota regions include nitrate, total dissolved solids, and boron, which have anthropogenic and natural sources.

Campground construction and day use area improvements would not introduce additional pollutants to groundwater and potentially degrade beneficial groundwater uses beneath the sites. As discussed for Threshold 4, groundwater usage and quality within the Northern and Central Delta–Mendota GSP jurisdictional boundaries would be actively monitored and regulated, ensuring the long-term sustainability of beneficial uses within the subbasin. Furthermore, the Modified Project would implement a SWPPP, stormwater BMPs, and LID design features, which would minimize the inadvertent release of pollutants on and off site, thereby protecting both surface and groundwater quality. As such, this element of the Modified Project would not result in the degradation in groundwater quality such that it would exceed regulatory standards or substantially impair reasonably anticipated

beneficial uses of groundwater. Similar to the Approved Project, groundwater quality impacts associated with the Modified Project would be **less than significant**.

#### Changes in Borrow Area Location

Extraction, grading, transportation, and stockpiling of sediment within Borrow Area 12, Borrow Area 14, and the newly proposed staging areas would comply with all applicable water quality regulatory requirements like those described for Threshold 1. Furthermore, this element of the Modified Project would not require groundwater use during construction or operational use. Surface water would be used for dust control purposes. As such, this element of the Modified Project would not result in the degradation in groundwater quality or substantially impair reasonably anticipated beneficial uses of groundwater. Similar to the Approved Project, groundwater quality impacts associated with the Modified Project would be **less than significant**.

#### Minor Additions to Contractor Work Area

Construction activities within the minor additions to contractor work areas would comply with all applicable water quality regulatory requirements like those described for Threshold 1. Furthermore, this element of the Modified Project would not require groundwater use during construction or operational use. Surface water would be used for dust control purposes. As such, this element of the Modified Project would not result in the degradation in groundwater quality or substantially impair reasonably anticipated beneficial uses of groundwater. Similar to the Approved Project, groundwater quality impacts associated with the Modified Project would be **less than significant**.

#### Additional Construction Assumptions

Excavation and dewatering activities at the base of the dam would comply with all applicable water quality regulatory requirements, as described for Threshold 1. As such, this element of the Modified Project would not result in the degradation in groundwater quality or substantially impair reasonably anticipated beneficial uses of groundwater. These additional construction assumptions, which were not included in the Approved Project, would result in **less-than-significant** impacts related to Modified Project groundwater quality.

#### Cumulative Impacts

As discussed for Threshold 4, in the event that groundwater is used to support cumulative projects in high- to medium-priority basins, such groundwater extractions would be completed under the guidance of a GSP, which would ensure sustainability of the underlying groundwater basin. DWR has identified sustainability indicators that, when significant and unreasonable, cause undesirable results; these indicators include degraded water quality. Minimum thresholds would be (or have been) established for groundwater quality to define when undesirable results occur within basins underlying each cumulative project. In addition, measurable objectives would be (or have been) established for each basin. With implementation of the SGMA process throughout each of the groundwater basins underlying cumulative project areas, groundwater quality impacts would not be cumulatively considerable. As a result, similar to the Approved Project, cumulative Modified Project impacts related to groundwater quality would be **less than significant**.

#### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant.

## Threshold 6

*Would the Modified Project result in increases in groundwater use that generates permanent/inelastic land subsidence caused by water level declines such that it causes saltwater intrusion that degrades groundwater quality and flooding that damages buildings and infrastructure?*

| 2019 EIS/EIR Impact Determination | Modified Project Impact Determination | New Significant Increase in Impact Severity? |
|-----------------------------------|---------------------------------------|--|
| Less than Significant             | Less than Significant                 | No   |

## Campground Construction and Day Use Area Improvements

As discussed in Section 3.1.1, Existing Conditions, land subsidence is a prevalent issue in the Delta–Mendota Subbasin; it has impacted prominent infrastructure of statewide importance (i.e., the DMC and California Aqueduct), as well as local canals, causing serious operational, maintenance, and construction-design issues. Reduced freeboard and flow capacity for the DMC and California Aqueduct have rippling effects on imported water availability throughout California. Even small amounts of subsidence in critical locations, especially where canal gradients are small, can impact canal operations. Differential land subsidence can also result in piping ruptures, resulting in loss of water or other substances. While subsidence is poised to be a long-lasting issue for the San Joaquin Valley, recorded subsidence rates for portions of the Modified Project site located within the Delta–Mendota Subbasin were less than 0.15 feet per year, from December 2011 to December 2014. Other sources (Merced County 2012; USGS 2020) indicate no recorded instances of subsidence have occurred within the Modified Project area as a result of groundwater pumping, peat loss, or oil extraction, as the Modified Project is located along the western boundary of the Delta–Mendota Subbasin. As such, there is a low potential for subsidence to occur within the Modified Project area.

As previously discussed for Threshold 4, the proposed campground and existing San Luis Creek Day Use Area are in the Northern and Central Delta–Mendota GSP jurisdictional boundaries. Potential groundwater withdrawals to support the proposed campground would not exacerbate the potential for ground subsidence to occur, as the subbasin would be actively monitored and regulated in accordance with the GSP, ensuring the long-term sustainability of beneficial uses within the subbasin. The GSP includes land subsidence as one of the sustainability indicators in maintaining the sustainability of the subbasin. As such, this element of the Modified Project would not result in an increase in groundwater use that generates permanent/inelastic land subsidence caused by water level declines. Similar to the Approved Project, subsidence impacts associated with the Modified Project would be **less than significant**.

## Changes in Borrow Area Location

As previously discussed, groundwater would not be used during material extraction, grading, restoration, temporary soil storage, or equipment staging activities related to the use of Borrow Area 12, Borrow Area 14, or the newly proposed staging area. Rather, surface water would be used for dust control purposes. As a result, construction and operational activities within these areas would not inadvertently cause a decline in groundwater such that flooding occurs on site. As such, this element of the Modified Project would not result in an increase in groundwater use that generates permanent/inelastic land subsidence caused by water level declines such that it causes flooding that damages buildings and infrastructure. These additional construction assumptions, which were not included in the Approved Project, would result in **less-than-significant** impacts related to Modified Project-induced subsidence.

### Minor Additions to Contractor Work Area

As previously discussed, minor additions to contractor work areas would include several staging/soil stockpiling areas downstream of B.F. Sisk Dam that would later be covered by the stability berms and expanded dam embankment, as well as another small area of less than 1.0 acre immediately west of the dam's right abutment, where a haul road would be widened (Figures 2-4A and 2-4B). Surface water would be used for dust control purposes in these areas. As a result, construction activities within these areas would not inadvertently cause a decline in groundwater such that subsidence and associated flooding occurs on site. Therefore, this element of the Modified Project would not result in an increase in groundwater use that generates permanent/inelastic land subsidence caused by water level declines such that it causes flooding that damages buildings and infrastructure. Similar to the Approved Project, subsidence impacts associated with the Modified Project would be **less than significant**.

### Additional Construction Assumptions

As previously discussed, temporary dewatering activities would occur at the base of the dam related to the installation of the stability berms and the expanded dam embankment. However, dewatering would be temporary, limited in scope, and negligible on a regional aquifer scale. Moreover, once construction activities have ceased, this element of the Modified Project would not require the use of groundwater. As such, this element of the Modified Project would not result in an increase in groundwater use that generates permanent/inelastic land subsidence caused by water level declines such that it causes flooding that damages buildings and infrastructure. Similar to the Approved Project, subsidence impacts associated with the Modified Project would be **less than significant**.

### Cumulative Impacts

As discussed for Threshold 4, in the event that groundwater is used to support cumulative projects in high- to medium-priority basins, such groundwater extractions would be completed under the guidance of a GSP, which would ensure sustainability of the underlying groundwater basin. DWR has identified sustainability indicators that, when significant and unreasonable, cause undesirable results; these indicators include subsidence. Minimum thresholds would be (or have been) established for subsidence to define when undesirable results occur within basins underlying each cumulative project. In addition, measurable objectives would be (or have been) established for each basin. With implementation of the SGMA process throughout each of the groundwater basins underlying cumulative project areas, subsidence impacts would not be cumulatively considerable. As a result, similar to the Approved Project, cumulative Modified Project impacts related to ground subsidence would be **less than significant**.

### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant.



## Threshold 7

*Would the Modified Project otherwise substantially degrade existing water quality conditions?*

| 2019 EIS/EIR Impact Determination | Modified Project Impact Determination | New Significant Increase in Impact Severity? |
|-----------------------------------|---------------------------------------|--|
| Less than Significant             | Less than Significant                 | No   |

#### Campground Construction and Day Use Area Improvements

As previously discussed for Threshold 1, the Modified Project would comply with CDPR guidelines and applicable water quality regulatory requirements, including implementing a SWPPP, stormwater BMPs, and LID design, which would minimize the potential off-site surface water quality impacts and contribute to an improvement in water quality within the San Joaquin River watershed. In addition, compliance with these regulatory requirements would ensure that the Modified Project does not impair existing and potential beneficial uses of key surface water drainages downstream of the proposed campground and existing day use area, including O'Neill Forebay and the San Joaquin River. As a result, this element of the Modified Project would not otherwise substantially degrade existing water quality conditions. Similar to the Approved Project, water quality impacts associated with the Modified Project would be **less than significant**.

#### Changes in Borrow Area Location

Extraction and transportation of sediment from Borrow Area 12, Borrow Area 14, and temporary soil stockpiling at the proposed staging area would comply with all applicable water quality regulatory requirements, like those described for campground construction and day use area improvements. For the reasons described above, this element of the Modified Project would not otherwise substantially degrade existing water quality conditions. Similar to the Approved Project, water quality impacts associated with the Modified Project would be **less than significant**.

#### Minor Additions to Contractor Work Area

Construction activities within the minor additions to contractor work areas would comply with all applicable water quality regulatory requirements, like those described for campground construction and day use area improvements. For the reasons described above, this element of the Modified Project would not otherwise substantially degrade existing water quality conditions. Similar to the Approved Project, water quality impacts associated with the Modified Project would be **less than significant**.

#### Additional Construction Assumptions

Excavation and dewatering activities at the base of the dam would comply with all applicable water quality regulatory requirements, like those described for campground construction and day use area improvements. For the reasons described above, this element of the Modified Project would not otherwise substantially degrade existing water quality conditions. These additional construction assumptions, which were not included in the Approved Project, would result in **less-than-significant** impacts related to Modified Project water quality.

#### Cumulative Impacts

As described for Threshold 1, short-term and long-term erosion BMPs and spill control BMPs would be employed at each cumulative project site consistent with NPDES stormwater quality regulations, including the Construction General Permit and local MS4 permits. Cumulative Regulated Projects within Merced County jurisdiction would be required to incorporate LID BMPs that would evapotranspire, infiltrate, harvest and use, and/or biotreat stormwater to satisfy the point source, volumetric, and flow-based specifications outlined in Ordinance No. 1923. In addition, cumulative projects within the San Luis Reservoir SRA, as well as adjacent lands owned by Reclamation and managed by CDPR, would be designed and operated in accordance with CDPR goals and guidelines regarding post-construction stormwater quality. As a result, impacts would not be cumulatively considerable and similar to the Approved Project, cumulative Modified Project water quality impacts would be **less than significant**.

#### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant.

#### Threshold 8

*Would the Modified Project result in substantial effects on water quality-related beneficial uses?*

| 2019 EIS/EIR Impact Determination | Modified Project Impact Determination | New Significant Increase in Impact Severity? |
|-----------------------------------|---------------------------------------|--|
| Less than Significant             | Less than Significant                 | No   |

#### Campground Construction and Day Use Area Improvements

Beneficial uses of water bodies and watercourse in the vicinity of and downstream of the Modified Project site are included in Table 3.1-1, Beneficial Uses. As previously discussed for Threshold 1, development of the proposed campground and improvement of the San Luis Creek Day Use Area could inadvertently result in the release of pollutants into nearby waterways, potentially contributing to the degradation of the beneficial uses for nearby water bodies. However, the Modified Project would comply with applicable water quality regulatory requirements and CDPR guidelines, including the implementation of a SWPPP, stormwater BMPs, and LID design, which would minimize potential off-site surface water quality impacts and associated impacts to water quality-related beneficial uses. Similar to the Approved Project, water quality impacts associated with the Modified Project would be **less than significant**.

### Changes in Borrow Area Location

As previously discussed, material extraction, transportation, and stockpiling activities within Borrow Area 12, Borrow Area 14, and the newly proposed staging area would comply with all applicable water quality regulatory requirements, like those described for campground construction and day use area improvements. For the reasons described above, this element of the Modified Project would not substantially affect water quality-related beneficial uses. Similar to the Approved Project, water quality impacts associated with the Modified Project would be **less than significant**.

### Minor Additions to Contractor Work Area

As previously discussed, construction activities within the minor additions to contractor work areas would comply with all applicable water quality regulatory requirements, like those described for campground construction and day use area improvements. For the reasons described above, this element of the Modified Project would not result in substantial effects on water quality-related beneficial uses. Similar to the Approved Project, water quality impacts associated with the Modified Project would be **less than significant**.

### Additional Construction Assumptions

Excavation and dewatering activities at the base of the dam would comply with all applicable water quality regulatory requirements, like those described for campground construction and day use area improvements. For the reasons described above, this element of the Modified Project would not result in substantial effects on water quality-related beneficial uses. These additional construction assumptions, which were not included in the Approved Project, would result in **less-than-significant** impacts related to Modified Project water quality and beneficial uses.

### Cumulative Impacts

As described for Threshold 1, the Modified Project, in combination with cumulative projects, could inadvertently result in the release of pollutants into nearby waterways, potentially contributing to the cumulative degradation of the beneficial uses for nearby water bodies. However, the Modified Project and all cumulative projects would comply with applicable water quality regulatory requirements and applicable CDPR guidelines, including the implementation of a SWPPP, stormwater BMPs, and LID design (as applicable), which would minimize potential off-site surface water quality impacts that contribute to a reduction in water quality-related beneficial uses. As a result, similar to the Approved Project, cumulative Modified Project water quality impacts would be **less than significant**.

### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant.

## 3.1.5 Mitigation Measures

No mitigation measures are required as impacts would be less than significant.

### 3.1.6 Level of Significance After Mitigation

Impacts regarding water quality, stormwater runoff, and groundwater from the Modified Project were determined to be less than significant without mitigation. Therefore, no mitigation measures are required, and impacts for the Modified Project would remain less than significant.



SOURCE: CVRWQCB 2019

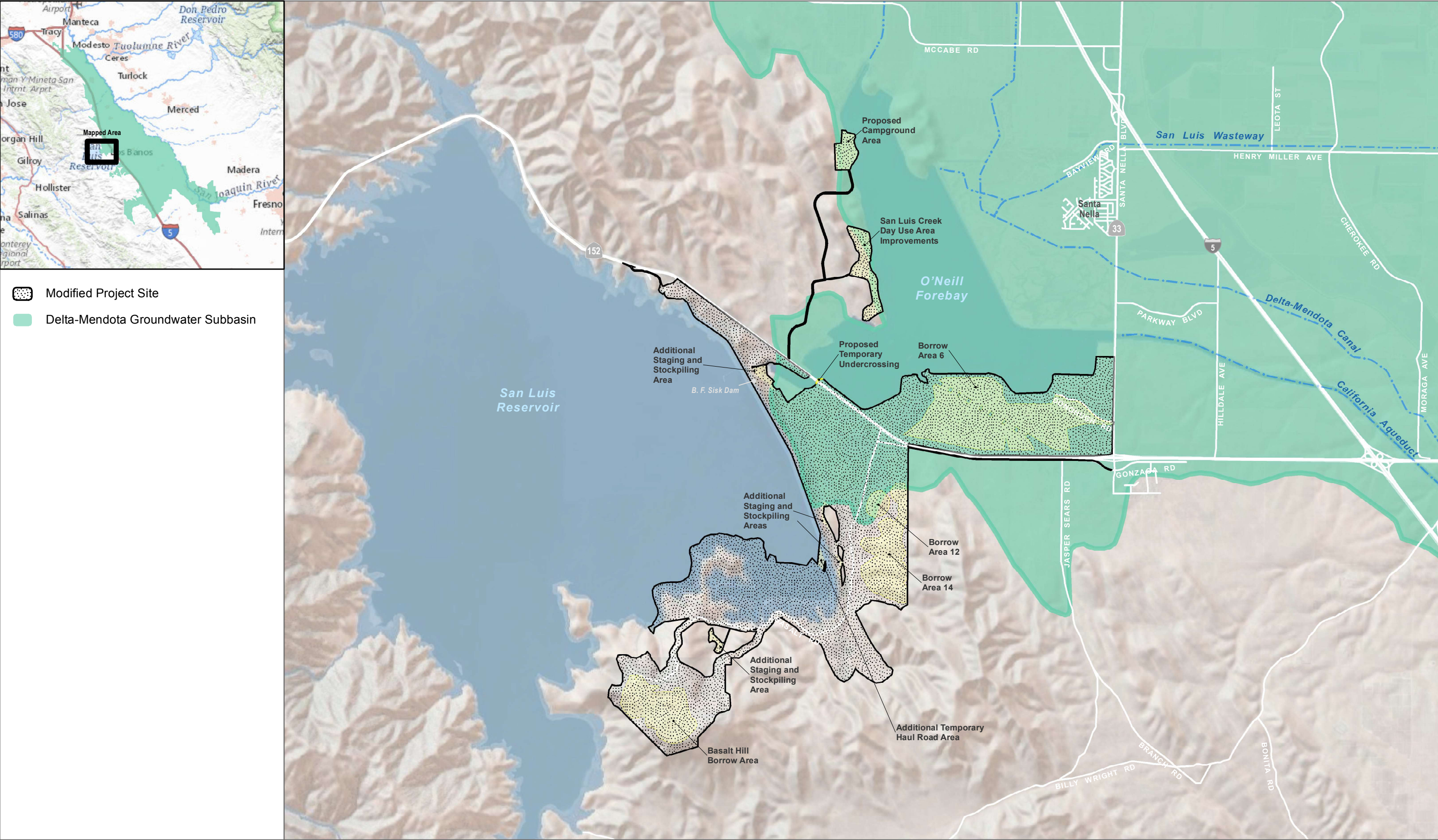
FIGURE 3.1-1

San Joaquin River Watershed

B.F. Sisk Dam Safety of Dams Modification Project SEIR

INTENTIONALLY LEFT BLANK





SOURCE: DWR 2020

**FIGURE 3.1-2**  
**Delta-Mendota Groundwater Subbasin**  
B.F. Sisk Dam Safety of Dams Modification Project SEIR

INTENTIONALLY LEFT BLANK



## 3.2 Air Quality

This supplemental environmental impact report (SEIR) addresses proposed modifications to the B.F. Sisk Dam Safety of Dams Modification Project, which was previously evaluated in the B.F. Sisk Dam Safety of Dams Modification Project Environmental Impact Statement/Environmental Impact Report (2019 EIS/EIR). The project addressed in the 2019 EIS/EIR is referred to herein as the Approved Project; the Approved Project with proposed modifications identified since certification of the 2019 EIS/EIR is referred to herein as the Modified Project.

This section describes the existing air quality conditions of the Modified Project site and vicinity, identifies associated regulatory requirements, evaluates potential impacts, and identifies any applicable mitigation measures related to implementation of the Modified Project.

### 3.2.1 Existing Conditions

#### 3.2.1.1 Meteorological and Topographical Conditions

The primary factors that determine air quality are the locations of air pollutant sources and the amounts of pollutants emitted. Meteorological and topographical conditions also are important. Factors such as wind speed and direction, air temperature gradients and sunlight, and precipitation and humidity interact with physical landscape features to determine the movement and dispersal of criteria air pollutants. These factors are described below.

#### **Topography**

The Modified Project site is within the San Joaquin Valley Air Basin (SJVAB),<sup>1</sup> which consists of eight counties and is spread across 25,000 square miles of Central California. The SJVAB is bordered on the east by the Sierra Nevada (8,000 to 14,491 feet in elevation), on the west by the Coast Ranges (averaging 3,000 feet in elevation), and to the south by the Tehachapi Mountains (6,000 to 7,981 feet in elevation). The San Joaquin Valley comprises the southern half of California's Central Valley, is approximately 250 miles long, and averages 35 miles wide, with a slight downward elevation gradient from Bakersfield in the southeast end (elevation 408 feet) to sea level at the northwest end where the San Joaquin Valley opens to the San Francisco Bay at the Carquinez Strait. At its northern end is the Sacramento Valley, which comprises the northern half of the Central Valley. The region's topographic features restrict air movement through and out of the SJVAB. As a result, the SJVAB is highly susceptible to pollutant accumulation over time.

#### **Climate**

The San Joaquin Valley is in a Mediterranean Climate Zone, influenced by a subtropical high-pressure cell most of the year and characterized by warm, dry summers and cooler winters. Mediterranean climates are characterized by sparse rainfall, which occurs mainly in winter. Summertime maximum temperatures in the San Joaquin Valley often exceed 100°F.

---

<sup>1</sup> Descriptions of climate and topography are based on Guidance for Assessing and Mitigating Air Quality Impacts (SJVAPCD 2015a).

The vertical dispersion of air pollutants in the San Joaquin Valley can be limited by the presence of persistent temperature inversions. Air temperatures usually decrease with an increase in altitude. A reversal of this atmospheric state, where the air temperature increases with height, is termed an inversion. A temperature inversion can act like a lid, restricting vertical mixing of air above and below an inversion because of differences in air density, thereby trapping air pollutants below the inversion. The subtropical high-pressure cell is strongest during spring, summer, and fall and produces subsiding air, which can result in temperature inversions. Most of the surrounding mountains are above the normal height of summer inversions (1,500–3,000 feet). Winter-time high-pressure events can often last many weeks, with surface temperatures often lowering into the 30s °F. During these events, fog can be present and inversions are extremely strong. These wintertime inversions can inhibit vertical mixing of pollutants to a few hundred feet.

### Wind Patterns

Wind speed and direction play an important role in dispersion and transport of air pollutants. Winds in the San Joaquin Valley most frequently blow from the northwesterly direction, especially in the summer. The region's topographic features restrict air movement and channel the air mass towards the southeastern end of the San Joaquin Valley. Marine air can flow into the SJVAB from the Sacramento–San Joaquin River Delta and over Altamont Pass and Pacheco Pass, where it can flow through the San Joaquin Valley, over the Tehachapi Pass, and into the Mojave Desert Air Basin. The Coastal Range and the Sierra Nevada are barriers to air movement to the west and east, respectively. A secondary but significant summer wind pattern is from the southeast and can be associated with nighttime drainage winds, prefrontal conditions, and summer monsoons. During winter, winds can be very weak, which minimizes the transport of pollutants and results in stagnation events.

Two significant diurnal wind cycles that occur frequently in the San Joaquin Valley are the sea breeze and mountain-valley upslope and drainage flows. The sea breeze can accentuate the northwest wind flow, especially on summer afternoons. Nighttime drainage flows can accentuate the southeast movement of air down the San Joaquin Valley. In the mountains during periods of weak synoptic scale winds, winds tend to be upslope during the day and downslope at night. Nighttime and drainage flows are pronounced during the winter when flow from the easterly direction is enhanced by nighttime cooling in the Sierra Nevada. Eddies can form in the valley wind flow and can re-circulate a polluted air mass for an extended period.

### Temperature, Sunlight, and Ozone Production

Solar radiation and temperature are particularly important in the chemistry of ozone ( $O_3$ ) formation. The SJVAB averages over 260 sunny days per year. Photochemical air pollution (primarily  $O_3$ ) results from the atmospheric interaction of reactive organic gases (ROGs) and oxides of nitrogen ( $NO_x$ ) under the influence of sunlight.  $O_3$  concentrations are very dependent on the amount of solar radiation, especially during late spring, summer, and early fall.  $O_3$  levels typically peak in the afternoon. After the sun goes down, the chemical reaction between  $NO_x$  and  $O_3$  begins to dominate. This reaction tends to reduce  $O_3$  concentrations in the metropolitan areas through the early morning hours. At sunrise,  $NO_x$  tends to peak, partly due to low levels of  $O_3$  at this time and also due to the morning commuter vehicle emissions of  $NO_x$ .

Reaction rates generally increase with temperature, which results in greater  $O_3$  production at higher temperatures. However, extremely hot temperatures can “lift” or “break” the inversion layer. Typically, if the inversion layer remains intact,  $O_3$  levels peak in the late afternoon. If the inversion layer breaks and the resultant afternoon winds occur,  $O_3$  levels peak in the early afternoon and decrease in the late afternoon as the contaminants are dispersed or transported out of the SJVAB.  $O_3$  levels are low during winter periods when there is much less sunlight to drive the photochemical reaction.

### Precipitation, Humidity, and Fog

Precipitation and fog can result in the reduction or increase in some pollutant concentrations. For instance, O<sub>3</sub> needs sunlight for its formation, and clouds and fog can block the required solar radiation. In addition, wet fogs can cleanse the air during winter as moisture collects on particles and deposits them on the ground. Fog with less moisture content, however, can contribute to the formation of secondary ammonium nitrate particulate matter.

The winds and unstable air conditions experienced during the passage of winter storms result in periods of low pollutant concentrations. Between winter storms, high pressure and light winds allow cold, moist air to pool on the San Joaquin Valley floor, resulting in strong low-level temperature inversions and very stable air conditions, which can lead to Tule fog. Wintertime conditions favorable to fog formation are also conditions favorable to high concentrations of particulate matter.

#### 3.2.1.2 Criteria Air Pollutants

Criteria air pollutants are defined as pollutants for which the federal and state governments have established ambient air quality standards, or criteria, for outdoor concentrations to protect public health. The federal and state standards have been set, with an adequate margin of safety, at levels above which concentrations could be harmful to human health and welfare. These standards are designed to protect the most sensitive persons from illness or discomfort. Pollutants of concern include O<sub>3</sub>, nitrogen dioxide (NO<sub>2</sub>), carbon monoxide (CO), sulfur dioxide (SO<sub>2</sub>), particulate matter with an aerodynamic diameter equal to or less than 10 microns (PM<sub>10</sub>), particulate matter with an aerodynamic diameter equal to or less than 2.5 microns (PM<sub>2.5</sub>), and lead. These pollutants, as well as toxic air contaminants (TACs), are discussed in the following paragraphs.<sup>2</sup> In California, sulfates, vinyl chloride, hydrogen sulfide, and visibility-reducing particles are also regulated as criteria air pollutants.

**Ozone.** O<sub>3</sub> is a strong-smelling, pale blue, reactive, toxic chemical gas consisting of three oxygen atoms. It is a secondary pollutant formed in the atmosphere by a photochemical process involving the sun's energy and O<sub>3</sub> precursors. These precursors are mainly NO<sub>x</sub> and ROG<sub>s</sub> (also referred to as volatile organic compounds [VOCs]). The maximum effects of precursor emissions on O<sub>3</sub> concentrations usually occur several hours after they are emitted and many miles from the source. Meteorology and terrain play major roles in O<sub>3</sub> formation, and ideal conditions occur during summer and early autumn on days with low wind speeds or stagnant air, warm temperatures, and cloudless skies. O<sub>3</sub> exists in the upper atmosphere (stratospheric O<sub>3</sub>) and at Earth's surface in the lower atmosphere (tropospheric O<sub>3</sub>).<sup>3</sup> The O<sub>3</sub> that the U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (CARB) regulate as a criteria air pollutant is produced close to the ground level, where people live, exercise, and breathe. Ground-level O<sub>3</sub> is a harmful air pollutant that causes numerous adverse health effects and is thus considered “bad” O<sub>3</sub>. Stratospheric, or “good,” O<sub>3</sub> occurs naturally in the upper atmosphere, where it reduces the amount of ultraviolet light (i.e., solar radiation) entering the Earth's atmosphere. Without the protection of the beneficial stratospheric O<sub>3</sub> layer, plant and animal life would be seriously harmed.

O<sub>3</sub> in the troposphere causes numerous adverse health effects; short-term exposures (lasting for a few hours) to O<sub>3</sub> can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes (EPA 2013). Inhalation of O<sub>3</sub> causes

<sup>2</sup> The descriptions of the criteria air pollutants and associated health effects are based on the U.S. Environmental Protection Agency's “Criteria Air Pollutants” (EPA 2018a) and the California Air Resources Board's (CARB) “Glossary” (CARB 2019a), and CARB's “Fact Sheet: Air Pollution Sources, Effects and Control” (CARB 2009).

<sup>3</sup> The troposphere is the layer of Earth's atmosphere nearest to the surface of Earth, extending outward approximately 5 miles at the poles and approximately 10 miles at the equator.

inflammation and irritation of the tissues lining human airways, causing and worsening a variety of symptoms. Exposure to O<sub>3</sub> can reduce the volume of air that the lungs breathe in and cause shortness of breath. O<sub>3</sub> in sufficient doses increases the permeability of lung cells, rendering them more susceptible to toxins and microorganisms. The occurrence and severity of health effects from O<sub>3</sub> exposure vary widely among individuals, even when the dose and the duration of exposure are the same. Research shows adults and children who spend more time outdoors participating in vigorous physical activities are at greater risk from the harmful health effects of O<sub>3</sub> exposure. While there are relatively few studies of O<sub>3</sub>'s effects on children, the available studies show that children are no more or less likely to suffer harmful effects than adults. However, there are a number of reasons why children may be more susceptible to O<sub>3</sub> and other pollutants. Children and teens spend nearly twice as much time outdoors and engaged in vigorous activities as adults. Children breathe more rapidly than adults and inhale more pollution per pound of their body weight than adults. Also, children are less likely than adults to notice their own symptoms and avoid harmful exposures. Further research may be able to better distinguish between health effects in children and adults. Children, adolescents and adults who exercise or work outdoors, where O<sub>3</sub> concentrations are the highest, are at the greatest risk of harm from this pollutant (CARB 2019b).

**Nitrogen Dioxide.** NO<sub>2</sub> is a brownish, highly reactive gas that is present in all urban atmospheres. The major mechanism for the formation of NO<sub>2</sub> in the atmosphere is the oxidation of the primary air pollutant nitric oxide, which is a colorless, odorless gas. NO<sub>x</sub>, which includes NO<sub>2</sub> and nitric oxide, plays a major role, together with ROG, in the atmospheric reactions that produce O<sub>3</sub>. NO<sub>x</sub> is formed from fuel combustion under high temperature or pressure. In addition, NO<sub>2</sub> is an important precursor to acid rain and may affect both terrestrial and aquatic ecosystems. The two major emissions sources are transportation and stationary fuel combustion sources (such as electric utility and industrial boilers).

A large body of health science literature indicates that exposure to NO<sub>2</sub> can induce adverse health effects. The strongest health evidence, and the health basis for the ambient air quality standards for NO<sub>2</sub>, results from controlled human exposure studies that show that NO<sub>2</sub> exposure can intensify responses to allergens in allergic asthmatics. In addition, a number of epidemiological studies have demonstrated associations between NO<sub>2</sub> exposure and premature death, cardiopulmonary effects, decreased lung function growth in children, respiratory symptoms, emergency room visits for asthma, and intensified allergic responses. Infants and children are particularly at risk because they have disproportionately higher exposure to NO<sub>2</sub> than adults due to their greater breathing rate for their body weight and their typically greater outdoor exposure duration. Several studies have shown that long-term NO<sub>2</sub> exposure during childhood, the period of rapid lung growth, can lead to smaller lungs at maturity in children with higher compared to lower levels of exposure. In addition, children with asthma have a greater degree of airway responsiveness compared with adult asthmatics. In adults, the greatest risk is to people who have chronic respiratory diseases, such as asthma and chronic obstructive pulmonary disease (CARB 2019c).

**Carbon Monoxide.** CO is a colorless, odorless gas formed by the incomplete combustion of hydrocarbon, or fossil fuels. CO is emitted almost exclusively from motor vehicles, power plants, refineries, industrial boilers, ships, aircraft, and trains. In urban areas, automobile exhaust accounts for the majority of CO emissions. CO is a nonreactive air pollutant that dissipates relatively quickly; therefore, ambient CO concentrations generally follow the spatial and temporal distributions of vehicular traffic. CO concentrations are influenced by local meteorological conditions—primarily wind speed, topography, and atmospheric stability. CO from motor vehicle exhaust can become locally concentrated when surface-based temperature inversions are combined with calm atmospheric conditions, which is a typical situation at dusk in urban areas from November through February. The highest levels of CO typically occur during the colder months, when inversion conditions are more frequent.

CO is harmful because it binds to hemoglobin in the blood, reducing the ability of blood to carry oxygen. This interferes with oxygen delivery to the body's organs. The most common effects of CO exposure are fatigue, headaches, confusion and reduced mental alertness, and light-headedness and dizziness due to inadequate oxygen delivery to the brain. For people with cardiovascular disease, short-term CO exposure can further reduce their body's already compromised ability to respond to the increased oxygen demands of exercise, exertion, or stress. Inadequate oxygen delivery to the heart muscle leads to chest pain and decreased exercise tolerance. Unborn babies whose mothers experience high levels of CO exposure during pregnancy are at risk of adverse developmental effects. Unborn babies, infants, older adults, and people with anemia or with a history of heart or respiratory disease are most likely to experience health effects with exposure to elevated levels of CO (CARB 2019d).

**Sulfur Dioxide.** SO<sub>2</sub> is a colorless, pungent gas formed primarily from incomplete combustion of sulfur-containing fossil fuels. The main sources of SO<sub>2</sub> are coal and oil used in power plants and industries; as such, the highest levels of SO<sub>2</sub> are generally found near large industrial complexes. In recent years, SO<sub>2</sub> concentrations have been reduced by the increasingly stringent controls placed on stationary source emissions of SO<sub>2</sub> and limits on the sulfur content of fuels.

Controlled human exposure and epidemiological studies show that children and adults with asthma are more likely to experience adverse responses with SO<sub>2</sub> exposure, compared with the non-asthmatic population. Effects at levels near the 1-hour standard are those of asthma exacerbation, including bronchoconstriction accompanied by symptoms of respiratory irritation such as wheezing, shortness of breath, and chest tightness, especially during exercise or physical activity. Also, exposure at elevated levels of SO<sub>2</sub> (above 1 part per million) results in increased incidence of pulmonary symptoms and disease, decreased pulmonary function, and increased risk of mortality. Older adults and people with cardiovascular disease or chronic lung disease (such as bronchitis or emphysema) are most likely to experience these adverse effects (CARB 2019e).

SO<sub>2</sub> is of concern both because it is a direct respiratory irritant and because it contributes to the formation of sulfate and sulfuric acid in particulate matter (NRC 2005). People with asthma are of particular concern because they have increased baseline airflow resistance and because their SO<sub>2</sub>-induced increase in resistance is greater than that seen in healthy people, and it increases with the severity of their asthma (NRC 2005). SO<sub>2</sub> is thought to induce airway constriction via neural reflexes involving irritant receptors in the airways (NRC 2005).

**Particulate Matter.** Particulate matter pollution consists of very small liquid and solid particles floating in the air, which can include smoke, soot, dust, salts, acids, and metals. Particulate matter can form when gases emitted from industries and motor vehicles undergo chemical reactions in the atmosphere. PM<sub>2.5</sub> and PM<sub>10</sub> represent fractions of particulate matter. Coarse particulate matter (PM<sub>10</sub>) is about 1/7 the thickness of a human hair. Major sources of PM<sub>10</sub> include crushing or grinding operations; dust stirred up by vehicles traveling on roads; wood-burning stoves and fireplaces; dust from construction, landfills, and agriculture; wildfires and brush/waste burning; industrial sources; windblown dust from open lands; and atmospheric chemical and photochemical reactions. Fine particulate matter (PM<sub>2.5</sub>) is roughly 1/28 the diameter of a human hair. PM<sub>2.5</sub> results from fuel combustion (e.g., from motor vehicles and power generation and industrial facilities), residential fireplaces, and woodstoves. In addition, PM<sub>2.5</sub> can be formed in the atmosphere from gases such as sulfur oxides (SO<sub>x</sub>), NO<sub>x</sub>, and ROG.

PM<sub>2.5</sub> and PM<sub>10</sub> pose a greater health risk than larger-size particles. When inhaled, these tiny particles can penetrate the human respiratory system's natural defenses and damage the respiratory tract. PM<sub>2.5</sub> and PM<sub>10</sub> can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. Very small particles of substances such as lead, sulfates, and nitrates

can cause lung damage directly or be absorbed into the blood stream, causing damage elsewhere in the body. Additionally, these substances can transport adsorbed gases such as chlorides or ammonium into the lungs, also causing injury. PM<sub>10</sub> tends to collect in the upper portion of the respiratory system, whereas PM<sub>2.5</sub> is small enough to penetrate deeper into the lungs and damage lung tissue. Suspended particulates also produce haze and reduce regional visibility and damage and discolor surfaces on which they settle.

A number of adverse health effects have been associated with exposure to PM<sub>2.5</sub> and PM<sub>10</sub>. For PM<sub>2.5</sub>, short-term exposures (up to 24 hours) have been associated with premature mortality, increased hospital admissions for heart or lung causes, acute and chronic bronchitis, asthma attacks, emergency room visits, respiratory symptoms, and restricted activity days. These adverse health effects have been reported primarily in infants, children, and older adults with preexisting heart or lung diseases. In addition, of all of the common air pollutants, PM<sub>2.5</sub> is associated with the greatest proportion of adverse health effects related to air pollution, both in the United States and world-wide, based on the World Health Organization's Global Burden of Disease Project. Short-term exposures to PM<sub>10</sub> have been associated primarily with worsening of respiratory diseases, including asthma and chronic obstructive pulmonary disease, leading to hospitalization and emergency department visits (CARB 2017).

Long-term (months to years) exposure to PM<sub>2.5</sub> has been linked to premature death, particularly in people who have chronic heart or lung diseases, and reduced lung function growth in children. The effects of long-term exposure to PM<sub>10</sub> are less clear, although several studies suggest a link between long-term PM<sub>10</sub> exposure and respiratory mortality. The International Agency for Research on Cancer published a review in 2015 that concluded that particulate matter in outdoor air pollution causes lung cancer (CARB 2017).

**Lead.** Lead in the atmosphere occurs as particulate matter. Sources of lead include leaded gasoline; the manufacturing of batteries, paints, ink, ceramics, and ammunition; and secondary lead smelters. Prior to 1978, mobile emissions were the primary source of atmospheric lead. Between 1978 and 1987, the phase out of leaded gasoline reduced the overall inventory of airborne lead by nearly 95%. With the phase out of leaded gasoline, secondary lead smelters, battery recycling, and manufacturing facilities are becoming lead-emissions sources of greater concern.

Prolonged exposure to atmospheric lead poses a serious threat to human health. Health effects associated with exposure to lead include gastrointestinal disturbances, anemia, kidney disease, and, in severe cases, neuromuscular and neurological dysfunction. Of particular concern are low-level lead exposures during infancy and childhood. Such exposures are associated with decrements in neurobehavioral performance, including intelligence quotient performance, psychomotor performance, reaction time, and growth. Children are highly susceptible to the effects of lead.

**Sulfates.** Sulfates are the fully oxidized form of sulfur, which typically occur in combination with metals or hydrogen ions. Sulfates are produced from reactions of SO<sub>2</sub> in the atmosphere. Sulfates can result in respiratory impairment and reduced visibility.

**Vinyl Chloride.** Vinyl chloride is a colorless gas with a mild, sweet odor that has been detected near landfills, sewage plants, and hazardous waste sites due to the microbial breakdown of chlorinated solvents. Short-term exposure to high levels of vinyl chloride in air can cause nervous system effects, such as dizziness, drowsiness, and headaches. Long-term exposure through inhalation can cause liver damage, including liver cancer.

**Hydrogen Sulfide.** Hydrogen sulfide is a colorless and flammable gas that has a characteristic odor of rotten eggs. Sources of hydrogen sulfide include geothermal power plants, petroleum refineries, sewers, and sewage treatment plants. Exposure to hydrogen sulfide can result in nuisance odors, as well as headaches and breathing difficulties at higher concentrations.

**Visibility-Reducing Particles.** Visibility-reducing particles are any particles in the air that obstruct the range of visibility. Effects of reduced visibility can include obscuring the viewshed of natural scenery, reducing airport safety, and discouraging tourism. Sources of visibility-reducing particles are the same as for PM<sub>2.5</sub> described above.

**Reactive Organic Gases.** Hydrocarbons are organic gases that are formed from hydrogen and carbon and sometimes other elements. Hydrocarbons that contribute to the formation of O<sub>3</sub> are referred to and regulated as ROG. Combustion engine exhaust, oil refineries, and fossil-fueled power plants are the sources of hydrocarbons. Other sources of hydrocarbons include evaporation from petroleum fuels, solvents, dry cleaning solutions, and paint.

The primary health effects of ROG result from the formation of O<sub>3</sub> and its related health effects. High levels of ROG in the atmosphere can interfere with oxygen intake by reducing the amount of available oxygen through displacement. Carcinogenic forms of hydrocarbons, such as benzene, are considered TACs. There are no separate health standards for ROG as a group.

### 3.2.1.3 Non-Criteria Air Pollutants

**Toxic Air Contaminants.** A substance is considered toxic if it has the potential to cause adverse health effects in humans, including increasing the risk of cancer upon exposure, or acute and/or chronic noncancer health effects. A toxic substance released into the air is considered a TAC. TACs are identified by federal and state agencies based on a review of available scientific evidence. In California, TACs are identified through a two-step process that was established in 1983 under the Toxic Air Contaminant Identification and Control Act. This two-step process of risk identification and risk management and reduction was designed to protect residents from the health effects of toxic substances in the air. In addition, the California Air Toxics “Hot Spots” Information and Assessment Act, Assembly Bill (AB) 2588, was enacted by the legislature in 1987 to address public concern over the release of TACs into the atmosphere. The law requires facilities emitting toxic substances to provide local air pollution control districts with information that will allow an assessment of the air toxics problem, identification of air toxics emissions sources, location of resulting hotspots, notification of the public exposed to significant risk, and development of effective strategies to reduce potential risks to the public over 5 years.

Examples include certain aromatic and chlorinated hydrocarbons, certain metals, and asbestos. TACs are generated by a number of sources, including stationary sources, such as dry cleaners, gas stations, combustion sources, and laboratories; mobile sources, such as automobiles; and area sources, such as landfills. Adverse health effects associated with exposure to TACs may include carcinogenic (i.e., cancer-causing) and noncarcinogenic effects. Noncarcinogenic effects typically affect one or more target organ systems and may be experienced on either short-term (acute) or long-term (chronic) exposure to a given TAC.

Diesel particulate matter (DPM) is part of a complex mixture that makes up diesel exhaust. Diesel exhaust is composed of two phases, gas and particle, both of which contribute to health risks. More than 90% of DPM is less than 1 micrometer in diameter (about 1/70th the diameter of a human hair) and thus is a subset of PM<sub>2.5</sub> (CARB 2019f). DPM is typically composed of carbon particles (“soot,” also called black carbon) and numerous organic compounds, including more than 40 known cancer-causing organic substances. Examples of these chemicals include polycyclic aromatic hydrocarbons, benzene, formaldehyde, acetaldehyde, acrolein, and 1,3-butadiene (CARB 2019f). CARB classified “particulate emissions from diesel-fueled engines” (i.e., DPM; 17 CCR 93000) as a TAC in August 1998. DPM is emitted from a broad range of diesel engines: on-road diesel engines of trucks, buses, and cars and off-road diesel engines, including locomotives, marine vessels, and heavy-duty construction equipment, among others. Approximately 70% of all airborne cancer risk in California is associated with DPM (CARB 2000). To reduce the cancer risk associated with DPM, CARB adopted a diesel risk reduction plan in 2000 (CARB

2000). Because it is part of PM<sub>2.5</sub>, DPM also contributes to the same noncancer health effects as PM<sub>2.5</sub> exposure. These effects include premature death; hospitalizations and emergency department visits for exacerbated chronic heart and lung disease, including asthma; increased respiratory symptoms; and decreased lung function in children. Several studies suggest that exposure to DPM may also facilitate development of new allergies (CARB 2019f). Those most vulnerable to noncancer health effects are children, whose lungs are still developing, and older adults, who often have chronic health problems.

**Odorous Compounds.** Odors are generally regarded as an annoyance rather than a health hazard. Manifestations of a person's reaction to odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache). The ability to detect odors varies considerably among the population and overall is quite subjective. People may have different reactions to the same odor. An odor that is offensive to one person may be perfectly acceptable to another (e.g., coffee roaster). An unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. In a phenomenon known as odor fatigue, a person can become desensitized to almost any odor, and recognition may only occur with an alteration in the intensity. The occurrence and severity of odor impacts depend on the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of receptors.

**Valley Fever.** Coccidioidomycosis, more commonly known as "Valley Fever," is an infection caused by inhalation of the spores of the *Coccidioides immitis* fungus, which grows in the soils of the southwestern United States. The spores can be found in some areas naturally occurring in soils, can become airborne when the soil is disturbed, and can subsequently be inhaled into the lungs. Valley Fever symptoms occur within 2 to 3 weeks of exposure. Approximately 60% of Valley Fever cases are mild and display flu-like symptoms or no symptoms at all. The fungus is prevalent in the soils of the San Joaquin Valley, including in Merced County. In 2018, Merced County had an incidence rate of 48.3 cases annually of Valley Fever per 100,000 people (CDPH 2018). *Coccidioides* is thought to grow best in soil after heavy rainfall and then disperse into the air most effectively during hot, dry conditions.

#### 3.2.1.4 Sensitive Receptors

Some receptors are considered more sensitive than others to air pollutants. The reasons for greater than average sensitivity include pre-existing health problems, proximity to an emissions source, or duration of exposure to air pollutants. The San Joaquin Valley Air Pollution Control District (SJVAPCD) considers hospitals, schools, parks, playgrounds, daycare centers, nursing homes, convalescent facilities, and residential areas as sensitive receptor land uses (SJVAPCD 2015a).

The nearest point of construction activities to the closest sensitive receptors (i.e., residential subdivision to the east) for the proposed changes in borrow areas would be approximately 11,630 feet from Borrow Area 12 and approximately 10,700 feet from Borrow Area 14. The nearest point of construction activities to the closest sensitive receptors (i.e., residences east of O'Neill Forebay) for the proposed campground construction would be approximately 10,900 feet. The nearest point of construction activities to the closest sensitive receptors (i.e., residence at Harper Lane south of Basalt Hill Borrow Area) for the proposed minor additions to contractor work area would be approximately 14,300 feet.



### 3.2.1.5 Existing Air Quality

Under both the federal and state Clean Air Acts (described in Section 3.2.2), standards identifying the maximum allowable concentration of criteria air pollutants have been adopted. The EPA and CARB use air quality monitoring data to determine if each air basin or county is in compliance with the applicable standards. If the concentration of a criteria air pollutant is lower than the standard or not monitored in an area, the area is classified as attainment or unclassified (unclassified areas are treated as attainment areas). If an area exceeds the standard, the area is classified as nonattainment for that pollutant.

The EPA has designated the SJVAB as a nonattainment area for the federal 8-hour O<sub>3</sub> standard, and CARB has designated the SJVAB as a nonattainment area for the state 1-hour and 8-hour O<sub>3</sub> standards. The SJVAB has also been designated as a nonattainment area for the state PM<sub>10</sub> standard and for the federal and state PM<sub>2.5</sub> standards. The SJVAB is designated as unclassified or attainment for the other criteria air pollutants. The status of the SJVAB with respect to the National Ambient Air Quality Standards (NAAQS) and the California Ambient Air Quality Standards (CAAQS) is summarized in Table 3.2-1.

**Table 3.2-1. San Joaquin Valley Air Basin Attainment Status (Merced County)**

| Pollutant   | Designation/Classification         |                      |
|---|------------------------------------|----------------------|
|   | Federal Standards                  | State Standards      |
| Ozone (O <sub>3</sub> ) – 1-hour                  | No federal standard <sup>1</sup>   | Nonattainment/severe |
| Ozone (O <sub>3</sub> ) – 8-hour                  | Nonattainment/extreme <sup>2</sup> | Nonattainment        |
| Nitrogen dioxide (NO <sub>2</sub> )               | Unclassifiable/attainment          | Attainment           |
| Carbon monoxide (CO)                              | Unclassifiable/attainment          | Unclassified         |
| Sulfur dioxide (SO <sub>2</sub> )                 | Unclassifiable/attainment          | Attainment           |
| Respirable particulate matter (PM <sub>10</sub> ) | Attainment <sup>3</sup>            | Nonattainment        |
| Fine particulate matter (PM <sub>2.5</sub> )      | Nonattainment/serious <sup>4</sup> | Nonattainment        |
| Lead <sup>5</sup>                                 | Unclassifiable/attainment          | Attainment           |
| Sulfates (SO <sub>4</sub> )                       | No federal standard                | Attainment           |
| Hydrogen sulfide (H <sub>2</sub> S)               | No federal standard                | Unclassified         |
| Vinyl chloride <sup>5</sup>                       | No federal standard                | No designation       |
| Visibility-reducing particles                     | No federal standard                | Unclassified         |

**Sources:** CARB 2019g; EPA 2020a; SJVAPCD n.d.

**Notes:** Attainment = meets the standards; Attainment (maintenance) = achieve the standards after a nonattainment designation; Nonattainment = does not meet the standards; Unclassified or unclassifiable = insufficient data to classify; Unclassifiable/attainment = meets the standard or is expected to meet the standard despite a lack of monitoring data.

<sup>1</sup> Effective June 15, 2005, the EPA revoked the federal 1-hour O<sub>3</sub> standard, including associated designations and classifications. EPA had previously classified the SJVAB as extreme nonattainment for this standard. EPA approved the 2004 Extreme Ozone Attainment Demonstration Plan (SJVAPCD 2004) on March 8, 2010 (effective April 7, 2010). Many applicable requirements for extreme 1-hour O<sub>3</sub> nonattainment areas continue to apply to the SJVAB.

<sup>2</sup> Though the San Joaquin Valley was initially classified as serious nonattainment for the 1997 8-hour O<sub>3</sub> standard, EPA approved San Joaquin Valley reclassification to extreme nonattainment in the Federal Register on May 5, 2010 (effective June 4, 2010).

<sup>3</sup> On September 25, 2008, EPA re-designated the San Joaquin Valley to attainment for the PM<sub>10</sub> NAAQS and approved the PM<sub>10</sub> Maintenance Plan.

<sup>4</sup> The San Joaquin Valley is designated nonattainment for the 1997 PM<sub>2.5</sub> NAAQS. EPA designated the San Joaquin Valley as nonattainment for the 2006 PM<sub>2.5</sub> NAAQS on November 13, 2009 (effective December 14, 2009).

<sup>5</sup> CARB has identified lead and vinyl chloride as TACs with no threshold level of exposure for adverse health effects determined.

Under authority and oversight from the EPA pursuant to Title 40 Code of Federal Regulations Part 58, the SJVAPCD and CARB maintain ambient air quality monitoring stations throughout the SJVAB. In addition, the SJVAPCD gathers air quality data from a variety of monitoring sites from other contracted agencies (e.g., U.S. Marine Corps). Air quality monitoring stations usually measure pollutant concentrations 10 feet above ground level; therefore, air quality is often referred to in terms of ground-level concentrations. Not all air pollutants are monitored at each station; thus, data are summarized from the closest representative station that monitors a specific pollutant.

The closest ambient air quality monitoring station to the Modified Project site that monitors O<sub>3</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, and NO<sub>2</sub> is located at 1034 South Minaret Street, Turlock, California 95380, approximately 30 miles northeast of the Modified Project site. The closest monitoring station for CO is the monitoring station at 814 14th Street, Modesto, California 95354, approximately 40 miles to the north. The data collected at these stations are considered generally representative of the air quality experienced in the Modified Project vicinity. The most recent background ambient air quality data from 2017 to 2019 and the number of days exceeding the ambient air quality standards are presented in Table 3.3-2.

**Table 3.2-2. Local Ambient Air Quality Data**

| Averaging Time   | Unit              | Agency/<br>Method | Ambient Air<br>Quality<br>Standard | Measured Concentration<br>by Year |       |       | Exceedances by Year |              |              |
|--|-------------------|-------------------|------------------------------------|-----------------------------------|-------|-------|---------------------|--------------|--------------|
|  |                   |                   |                                    | 2017                              | 2018  | 2019  | 2017                | 2018         | 2019         |
| Ozone (O <sub>3</sub> ) – Turlock Station                                    |                   |                   |                                    |                                   |       |       |                     |              |              |
| Maximum 1-hour<br>Concentration  | ppm               | State             | 0.09                               | 0.114                             | 0.108 | 0.090 | 3                   | 7            | 0            |
| Maximum 8-hour<br>Concentration  | ppm               | State             | 0.070                              | 0.100                             | 0.096 | 0.083 | 31                  | 28           | 13           |
|  |                   | Federal           | 0.070                              | 0.099                             | 0.095 | 0.082 | 31                  | 26           | 13           |
| Nitrogen Dioxide (NO <sub>2</sub> ) – Turlock Station                        |                   |                   |                                    |                                   |       |       |                     |              |              |
| Maximum 1-hour<br>Concentration  | ppm               | State             | 0.18                               | 0.058                             | 0.067 | 0.059 | 0                   | 0            | 0            |
|  |                   | Federal           | 0.100                              | 0.059                             | 0.067 | 0.059 | 0                   | 0            | 0            |
| Annual<br>Concentration  | ppm               | State             | 0.030                              | 0.009                             | 0.009 | 0.008 | 0                   | 0            | 0            |
|  |                   | Federal           | 0.053                              | 0.010                             | 0.010 | 0.009 | 0                   | 0            | 0            |
| Carbon Monoxide (CO) – Modesto Station                                       |                   |                   |                                    |                                   |       |       |                     |              |              |
| Maximum 1-hour<br>Concentration  | ppm               | State             | 20                                 | 2                                 | 2.7   | 1.8   | 0                   | 0            | 0            |
|  |                   | Federal           | 35                                 | 2                                 | 2.7   | 1.8   | 0                   | 0            | 0            |
| Maximum 8-hour<br>Concentration  | ppm               | State             | 9.0                                | 1.6                               | 2.1   | 1.3   | 0                   | 0            | 0            |
|  |                   | Federal           | 9                                  | 1.6                               | 2.1   | 1.3   | 0                   | 0            | 0            |
| Coarse Particulate Matter (PM <sub>10</sub> ) <sup>a</sup> – Turlock Station |                   |                   |                                    |                                   |       |       |                     |              |              |
| Maximum 24-hour<br>Concentration   | µg/m <sup>3</sup> | State             | 50                                 | 109.4                             | 250.4 | 98.4  | 91.8<br>(15)        | 79.6<br>(13) | 60.5<br>(10) |
|  |                   | Federal           | 150                                | 111.7                             | 238.7 | 95.9  | 0.0<br>(0)          | 6.1<br>(1)   | 0.0<br>(0)   |
| Annual<br>Concentration  | µg/m <sup>3</sup> | State             | 20                                 | 36.9                              | 37.5  | 30.6  | —                   | —            | —            |
| Fine Particulate Matter (PM <sub>2.5</sub> ) <sup>a</sup> – Turlock Station  |                   |                   |                                    |                                   |       |       |                     |              |              |
| Maximum 24-hour<br>Concentration   | µg/m <sup>3</sup> | Federal           | 35                                 | 72.3                              | 187.3 | 40.7  | 29.2<br>(29)        | 25.7<br>(25) | 8.3<br>(8)   |
| Annual<br>Concentration  | µg/m <sup>3</sup> | State             | 12                                 | 12.7                              | 17.2  | 10.6  | —                   | —            | —            |
|  |                   | Federal           | 12.0                               | 12.7                              | 17.2  | 10.6  | —                   | —            | —            |

**Sources:** CARB 2020; EPA 2020b.

**Notes:** — = not available; µg/m<sup>3</sup> = micrograms per cubic meter; ND = insufficient data available to determine the value; ppm = parts per million

Data taken from CARB iADAM (<http://www.arb.ca.gov/adam>) and EPA AirData (<http://www.epa.gov/airdata/>) represent the highest concentrations experienced over a given year.

Exceedances of federal and state standards are only shown for O<sub>3</sub>, particulate matter, and CO. Daily exceedances for particulate matter are estimated days because PM<sub>10</sub> and PM<sub>2.5</sub> are not monitored daily. All other criteria pollutants did not exceed federal or state standards during the years shown. There is no federal standard for 1-hour O<sub>3</sub>, annual PM<sub>10</sub>, or 24-hour SO<sub>2</sub>, nor is there a state 24-hour standard for PM<sub>2.5</sub>.

<sup>a</sup> Measurements of PM<sub>10</sub> and PM<sub>2.5</sub> are usually collected every 6 days and every 1 to 3 days, respectively. Number of days exceeding the standards is a mathematical estimate of the number of days concentrations would have been greater than the level of the standard had each day been monitored. The numbers in parentheses are the measured number of samples that exceeded the standard.

## 3.2.2 Relevant Plans, Policies, and Ordinances

### 3.2.2.1 Federal

#### Criteria Air Pollutants

The federal Clean Air Act, passed in 1970 and last amended in 1990, forms the basis for the national air pollution control effort. EPA is responsible for implementing most aspects of the Clean Air Act, including setting NAAQS for major air pollutants; setting hazardous air pollutant (HAP) standards; approving state attainment plans; setting motor vehicle emission standards; issuing stationary source emission standards and permits; and establishing acid rain control measures, stratospheric O<sub>3</sub> protection measures, and enforcement provisions. Under the Clean Air Act, NAAQS are established for the following criteria pollutants: O<sub>3</sub>, CO, NO<sub>2</sub>, SO<sub>2</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, and lead.

The NAAQS describe acceptable air quality conditions designed to protect the health and welfare of the citizens of the nation. The NAAQS (other than for O<sub>3</sub>, NO<sub>2</sub>, SO<sub>2</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, and those based on annual averages or arithmetic mean) are not to be exceeded more than once per year. NAAQS for O<sub>3</sub>, NO<sub>2</sub>, SO<sub>2</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> are based on statistical calculations over 1- to 3-year periods, depending on the pollutant. The Clean Air Act requires EPA to reassess the NAAQS at least every 5 years to determine whether adopted standards are adequate to protect public health based on current scientific evidence. States with areas that exceed the NAAQS must prepare state implementation plans that demonstrates how those areas will attain the standards within mandated time frames.

#### Hazardous Air Pollutants

The 1977 federal Clean Air Act amendments required EPA to identify national emission standards for HAPs to protect public health and welfare. HAPs include certain volatile organic chemicals, pesticides, herbicides, and radionuclides that present a tangible hazard, based on scientific studies of exposure to humans and other mammals. Under the 1990 federal Clean Air Act Amendments, which expanded the control program for HAPs, 189 substances and chemical families were identified as HAPs.

### 3.2.2.2 State

#### Criteria Air Pollutants

The federal Clean Air Act delegates the regulation of air pollution control and the enforcement of the NAAQS to the states. In California, the task of air quality management and regulation has been legislatively granted to CARB, with subsidiary responsibilities assigned to air quality management districts and air pollution control districts at the regional and county levels. CARB, which became part of the California Environmental Protection Agency in 1991, is responsible for ensuring implementation of the California Clean Air Act of 1988, responding to the federal Clean Air Act, and regulating emissions from motor vehicles and consumer products.

CARB has established the CAAQS, which are generally more restrictive than the NAAQS. The CAAQS describe adverse conditions, that is, pollution levels must be below these standards before a basin can attain the standard. Air quality is considered “in attainment” if pollutant levels are continuously below the CAAQS and violate the standards no more than once each year. The CAAQS for O<sub>3</sub>, CO, SO<sub>2</sub> (1-hour and 24-hour), NO<sub>2</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. The NAAQS and CAAQS are presented in Table 3.2-3.

**Table 3.2-3. Ambient Air Quality Standards**

| Pollutant                      | Averaging Time          | California Standards <sup>a</sup>  | National Standards <sup>b</sup>                        |                                       |
|--------------------------------|-------------------------|------------------------------------|--|---------------------------------------|
|                                |                         | Concentration <sup>c</sup>         | Primary <sup>c,d</sup>                                 | Secondary <sup>c,e</sup>              |
| O <sub>3</sub>                 | 1 hour                  | 0.09 ppm (180 µg/m <sup>3</sup> )  | —  | Same as primary standard <sup>f</sup> |
|                                | 8 hours                 | 0.070 ppm (137 µg/m <sup>3</sup> ) | 0.070 ppm (137 µg/m <sup>3</sup> ) <sup>f</sup>        |                                       |
| NO <sub>2</sub> <sup>g</sup>   | 1 hour                  | 0.18 ppm (339 µg/m <sup>3</sup> )  | 0.100 ppm (188 µg/m <sup>3</sup> )                     | Same as primary standard              |
|                                | Annual arithmetic mean  | 0.030 ppm (57 µg/m <sup>3</sup> )  | 0.053 ppm (100 µg/m <sup>3</sup> )                     |                                       |
| CO                             | 1 hour                  | 20 ppm (23 mg/m <sup>3</sup> )     | 35 ppm (40 mg/m <sup>3</sup> )                         | None                                  |
|                                | 8 hours                 | 9.0 ppm (10 mg/m <sup>3</sup> )    | 9 ppm (10 mg/m <sup>3</sup> )                          |                                       |
| SO <sub>2</sub> <sup>h</sup>   | 1 hour                  | 0.25 ppm (655 µg/m <sup>3</sup> )  | 0.075 ppm (196 µg/m <sup>3</sup> )                     | —                                     |
|                                | 3 hours                 | —                                  | —  | 0.5 ppm (1,300 µg/m <sup>3</sup> )    |
|                                | 24 hours                | 0.04 ppm (105 µg/m <sup>3</sup> )  | 0.14 ppm (for certain areas) <sup>g</sup>              | —                                     |
|                                | Annual                  | —                                  | 0.030 ppm (for certain areas) <sup>g</sup>             | —                                     |
| PM <sub>10</sub> <sup>i</sup>  | 24 hours                | 50 µg/m <sup>3</sup>               | 150 µg/m <sup>3</sup>                                  | Same as primary standard              |
|                                | Annual arithmetic mean  | 20 µg/m <sup>3</sup>               | —  |                                       |
| PM <sub>2.5</sub> <sup>i</sup> | 24 hours                | —                                  | 35 µg/m <sup>3</sup>                                   | Same as primary standard              |
|                                | Annual arithmetic mean  | 12 µg/m <sup>3</sup>               | 12.0 µg/m <sup>3</sup>                                 | 15.0 µg/m <sup>3</sup>                |
| Lead <sup>j,k</sup>            | 30-day average          | 1.5 µg/m <sup>3</sup>              | —  | —                                     |
|                                | Calendar quarter        | —                                  | 1.5 µg/m <sup>3</sup> (for certain areas) <sup>k</sup> | Same as primary standard              |
|                                | Rolling 3-month average | —                                  | 0.15 µg/m <sup>3</sup>                                 |                                       |
| Hydrogen sulfide               | 1 hour                  | 0.03 ppm (42 µg/m <sup>3</sup> )   | —  | —                                     |
| Vinyl chloride <sup>l</sup>    | 24 hours                | 0.01 ppm (26 µg/m <sup>3</sup> )   | —  | —                                     |
| Sulfates                       | 24 hours                | 25 µg/m <sup>3</sup>               | —  | —                                     |

Table 3.2-3. Ambient Air Quality Standards

| Pollutant                     | Averaging Time                        | California Standards <sup>a</sup>   | National Standards <sup>b</sup> |                          |
|-------------------------------|---------------------------------------|---|---------------------------------|--------------------------|
|                               |                                       | Concentration <sup>c</sup>  | Primary <sup>c,d</sup>          | Secondary <sup>c,e</sup> |
| Visibility reducing particles | 8 hours (10:00 a.m. to 6:00 p.m. PST) | Insufficient amount to produce an extinction coefficient of 0.23 per kilometer due to the number of particles when the relative humidity is less than 70% | —                               | —                        |

Source: CARB 2016.

**Notes:** O<sub>3</sub> = ozone; ppm = parts per million by volume; µg/m<sup>3</sup> = micrograms per cubic meter; NO<sub>2</sub> = nitrogen dioxide; CO = carbon monoxide; mg/m<sup>3</sup> = milligrams per cubic meter; SO<sub>2</sub> = sulfur dioxide; PM<sub>10</sub> = coarse particulate matter; PM<sub>2.5</sub> = fine particulate matter; PST = Pacific Standard Time.

- <sup>a</sup> California standards for O<sub>3</sub>, CO, SO<sub>2</sub> (1-hour and 24-hour), NO<sub>2</sub>, suspended particulate matter (PM<sub>10</sub>, PM<sub>2.5</sub>), and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. CAAQS are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
- <sup>b</sup> National standards (other than O<sub>3</sub>, NO<sub>2</sub>, SO<sub>2</sub>, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once per year. The O<sub>3</sub> standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over 3 years, is equal to or less than the standard. For PM<sub>10</sub>, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m<sup>3</sup> is equal to or less than 1. For PM<sub>2.5</sub>, the 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standard.
- <sup>c</sup> Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based on a reference temperature of 25 °C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25 °C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
- <sup>d</sup> National primary standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.
- <sup>e</sup> National secondary standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
- <sup>f</sup> On October 1, 2015, the national 8-hour O<sub>3</sub> primary and secondary standards were lowered from 0.075 to 0.070 ppm.
- <sup>g</sup> To attain the national 1-hour standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 parts per billion (ppb). Note that the national 1-hour standard is in units of ppb. California standards are in units of ppm. To directly compare the national 1-hour standard to the California standards, the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.
- <sup>h</sup> On June 2, 2010, a new 1-hour SO<sub>2</sub> standard was established, and the existing 24-hour and annual primary standards were revoked. To attain the national 1-hour standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO<sub>2</sub> national standards (24-hour and annual) remain in effect until 1 year after an area is designated for the 2010 standard, except that in areas designated nonattainment of the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.
- <sup>i</sup> On December 14, 2012, the national annual PM<sub>2.5</sub> primary standard was lowered from 15 µg/m<sup>3</sup> to 12.0 µg/m<sup>3</sup>. The existing national 24-hour PM<sub>2.5</sub> standards (primary and secondary) were retained at 35 µg/m<sup>3</sup>, as was the annual secondary standard of 15 µg/m<sup>3</sup>. The existing 24-hour PM<sub>10</sub> standards (primary and secondary) of 150 µg/m<sup>3</sup> were also retained. The form of the annual primary and secondary standards is the annual mean averaged over 3 years.
- <sup>j</sup> CARB has identified lead and vinyl chloride as TACs with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
- <sup>k</sup> The national standard for lead was revised on October 15, 2008, to a rolling 3-month average. The 1978 lead standard (1.5 µg/m<sup>3</sup> as a quarterly average) remains in effect until 1 year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

### Toxic Air Contaminants

The state Air Toxics Program was established in 1983 under AB 1807. The California TAC list identifies more than 700 pollutants, of which carcinogenic and noncarcinogenic toxicity criteria have been established for a subset of these pollutants pursuant to the California Health and Safety Code. In accordance with AB 2728, the state list

includes the (federal) HAPs. In 1987, the legislature enacted the Air Toxics “Hot Spots” Information and Assessment Act of 1987 (AB 2588) to address public concern over the release of TACs into the atmosphere. AB 2588 requires facilities emitting toxic substances to provide local air pollution control districts with information that will allow an assessment of the air toxics problem, identification of air toxics emissions sources, location of resulting hotspots, notification of the public exposed to significant risk, and development of effective strategies to reduce potential risks to the public over 5 years. TAC emissions from individual facilities are quantified and prioritized. High-priority facilities are required to perform a health risk assessment, and if specific thresholds are exceeded, the facility operator is required to communicate the results to the public in the form of notices and public meetings.

In 2000, CARB approved a comprehensive diesel risk reduction plan to reduce diesel emissions from new and existing diesel-fueled vehicles and engines (CARB 2000). The regulation is anticipated to result in an 80% decrease in statewide diesel health risk by 2020 compared with the diesel risk in 2000. Additional regulations apply to new trucks and diesel fuel, including the On-Road Heavy Duty Diesel Vehicle (In-Use) Regulation, the On-Road Heavy Duty (New) Vehicle Program, the In-Use Off-Road Diesel Vehicle Regulation, and the New Off-Road Compression-Ignition (Diesel) Engines and Equipment Program. These regulations and programs have timetables by which manufacturers must comply and existing operators must upgrade their diesel-powered equipment. There are several Airborne Toxic Control Measures that reduce diesel emissions, including In-Use Off-Road Diesel-Fueled Fleets (13 CCR 2449 et seq.) and In-Use On-Road Diesel-Fueled Vehicles (13 CCR 2025).

#### **California Health and Safety Code Section 41700**

Section 41700 of the California Health and Safety Code states that a person must not discharge from any source whatsoever quantities of air contaminants or other material that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public; that endanger the comfort, repose, health, or safety of any of those persons or the public; or that cause, or have a natural tendency to cause, injury or damage to business or property. Section 41700 also applies to sources of objectionable odors.

#### **3.2.2.3 Local**

##### **San Joaquin Valley Air Pollution Control District**

The SJVAPCD is the regional agency responsible for the regulation and enforcement of federal, state, and local air pollution control regulations in the SJVAB. The SJVAPCD jurisdiction includes all of Merced, San Joaquin, Stanislaus, Madera, Fresno, Kings, and Tulare Counties, and the San Joaquin Valley portion of Kern County.

##### ***Air Quality Plans***

The SJVAPCD has prepared several air quality attainment plans to achieve the O<sub>3</sub> and particulate matter standards, the most recent of which include the 2020 Reasonably Available Control Technology Demonstration for the 2015 8-Hour Ozone Standard (2020 RACT Demonstration) (SJVAPCD 2020), 2016 Plan for the 2008 8-Hour Ozone Standard (SJVAPCD 2016a), 2014 Reasonably Available Control Technology Demonstration for the 8-Hour Ozone State Implementation Plan (SJVAPCD 2014a), 2013 Plan for the Revoked 1-Hour Ozone Standard (SJVAPCD 2013), 2007 PM<sub>10</sub> Maintenance Plan and Request for Redesignation (SJVAPCD 2007), 2012 PM<sub>2.5</sub> Plan (SJVAPCD 2012), 2015 Plan for the 1997 PM<sub>2.5</sub> Standard (SJVAPCD 2015b), 2016 Moderate Area Plan for the 2012 PM<sub>2.5</sub> Standard (SJVAPCD 2016b), and the 2018 Plan for the 1997, 2006, and 2012 PM<sub>2.5</sub> Standards (SJVAPCD 2018). Brief summaries for the most recent plans are provided below.

### **2020 Reasonably Available Control Technology Demonstration for the 2015 8-Hour Ozone Standard**

The SJVAPCD adopted the 2020 RACT Demonstration on June 18, 2020. The San Joaquin Valley is classified as an extreme nonattainment area for the 2015 O<sub>3</sub> standard. The 2020 RACT Demonstration includes a comprehensive evaluation of all NO<sub>x</sub> and ROG SJVAPCD rules to ensure that each rule meets or exceeds Reasonably Available Control Technology. The 2020 RACT Demonstration fulfills Clean Air Act requirements and demonstrates that all federal Reasonably Available Control Technology requirements continue to be satisfied in the San Joaquin Valley.

### **SJVAPCD 2018 Plan for the 1997, 2006, and 2012 PM<sub>2.5</sub> Standards**

The SJVAPCD adopted the 2018 Plan for the 1997, 2006, and 2012 PM<sub>2.5</sub> Standards on November 15, 2018. This plan addresses the EPA federal 1997 annual PM<sub>2.5</sub> standard of 15 micrograms per cubic meter (µg/m<sup>3</sup>) and 24-hour PM<sub>2.5</sub> standard of 65 µg/m<sup>3</sup>, the 2006 24-hour PM<sub>2.5</sub> standard of 35 µg/m<sup>3</sup>, and the 2012 annual PM<sub>2.5</sub> standard of 12 µg/m<sup>3</sup>. This plan demonstrates attainment of the federal PM<sub>2.5</sub> standards as expeditiously as practicable.

#### ***Applicable Rules***

The SJVAPCD's primary means of implementing air quality plans is by adopting and enforcing rules and regulations. Stationary sources within the jurisdiction are regulated by the SJVAPCD's permit authority over such sources and through its review and planning activities. Unlike stationary source projects, which encompass very specific types of equipment, process parameters, throughputs, and controls, air pollutant emissions sources from land use development projects are mainly mobile sources (traffic); area sources (small dispersed stationary and other non-mobile sources), including exempt (i.e., no permit required) sources such as consumer products and landscaping equipment; and energy sources, such as furnaces and water heaters. Mixed-use land development projects may include nonexempt sources, including devices such as small to large boilers, stationary internal combustion engines, gas stations, or asphalt batch plants.

Notwithstanding nonexempt stationary sources, which would be permitted on a case-by-case basis, SJVAPCD Regulations IV, VIII and IX generally apply to land use development projects and are listed below:

- Regulation IV – Prohibitions
  - Rule 4102: Nuisance
  - Rule 4601: Architectural Coatings
  - Rule 4641: Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations
- Regulation VIII – Fugitive PM<sub>10</sub> Prohibition
  - Rule 8021: Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities
  - Rule 8031: Bulk Materials
  - Rule 8041: Carryout and Trackout
  - Rule 8051: Open Areas
  - Rule 8061: Paved and Unpaved Roads
  - Rule 8071: Unpaved Vehicle/Equipment Traffic Areas
- Regulation IX – Mobile and Indirect Sources
  - Rule 9110: General Conformity
  - Rule 9120: Transportation Conformity

- Rule 9410: Employer Based Trip Reduction
- Rule 9510: Indirect Source Review (ISR)
- Rule 9610: State Implementation Plan Credit for Emission Reductions Generated through Incentive Programs

Pursuant to Rule 8021, Section 6.3, the Modified Project would be required to develop, prepare, submit, obtain approval of, and implement a dust control plan to reduce fugitive dust impacts during Modified Project construction.

### **Merced County Association of Governments**

The Merced County Association of Governments (MCAG) is the regional planning agency for Merced County and serves as a forum for regional issues relating to transportation, the economy, community development, and the environment. MCAG serves as the federally designated metropolitan planning organization for Merced County. With respect to air quality planning and other regional issues, MCAG has prepared the 2018 Regional Transportation Plan and Sustainable Communities Strategy (2018 RTP/SCS) for the region (MCAG 2018). The 2018 RTP/SCS is a problem-solving guidance document that directly responds to what MCAG has learned about Merced County's challenges through the annual State of the Region report card.

In regards to air quality, the 2018 RTP/SCS sets the policy context in which MCAG participates, responds to the air district's air quality plans, and builds off of the air district's air quality plans and processes that are designed to meet health-based criteria pollutant standards in several ways (MCAG 2018). First, it complements air quality plans by providing guidance and incentives for public agencies to consider best practices that support the technology-based control measures in air quality plans. Second, the 2018 RTP/SCS emphasizes the need for local initiatives that can reduce the region's greenhouse gas emissions that contribute to climate change, an issue that is largely outside the focus of local attainment plans. Third, the 2018 RTP/SCS emphasizes the need for better coordination of land use and transportation planning, which heavily influences the emissions inventory from the transportation sectors of the economy. This also minimizes land use conflicts, such as residential development near freeways, industrial areas, or other sources of air pollution.

### **Merced Vision 2030 General Plan**

As required by state law, Merced County has adopted a general plan to guide land use decisions within the county. The general plan provides goals, policies, standards, and implementation programs to guide the physical development of a county. At a minimum, the general plan must address the topics of land use, transportation, housing, conservation, open space, noise, and safety. The Merced Vision 2030 General Plan (Merced County General Plan), adopted in 2013, has established the year 2030 as the plan's time horizon. The Air Quality Element of the Merced County General Plan is intended to protect public health and welfare by implementing measures that allow the SJVAPCD to attain federal and state air quality standards (Merced County 2013). The Air Quality Element sets forth a number of policies and standards to reduce current pollutant emissions and to require new development to include measures to comply with air quality standards. The following goal and policies would apply to the Modified Project (Merced County 2013):



### *Air Quality Element*

**Goal AQ-6:** Improve air quality in Merced County by reducing emissions of PM<sub>10</sub>, PM<sub>2.5</sub>, and other particulates from mobile and non-mobile sources.

- **Policy AQ-6.1: Particulate Emissions from Construction.** Support the SJVAPCD's efforts to reduce particulate emissions from construction, grading, excavation, and demolition to the maximum extent feasible and consistent with State and Federal regulations.
- **Policy AQ-6.2: Emissions from County Roads.** Require PM<sub>10</sub> and PM<sub>2.5</sub> emission reductions on County-maintained roads to the maximum extent feasible and consistent with State and Federal regulations.
- **Policy AQ-6.3: Paving Materials.** Require all access roads, driveways, and parking areas serving new commercial and industrial development to be constructed with materials that minimize particulate emissions and are appropriate to the scale and intensity of use.
- **Policy AQ-6.8: Voluntary Emissions Reduction Agreement.** Require all project applicants, where project emissions for any criteria pollutant have been evaluated to exceed SJVAPCD significance thresholds, to consult with the SJVAPCD regarding the establishment of a Voluntary Emissions Reduction Agreement between the applicant and the SJVAPCD. Support the SJVAPCD in its efforts to fund the Emission Reduction Incentive Program.

### 3.2.3 Thresholds of Significance

The following significance criteria from the 2019 EIS/EIR are used for the purpose of analysis in this SEIR. These criteria, which have not changed from the 2019 EIS/EIR, are identified in Chapter 7, Air Quality, of the 2019 EIS/EIR. A significant impact related to air quality would occur if the Modified Project would:

1. Conflict with or obstruct implementation of the applicable air quality plan.
2. Violate any ambient air quality standard or contribute substantially to an existing or projected violation of any ambient air quality standard.
3. Result in a cumulatively considerable net increase of any criteria pollutant for which the area of analysis is nonattainment under an applicable Federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone [O<sub>3</sub>] precursors).
4. Expose sensitive receptors to substantial pollutant concentrations.
5. Create objectionable odors affecting a substantial number of people.

Appendix G of the California Environmental Quality Act (CEQA) Guidelines (14 CCR 15000 et seq.) indicates that, where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to determine whether the Modified Project would have a significant impact on air quality.

## SJVAPCD Thresholds

### Criteria Air Pollutants

The SJVAPCD Guidance for Assessing and Mitigating Air Quality Impacts has established emissions-based thresholds of significance for criteria pollutants (SJVAPCD 2015a), which are identified in Table 3.2-4. As shown in Table 3.2-4, the SJVAPCD has established significance thresholds for construction emissions and operational permitted and non-permitted equipment and activities. The Guidance for Assessing and Mitigating Air Quality Impacts recommends evaluating impact significance for each of these categories of emissions separately.

**Table 3.2-4. SJVAPCD CEQA Significance Thresholds for Criteria Pollutants**

| Pollutant         | Construction Emissions<br>(tons per year) | Operational Emissions (tons per year) |   |
|-------------------|---|---------------------------------------|---|
|                   |   | Permitted Equipment<br>and Activities | Non-Permitted Equipment<br>and Activities |
| ROG               | 10  | 10                                    | 10  |
| NO <sub>x</sub>   | 10  | 10                                    | 10  |
| CO                | 100                                       | 100                                   | 100                                       |
| SO <sub>x</sub>   | 27  | 27                                    | 27  |
| PM <sub>10</sub>  | 15  | 15                                    | 15  |
| PM <sub>2.5</sub> | 15  | 15                                    | 15  |

**Source:** SJVAPCD 2015a.

**Note:** ROG = reactive organic gas; NO<sub>x</sub> = oxides of nitrogen; CO = carbon monoxide; SO<sub>x</sub> = sulfur oxides; PM<sub>10</sub> = coarse particulate matter; PM<sub>2.5</sub> = fine particulate matter.

In addition to the annual emissions mass thresholds described in Table 3.2-4, the SJVAPCD has also established screening criteria to determine whether a project would result in a CO hotspot at affected roadway intersections (SJVAPCD 2015a). If neither of the following criteria is met at any of the intersections affected by the Modified Project, the Modified Project would result in no potential to create a violation of the CO standard:

- A traffic study for the Modified Project indicates that the level of service (LOS) on one or more streets or at one or more intersections in the Modified Project site will be reduced to LOS E or F.
- A traffic study indicates that the Modified Project will substantially worsen an already existing LOS F on one or more streets or at more or more intersections in the Modified Project site.

### Ambient Air Quality Impacts

Appendix G of the State of California CEQA Guidelines (CEQA Guidelines) indicates that a project would have a significant air quality impact if it would violate any air quality standard or contribute substantially to an existing or projected air quality violation. The thresholds of significance for ambient air quality are based on the CAAQS and NAAQS, whereby a project would be considered to have a significant impact if its emissions are predicted to cause or contribute to a violation of an ambient air quality standard by exceeding any CAAQS or NAAQS (SJVAPCD 2015a). The Guidance for Assessing and Mitigating Air Quality Impacts recommends performing an ambient air quality analysis if a project would generate criteria air pollutant emissions from on-site sources that exceed 100 pounds per day (SJVAPCD 2015a). The ambient air quality assessment includes air quality dispersion modeling to determine air pollutant concentrations, which are added to the corresponding background levels of pollutant concentrations and compared to the relevant CAAQS and/or NAAQS. If the sum of air pollutant concentrations and background

pollutant levels is modeled to exceed a CAAQS or NAAQS, SJVAPCD recommends that specified significant impact levels be applied to the modeled concentrations to assess whether a project's emissions would contribute substantially to an existing violation of the CAAQS or NAAQS (SJVAPCD 2014b).

### **Toxic Air Contaminants**

The SJVAPCD has established thresholds of significance for combined TAC emissions from the operations of both permitted and non-permitted sources (SJVAPCD 2015a). Projects that have the potential to expose the public to TACs in excess of the following thresholds would be considered to have a significant air quality impact:

- Probability of contracting cancer for the maximally exposed individual equals or exceeds 20 in 1 million people<sup>4</sup>
- Hazard Index<sup>5</sup> for acute and chronic non-carcinogenic TACs equals or exceeds 1 for the maximally exposed individual

### **Odors**

As described in the Guidance for Assessing and Mitigating Air Quality Impacts, due to the subjective nature of odor impacts, there are no quantitative thresholds to determine if potential odors would have a significant impact (SJVAPCD 2015a). Projects must be assessed for odor impacts on a case-by-case basis for the following two situations:

- Generators: Projects that would potentially generate odorous emissions proposed to locate near existing sensitive receptors or other land uses where people may congregate
- Receivers: Residential or other sensitive receptor projects or other projects built for the intent of attracting people locating near existing odor sources

The SJVAPCD has identified some common types of facilities that have been known to produce substantial odors, as well as screening distances between these odor sources and receptors. These are depicted in Table 3.2-5.

**Table 3.2-5. Screening Levels for Potential Odor Sources**

| Type of Facility                        | Screening Distance (Miles) |
|---|----------------------------|
| Wastewater Treatment Facility           | 2                          |
| Sanitary Landfill                       | 1                          |
| Transfer Station                        | 1                          |
| Composting Facility                     | 1                          |
| Petroleum Facility                      | 2                          |
| Asphalt Batch Plant                     | 1                          |
| Chemical Manufacturing                  | 1                          |
| Fiberglass Manufacturing                | 1                          |
| Painting/Coating (i.e., auto body shop) | 1                          |

<sup>4</sup> The cancer risk threshold was increased from 10 to 20 in 1 million with approval of APR 1906 (Framework for Performing Health Risk Assessments) on June 30, 2015.

<sup>5</sup> Non-cancer adverse health impact, both for acute (short-term) and chronic (long-term) health effects, is measured against a hazard index, which is defined as the ratio of the predicted incremental exposure concentration from the project to a published reference exposure level that could cause adverse health effects as established by the Office of Environmental Health Hazard Assessment (OEHHHA). The ratio (referred to as the hazard quotient) of each noncarcinogenic substance that affects a certain organ system is added together to produce an overall hazard index for that organ system.

Table 3.2-5. Screening Levels for Potential Odor Sources

| Type of Facility         | Screening Distance (Miles) |
|--------------------------|----------------------------|
| Food Processing Facility | 1                          |
| Feed Lot/Dairy           | 1                          |
| Rendering Plant          | 1                          |

Source: SJVAPCD 2015a.

If a project would result in an odor source and sensitive receptors being located within these screening distances, additional analysis would be required. For projects involving new receptors locating near an existing odor source where there is currently no nearby development and for new odor sources locating near existing receptors, the SJVAPCD recommends the analysis be based on a review of odor complaints for similar facilities, with consideration also given to local meteorological conditions, particularly the intensity and direction of prevailing winds. Regarding the complaint record of the odor source facility (or similar facility), the facility would be considered to result in significant odors if there has been:

- More than one confirmed complaint per year averaged over a 3-year period.
- Three unconfirmed complaints<sup>6</sup> per year averaged over a 3-year period.

### **Cumulative**

A project's emissions may be individually limited but cumulatively considerable when taken in combination with past, present, and future development within the SJVAB. If a project would result in a significant impact based on the SJVAPCD annual thresholds of significance for criteria pollutants, then the project would also be considered cumulatively significant. However, if the project emissions are below the annual significance thresholds for criteria pollutants, the impact may still be cumulatively significant. For instance, if the project results in criteria pollutant concentrations that exceed any of the federal health-based ambient air concentration standards or causes a worsening of areas already exceeding those standards, the project's impacts would be considered individually significant and cumulatively significant. In addition, the combined emissions of the project and cumulative development located within the same area could potentially cause or worsen an exceedance of the concentration standards, whereby the project would have a cumulatively significant impact (SJVAPCD 2015a).

In regard to TACs, because impacts are localized and the SJVAPCD thresholds of significance for TACs have been established at an extremely conservative level, risks that equal or exceed the individual thresholds of significance are also considered cumulatively significant (SJVAPCD 2015a). No other cumulative risk thresholds would apply.

The SJVAPCD has not established cumulative significance thresholds regarding odor impacts.

<sup>6</sup> An unconfirmed complaint means that either the odor/air contaminant release could not be detected or the source/facility cannot be determined (SJVAPCD 2015a).

## 3.2.4 Impacts Analysis

### 3.2.4.1 Approach and Methodology

Emissions from construction and operation of the Modified Project were estimated using the California Emissions Estimator Model (CalEEMod) Version 2016.3.2.7. Specifically, emissions were estimated for the campground construction and day use area improvements and minor additions to contractor work area components of the Modified Project. Detailed modeling assumptions are included in Appendix B1. The changes in borrow area location of the Modified Project would result in shorter haul truck trips than what was assessed in the 2019 EIS/EIR for the Approved Project, which would equate to a comparable reduction in emissions. In addition, the additional construction assumptions element of the Modified Project is described for clarification purposes in this SEIR and would result in no change in the emissions or conclusions presented in the 2019 EIS/EIR.

#### Construction

Construction emissions were calculated for each year of construction and for the estimated worst-case day over the construction period, where the worst-case day is defined as the day with the greatest emissions. Default CalEEMod values were used where detailed Modified Project information was unknown or not available.

For purposes of estimating Modified Project construction emissions, the analysis contained herein is based on the following assumptions (duration of phases is approximate):

- Site preparation – minor additions to contractor work area: June 2021
- Grading – minor additions to contractor work area: June 2021–July 2021
- Site preparation – campground construction and day use area improvements: June 2022–July 2022
- Grading/trenching – campground construction and day use area improvements: July 2022–October 2022
- Building construction – campground construction and day use area improvements: October 2022–August 2023
- Paving – campground construction and day use area improvements: August 2023–November 2023
- Architectural coatings – campground construction and day use area improvements: November 2023–December 2023

While construction could now occur later than identified above, use of the above schedule assumptions provides a conservative basis for the analysis and remains valid for the purposes of estimating construction emissions.

The construction equipment mix and estimated hours of operation per day for the criteria air pollutant emissions modeling are based on default assumptions included in CalEEMod (see Table 3.2-6). For the campground construction and day use area improvements and minor additions to contractor work area components of the Modified Project, it was assumed that heavy construction equipment would be used 5 days per week (22 days per month) during Modified Project construction.

<sup>7</sup> CalEEMod is a statewide computer model developed in cooperation with air districts throughout the state to quantify criteria air pollutant emissions associated with the construction and operational activities from a variety of land use projects, such as residential, commercial, and industrial facilities. CalEEMod input parameters were based on information provided by the Modified Project proponent, or default model assumptions if Modified Project specifics were unavailable.

Table 3.2-6 also presents estimated worker trips, vendor (delivery/water truck) trips, and haul truck trips anticipated for each construction phase. During the grading/trenching phase of campground construction and day use area improvements, approximately 20,000 cubic yards of material would be imported, based on information provided by the Bureau of Reclamation (Reclamation). Assuming a haul truck capacity of 16 cubic yards per truck, it is anticipated that 1,250 round-trip haul truck trips (2,500 one-way trips) would be required to haul this material. Vendor trucks transporting concrete, steel, and other building materials were assumed during building construction. Vendor trucks were also assumed in the grading phases of the Modified Project components to account for water trucks. Also, the CalEEMod default one-way trip lengths were increased for workers (20 miles), vendor trucks (40 miles), and haul trucks (40 miles) to account for transport to and from the nearest cities. Table 3.2-6 presents the construction scenario assumptions used to estimate construction emissions for the Modified Project.

**Table 3.2-6. Construction Scenario Assumptions**

| Construction Phase                                    | One-Way Vehicle Trips      |                                  |                        | Equipment                 |          |                   |
|---|----------------------------|----------------------------------|------------------------|---------------------------|----------|-------------------|
|   | Average Daily Worker Trips | Average Daily Vendor Truck Trips | Total Haul Truck Trips | Equipment Type            | Quantity | Daily Usage Hours |
| Minor Additions to Contractor Work Area               |                            |                                  |                        |                           |          |                   |
| Site Preparation                                      | 18                         | 0                                | 0                      | Rubber-Tired Dozers       | 3        | 8                 |
|   |                            |                                  |                        | Tractors/Loaders/Backhoes | 4        | 8                 |
| Grading   | 20                         | 4                                | 0                      | Excavators                | 2        | 8                 |
|   |                            |                                  |                        | Graders                   | 1        | 8                 |
|   |                            |                                  |                        | Rubber-Tired Dozers       | 1        | 8                 |
|   |                            |                                  |                        | Scrapers                  | 2        | 8                 |
|   |                            |                                  |                        | Tractors/Loaders/Backhoes | 2        | 8                 |
| Campground Construction and Day Use Area Improvements |                            |                                  |                        |                           |          |                   |
| Site Preparation                                      | 18                         | 0                                | 0                      | Rubber-Tired Dozers       | 3        | 8                 |
|   |                            |                                  |                        | Tractors/Loaders/Backhoes | 4        | 8                 |
| Grading/ Trenching                                    | 24                         | 4                                | 2,500                  | Excavators                | 2        | 8                 |
|   |                            |                                  |                        | Graders                   | 1        | 8                 |
|   |                            |                                  |                        | Rubber-Tired Dozers       | 1        | 8                 |
|   |                            |                                  |                        | Scrapers                  | 2        | 8                 |
|   |                            |                                  |                        | Tractors/Loaders/Backhoes | 2        | 8                 |
|   |                            |                                  |                        | Trencher                  | 1        | 8                 |
| Building Construction                                 | 24                         | 20                               | 0                      | Cranes                    | 1        | 7                 |
|   |                            |                                  |                        | Forklifts                 | 3        | 8                 |
|   |                            |                                  |                        | Generator Sets            | 1        | 8                 |
|   |                            |                                  |                        | Tractors/Loaders/Backhoes | 3        | 7                 |
|   |                            |                                  |                        | Welders                   | 1        | 8                 |
| Paving  | 16                         | 0                                | 0                      | Pavers                    | 2        | 8                 |
|   |                            |                                  |                        | Paving Equipment          | 2        | 8                 |
|   |                            |                                  |                        | Rollers                   | 2        | 8                 |
| Architectural Coatings                                | 10                         | 0                                | 0                      | Air Compressors           | 1        | 6                 |

**Notes:** See Appendix B1 for details.

## Operations

Emissions from the operational phase of the Modified Project were estimated using CalEEMod. Specifically, emissions were estimated for campground construction and day use area improvements only, because that is the only component of the Modified Project that would result in long-term operational emissions. Year 2024 was assumed as the first full year of proposed campground/improved San Luis Creek Day Use Area operations. For the maximum daily emissions, it was assumed that all campsites would be filled. For annual emissions, it was assumed that the proposed campground would have an average occupancy rate of 40%, based on input from the California Department of Parks and Recreation (Heberling, pers. comm. 2020). Default CalEEMod values were used where detailed Modified Project information was unknown or not available. Detailed modeling assumptions are included in Appendix B1 and a summary of assumptions by source is provided below.

### Area Sources

CalEEMod was used to estimate operational emissions from area sources, which include emissions from consumer product use, architectural coatings, and landscape maintenance equipment. Consumer products are chemically formulated products used by household and institutional consumers, including items such as cleaning compounds, cosmetics, personal care products, disinfectants, and sanitizers (CAPCOA 2017). Consumer product VOC emissions are estimated in CalEEMod based on the floor area of buildings and on the default factor of pounds of VOC per building square foot per day. For the proposed paved areas, CalEEMod estimates VOC emissions associated with use of surface degreasers based on a square footage of paved surface area and pounds of VOC per square foot per day.

VOC off-gassing emissions result from evaporation of solvents contained in surface coatings such as in paints and primers used during building maintenance. CalEEMod calculates the VOC evaporative emissions from application of nonresidential surface coatings based on the VOC emission factor, the building square footage, the assumed fraction of surface area, and the reapplication rate. The model default reapplication rate of 10% of area per year is assumed. Consistent with CalEEMod defaults, it is assumed that the nonresidential surface area for painting equals 2.0 times the floor square footage, with 75% assumed for interior coating and 25% assumed for exterior surface coating. For asphalt surfaces, the architectural coating area is assumed to be 6% of the total square footage, consistent with the supporting CalEEMod studies provided as an appendix to the CalEEMod User's Guide (CAPCOA 2017).

Landscape maintenance includes fuel combustion emissions from equipment such as lawn mowers, rototillers, shredders/grinders, blowers, trimmers, chain saws, and hedge trimmers. The emissions associated with landscape equipment use are estimated based on CalEEMod default values for emission factors.

### Energy Sources

Electricity use would contribute indirectly to criteria air pollutant emissions; however, the emissions from electricity use are only quantified for greenhouse gas emissions in CalEEMod, because criteria pollutant emissions would occur at the site of power plants, which are not on the Modified Project site. A separate workbook was developed to estimate emissions associated with combustion of propane, which would be used to heat water for the campground restroom facilities. According to California Department of Parks and Recreation, it is anticipated that the proposed campground would require approximately 1,300 gallons of propane on an annual basis. Emission factors for propane combustion were from the EPA's AP-42 Section 1.5 (Liquefied Petroleum Gas Combustion) (EPA 2008a) and from A National Methodology and Emission Inventory for Residential Fuel Combustion (Haneke n.d.). No other sources of natural gas consumption are anticipated for operation.

### **Mobile Sources**

Mobile sources for the Modified Project would primarily be motor vehicles traveling to and from the Modified Project site. Motor vehicles may be fueled with gasoline, diesel, or alternative fuels. The default vehicle mix provided in CalEEMod was applied to the Modified Project. Emission factors representing year 2024 were used to estimate emissions associated with the first full year of new campground operations. As described in Section 3.7, Traffic and Transportation, of this SEIR, camping at Basalt Campground primarily attracts visitors interested in boating activities at either O'Neill Forebay or San Luis Reservoir. The proposed campground is expected to attract visitors interested in participating in these same recreational activities. The nearest alternative to similar camping activities would be provided by the Los Banos Creek Campground, approximately 16 miles to the southeast. Otherwise, additional alternative recreational camping and boating activities would be provided by several reservoirs and lakes within the foothills of the Sierra Nevada, including Hensley Lake, Millerton Lake, Eastman Lake, Lake McClure, and Don Pedro Reservoir. All are located 70 miles or more from the Modified Project. As such, an additional campground within San Luis Reservoir State Recreation Area would likely reduce trips made from communities in the nearby coastal regions to recreational camping and boating activities further to the east, thereby decreasing the net vehicle miles traveled in the region. However, this potential vehicle miles traveled reduction was not accounted for in CalEEMod; rather, default trip lengths for the surrogate mobile home land use were assumed for camping uses to provide a conservative estimate of vehicle miles traveled.

### **Campfire Emissions**

For campfire emissions, the Piled Fuels Biomass and Emissions Calculator (FERA et al. 2014) was used, assuming a campsite would burn a bundle of approximately 0.75 cubic feet of hardwood per night. For the maximum daily emissions, it was assumed that all campsites would be filled and would have a campfire, whereas for annual emissions, it was assumed that 40% of the campsites would have a campfire, based on the anticipated annual average occupancy rate of 40% provided by the California Department of Parks and Recreation.

### **Ambient Air Quality Impacts**

This analysis includes an ambient air quality assessment to evaluate potential ambient air quality impacts associated with the Modified Project and determine if emissions are predicted to cause or contribute to a violation of an ambient air quality standard by exceeding any NAAQS or CAAQS. Dispersion modeling results are provided in Appendix B2.

### **Construction**

The dispersion modeling was performed using the American Meteorological Society/EPA Regulatory Model (AERMOD), which is the model SJVAPCD requires for atmospheric dispersion of emissions. Off-site concentrations were modeled for the construction phase for the estimated Modified Project emissions in order to determine compliance with the CAAQS and NAAQS. Principal parameters of AERMOD for the Modified Project construction include the following:

- **Dispersion Modeling.** AERMOD was run with all sources emitting unit emissions (1 gram per second) to obtain the “X/Q” values. X/Q is a dispersion factor that is the average effluent concentration normalized by source strength and is used as a way to simplify the representation of emissions from many sources. The X/Q values of ground-level concentrations were determined for construction emissions using AERMOD and



the maximum concentrations determined for the 1-hour, 3-hour, 8-hour, 24-hour, and Period averaging periods recommended by the SJVAPCD.

- **Meteorological Data.** The latest 5-year meteorological data (2004–2008) for the Los Banos station (Station ID 66666) from SJVAPCD were used.
- **Urban and Rural Options.** Urban areas typically have more surface roughness as well as structures and low-albedo surfaces that absorb more sunlight—and thus more heat—relative to rural areas. However, in accordance with the SJVAPCD guidelines, the rural dispersion option was selected due to the undeveloped nature of the Modified Project area.
- **Modeling Options.** The modeling included the use of standard regulatory default options.
- **Terrain Characteristics.** Digital elevation model files were imported into AERMOD so that complex terrain features were evaluated as appropriate. The National Elevation Dataset with resolution of 1/3 arc-second was used.
- **Modeling Grid.** A nested grid of sensitive receptors was evaluated to capture maximum ambient pollutant impacts. This telescoping grid of receptors was set up with the following resolutions:
  - 25-meter spacing on the facility boundary
  - 25-meter spacing from facility boundary to 100 meters
  - 50-meter spacing from 100 meters to 250 meters
  - 100-meter spacing from 250 meters to 500 meters
  - 250-meter spacing from 500 meters to 1 kilometer
  - 500-meter spacing from 1 kilometer to 2 kilometers
- **Source Release Characterizations.** For modeling construction emissions impacts using AERMOD, based on the types and number of concurrent activities for the Modified Project, it was assumed that the most intense activity would be located at the dam during development of the stability berm and expanded embankment. The construction area was modeled as a single area source with an initial vertical dimension of 1.4 meters and release height of 5 meters.

### Operations

Because operational activities would be minimal, ambient air quality modeling was not performed for operational activities associated with the Modified Project.

### 3.2.4.2 Impact Discussion

Threshold 1

*Would the Modified Project conflict with or obstruct implementation of the applicable air quality plan?*

| 2019 EIS/EIR Impact Determination                  | Modified Project Impact Determination              | New Significant Increase in Impact Severity? |
|--|--|--|
| Less than Significant with Mitigation Incorporated | Less than Significant with Mitigation Incorporated | No   |

The SJVAPCD has prepared plans to attain federal and state O<sub>3</sub> and particulate matter ambient air quality standards as required under the federal and California Clean Air Acts, as detailed in Section 3.2.2. The SJVAPCD has established thresholds of significance for criteria pollutant emissions (see Table 3.2-4) and projects with emissions below the annual thresholds of significance for criteria pollutants would be determined to “not conflict or obstruct implementation of the District’s air quality plan” (SJVAPCD 2015a). As analyzed in the 2019 EIS/EIR, the Approved Project would exceed the SJVAPCD annual thresholds of significance without mitigation. With mitigation, the Approved Project would result in emissions below the SJVAPCD thresholds.

#### **Campground Construction and Day Use Area Improvements and Minor Additions to Contractor Work Area**

As discussed under Threshold 2, emissions of criteria air pollutants associated with the minor additions to the contractor work area (construction only) and proposed campground area and San Luis Creek Day Use Area improvement (construction and operations) elements of the Modified Project would not exceed the SJVAPCD thresholds of significance. However, when summed with the Approved Project emissions, the combined emissions of the Modified Project would exceed the SJVAPCD thresholds without mitigation; therefore, a significant impact would occur. In order to mitigate for this impact, mitigation is provided. **Mitigation Measure AQ-1 (same as AQ-1 in the 2019 EIS/EIR)** requires lower emitting construction equipment, **Mitigation Measure AQ-2 (same as AQ-2 in the 2019 EIS/EIR)** requires newer on-road trucks, and **Mitigation Measure AQ-3 (same as AQ-3 in the 2019 EIS/EIR)** requires implementation of a fugitive dust control plan with associated measures, such as stabilizing disturbed areas of dust and limiting trackout. After mitigation, construction and operational emissions of the Modified Project would not exceed the SJVAPCD thresholds and would not conflict with or obstruct implementation of the SJVAPCD’s air quality plans. This impact would be **less than significant after mitigation**.

#### **Changes in Borrow Area Location**

Borrow Areas 12 and 14 are closer to the dam construction site than Borrow Area 6 and existing roads allow for access from these borrow areas to the dam. Hauling materials from these borrow areas would be preferable for construction because it would reduce the length of haul trips, which would also reduce associated air pollutant emissions. Thus, emissions associated with this Modified Project element are conservatively assumed to be accounted for in the 2019 EIS/EIR. This element of the Modified Project would not conflict with or obstruct implementation of the SJVAPCD’s air quality plans and the impact would be **less than significant**.

#### **Additional Construction Assumptions**

As discussed in Chapter 2, Project Description, of this SEIR, the overall construction schedule and assumptions regarding personnel and equipment remain unchanged by the Modified Project. Although dewatering was only briefly mentioned in the 2019 EIS/EIR, this activity would be required for the Approved Project and is not a discreet addition for the Modified Project. Overall, the additional construction assumptions are described for clarification purposes in the SEIR. Based on the above considerations, these elements of the Modified Project would not conflict with or obstruct implementation of the SJVAPCD’s air quality plans. This impact would be **less than significant**.

#### **Summary**

In summary, construction and operational emissions of the Modified Project elements would not exceed the SJVAPCD thresholds of significance when summed with the emission of the Approved Project after implementation of mitigation to reduce construction emissions. As such, the Modified Project overall would not conflict with or obstruct implementation of the applicable air quality plans. This impact would be **less than significant after mitigation**.

### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant impacts with mitigation incorporated and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant with mitigation incorporated (see Section 3.2.5).

#### Threshold 2

***Would the Modified Project violate any ambient air quality standard or contribute substantially to an existing or projected violation of any ambient air quality standard?***

| 2019 EIS/EIR Impact Determination                  | Modified Project Impact Determination              | New Significant Increase in Impact Severity? |
|--|--|--|
| Less than Significant with Mitigation Incorporated | Less than Significant with Mitigation Incorporated | No   |

### Campground Construction and Day Use Area Improvements and Minor Additions to Contractor Work Area

#### Construction

Proposed construction activities associated with the various Modified Project elements would result in the temporary addition of pollutants to the local airshed caused by on-site sources (i.e., off-road construction equipment, soil disturbance, and ROG off-gassing from asphalt pavement and architectural coating) and off-site sources (i.e., on-road haul trucks, delivery trucks, and worker vehicle trips). Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation, and, for dust, the prevailing weather conditions. Therefore, such emission levels can only be estimated, with a corresponding uncertainty in precise ambient air quality impacts. Emissions associated with the construction and operation of the Modified Project elements were quantified where appropriate and were summed with the Approved Project emissions in order to determine the potential impact of the Modified Project overall.

Construction associated with the minor additions to the contractor work area was conservatively assumed to occur over a 2-month period, beginning in June 2021. Construction of the proposed campground and San Luis Creek Day Use Area improvements are anticipated to occur over an 18-month period, beginning in June 2022. Construction scenario assumptions for these elements of the Modified Project, including phasing, equipment mix, and vehicle trips, were based on information provided by Reclamation and CalEEMod generated default values where Modified Project specifics were not available. Complete detailed construction assumptions are included in Appendix B1 for these elements of the Modified Project.

Table 3.2-7 presents the estimated unmitigated annual emissions generated during construction of the Modified Project.

**Table 3.2-7. Unmitigated Annual Construction Criteria Air Pollutant Emissions**

| Year <sup>1</sup>                                    | ROG           | NO <sub>x</sub> | CO   | SO <sub>x</sub> | PM <sub>10</sub> | PM <sub>2.5</sub> |
|--|---------------|-----------------|------|-----------------|------------------|-------------------|
|  | Tons per year |                 |      |                 |                  |                   |
| Minor Additions to Contractor Work Area <sup>1</sup> |               |                 |      |                 |                  |                   |
| 2021   | 0.09          | 0.92            | 0.61 | <0.01           | 0.27             | 0.14              |

Table 3.2-7. Unmitigated Annual Construction Criteria Air Pollutant Emissions

| Year <sup>1</sup>  | ROG           | NO <sub>x</sub> | CO    | SO <sub>x</sub> | PM <sub>10</sub> | PM <sub>2.5</sub> |
|--|---------------|-----------------|-------|-----------------|------------------|-------------------|
|  | Tons per year |                 |       |                 |                  |                   |
| Campground Construction and Day Use Area Improvements <sup>2</sup> |               |                 |       |                 |                  |                   |
| 2022   | 0.25          | 2.64            | 1.98  | 0.01            | 0.72             | 0.38              |
| 2023   | 0.65          | 1.86            | 2.09  | 0.01            | 0.21             | 0.11              |
| Approved Project Construction <sup>3</sup>                         |               |                 |       |                 |                  |                   |
| Annual Average   | 8.35          | 86.76           | 67.16 | 0.20            | 12.97            | 6.22              |
| Modified Project - Annual Emissions                                | 9.00          | 89.40           | 69.25 | 0.21            | 13.69            | 6.60              |
| SJVAPCD Threshold  | 10            | 10              | 100   | 27              | 15               | 15                |
| Threshold Exceeded?  | No            | Yes             | No    | No              | No               | No                |

Source: Appendix B1.

Notes: ROG = reactive organic gases; NO<sub>x</sub> = oxides of nitrogen; CO = carbon monoxide; SO<sub>x</sub> = sulfur oxides; PM<sub>10</sub> = particulate matter with an aerodynamic diameter equal to or less than 10 microns; PM<sub>2.5</sub> = particulate matter with an aerodynamic diameter equal to or less than 2.5 microns; SJVAPCD = San Joaquin Valley Air Pollution Control District.

- <sup>1</sup> While construction could now occur later than identified by dates provided, use of the schedule assumptions provides a conservative basis for the analysis and remains valid for the purposes of estimating construction emissions.
- <sup>2</sup> These elements of the Modified Project were modeled using CalEEMod based on the assumptions outlined in the Construction subsection of Section 3.2.4.1, Approach and Methodology.
- <sup>3</sup> In the 2019 EIS/EIR, all haul truck trips were assumed to be 40-miles one-way, which overestimated the associated emissions. This was adjusted herein for haul trucks in order to account for the shorter trip length between the borrow areas and worksites. 15% of total trips were still conservatively assumed to require 40-mile one-way trips, with the remainder of trips occurring on site with a one-way trip length of 4 miles.

As shown in Table 3.2-7, emissions from construction of the minor additions to the contractor work area and proposed campground and San Luis Creek Day Use Area improvement elements of the Modified Project would be minimal and would not exceed the SJVAPCD thresholds. However, when summed with the Approved Project emissions, the unmitigated scenario of the overall Modified Project would exceed the SJVAPCD NO<sub>x</sub> threshold during construction; therefore, a significant impact would occur. Construction of the Modified Project would not exceed the SJVAPCD annual thresholds for ROG, CO, SO<sub>x</sub>, PM<sub>10</sub>, or PM<sub>2.5</sub>. Because the Modified Project would exceed the SJVAPCD thresholds during construction, it would result in a potentially significant impact related to the potential to violate any air quality standard or contribute substantially to an existing or projected air quality violation. In order to mitigate for this impact, mitigation is provided. **Mitigation Measure AQ-1** requires lower emitting construction equipment, **Mitigation Measure AQ-2** requires newer on-road trucks, and **Mitigation Measure AQ-3** requires implementation of a fugitive dust control plan with associated measures, such as stabilizing disturbed areas of dust and limiting trackout. Table 3.2-8 presents the estimated mitigated annual emissions generated during construction of the Modified Project.

Table 3.2-8. Mitigated Annual Construction Criteria Air Pollutant Emissions

| Year <sup>1</sup>  | ROG           | NO <sub>x</sub> | CO   | SO <sub>x</sub> | PM <sub>10</sub> | PM <sub>2.5</sub> |
|--|---------------|-----------------|------|-----------------|------------------|-------------------|
|  | Tons per year |                 |      |                 |                  |                   |
| Minor Additions to Contractor Work Area <sup>1</sup>               |               |                 |      |                 |                  |                   |
| 2021   | 0.02          | 0.08            | 0.64 | <0.01           | 0.11             | 0.05              |
| Campground Construction and Day Use Area Improvements <sup>2</sup> |               |                 |      |                 |                  |                   |
| 2022   | 0.08          | 0.60            | 2.16 | 0.01            | 0.33             | 0.15              |
| 2023   | 0.54          | 0.61            | 2.28 | 0.01            | 0.15             | 0.05              |

Table 3.2-8. Mitigated Annual Construction Criteria Air Pollutant Emissions

| Year <sup>1</sup>                                 | ROG           | NO <sub>x</sub> | CO    | SO <sub>x</sub> | PM <sub>10</sub> | PM <sub>2.5</sub> |
|---|---------------|-----------------|-------|-----------------|------------------|-------------------|
|   | Tons per year |                 |       |                 |                  |                   |
| Approved Project Construction <sup>3</sup>        |               |                 |       |                 |                  |                   |
| Annual Average                                    | 2.72          | 8.66            | 42.82 | 0.20            | 5.87             | 1.82              |
| Modified Project -<br>Maximum Annual<br>Emissions | 3.26          | 9.27            | 45.10 | 0.21            | 6.20             | 1.97              |
| SJVAPCD Threshold                                 | 10            | 10              | 100   | 27              | 15               | 15                |
| Threshold Exceeded?                               | No            | No              | No    | No              | No               | No                |

Source: Appendix B1.

Notes: ROG = reactive organic gases; NO<sub>x</sub> = oxides of nitrogen; CO = carbon monoxide; SO<sub>x</sub> = sulfur oxides; PM<sub>10</sub> = particulate matter with an aerodynamic diameter equal to or less than 10 microns; PM<sub>2.5</sub> = particulate matter with an aerodynamic diameter equal to or less than 2.5 microns; SJVAPCD = San Joaquin Valley Air Pollution Control District.

Emissions account for implementation of Mitigation Measures AQ-1, AQ-2, and AQ-3 described in Section 3.2.5, Mitigation Measures.

- <sup>1</sup> While construction could now occur later than identified, use of the schedule assumptions provides a conservative basis for the analysis and remains valid for the purposes of estimating construction emissions.
- <sup>2</sup> These elements of the Modified Project were modeled using CalEEMod based on the assumptions outlined in the Construction subsection of Section 3.2.4.1, Approach and Methodology.
- <sup>3</sup> In the 2019 EIS/EIR, all haul truck trips were assumed to be 40-miles one-way, which overestimated the associated emissions. This was adjusted herein for haul trucks in order to account for the shorter trip length between the borrow areas and worksites. 15% of total trips were still conservatively assumed to require 40-mile one-way trips, with the remainder of trips occurring on site with a one-way trip length of 4 miles.

As depicted in Table 3.2-8, after mitigation, construction emissions generated by the Modified Project would not exceed the SJVAPCD thresholds and would not violate any ambient air quality standard or contribute substantially to an existing or projected violation of any ambient air quality standard. This impact would be **less than significant after mitigation**.

In addition to the annual criteria air pollutant emissions analysis, an ambient air quality impacts assessment for the off-site atmosphere to which the general public has reasonable access should be performed if any on-site pollutants exceed 100 pounds per day, as recommended by the Guidance for Assessing and Mitigating Air Quality Impacts (SJVAPCD 2015a). Table 3.2-9 shows the maximum daily unmitigated construction emissions for the Modified Project, which includes on-site and off-site emissions.

Table 3.2-9. Unmitigated Maximum Daily Construction Criteria Air Pollutant Emissions

| Year <sup>1</sup>  | ROG            | NOx    | CO     | SOx  | PM10  | PM2.5 |
|--|----------------|--------|--------|------|-------|-------|
|  | Pounds per day |        |        |      |       |       |
| Minor Additions to Contractor Work Area <sup>2</sup>               |                |        |        |      |       |       |
| 2021   | 4.51           | 47.86  | 33.50  | 0.07 | 20.66 | 11.96 |
| Campground Construction and Day Use Area Improvements <sup>1</sup> |                |        |        |      |       |       |
| 2022   | 4.46           | 48.74  | 34.99  | 0.09 | 20.23 | 11.56 |
| 2023   | 43.21          | 18.40  | 19.63  | 0.06 | 2.18  | 1.08  |
| Approved Project Construction <sup>3</sup>                         |                |        |        |      |       |       |
| Daily Average  | 54.61          | 570.44 | 485.35 | 1.12 | 75.12 | 38.06 |

Table 3.2-9. Unmitigated Maximum Daily Construction Criteria Air Pollutant Emissions

| Year <sup>1</sup>                                 | ROG                   | NO <sub>x</sub> | CO            | SO <sub>x</sub> | PM <sub>10</sub> | PM <sub>2.5</sub> |
|---|-----------------------|-----------------|---------------|-----------------|------------------|-------------------|
|   | <i>Pounds per day</i> |                 |               |                 |                  |                   |
| <b>Modified Project - Maximum Daily Emissions</b> | <b>97.82</b>          | <b>619.18</b>   | <b>520.34</b> | <b>1.21</b>     | <b>95.78</b>     | <b>50.02</b>      |

Source: Appendix B1.

Notes: ROG = reactive organic gases; NO<sub>x</sub> = oxides of nitrogen; CO = carbon monoxide; SO<sub>x</sub> = sulfur oxides; PM<sub>10</sub> = particulate matter with an aerodynamic diameter equal to or less than 10 microns; PM<sub>2.5</sub> = particulate matter with an aerodynamic diameter equal to or less than 2.5 microns; SJVAPCD = San Joaquin Valley Air Pollution Control District.

Although maximum daily emissions represent only on-site sources, off-site vehicular emissions were also included in the summation as a conservative estimate.

- <sup>1</sup> While construction could now occur later than identified, use of the schedule assumptions provides a conservative basis for the analysis and remains valid for the purposes of estimating construction emissions.
- <sup>2</sup> These elements of the Modified Project were modeled using CalEEMod based on the assumptions outlined in the Construction subsection of Section 3.2.4.1, Approach and Methodology. Maximum daily emissions are from the summer or winter outputs, whichever was greater.
- <sup>3</sup> In the 2019 EIS/EIR, all haul truck trips were assumed to be 40-miles one-way, which overestimated the associated emissions. This was adjusted herein for haul trucks in order to account for the shorter trip length between the borrow areas and worksites. 15% of total trips were still conservatively assumed to require 40-mile one-way trips, with the remainder of trips occurring on site with a one-way trip length of 4 miles.

As shown in Table 3.2-9, the minor additions to the contractor work area and proposed campground area and San Luis Creek Day Use Area improvement elements of the Modified Project would be minimal and would not exceed 100 pounds per day during construction. However, when summed with the Approved Project emissions, the unmitigated scenario of the overall Modified Project would exceed 100 pounds per day of NO<sub>x</sub> and CO during construction; therefore, a potentially significant impact would occur. Construction of the Modified Project would not exceed the 100 pounds per day for ROG, SO<sub>x</sub>, PM<sub>10</sub>, or PM<sub>2.5</sub>. In order to mitigate for this potential impact, mitigation is provided. Mitigation Measure AQ-1 requires lower emitting construction equipment, Mitigation Measure AQ-2 requires newer on-road trucks, and Mitigation Measure AQ-3 requires implementation of a fugitive dust control plan with associated measures, such as stabilizing disturbed areas of dust and limiting trackout. Table 3.2-10 presents the estimated maximum daily mitigated emissions generated during construction of the Modified Project.

Table 3.2-10. Mitigated Maximum Daily Construction Criteria Air Pollutant Emissions

| Year <sup>1</sup>  | ROG            | NO <sub>x</sub> | CO     | SO <sub>x</sub> | PM <sub>10</sub> | PM <sub>2.5</sub> |
|--|----------------|-----------------|--------|-----------------|------------------|-------------------|
|  | Pounds per day |                 |        |                 |                  |                   |
| Minor Additions to Contractor Work Area <sup>2</sup>               |                |                 |        |                 |                  |                   |
| 2021   | 1.08           | 4.76            | 35.62  | 0.07            | 8.74             | 4.68              |
| Campground Construction and Day Use Area Improvements <sup>2</sup> |                |                 |        |                 |                  |                   |
| 2022   | 1.28           | 9.99            | 38.89  | 0.09            | 8.74             | 4.68              |
| 2023   | 43.04          | 6.66            | 21.03  | 0.06            | 1.58             | 0.51              |
| Approved Project Construction <sup>3</sup>                         |                |                 |        |                 |                  |                   |
| Daily Average  | 18.19          | 57.68           | 325.71 | 1.12            | 33.50            | 10.82             |
| Modified Project -<br>Maximum Daily<br>Emissions                   | 61.23          | 67.67           | 364.60 | 1.21            | 42.24            | 15.50             |

Source: Appendix B1.

**Notes:** ROG = reactive organic gases; NO<sub>x</sub> = oxides of nitrogen; CO = carbon monoxide; SO<sub>x</sub> = sulfur oxides; PM<sub>10</sub> = particulate matter with an aerodynamic diameter equal to or less than 10 microns; PM<sub>2.5</sub> = particulate matter with an aerodynamic diameter equal to or less than 2.5 microns; SJVAPCD = San Joaquin Valley Air Pollution Control District.

Although maximum daily emissions represent only on-site sources, off-site vehicular emissions were also included in the summation as a conservative estimate. Emissions account for implementation of Mitigation Measures AQ-1, AQ-2, and AQ-3 described in Section 3.2.5, Mitigation Measures.

- <sup>1</sup> While construction could now occur later than identified, use of the schedule assumptions provides a conservative basis for the analysis and remains valid for the purposes of estimating construction emissions.
- <sup>2</sup> These elements of the Modified Project were modeled using CalEEMod based on the assumptions outlined in the Construction subsection of Section 3.2.4.1, Approach and Methodology. Maximum daily emissions are from the summer or winter outputs, whichever was greater.
- <sup>3</sup> In the 2019 EIS/EIR, all haul truck trips were assumed to be 40-miles one-way, which overestimated the associated emissions. This was adjusted herein for haul trucks in order to account for the shorter trip length between the borrow areas and worksites. 15% of total trips were still conservatively assumed to require 40-mile one-way trips, with the remainder of trips occurring on site with a one-way trip length of 4 miles.

As shown in Table 3.2-10, with mitigation, all of the criteria air pollutants except for CO would be below 100 pounds per day during construction of the Modified Project. The SJVAPCD recommends that an ambient air quality assessment be performed when emissions of any criteria pollutant would equal or exceed any applicable threshold of significance for criteria pollutants or 100 pounds per day of any criteria pollutant (SJVAPCD 2015a). As such, an ambient air quality assessment was performed to determine whether construction of the Modified Project would exceed the NAAQS or CAAQS.

Maximum mitigated daily emissions were used as the basis for determining the Modified Project's potential impact on ambient air quality. For the initial assessment (Step 1) of the ambient air quality assessment, the maximum background concentration for the modeled Modified Project site for each pollutant and averaging period combination was added to the corresponding maximum ground-level concentration from Modified Project-related construction. The sum of these values was then compared to the corresponding ambient air quality standard. If the incremental increase in concentration from Modified Project-related sources did not cause an exceedance of an ambient air quality standard, then the analysis was complete for that source/receptor/pollutant combination. If the incremental increase in concentration from Modified Project-related sources caused an exceedance of an ambient air quality standard, then the analysis proceeded to Step 2. Step 2 was similar to Step 1 with one major difference—for Step 2, the maximum ground-level concentration of each pollutant and averaging period combination were compared to the pollutant's corresponding significant impact level. The significant impact level is used to evaluate whether the Modified Project's construction emissions would contribute to a violation of an ambient air quality standard, where the background level is close to or exceeds an ambient air quality standard. If the maximum ground-level concentration did not exceed the corresponding significant impact level, then the analysis was complete for that source/receptor/pollutant combination, and no further analysis was required. Table 3.2-11 presents a summary of the two-step process taken to determine whether construction activities associated with the Modified Project would cause or contribute to ambient air quality impacts, with the detailed ambient air quality assessment included in Appendix B2.

Table 3.2-11. Mitigated Construction Ambient Air Quality Impact Assessment Results

| Step 1 – Ambient Air Quality Standard Basis |                          |                          |   |              |
|---|--------------------------|--------------------------|---|--------------|
| Impact Parameter                            | Applicable Standard      | AAQS                     | Maximum Concentration: Modified Project + Background Levels |              |
|   |                          | $\mu\text{g}/\text{m}^3$ | $\mu\text{g}/\text{m}^3$                                    | Exceed AAQS? |
| 1-hour CO                                   | State                    | 22,900                   | 2,280   | No           |
|   | Federal                  | 40,100                   | 2,280   | No           |
| 8-hour CO                                   | State                    | 10,300                   | 1,593   | No           |
|   | Federal                  | 10,300                   | 1,593   | No           |
| 1-hour NO <sub>2</sub>                      | State                    | 339                      | 141   | No           |
|   | Federal                  | 188                      | 141   | No           |
| Annual NO <sub>2</sub>                      | State                    | 57                       | 16  | No           |
|   | Federal                  | 100                      | 18  | No           |
| 1-hour SO <sub>2</sub>                      | State                    | 655                      | 24  | No           |
|   | Federal                  | 196                      | 24  | No           |
| 24-Hour SO <sub>2</sub>                     | State                    | 105                      | 6   | No           |
|   | Federal                  | 367                      | 6   | No           |
| Annual SO <sub>2</sub>                      | Federal                  | 79                       | 1   | No           |
| 24-hour PM <sub>10</sub>                    | State                    | 50                       | 101   | Yes (Step 2) |
|   | Federal                  | 150                      | 99  | No           |
| Annual PM <sub>10</sub>                     | State                    | 20                       | 31  | Yes (Step 2) |
| 24-hour PM <sub>2.5</sub>                   | Federal                  | 35                       | 42  | Yes (Step 2) |
| Annual PM <sub>2.5</sub>                    | State                    | 12                       | 11  | No           |
|   | Federal                  | 12                       | 11  | No           |
| Step 2 – SIL Basis                          |                          |                          |   |              |
| Impact Parameter                            | Class II SILs            |                          | Modified Project Contribution                               |              |
|   | $\mu\text{g}/\text{m}^3$ |                          | $\mu\text{g}/\text{m}^3$                                    | Exceed SIL?  |
| 24-hour PM <sub>10</sub>                    | 5                        |                          | 2.69  | No           |
| Annual PM <sub>10</sub>                     | 1                        |                          | 0.38  | No           |
| 24-hour PM <sub>2.5</sub>                   | 5                        |                          | 1.35  | No           |

**Source:** Appendix B2.

**Notes:** AAQS = ambient air quality standard  $\mu\text{g}/\text{m}^3$  = micrograms per cubic meter; CO = carbon monoxide; NO<sub>2</sub> = nitrogen dioxide; SO<sub>2</sub> = sulfur dioxide; PM<sub>10</sub> = particulate matter with an aerodynamic diameter equal to or less than 10 microns; PM<sub>2.5</sub> = particulate matter with an aerodynamic diameter equal to or less than 2.5 microns; SIL = significant impact level.

As demonstrated in Table 3.2-11, the Modified Project would result in construction activities that would generate ambient concentrations of all criteria air pollutants that would be below the applicable thresholds. This impact would be **less than significant after mitigation**.

### Operations

Emissions from the operational phase of the Modified Project were estimated for the campground construction and day use area improvements only, because that is the only component of the Modified Project that would result in long-term operational emissions. Operation of the proposed campground/improved San Luis Creek Day Use Area would generate criteria pollutant emissions from area sources (consumer products, architectural coatings, and landscaping



equipment), propane combustion, mobile sources (vehicular traffic), and wood burning in campfires. Table 3.2-12 presents the estimated unmitigated annual emissions generated during operation of the Modified Project.

**Table 3.2-12. Unmitigated Annual Operational Criteria Air Pollutant Emissions**

| Source  | ROG           | NO <sub>x</sub> | CO   | SO <sub>x</sub> | PM <sub>10</sub> | PM <sub>2.5</sub> |
|---|---------------|-----------------|------|-----------------|------------------|-------------------|
|   | Tons per year |                 |      |                 |                  |                   |
| Campground Construction and Day Use Area Improvements |               |                 |      |                 |                  |                   |
| Area  | 0.17          | 0.01            | 0.59 | <0.01           | <0.01            | <0.01             |
| Propane   | <0.01         | 0.01            | 0.01 | <0.01           | <0.01            | <0.01             |
| Mobile  | 0.05          | 0.54            | 0.54 | <0.01           | 0.19             | 0.05              |
| Campfires   | <0.01         | 0.00            | 0.07 | 0.00            | 0.01             | 0.01              |
| Total Operational Emissions                           | 0.22          | 0.56            | 1.21 | 0.00            | 0.20             | 0.06              |
| SJVAPCD Threshold                                     | 10            | 10              | 100  | 27              | 15               | 15                |
| Threshold Exceeded?                                   | No            | No              | No   | No              | No               | No                |

**Source:** Appendix B1.

**Notes:** ROG = reactive organic gases; NO<sub>x</sub> = oxides of nitrogen; CO = carbon monoxide; SO<sub>x</sub> = sulfur oxides; PM<sub>10</sub> = particulate matter with an aerodynamic diameter equal to or less than 10 microns; PM<sub>2.5</sub> = particulate matter with an aerodynamic diameter equal to or less than 2.5 microns; SJVAPCD = San Joaquin Valley Air Pollution Control District.

As shown in Table 3.2-12, the proposed campground and San Luis Creek Day Use Area improvement elements of the Modified Project would result in minimal annual criteria air pollutant emissions and would not exceed the SJVAPCD thresholds during operations. Therefore, operation of the Modified Project would not violate any ambient air quality standard or contribute substantially to an existing or projected violation of any ambient air quality standard. This impact would be **less than significant**.

In addition to the annual criteria air pollutant emissions analysis, an ambient air quality impacts assessment for the off-site atmosphere to which the general public has reasonable access should be performed if any on-site pollutants exceed 100 pounds per day, as recommended by the Guidance for Assessing and Mitigating Air Quality Impacts (SJVAPCD 2015a). Table 3.2-13 shows the maximum daily unmitigated operational emissions for the Modified Project.

**Table 3.2-13. Unmitigated Maximum Daily Operational Criteria Air Pollutant Emissions**

| Source  | ROG            | NO <sub>x</sub> | CO    | SO <sub>x</sub> | PM <sub>10</sub> | PM <sub>2.5</sub> |
|---|----------------|-----------------|-------|-----------------|------------------|-------------------|
|   | Pounds per day |                 |       |                 |                  |                   |
| Campground Construction and Day Use Area Improvements |                |                 |       |                 |                  |                   |
| Area  | 1.01           | 0.08            | 6.52  | <0.01           | 0.04             | 0.04              |
| Propane   | <0.01          | 0.05            | 0.03  | <0.01           | <0.01            | <0.01             |
| Mobile  | 0.75           | 7.31            | 8.11  | 0.05            | 2.66             | 0.73              |
| Campfires   | 0.00           | 0.00            | <0.01 | 0.00            | <0.01            | <0.01             |
| Total Operational Emissions                           | 1.76           | 7.44            | 14.66 | 0.05            | 2.70             | 0.77              |

**Source:** Appendix B1.

**Notes:** ROG = reactive organic gases; NO<sub>x</sub> = oxides of nitrogen; CO = carbon monoxide; SO<sub>x</sub> = sulfur oxides; PM<sub>10</sub> = particulate matter with an aerodynamic diameter equal to or less than 10 microns; PM<sub>2.5</sub> = particulate matter with an aerodynamic diameter equal to or less than 2.5 microns; SJVAPCD = San Joaquin Valley Air Pollution Control District.

Although maximum daily emissions represent only on-site sources, off-site vehicular emissions were also included in the summation as a conservative estimate.

As shown in Table 3.2-13, the proposed campground and San Luis Creek Day Use Area improvement elements of the Modified Project would result in minimal daily criteria air pollutant emissions and would not exceed 100 pounds per day. Therefore, operation of the Modified Project would not violate any ambient air quality standard or contribute substantially to an existing or projected violation of any ambient air quality standard. This impact would be **less than significant**.

#### Changes in Borrow Area Location

As mentioned in Section 3.2.4.1, Approach and Methodology, emissions were estimated only for the campground construction and day use area improvements and minor additions to contractor work area elements of the Modified Project. Changes to the borrow area location would result in shorter haul truck trips than what was assessed in the 2019 EIS/EIR, which would equate to a comparable reduction in emissions. This element of the Modified Project would not violate any ambient air quality standard or contribute substantially to an existing or projected violation of any ambient air quality standard and the impact would be **less than significant**.

#### Additional Construction Assumptions

As discussed in Chapter 2 of this SEIR, the overall construction schedule and assumptions regarding personnel and equipment remain unchanged by the Modified Project. Although dewatering was only briefly mentioned in the 2019 EIS/EIR, this activity would be required for the Approved Project and is not a discreet addition for the Modified Project. Overall, the additional construction assumptions are described for clarification purposes in the SEIR. Based on the above considerations, these elements of the Modified Project would not violate any ambient air quality standard or contribute substantially to an existing or projected violation of any ambient air quality standard. This impact would be **less than significant**.

#### Summary

In summary, construction and operational emissions of the Modified Project elements would not exceed the SJVAPCD thresholds of significance when summed with the Approved Project emissions, after implementation of mitigation to reduce construction emissions. As such, the Modified Project overall would not violate any ambient air quality standard or contribute substantially to an existing or projected violation of any ambient air quality standard. This impact would be **less than significant after mitigation**.

#### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant impacts with mitigation incorporated and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant with mitigation incorporated (see Section 3.2.5).

#### Threshold 3

***Would the Modified Project result in a cumulatively considerable net increase of any criteria pollutant for which the area of analysis is nonattainment under an applicable Federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone [O<sub>3</sub>] precursors)?***

| 2019 EIS/EIR Impact Determination | Modified Project Impact Determination | New Significant Increase in Impact Severity? |
|-----------------------------------|---------------------------------------|--|
| Significant and Unavoidable       | Significant and Unavoidable           | No   |

Air pollution by nature is largely a cumulative impact. The nonattainment status of regional pollutants is a result of past and present development, and the SJVAPCD develops and implements plans for future attainment of ambient air quality standards. Based on these considerations, and as discussed in the Cumulative Impacts subsection of Section 3.2.3, Thresholds of Significance, the potential for the Modified Project to result in a cumulatively considerable impact, per the SJVAPCD guidance and thresholds, is based on the Modified Project's potential to exceed the project-specific annual thresholds. However, a project's emissions may be individually limited but cumulatively considerable when taken in combination with past, present, and future development within the SJVAB (SJVAPCD 2015a).

As discussed under Threshold 2, construction and operation of the Modified Project elements would result in a minimal increase in criteria air pollutant emissions and would not exceed the applicable SJVAPCD annual thresholds when summed with the Approved Project emissions, after implementation of Mitigation Measures AQ-1, AQ-2, and AQ-3 to reduce construction emissions, which require lower emitting construction equipment (AQ-1), newer on-road trucks (AQ-2), and implementation of a fugitive dust control plan with associated measures, such as stabilizing disturbed areas of dust and limiting trackout (AQ-3). However, other cumulative projects in the SJVAB would also result in emissions concurrently with the Modified Project, as listed in Chapter 3, Environmental Analysis, Table 3-1. Of particular note, because the B.F. Sisk Dam Raise and Reservoir Expansion Project (reservoir expansion project) would be constructed as a further modification to B.F. Sisk Dam and within an overlapping time period as the Modified Project, and because construction of the reservoir expansion project would result in emissions of NO<sub>x</sub> and PM<sub>10</sub> that exceed the SJVAPCD thresholds of significance after mitigation, as concluded by the joint EIR and Supplemental EIS prepared by Reclamation and the San Luis & Delta–Mendota Water Authority for the reservoir expansion project (SLDMWA and Reclamation 2020), the construction and operational emissions generated by the Modified Project would contribute to a cumulatively significant impact. As such, this impact would be **significant and unavoidable**.

#### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in significant and unavoidable impacts even with mitigation incorporated and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain significant and unavoidable.

#### Threshold 4

##### *Would the Modified Project expose sensitive receptors to substantial pollutant concentrations?*

| 2019 EIS/EIR Impact Determination                  | Modified Project Impact Determination              | New Significant Increase in Impact Severity? |
|--|--|--|
| Less than Significant with Mitigation Incorporated | Less than Significant with Mitigation Incorporated | No   |

As described in the Sensitive Receptors subsection of Section 3.2.1, the SJVAPCD considers hospitals, schools, parks, playgrounds, daycare centers, nursing homes, convalescent facilities, and residential areas as sensitive receptor land uses (SJVAPCD 2015a). For the Approved Project, the nearest residential receptor would be approximately 8,250 feet from the Modified Project site. For the additional project elements included in the Modified

Project, the nearest point of construction activities to the closest sensitive receptors (i.e., residential subdivision to the east) for the proposed changes in borrow areas would be approximately 11,630 feet from Borrow Area 12 and approximately 10,700 feet from Borrow Area 14; the nearest point of construction activities to the closest sensitive receptors (i.e., residences east of O'Neill Forebay) for the proposed campground construction would be approximately 10,900 feet; the nearest point of construction activities to the closest sensitive receptors (i.e., residence at Harper Lane south of Basalt Hill Borrow Area) for the proposed minor additions to contractor work areas would be approximately 14,300 feet.

### Toxic Air Contaminants

Construction of the Modified Project would require use of heavy-duty construction equipment and diesel trucks, which are subject to CARB Airborne Toxic Control Measures for in-use diesel construction equipment and diesel trucks to reduce diesel particulate emissions. According to the SJVAPCD, health risk assessments (which determine the exposure of sensitive receptors to toxic emissions) should be based on a 70-year exposure period for the maximally exposed individual resident. However, such assessments should also be limited to the period/duration of activities associated with the project. The construction period for the Modified Project is expected to be approximately 8 to 10 years with a maximum duration of 20 years if funding constraints are encountered, after which construction-related TAC emissions would cease. Also, as indicated in the 2019 EIS/EIR, DPM exposure was determined to be less than significant based on the substantial distance to sensitive receptors. For context, as noted in CARB's Air Quality and Land Use Handbook (CARB 2005), DPM concentrations are expected to drop off 80% at approximately 1,000 feet from a distribution center and 70% at 500 feet from a major freeway. Therefore, the exposure of sensitive receptors to DPM from the Modified Project is expected to be minimal because of the distance from the construction activities at the Modified Project site. In addition to the reduction in DPM concentrations due to distance from construction areas to sensitive receptors, the Modified Project would also implement Mitigation Measure AQ-1, which requires Tier 4 equipment that would also substantially reduce DPM emissions by requiring cleaner engines in off-road equipment.

In regard to long-term operations, the only elements of the Modified Project that would result in long-term emissions would be the proposed campground/improved San Luis Creek Day Use Area. However, based on the recreational activities at this land use, there are no meaningful sources of TACs for the operating phase of the Modified Project, and therefore, no reason to expect health impacts related to TACs. Overall, the Modified Project would not expose sensitive receptors to substantial TACs and this impact would be **less than significant**.

### Valley Fever Exposure

As discussed above for TACs, existing sensitive receptors would be an extensive distance from construction activities associated with the Modified Project that would generate substantial fugitive dust. Thus, potential exposure of sensitive receptors to spores of the *Coccidioides immitis* fungus would be minimal. In addition, as previously discussed in Section 3.2.2 and detailed in Mitigation Measure AQ-3, the Modified Project would comply with SJVAPCD Regulation VIII, which requires construction contractors to minimize fugitive dust through measures such as stabilizing disturbed areas, including storage piles, with water or chemical stabilizer/suppressant, as well as preventing trackout from on-road vehicles. Implementation of these best management practices would ensure fugitive dust impacts would be less than significant for all construction phases of the Modified Project and also control the release of the *Coccidioides immitis* fungus from construction activities. In addition, the Modified Project shall meet the requirements of Labor Code Section 6709 as follows:

- (a) The Legislature finds and declares that Valley Fever is caused by a microscopic fungus known as *Coccidioides immitis*, which lives in the top 2 to 12 inches of soil in many parts of the state. When soil is disturbed by activities such as digging, grading, driving, or is disturbed by environmental conditions such as or high winds, fungal spores can become airborne and can potentially be inhaled.
- (b) This section applies to a construction employer with employees working at worksites in counties where Valley Fever is highly endemic, including, but not limited to, the Counties of Fresno, Kern, Kings, Madera, Merced, Monterey, San Joaquin, San Luis Obispo, Santa Barbara, Tulare, and Ventura, where work activities disturb the soil, including, but not limited to, digging, grading, or other earth moving operations, or vehicle operation on dirt roads, or high winds. Highly endemic means that the annual incidence rate of Valley Fever is greater than 20 cases per 100,000 persons per year.
- (c) An employer subject to this section pursuant to subdivision (b) shall provide effective awareness training on Valley Fever to all employees by May 1, 2020, and annually by that date thereafter, and before an employee begins work that is reasonably anticipated to cause exposure to substantial dust disturbance. Substantial dust disturbance means visible airborne dust for a total duration of one hour or more on any day. The training may be included in the employer's injury and illness prevention program training or as a standalone training program. The training shall include all of the following topics:
  - (1) What Valley Fever is and how it is contracted.
  - (2) High risk areas and types of work and environmental conditions during which the risk of contracting Valley Fever is highest.
  - (3) Personal risk factors that may create a higher risk for some individuals, including pregnancy, diabetes, having a compromised immune system due to causes including, but not limited to, human immunodeficiency virus (HIV) or acquired immunodeficiency syndrome (AIDS), having received an organ transplant, or taking immunosuppressant drugs such as corticosteroids or tumor necrosis factor inhibitors.
  - (4) Personal and environmental exposure prevention methods that may include, but are not limited to, water-based dust suppression, good hygiene when skin and clothing is soiled by dust, limiting contamination of drinks and food, working upwind from dusty areas when feasible, wet cleaning dusty equipment when feasible, and wearing a respirator when exposure to dust cannot be avoided.
  - (5) The importance of early detection, diagnosis, and treatment to help prevent the disease from progressing. Early diagnosis and treatment are important because the effectiveness of medication is greatest in early stages of the disease.
  - (6) Recognizing common signs and symptoms of Valley Fever, which include fatigue, cough, fever, shortness of breath, headache, muscle aches or joint pain, rash on upper body or legs, and symptoms similar to influenza that linger longer than usual.
  - (7) The importance of reporting symptoms to the employer and seeking medical attention from a physician and surgeon for appropriate diagnosis and treatment.
  - (8) Common treatment and prognosis for Valley Fever.
- (d) Training materials may include existing material on Valley Fever developed by a federal, state, or local agency, including, but not limited to, the federal Centers for Disease Control and Prevention, the State Department of Public Health, or a local health department.

- (e) In the event that a county which has not been previously identified as being highly endemic is determined to be highly endemic per the annual report published by the State Department of Public Health, this section shall not apply in the initial year of that county's listing in the report. However, this section shall begin to apply to employers in that county in the year subsequent to the department's publication that initially identified the county as being highly endemic.
- (f) This section shall apply to an employer whenever employment exists in connection with the construction, alteration, painting, repairing, construction maintenance, renovation, removal, or wrecking of any fixed structure or its parts.

Overall, based on the preceding considerations, the Modified Project would not expose sensitive receptors to substantial Valley Fever exposure. This impact would be **less than significant**.

### Health Effects of Criteria Air Pollutants

Construction and operation of the Modified Project would not result in emissions that exceed the SJVAPCD emission thresholds for any criteria air pollutant after implementation of mitigation to reduce construction emissions, which requires lower emitting construction equipment (**Mitigation Measure AQ-1**), newer on-road trucks (**Mitigation Measure AQ-2**), and implementation of a fugitive dust control plan with associated measures, such as stabilizing disturbed areas of dust and limiting trackout (**Mitigation Measure AQ-3**).

ROG and NO<sub>x</sub> are precursors to O<sub>3</sub>, for which the SJVAB is designated as nonattainment with respect to the NAAQS and CAAQS. Nonetheless, because ROG and NO<sub>x</sub> emissions associated with Modified Project construction would not exceed the SJVAPCD thresholds after mitigation, it is not anticipated the Modified Project would contribute substantially to regional O<sub>3</sub> concentrations and the associated health effects. In addition, the operational emissions associated with the proposed campground/San Luis Creek Day Use Area improvements would not exceed the SJVAPCD thresholds without mitigation.

Construction and operation of the Modified Project would not contribute to exceedances of the NAAQS and CAAQS for NO<sub>2</sub>. Off-road construction equipment would be operating at various portions of the site at any one time. In addition, existing NO<sub>2</sub> concentrations in the area are well below the NAAQS and CAAQS standards. Construction of the Modified Project would result in a less-than-significant increase in localized NO<sub>x</sub> emissions after implementation of mitigation (see Table 3.2-11). Operation of the proposed campground/improved San Luis Creek Day Use Area would result in a minimal increase in localized NO<sub>x</sub> emissions without mitigation. Therefore, the Modified Project is not anticipated to result in substantial NO<sub>2</sub> emissions or the potential health effects associated with NO<sub>2</sub>.

Regarding localized CO from the Modified Project, although the daily emissions of CO from construction would exceed 100 pounds per day after mitigation, the ambient air quality assessment determined that the Modified Project's CO emissions would not contribute to significant health effects associated with this pollutant (see Table 3.2-11). In regard to operations, CO tends to be a localized impact associated with congested intersections. As discussed in Section 3.7 of the SEIR, the Modified Project would result in minimal new traffic trips and would not result in reductions in LOS at affected intersections to E or F or substantially worsen any intersections already operating at LOS F. All of the existing intersection and roadway LOS would remain the same after the addition of traffic volumes from operation of the Modified Project. Furthermore, based on the structural design of the intersections and roadways that would have the maximum hourly traffic volumes (i.e., State Route 33/ Interstate 5 West Junction, access road to Romero Visitor Center/State Route 152, and Basalt Road/State Route 152), there are no proximate sidewalks or other facilities for general public access. Thus, the Modified Project would not expose sensitive receptors to substantial concentrations or the potential health effects associated with CO.

Construction and operation of the Modified Project would also not exceed thresholds for PM<sub>10</sub> or PM<sub>2.5</sub>, and would not contribute to exceedances of the NAAQS and CAAQS for particulate matter or obstruct the SJVAB from coming into attainment for these pollutants. Although PM<sub>10</sub> and PM<sub>2.5</sub> emissions from construction would be less than significant before mitigation, the implementation of Mitigation Measures AQ-1, AQ-2, and AQ-3 would further reduce exhaust and fugitive dust particulate emissions by requiring lower emitting construction equipment (AQ-1), newer on-road trucks (AQ-2), and implementation of a fugitive dust control plan with associated measures (AQ-3). Due to the less-than-significant contribution of PM<sub>10</sub> and PM<sub>2.5</sub> during construction and operation, it is not anticipated that the Modified Project would result in potential health effects related to particulate matter.

The California Supreme Court's *Sierra Club v. County of Fresno* (2018) 6 Cal. 5th 502 decision (referred to herein as the Friant Ranch decision) (issued on December 24, 2018) addresses the need to correlate mass emission values for criteria air pollutants to specific health consequences and contains the following direction from the California Supreme Court: "The Environmental Impact Report (EIR) must provide an adequate analysis to inform the public how its bare numbers translate to create potential adverse impacts or it must explain what the agency *does* know and why, given existing scientific constraints, it cannot translate potential health impacts further." (*Italics original.*) (*Sierra Club v. County of Fresno* 2018.) Currently, the SJVAPCD, CARB, and EPA have not approved a quantitative method to reliably, meaningfully, and consistently translate the mass emission estimates for the criteria air pollutants resulting from the Modified Project to specific health effects. In addition, there are numerous scientific and technological complexities associated with correlating criteria air pollutant emissions from an individual project to specific health effects or potential additional nonattainment days.

In connection with the judicial proceedings culminating in issuance of the Friant Ranch decision, the South Coast Air Quality Management District (SCAQMD) and the SJVAPCD filed amicus briefs attesting to the extreme difficulty of correlating an individual project's criteria air pollutant emissions to specific health impacts. Both SJVAPCD and SCAQMD have among the most sophisticated air quality modeling and health impact evaluation capabilities of the air districts in California. The key, relevant points from SCAQMD and SJVAPCD briefs are summarized herein.

In requiring a health impact type of analysis for criteria air pollutants, it is important to understand how O<sub>3</sub> and particulate matter (PM) are formed, dispersed, and regulated. The formation of O<sub>3</sub> and PM in the atmosphere, as secondary pollutants,<sup>8</sup> involves complex chemical and physical interactions of multiple pollutants from natural and anthropogenic sources. The O<sub>3</sub> reaction is self-perpetuating (or catalytic) in the presence of sunlight because NO<sub>2</sub> is photochemically reformed from nitric oxide. In this way, O<sub>3</sub> is controlled by both NO<sub>x</sub> and ROG emissions (NRC 2005). The complexity of these interacting cycles of pollutants means that incremental decreases in one emission may not result in proportional decreases in O<sub>3</sub> (NRC 2005). Although these reactions and interactions are well understood, variability in emission source operations and meteorology creates uncertainty in the modeled O<sub>3</sub> concentrations to which downwind populations may be exposed (NRC 2005). Once formed, O<sub>3</sub> can be transported long distances by wind, and due to atmospheric transport, contributions of precursors from the surrounding region can also be important (EPA 2008b). Because of the complexity of O<sub>3</sub> formation, a specific tonnage amount of ROG or NO<sub>x</sub> emitted in a particular area does not equate to a particular concentration of O<sub>3</sub> in that area (SJVAPCD 2015c).

PM can be divided into two categories: directly emitted PM and secondary PM. Secondary PM, like O<sub>3</sub>, is formed via complex chemical reactions in the atmosphere between precursor chemicals such as SO<sub>x</sub> and NO<sub>x</sub> (SJVAPCD 2015c). Because of the complexity of secondary PM formation, including the potential to be transported long distances by wind, the tonnage of PM-forming precursor emissions in an area does not necessarily result in an

<sup>8</sup> Air pollutants formed through chemical reactions in the atmosphere are referred to as secondary pollutants.

equivalent concentration of secondary PM in that area (SJVAPCD 2015c). This is especially true for individual projects, like the Modified Project, where project-generated criteria air pollutant emissions are not derived from a single "point source," but from construction equipment and mobile sources (passenger cars and trucks) driving to, from, and around the Modified Project site.

Another important technical nuance is that health effects from air pollutants are related to the concentration of the air pollutant that an individual is exposed to, not necessarily the individual mass quantity of emissions associated with an individual project. For example, health effects from O<sub>3</sub> are correlated with increases in the ambient level of O<sub>3</sub> in the air a person breathes (SCAQMD 2015). However, it takes a large amount of additional precursor emissions to cause a modeled increase in ambient O<sub>3</sub> levels over an entire region (SCAQMD 2015). The lack of link between the tonnage of precursor pollutants and the concentration of O<sub>3</sub> and PM<sub>2.5</sub> formed is important because it is not necessarily the tonnage of precursor pollutants that causes human health effects; rather, it is the concentration of resulting O<sub>3</sub> that causes these effects (SJVAPCD 2015c). Indeed, the ambient air quality standards, which are statutorily required to be set by EPA at levels that are requisite to protect the public health, are established as concentrations of O<sub>3</sub> and PM<sub>2.5</sub> and not as tonnages of their precursor pollutants (EPA 2018b). Because the ambient air quality standards are focused on achieving a particular concentration region-wide, the tools and plans for attaining the ambient air quality standards are regional in nature. For CEQA analyses, project-generated emissions are typically estimated in pounds per day or tons per year and compared to mass daily or annual emission thresholds. While CEQA thresholds are established at levels that the air basin can accommodate without affecting the attainment date for the ambient air quality standards, even if a project exceeds established CEQA significance thresholds, this does not mean that one can easily determine the concentration of O<sub>3</sub> or PM that will be created at or near the Modified Project site on a particular day or month of the year, or what specific health impacts will occur (SJVAPCD 2015c).

In regard to regional concentrations and air basin attainment, the SJVAPCD emphasized that attempting to identify a change in background pollutant concentrations that can be attributed to a single project, even one as large as the entire Friant Ranch Specific Plan, is a theoretical exercise. The SJVAPCD brief noted that it "would be extremely difficult to model the impact on NAAQS attainment that the emissions from the Friant Ranch Project may have" (SJVAPCD 2015c). The situation is further complicated by the fact that background concentrations of regional pollutants are not uniform either temporally or geographically throughout an air basin, but are constantly fluctuating based upon meteorology and other environmental factors. SJVAPCD noted that the currently available modeling tools are equipped to model the impact of all emission sources in the SJVAB on attainment (SJVAPCD 2015c). The SJVAPCD brief then indicated that, "Running the photochemical grid model used for predicting O<sub>3</sub> attainment with the emissions solely from the Friant Ranch Project (which equate to less than 0.1% of the total NO<sub>x</sub> and VOC in the Valley) is not likely to yield valid information given the relative scale involved" (SJVAPCD 2015c).

SCAQMD and SJVAPCD have indicated that it is not feasible to quantify project-level health impacts based on existing modeling (SCAQMD 2015; SJVAPCD 2015c). Even if a metric could be calculated, it would not be reliable because the models are equipped to model the impact of all emission sources in an air basin on attainment and would likely not yield valid information or a measurable increase in O<sub>3</sub> concentrations sufficient to accurately quantify O<sub>3</sub>-related health impacts for an individual project.

Nonetheless, following the Supreme Court's Friant Ranch decision, some EIRs where estimated criteria air pollutant emissions exceeded applicable air district thresholds have included a quantitative analysis of potential project-generated health effects using a combination of a regional photochemical grid model<sup>9</sup> and the EPA Benefits

---

<sup>9</sup> The first step in the publicly available HIAs includes running a regional photochemical grid model, such as the Community Multiscale Air Quality model or the Comprehensive Air Quality Model with extensions to estimate the increase in concentrations of O<sub>3</sub> and PM<sub>2.5</sub> as a result of project-generated emissions of criteria and precursor pollutants. Air districts, such as the SCAQMD,



Mapping and Analysis Program (BenMAP or BenMAP–Community Edition).<sup>10</sup> To date, the publicly available health impact assessments (HIAs) typically present results in terms of an increase in health incidences and/or the increase in background health incidence for various health outcomes resulting from the project’s estimated increase in concentrations of O<sub>3</sub> and PM<sub>2.5</sub>, and have each concluded that the potential health impacts are negligible and potentially within the models’ margin of error.<sup>11</sup>

As explained in the SJVAPCD brief and noted previously, running the photochemical grid model used for predicting O<sub>3</sub> attainment with the emissions solely from an individual project like the Friant Ranch Project or the Modified Project is not likely to yield valid information given the relative scale involved. Accordingly, additional work in the industry and, more importantly, air district participation is needed to develop a more meaningful analysis to correlate project-level mass criteria air pollutant emissions and health effects for decision makers and the public. Furthermore, at the time of writing, no HIA has concluded that health effects estimated using the photochemical grid model and BenMAP approach are substantial, provided that the estimated project-generated incidences represent a very small percentage of the number of background incidences, potentially within the models’ margin of error.

Of importance, construction and operational emissions of the Modified Project elements would not exceed the SJVAPCD thresholds of significance when summed with the Approved Project emissions after implementation of Mitigation Measures AQ-1, AQ-2, and AQ-3 to reduce construction emissions. As such, the Modified Project overall would not violate any ambient air quality standard or contribute substantially to an existing or projected violation of any ambient air quality standard. This impact would be **less than significant after mitigation**.

### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant impacts with mitigation incorporated and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant with mitigation incorporated (see Section 3.2.5).

### Threshold 5

***Would the Modified Project create objectionable odors affecting a substantial number of people?***

| 2019 EIS/EIR Impact Determination | Modified Project Impact Determination | New Significant Increase in Impact Severity? |
|-----------------------------------|---------------------------------------|--|
| Less than Significant             | Less than Significant                 | No   |

use photochemical air quality models for regional air quality planning. These photochemical models are large-scale air quality models that simulate the changes of pollutant concentrations in the atmosphere using a set of mathematical equations characterizing the chemical and physical processes in the atmosphere (EPA 2017).

<sup>10</sup> After estimating the increase in concentrations of O<sub>3</sub> and PM<sub>2.5</sub>, the second step in the five examples includes use of BenMAP or BenMAP–Community Edition to estimate the resulting associated health effects. BenMAP estimates the number of health incidences resulting from changes in air pollution concentrations (EPA 2018c). The health impact function in BenMAP–Community Edition incorporates four key sources of data: (i) modeled or monitored air quality changes, (ii) population, (iii) baseline incidence rates, and (iv) an effect estimate. All of the five example HIAs focused on O<sub>3</sub> and PM<sub>2.5</sub>.

<sup>11</sup> The following CEQA documents included a quantitative HIA to address Friant Ranch: (1) California State University Dominguez Hills 2018 Campus Master Plan EIR (CSUDH 2019), (2) March Joint Powers Association K4 Warehouse and Cactus Channel Improvements EIR (March JPA 2019), (3) Mineta San Jose Airport Amendment to the Airport Master Plan EIR (Ramboll 2019a), (4) City of Inglewood Basketball and Entertainment Center Project EIR (City of Inglewood 2019), and (5) San Diego State University Mission Valley Campus Master Plan EIR (Ramboll 2019b).

Section 41700 of the California Health and Safety Code and SJVAPCD Rule 4102 (Public Nuisance) prohibit emissions from any source whatsoever in such quantities of air contaminants or other material that cause injury, detriment, nuisance, or annoyance to the public health or damage to property. The occurrence and severity of potential odor impacts depends on numerous factors: the nature, frequency, and intensity of the source; the wind speeds and direction; and the sensitivity of receiving location each contribute to the intensity of the impact. Although offensive odors seldom cause physical harm, they can be annoying, cause distress among the public, and generate citizen complaints.

### **Campground Construction and Day Use Area Improvements**

Odors would be potentially generated from vehicles and equipment exhaust emissions during construction of the proposed campground and San Luis Creek Day Use Area improvements. Potential odors produced during proposed construction would be attributable to concentrations of unburned hydrocarbons from tailpipes of construction equipment, architectural coatings, and asphalt pavement application. Such odors would disperse rapidly from the Modified Project site and generally occur at magnitudes that would not affect substantial numbers of people.

Regarding long-term operations, as identified in Table 3.2-5, land uses and industrial operations that are associated with odor complaints include agricultural uses, wastewater treatment plants, food-processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding facilities (SJVAPCD 2015a). Construction of the proposed campground and San Luis Creek Day Use Area improvements would not result in the creation of a land use that is commonly associated with offensive odors. In addition, there are no existing sensitive receptors in close proximity to the proposed campground or day use area. Therefore, this element of the Modified Project would not result in odor emissions and the impact would be **less than significant**.

### **Changes in Borrow Area Location**

Based on the short-term duration of construction activities associated with the additions to the contractor work area and the substantial distance to existing sensitive receptors, potential odors associated with this element of the Modified Project would be **less than significant**. This element of the Modified Project would not result in long-term operations or odors.

### **Minor Additions to Contractor Work Area**

Based on the short-term duration of construction activities associated with the additions to the contractor work area and the substantial distance to existing sensitive receptors, potential odors associated with this element of the Modified Project would be **less than significant**. This element of the Modified Project would not result in long-term operations or odors.

### **Additional Construction Assumptions**

As noted in Chapter 2 of this SEIR, overall, the additional construction assumptions are described for clarification purposes in the SEIR. Additionally, the campground construction and day use area improvements element of the Modified Project was discussed above. These elements of the Modified Project would not result in odor emissions and the impact would be **less than significant**.

## Summary

In summary, because the Approved Project would not result in substantial odors, and based on the above considerations for elements of the Modified Project, the Modified Project overall would not create objectionable odors affecting a substantial number of people. This impact would be **less than significant**.

## Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant.

### 3.2.5 Mitigation Measures

The following mitigation measures were identified in the 2019 EIS/EIR for the Approved Project and have been incorporated herein for the Modified Project where applicable and revised where appropriate.

**AQ-1 (Same as AQ-1 in 2019 EIS/EIR): Reduce Emissions from Off-Road Construction Equipment by Using Tier 4 Construction Equipment.** Impacts on air quality from construction activities will be reduced by using construction equipment compliant with the Tier 4 emission standards for off-road diesel engines instead of the fleet average for the San Joaquin Valley Air Basin. Records will be maintained by the construction contractor that demonstrate that actual emissions would not exceed the SJVAPCD's significance criteria and would be submitted to Reclamation monthly.

If NOx emissions are forecasted to exceed thresholds, then changes will be made so that the threshold is not exceeded, or work will be stopped.

**AQ-2 (Same as AQ-2 in 2019 EIS/EIR): Reduce Exhaust Emissions from On-Road Trucks.** All haul trucks, vendor trucks, and other heavy-heavy duty trucks operating on site with on-road engines will meet model year 2015 or better emission standards.

**AQ-3 (Same as AQ-3 in 2019 EIS/EIR): Implement Best Available Mitigation Measures for Construction Phase.** As required by the SJVAPCD, the project must apply the following best available mitigation measures for the construction phase:

- All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, covered with a tarp or other suitable cover or vegetative ground cover.
- All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant.
- All land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking.
- With the demolition of buildings up to six stories in height, all exterior surfaces of the building shall be wetted during demolition.

- When materials are transported off site, all material shall be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained.
- All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. *(The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions.) (Use of blower devices is expressly forbidden.)*
- Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions utilizing sufficient water or chemical stabilizer/suppressant.
- Within urban areas, trackout shall be immediately removed when it extends 50 or more feet from the site and at the end of each workday.
- An owner/operator of any site with 150 or more vehicle trips per day, or 20 or more vehicle trips per day by vehicles with three or more axles shall implement mitigation measures to prevent carryout and trackout.

### 3.2.6 Level of Significance After Mitigation

The Modified Project would result in a potentially significant impact with respect to conflicting with or obstructing implementation of the applicable air quality plan prior to mitigation. Mitigation Measures AQ-1, AQ-2, and AQ-3, which require exhaust and fugitive dust controls, would reduce impacts to a level below significance.

The Modified Project would result in a potentially significant impact with respect to violating ambient air quality standards or contributing substantially to an existing or projected violation. Mitigation Measures AQ-1, AQ-2, and AQ-3, which require exhaust and fugitive dust controls, would reduce impacts to a level below significance.

Construction and operation of the Modified Project elements would result in a minimal increase in criteria air pollutant emissions and would not exceed the applicable SJVAPCD annual thresholds when summed with the Approved Project emissions after implementation of Mitigation Measures AQ-1, AQ-2, and AQ-3 to reduce construction emissions. However, other cumulative projects in the SJVAB would also result in emissions concurrently with the Modified Project, including the reservoir expansion project, which would result in emissions of NO<sub>x</sub> and PM<sub>10</sub> that exceed the SJVAPCD thresholds after mitigation and would be constructed within the same general area and overlapping time period as the Modified Project. Therefore, the construction and operational emissions generated by the Modified Project would contribute to a cumulatively significant impact. As such, this impact would be significant and unavoidable.

The Modified Project would result in potentially significant impacts with respect to exposing sensitive receptors to substantial pollutant concentrations, specifically criteria air pollutants, during construction. Implementation of Mitigation Measures AQ-1, AQ-2, and AQ-3, which require exhaust and fugitive dust control, would reduce impacts to a level below significance. TAC exposure and potential for Valley Fever would be less than significant without additional mitigation.

The Modified Project would result in less-than-significant impacts with respect to creating objectionable odors affecting a substantial number of people. No mitigation is required.

## 3.3 Greenhouse Gas Emissions

This supplemental environmental impact report (SEIR) addresses proposed modifications to the B.F. Sisk Dam Safety of Dams Modification Project, which was previously evaluated in the B.F. Sisk Dam Safety of Dams Modification Project Environmental Impact Statement/Environmental Impact Report (2019 EIS/EIR). The project addressed in the 2019 EIS/EIR is referred to herein as the Approved Project; the Approved Project with proposed modifications identified since certification of the 2019 EIS/EIR is referred to herein as the Modified Project.

This section describes the existing conditions related to greenhouse gas (GHG) emissions, identifies associated regulatory requirements, evaluates potential impacts, and identifies any applicable mitigation measures related to implementation of the Modified Project.

### 3.3.1 Existing Conditions

#### 3.3.1.1 Climate Change Overview

Climate change refers to any significant change in measures of climate—such as temperature, precipitation, or wind patterns—lasting for an extended period of time (decades or longer). The Earth’s temperature depends on the balance between energy entering and leaving the planet’s system. Many factors, both natural and human, can cause changes in Earth’s energy balance, including variations in the sun’s energy reaching Earth, changes in the reflectivity of Earth’s atmosphere and surface, and changes in the greenhouse effect, which affects the amount of heat retained by Earth’s atmosphere (EPA 2017).

The greenhouse effect is the trapping and buildup of heat in the atmosphere (troposphere) near the Earth’s surface. The greenhouse effect traps heat in the troposphere through a three-part process as follows: (1) short-wave radiation emitted by the Sun is absorbed by the Earth, (2) the Earth emits a portion of this energy in the form of long-wave radiation, and (3) GHGs in the upper atmosphere absorb this long-wave radiation and emit it both into space and back toward the Earth. The greenhouse effect is a natural process that contributes to regulating the Earth’s temperature and creates a pleasant, livable environment on the Earth. Human activities that emit additional GHGs to the atmosphere increase the amount of infrared radiation that gets absorbed before escaping into space, thus enhancing the greenhouse effect and causing the Earth’s surface temperature to rise.

The scientific record of the Earth’s climate shows that the climate system varies naturally over a wide range of time scales and that, in general, climate changes prior to the Industrial Revolution in the 1700s can be explained by natural causes, such as changes in solar energy, volcanic eruptions, and natural changes in GHG concentrations. However, recent climate changes, in particular the warming observed over the past century, cannot be explained by natural causes alone. Rather, it is extremely likely that human activities have been the dominant cause of warming since the mid-twentieth century and are the most significant driver of observed climate change (IPCC 2013; EPA 2017). Human influence on the climate system is evident from the increasing GHG concentrations in the atmosphere, positive radiative forcing, observed warming, and improved understanding of the climate system (IPCC 2013). The atmospheric concentrations of GHGs have increased to levels unprecedented in the last 800,000 years, primarily from fossil fuel emissions and secondarily from emissions associated with land use changes (IPCC 2013). Continued emissions of GHGs will cause further warming and changes in all components of the climate system.

### 3.3.1.2 Greenhouse Gases

A GHG is any gas that absorbs infrared radiation in the atmosphere; in other words, GHGs trap heat in the atmosphere. As defined in California Health and Safety Code Section 38505(g), for purposes of administering many of the State's primary GHG emissions reduction programs, GHGs include carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF<sub>6</sub>), and nitrogen trifluoride. (See also 14 CCR 15364.5.)<sup>1</sup> Some GHGs (e.g., CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O) occur naturally and are emitted into the atmosphere through natural processes and human activities. Of these gases, CO<sub>2</sub> and CH<sub>4</sub> are the predominant GHGs emitted from human activities. Manufactured GHGs, which have a much greater heat-absorption potential than CO<sub>2</sub>, include fluorinated gases, such as HFCs, PFCs, and SF<sub>6</sub>, which are associated with certain industrial products and processes. The following paragraphs provide a summary of the most common GHGs and their sources.<sup>2</sup>

#### Carbon Dioxide

CO<sub>2</sub> is a naturally occurring gas and a by-product of human activities; it is the principal anthropogenic GHG that affects the Earth's radiative balance. Natural sources of CO<sub>2</sub> include respiration of bacteria, plants, animals, and fungi; evaporation from oceans; volcanic out-gassing; and decomposition of dead organic matter. Human activities that generate CO<sub>2</sub> are the combustion of fuels such as petroleum, coal, oil, natural gas, and wood, and changes in land use through loss of sequestered carbon.

#### Methane

CH<sub>4</sub> is produced through both natural and human activities. CH<sub>4</sub> is a flammable gas and is the main component of natural gas. Methane is produced through anaerobic (without oxygen) decomposition of waste in landfills, flooded rice fields, animal digestion, decomposition of animal wastes, production and distribution of natural gas and petroleum, coal production, and incomplete fossil fuel combustion.

#### Nitrous Oxide

N<sub>2</sub>O is produced through natural and human activities, mainly through agricultural activities and natural biological processes, although fuel burning and other processes also create N<sub>2</sub>O. Sources of N<sub>2</sub>O include soil cultivation practices (microbial processes in soil and water), especially the use of commercial and organic fertilizers, manure management, industrial processes (such as in nitric acid production, nylon production, and fossil-fuel-fired power plants), vehicle emissions, and using N<sub>2</sub>O as a propellant (such as in rockets, racecars, and aerosol sprays).

---

<sup>1</sup> Climate-forcing substances include GHGs and other substances such as black carbon and aerosols. This discussion focuses on the seven GHGs identified in California Health and Safety Code, Section 38505. Impacts associated with other climate-forcing substances are not evaluated herein.

<sup>2</sup> The descriptions of GHGs are summarized from the Intergovernmental Panel on Climate Change's Fourth Assessment Report (IPCC 2007), CARB's Glossary of Terms Used in GHG Inventories (CARB 2020a), and EPA's Glossary of Climate Change Terms (EPA 2016).

#### Fluorinated Gases

Fluorinated gases (also referred to as F-gases) are synthetic powerful GHGs emitted from many industrial processes. Fluorinated gases are commonly used as substitutes for stratospheric ozone-depleting substances (e.g., chlorofluorocarbons, hydrochlorofluorocarbons, and halons). The most prevalent fluorinated gases are discussed as follows.

- **Hydrofluorocarbons.** HFCs are compounds containing only hydrogen, fluorine, and carbon atoms. HFCs are synthetic chemicals used as alternatives to ozone-depleting substances in serving many industrial, commercial, and personal needs. HFCs are emitted as by-products of industrial processes and are used in manufacturing.
- **Perfluorocarbons.** PFCs are a group of human-made chemicals composed of carbon and fluorine only. These chemicals were introduced as alternatives, with HFCs, to the ozone-depleting substances. The two main sources of PFCs are aluminum production and semiconductor manufacturing. Because PFCs have stable molecular structures and do not break down through the chemical processes in the lower atmosphere, these chemicals have long lifetimes, ranging between 10,000 and 50,000 years.
- **Sulfur Hexafluoride.** SF<sub>6</sub> is a colorless gas soluble in alcohol and ether and slightly soluble in water. SF<sub>6</sub> is used for insulation in electric power transmission and distribution equipment, semiconductor manufacturing, the magnesium industry, and as a tracer gas for leak detection.
- **Nitrogen Trifluoride.** Nitrogen trifluoride is used in the manufacture of a variety of electronics, including semiconductors and flat panel displays.

#### Chlorofluorocarbons

Chlorofluorocarbons are synthetic chemicals that have been used as cleaning solvents, refrigerants, and aerosol propellants. Chlorofluorocarbons are chemically unreactive in the lower atmosphere (troposphere), and the production of chlorofluorocarbons was prohibited in 1987 due to the chemical destruction of stratospheric ozone.

#### Hydrochlorofluorocarbons

Hydrochlorofluorocarbons are a large group of compounds, whose structure is very close to that of chlorofluorocarbons—containing hydrogen, fluorine, chlorine, and carbon atoms—but including one or more hydrogen atoms. Like HFCs, hydrochlorofluorocarbons are used in refrigerants and propellants. Hydrochlorofluorocarbons were also used in place of chlorofluorocarbons for some applications; however, their use in general is being phased out.

#### Black Carbon

Black carbon is a component of fine particulate matter (i.e., particulate matter with an aerodynamic diameter equal to or less than 2.5 microns), which has been identified as a leading environmental risk factor for premature death. It is produced from the incomplete combustion of fossil fuels and biomass burning, particularly from older diesel engines and forest fires. Black carbon warms the atmosphere by absorbing solar radiation, influencing cloud formation, and darkening the surface of snow and ice, which accelerates heat absorption and melting. Black carbon is a short-lived substance that varies spatially, which makes it difficult to quantify its global warming potential (GWP). Diesel exhaust emissions are a major source of black carbon, and are toxic air contaminants that have been regulated and controlled in California for several decades to protect public health. In relation to declining diesel particulate matter as a result of the California Air Resources Board's (CARB's) regulations pertaining to diesel

engines, diesel fuels, and burning activities, CARB estimates that annual black carbon emissions in California have been reduced by 70% between 1990 and 2010, with 95% control expected by 2020 (CARB 2014).

### **Water Vapor**

The primary source of water vapor is evaporation from the ocean, with additional vapor generated by sublimation (change from solid to gas) from ice and snow, evaporation from other water bodies, and transpiration from plant leaves. Water vapor is the most important, abundant, and variable GHG in the atmosphere, and maintains a climate necessary for life.

### **Ozone**

Tropospheric ozone, which is created by photochemical reactions involving gases from both natural sources and human activities acts as a GHG. Stratospheric ozone, which is created by the interaction between solar ultraviolet radiation and molecular oxygen, plays a decisive role in the stratospheric radiative balance. Depletion of stratospheric ozone due to chemical reactions that may be enhanced by climate change results in an increased ground-level flux of ultraviolet-B radiation.

### **Aerosols**

Aerosols are suspensions of particulate matter in a gas emitted into the air through burning biomass (plant material) and fossil fuels. Aerosols can warm the atmosphere by absorbing and emitting heat and can cool the atmosphere by reflecting light.

#### 3.3.1.3 Global Warming Potential

Gases in the atmosphere can contribute to climate change both directly and indirectly. Direct effects occur when the gas itself absorbs radiation. Indirect radiative forcing occurs when chemical transformations of the substance produce other GHGs, when a gas influences the atmospheric lifetimes of other gases, and/or when a gas affects atmospheric processes that alter the radiative balance of the Earth (e.g., affect cloud formation or albedo) (EPA 2017). The Intergovernmental Panel on Climate Change developed the GWP concept to compare the ability of each GHG to trap heat in the atmosphere relative to another gas. The GWP of a GHG is defined as the ratio of the time-integrated radiative forcing from the instantaneous release of 1 kilogram of a trace substance relative to that of 1 kilogram of a reference gas (IPCC 2014). The reference gas used is CO<sub>2</sub>; therefore, GWP-weighted emissions are measured in metric tons (MT) of CO<sub>2</sub> equivalent (CO<sub>2</sub>e).

The current version of the California Emissions Estimator Model (CalEEMod) (Version 2016.3.2) assumes that the GWP for CH<sub>4</sub> is 25 (so emissions of 1 MT of CH<sub>4</sub> are equivalent to emissions of 25 MT of CO<sub>2</sub>), and the GWP for N<sub>2</sub>O is 298, based on the Intergovernmental Panel on Climate Change's Fourth Assessment Report (IPCC 2007). The GWP values identified in CalEEMod were applied to the Modified Project.

#### 3.3.1.4 Greenhouse Gas Inventories and Climate Change Conditions

##### **Global Inventory**

Anthropogenic GHG emissions worldwide in 2018 (the most recent year for which data is available) totaled approximately 51,800 million metric tons (MMT) of CO<sub>2</sub>e, excluding land use change and forestry (PBL 2019). Six



countries—China, the United States, the Russian Federation, India, Japan, and Brazil—and the European community accounted for approximately 65% of the total global emissions, or approximately 33,700 MMT CO<sub>2</sub>e (PBL 2019). Table 3.3-1 presents the top GHG-emissions-producing countries.

**Table 3.3-1. Six Top GHG-Producer Countries and the European Union**

| Emitting Countries (listed in order of emissions) | Greenhouse Gas Emissions (MMT CO <sub>2</sub> e) |
|---|--|
| China   | 13,600   |
| United States                                     | 6,700  |
| European Union                                    | 4,500  |
| India   | 3,700  |
| Russian Federation                                | 2,500  |
| Japan   | 1,400  |
| Brazil  | 1,300  |
| <b>Total</b>                                      | <b>33,700</b>                                    |

**Source:** PBL 2019.

**Notes:** GHG = greenhouse gas; MMT CO<sub>2</sub>e = million metric tons of carbon dioxide equivalent.

#### National and State Inventories

Per the U.S. Environmental Protection Agency (EPA) Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2018 (EPA 2020), total United States GHG emissions were approximately 6,676.6 MMT CO<sub>2</sub>e in 2018 (EPA 2020). The primary GHG emitted by human activities in the United States was CO<sub>2</sub>, which represented approximately 81.3% of total GHG emissions (5,428.1 MMT CO<sub>2</sub>e). The largest source of CO<sub>2</sub>, and of overall GHG emissions, was fossil-fuel combustion, which accounted for approximately 92.8% of CO<sub>2</sub> emissions in 2018 (5,031.8 MMT CO<sub>2</sub>e). Relative to 1990, gross United States GHG emissions in 2018 are higher by 3.7%, down from a high of 15.2% above 1990 levels in 2007. GHG emissions decreased from 2017 to 2018 by 2.9% (188.4 MMT CO<sub>2</sub>e) and overall, net emissions in 2018 were 10.2% below 2005 levels (EPA 2020).

According to California’s 2000–2018 GHG emissions inventory (2020 edition), California emitted 425 MMT CO<sub>2</sub>e in 2018, including emissions resulting from out-of-state electrical generation (CARB 2020b). The sources of GHG emissions in California include transportation, industry, electric power production from both in-state and out-of-state sources, residential and commercial activities, agriculture, high-GWP substances, and recycling and waste. The California GHG emission source categories and their relative contributions in 2018 are presented in Table 3.3-2.

**Table 3.3-2. GHG Emissions Sources in California**

| Source Category                          | Annual GHG Emissions (MMT CO <sub>2</sub> e) <sup>1</sup> | Percent of Total <sup>1</sup> |
|--|---|-------------------------------|
| Transportation                           | 169.5   | 40%                           |
| Industrial                               | 89.2  | 21%                           |
| Electric power <sup>2</sup>              | 63.1  | 15%                           |
| Agriculture                              | 32.6  | 8%                            |
| Commercial and Residential               | 41.4  | 10%                           |
| High Global-Warming Potential Substances | 20.5  | 5%                            |
| Recycling and Waste                      | 9.1   | 2%                            |
| <b>Totals</b>                            | <b>425.3</b>  | <b>100%</b>                   |

**Source:** CARB 2020b.

**Notes:** GHG = greenhouse gas; MMT CO<sub>2</sub>e = million metric tons of carbon dioxide equivalent.

Emissions reflect 2017 California GHG inventory.

<sup>1</sup> Totals may not sum due to rounding.

<sup>2</sup> Includes emissions associated with imported electricity.

Between 2000 and 2018, per-capita GHG emissions in California dropped from a peak of 14.0 MT per person in 2001 to 10.7 MT per person in 2018, representing a 24% decrease. In addition, total GHG emissions in 2018 were approximately 1 MMT CO<sub>2</sub>e higher than 2017 emissions (CARB 2020b).

#### Local Inventory

No official GHG inventory has been completed for Merced County. However, Merced County is currently developing a climate action plan, which will include inventories of past, current, and forecasted future GHG emissions.

#### Potential Effects of Climate Change

Globally, climate change has the potential to affect numerous environmental resources through uncertain impacts related to future air temperatures and precipitation patterns. The 2014 Intergovernmental Panel on Climate Change Synthesis Report (IPCC 2014) indicated that warming of the climate system is unequivocal and, since the 1950s, many of the observed changes are unprecedented over decades to millennia. Signs that global climate change has occurred include warming of the atmosphere and ocean, diminished amounts of snow and ice, and rising sea levels (IPCC 2014).

In California, climate change impacts have the potential to affect sea-level rise, agriculture, snowpack and water supply, forestry, wildfire risk, public health, frequency of severe weather events, and electricity demand and supply. The primary effect of global climate change has been a rise in average global tropospheric temperature. Reflecting the long-term warming trend since pre-industrial times, observed global mean surface temperature for the decade 2006–2015 was 0.87°C (likely between 0.75°C and 0.99°C) higher than the average over the 1850–1900 period (IPCC 2018). Scientific modeling predicts that continued emissions of GHGs at or above current rates would induce more extreme climate changes during the twenty-first century than were observed during the twentieth century. Human activities are estimated to have caused approximately 1.0°C (1.8°F) of global warming above pre-industrial levels, with a likely range of 0.8°C to 1.2°C (1.4°F to 2.2°F) (IPCC 2018). Global warming is likely to reach 1.5°C (2.7°F) between 2030 and 2052 if it continues to increase at the current rate (IPCC 2018).

Although climate change is driven by global atmospheric conditions, climate change impacts are felt locally. A scientific consensus confirms that climate change is already affecting California. The Office of Environmental Health Hazard Assessment identified various indicators of climate change in California, which are scientifically based measurements that track trends in various aspects of climate change. Many indicators reveal discernible evidence that climate change is occurring in California and is having significant, measurable impacts in the state. Changes in the state's climate have been observed including an increase in annual average air temperature with record warmth from 2012 to 2016, more frequent extreme heat events, more extreme drought, a decline in winter chill, an increase in cooling degree days and a decrease in heating degree days, and an increase in variability of statewide precipitation (OEHHA 2018).

Warming temperatures and changing precipitation patterns have altered California's physical systems—the ocean, lakes, rivers, and snowpack—upon which the state depends. Winter snowpack and spring snowmelt runoff from the Sierra Nevada and southern Cascade Mountains provide approximately one-third of the state's annual water supply. Impacts of climate on physical systems have been observed such as high variability of snow-water content

(i.e., amount of water stored in snowpack), decrease in snowmelt runoff, glacier change (loss in area), rise in sea levels, increase in average lake water temperature and coastal ocean temperature, and a decrease in dissolved oxygen in coastal waters (OEHHA 2018).

Impacts of climate change on biological systems, including humans, wildlife, and vegetation, have also been observed including climate change impacts on terrestrial, marine, and freshwater ecosystems. As with global observations, species responses include those consistent with warming—elevational or latitudinal shifts in range, changes in the timing of key plant and animal life cycle events, and changes in the abundance of species and in community composition. Humans are better able to adapt to a changing climate than plants and animals in natural ecosystems. Nevertheless, climate change poses a threat to public health as warming temperatures and changes in precipitation can affect vector-borne pathogen transmission and disease patterns in California as well as the variability of heat-related deaths and illnesses. In addition, since 1950, the area burned by wildfires each year has been increasing.

The California Natural Resources Agency (CNRA) has released four California Climate Change Assessments (2006, 2009, 2012, and 2018), which have addressed the following: acceleration of warming across the state, more intense and frequent heat waves, greater riverine flows, accelerating sea level rise, more intense and frequent drought, more severe and frequent wildfires, more severe storms and extreme weather events, shrinking snowpack and less overall precipitation, and ocean acidification, hypoxia, and warming. To address local and regional governments need for information to support action in their communities, California's Fourth Climate Change Assessment includes reports for nine regions of the state, including the San Joaquin Region, where the Modified Project is located. Key projected climate change issues for the San Joaquin Region include the following (CNRA 2018a):

- Agriculture is one of the most vulnerable sectors under climate change due in part of more frequent and severe drought, as well as tighter water supply.
- Ecosystems in the San Joaquin Valley are highly vulnerable to climate change given existing anthropogenic stressors and the lack of organization of landscape-scale science, funding, and mitigation of adverse impacts within the region.
- Water resources within the San Joaquin Valley region will be severely impacted by climate change.
- Infrastructure in the San Joaquin Valley—including urban, water, and transportation systems—may face increased stress from higher temperatures and extreme precipitation events, including droughts and floods.

## 3.3.2 Relevant Plans, Policies, and Ordinances

### 3.3.2.1 International

#### **United Nations Framework Convention on Climate Change, Kyoto Protocol, and Paris Agreement**

In 1992, numerous countries joined an international treaty, the United Nations Framework Convention on Climate Change, as a framework for international cooperation to combat climate change by limiting average global temperature increases and the resulting climate change, and coping with associated impacts. Currently, there are 197 Parties (196 States and 1 regional economic integration organization) in the United Nations Framework Convention on Climate Change (UNFCCC 2020).

By 1995, countries launched negotiations to strengthen the global response to climate change, and, two years later, adopted the Kyoto Protocol, which was the first international agreement to regulate GHG emissions. The Kyoto Protocol legally binds developed country Parties to emission reduction targets. The Protocol's first commitment period started in 2008 and ended in 2012. The second commitment period began on January 1, 2013 and will end in 2020. More than 160 countries signed the Kyoto Protocol (UNFCCC 2020). In 2001, President George W. Bush indicated that he would not submit the treaty to the U.S. Senate for ratification, which effectively ended the United States involvement in the Kyoto Protocol.

The 2015 Paris Agreement, adopted in Paris on December 12, 2015, marks the latest step in the evolution of the UN climate change regime and builds on the work undertaken under the Convention. The Paris Agreement charts a new course in the global effort to combat climate change. The Paris Agreement's central aim is to strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5°C (UNFCCC 2020). The Paris Agreement also aims to strengthen the ability of countries to deal with the impacts of climate change. The Paris Agreement requires all Parties to put forward their best efforts through nationally determined contributions and to strengthen these efforts in the years ahead.

The Paris Agreement entered into force on November 4, 2016, 30 days after the date on which at least 55 Parties to the Convention accounting in total for at least an estimated 55% of the total global GHG emissions deposited their instruments of ratification, acceptance, approval or accession with the Depositary (UNFCCC 2020).

### 3.3.2.2 Federal

#### **Massachusetts v. EPA**

In *Massachusetts v. EPA* (April 2007), the U.S. Supreme Court directed the EPA administrator to determine whether GHG emissions from new motor vehicles cause or contribute to air pollution that may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. In December 2009, the administrator signed a final rule with the following two distinct findings regarding GHGs under Section 202(a) of the federal Clean Air Act:

- The Administrator found that elevated concentrations of GHGs—CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs, and SF<sub>6</sub>—in the atmosphere threaten the public health and welfare of current and future generations. This is the “endangerment finding.”
- The Administrator further found the combined emissions of GHGs—CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, and HFCs—from new motor vehicles and new motor vehicle engines contribute to the GHG air pollution that endangers public health and welfare. This is the “cause or contribute finding.”

These two findings were necessary to establish the foundation for regulation of GHGs from new motor vehicles as air pollutants under the Clean Air Act.

#### **Energy Independence and Security Act of 2007**

The Energy Independence and Security Act of 2007 (December 2007), among other key measures, would do the following, which would aid in the reduction of national GHG emissions:

- Increase the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard requiring fuel producers to use at least 36 billion gallons of biofuel by 2022.

- Set a target of 35 miles per gallon for the combined fleet of cars and light trucks by model year 2020, and directs the National Highway Traffic Safety Administration (NHTSA) to establish a fuel economy program for medium- and heavy-duty trucks and create a separate fuel economy standard for work trucks.
- Prescribe or revise standards affecting regional efficiency for heating and cooling products and procedures for new or amended standards, energy conservation, energy-efficiency labeling for consumer electronic products, residential boiler efficiency, electric motor efficiency, and home appliances.

#### Federal Vehicle Standards

In 2007, in response to the *Massachusetts v. EPA* U.S. Supreme Court ruling, the Bush Administration issued Executive Order (EO) 13432 directing the EPA, the Department of Transportation, and the Department of Energy to establish regulations that reduce GHG emissions from motor vehicles, non-road vehicles, and non-road engines by 2008. In 2009, the NHTSA issued a final rule regulating fuel efficiency and GHG emissions from cars and light-duty trucks for model year 2011; and, in 2010, the EPA and NHTSA issued a final rule regulating cars and light-duty trucks for model years 2012 through 2016 (75 Fed. Reg. 25324–25728).

In 2010, President Obama issued a memorandum directing the Department of Transportation, Department of Energy, EPA, and NHTSA to establish additional standards regarding fuel efficiency and GHG reduction, clean fuels, and advanced vehicle infrastructure. In response to this directive, the EPA and NHTSA proposed stringent, coordinated federal GHG and fuel economy standards for model years 2017 through 2025 light-duty vehicles. The proposed standards projected to achieve 163 grams/mile of CO<sub>2</sub> in model year 2025, on an average industry fleet-wide basis, which is equivalent to 54.5 miles per gallon if this level were achieved solely through fuel efficiency. The final rule was adopted in 2012 for model years 2017 through 2021 (77 Fed. Reg. 62624–63200). On January 12, 2017, the EPA finalized its decision to maintain the current GHG emissions standards for model years 2022–2025 cars and light trucks.

In addition to the regulations applicable to cars and light-duty trucks described above, in 2011, the EPA and NHTSA announced fuel economy and GHG standards for medium- and heavy-duty trucks for model years 2014 through 2018. The standards for CO<sub>2</sub> emissions and fuel consumption are tailored to three main vehicle categories: combination tractors, heavy-duty pickup trucks and vans, and vocational vehicles. According to the EPA, this regulatory program will reduce GHG emissions and fuel consumption for the affected vehicles by 6 to 23% over the 2010 baselines (76 Fed. Reg. 57106–57513).

In August 2016, the EPA and NHTSA announced the adoption of the phase two program related to the fuel economy and GHG standards for medium- and heavy-duty trucks. The phase two program will apply to vehicles with model year 2018 through 2027 for certain trailers, and model years 2021 through 2027 for semi-trucks, large pickup trucks, vans, and all sizes of buses and work trucks. The final standards are expected to lower CO<sub>2</sub> emissions by approximately 1.1 billion MT and reduce oil consumption by up to 2 billion barrels over the lifetime of the vehicles sold under the program (83 FR 42986–43500).

In August 2018, EPA and NHTSA proposed to amend certain fuel economy and GHG standards for passenger cars and light trucks and establish new standards for model years 2021 through 2026. Compared to maintaining the post-2020 standards now in place, the 2018 proposal would increase U.S. fuel consumption by about half a million barrels per day (2%–3% of total daily consumption, according to the Energy Information Administration) and would impact the global climate by 3/1000th of one degree Celsius by 2100 (EPA and NHTSA 2018). California and other states have stated their intent to challenge federal actions that would delay or eliminate GHG reduction measures and have committed to cooperating with other countries to implement global climate change initiatives.

On September 27, 2019, the EPA and NHTSA published the SAFE Vehicles Rule Part One: One National Program (84 Fed. Reg. 51,310), which became effective November 26, 2019. The Part One Rule revokes California's authority to set its own GHG emissions standards and set zero-emission vehicle mandates in California. On March 31, 2020, the EPA and NHTSA issued the Part Two Rule, which will go into effect 60 days after being published in the Federal Register. The Part Two Rule sets CO<sub>2</sub> emissions standards and corporate average fuel economy standards for passenger vehicles and light-duty trucks for model years 2021 through 2026. This issue is evolving as California and 22 other states, as well as the District of Columbia and four cities, filed suit against the EPA and a petition for reconsideration of the rule on November 26, 2019. It is unknown as to when this litigation will be resolved.

### 3.3.2.3 State

The statewide GHG emissions regulatory framework is summarized in this subsection by category: state climate change targets, building energy, renewable energy and energy procurement, mobile sources, water, solid waste, and other state actions. The following text describes EOs, Assembly Bills (ABs), Senate Bills (SBs), and other plans and policies that would directly or indirectly reduce GHG emissions and/or address climate change issues.

#### State Climate Change Targets

The state has taken a number of actions to address climate change. These actions are summarized below, and include EOs, legislation, and CARB plans and requirements.

**EO S-3-05.** EO S-3-05 (June 2005) established California's GHG emissions-reduction targets and laid out responsibilities among the state agencies for implementing the EO and for reporting on progress toward the targets. This EO established the following targets:

- By 2010, reduce GHG emissions to 2000 levels
- By 2020, reduce GHG emissions to 1990 levels
- By 2050, reduce GHG emissions to 80% below 1990 levels

EO S-3-05 also directed the California Environmental Protection Agency to report biannually on progress made toward meeting the GHG targets and the impacts to California due to global warming, including impacts to water supply, public health, agriculture, the coastline, and forestry.

**AB 32.** In furtherance of the goals established in EO S-3-05, the Legislature enacted AB 32, the California Global Warming Solutions Act of 2006 (California Health and Safety Code, Sections 38500–38599 et seq). AB 32 provided initial direction on creating a comprehensive multiyear program to limit California's GHG emissions to 1990 levels by 2020, and initiate the transformations required to achieve the state's long-range climate objectives.

**SB 32 and AB 197.** SB 32 and AB 197 (enacted in 2016) are companion bills. SB 32 codified the 2030 emissions-reduction goal of EO B-30-15 by requiring CARB to ensure that statewide GHG emissions are reduced to 40% below 1990 levels by 2030. AB 197 established the Joint Legislative Committee on Climate Change Policies, consisting of at least three members of the Senate and three members of the Assembly, to provide ongoing oversight over implementation of the state's climate policies. AB 197 also added two members of the Legislature to the Board as nonvoting members; requires CARB to make available and update (at least annually via its website) emissions data for GHGs, criteria air pollutants, and toxic air contaminants from reporting

facilities; and requires CARB to identify specific information for GHG emissions-reduction measures when updating the scoping plan.

**CARB's 2007 Statewide Limit.** In 2007, CARB approved a statewide limit on the GHG emissions level for year 2020 consistent with the determined 1990 baseline (427 MMT CO<sub>2</sub>e), in accordance with California Health and Safety Code, Section 38550.

**CARB's Climate Change Scoping Plan.** One specific requirement of AB 32 is for CARB to prepare a “scoping plan” for achieving the maximum technologically feasible and cost-effective GHG emission reductions by 2020 (California Health and Safety Code, Section 38561[a]), and to update the plan at least once every 5 years. In 2008, CARB approved the first scoping plan: The Climate Change Proposed Scoping Plan: A Framework for Change (Scoping Plan). The Scoping Plan included a mix of recommended strategies that combined direct regulations, market-based approaches, voluntary measures, policies, and other emission-reduction programs calculated to meet the 2020 statewide GHG emission limit and initiate the transformations needed to achieve the state's long-range climate objectives. The key elements of the Scoping Plan include the following (CARB 2008):

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards
- Achieving a statewide renewable energy mix of 33%
- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system and caps sources contributing 85% of California's GHG emissions
- Establishing targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets
- Adopting and implementing measures pursuant to existing state laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard (17 CCR 95480 et seq.)
- Creating targeted fees, including a public goods charge on water use, fees on high-GWP gases, and a fee to fund the administrative costs of California's long-term commitment to AB 32 implementation

The Scoping Plan also identified local governments as essential partners in achieving California's goals to reduce GHG emissions because they have broad influence and, in some cases, exclusive authority over activities that contribute to significant direct and indirect GHG emissions through their planning and permitting processes, local ordinances, outreach and education efforts, and municipal operations. Specifically, the Scoping Plan encouraged local governments to adopt a reduction goal for municipal operations and for community emissions to reduce GHGs by approximately 15% from then levels (2008) by 2020. Many local governments developed community-scale local GHG-reduction plans based on this Scoping Plan recommendation.

In 2014, CARB approved the first update to the Scoping Plan, titled the First Update to the Climate Change Scoping Plan: Building on the Framework (First Update). The First Update defined the state's GHG emission reduction priorities for the next 5 years and laid the groundwork to start the transition to the post-2020 goals set forth in EOs S-3-05 and B-16-2012 (CARB 2014). The First Update concluded that California is on track to meet the 2020 target, but recommended a 2030 mid-term GHG reduction target be established to ensure a continuum of action to reduce emissions. The First Update recommended a mix of technologies in key economic sectors to reduce emissions through 2050 including energy demand reduction through efficiency and activity changes; large-scale electrification of on-road vehicles, buildings and industrial machinery; decarbonizing electricity and fuel supplies; and the rapid market penetration of efficient and clean energy technologies. As part of the First Update, CARB recalculated the state's 1990 emissions level, using more recent GWPs identified by the Intergovernmental Panel on Climate Change, from 427 MMT CO<sub>2</sub>e to 431 MMT CO<sub>2</sub>e.

In 2015, as directed by EO B-30-15, CARB began working on an update to the Scoping Plan to incorporate the 2030 target of 40% below 1990 levels by 2030 to keep California on its trajectory toward meeting or exceeding the long-term goal of reducing GHG emissions to 80% below 1990 levels by 2050, as set forth in S-3-05. The Governor called on California to pursue a new and ambitious set of strategies, in line with the five climate change pillars from his inaugural address, to reduce GHG emissions and prepare for the unavoidable impacts of climate change. In the summer of 2016, the Legislature affirmed the importance of addressing climate change through passage of SB 32.

In December 2017, CARB released the 2017 Climate Change Scoping Plan Update (Second Update) for public review and comment (CARB 2017a). The Second Update builds on the successful framework established in the initial Scoping Plan and First Update, while identifying new technologically feasible and cost-effective strategies that will serve as the framework to achieve the 2030 GHG target and define the state's climate change priorities to 2030 and beyond. The strategies' "known commitments" include implementing renewable energy and energy efficiency (including the mandates of SB 350), increased stringency of the Low Carbon Fuel Standard, measures identified in the Mobile Source and Freight Strategies, measures identified in the proposed Short-Lived Climate Pollutant Plan, and increased stringency of SB 375 targets. To fill the gap in additional reductions needed to achieve the 2030 target, the Second Update recommends continuing the Cap-and-Trade Program and a measure to reduce GHGs from refineries by 20%.

For local governments, the Second Update replaced the initial Scoping Plan's 15% reduction goal with a recommendation to aim for a community-wide goal of no more than 6 MT CO<sub>2e</sub> per capita by 2030 and no more than 2 MT CO<sub>2e</sub> per capita by 2050, which are developed around the scientifically based levels necessary to limit global warming below 2°C. The Second Update recognized the benefits of local government GHG planning (e.g., through climate action plans) and provides more information regarding tools CARB is working on to support those efforts. It also recognizes the California Environmental Quality Act (CEQA) streamlining provisions for project-level review where there is a legally adequate climate action plan. The Second Update was approved by CARB's Governing Board on December 14, 2017.

The Scoping Plan recommends strategies for implementation at the statewide level to meet the goals of AB 32, SB 32, and the EOs; it also establishes an overall framework for the measures that will be adopted to reduce California's GHG emissions. A project is considered consistent with the statutes and EOs if it would meet the general policies in reducing GHG emissions in order to facilitate the achievement of the state's goals and would not impede attainment of those goals. As discussed in several cases, a given project need not be in perfect conformity with each and every planning policy or goal to be consistent. A project would be consistent if it would further the objectives and not obstruct their attainment.

**CARB's Regulations for the Mandatory Reporting of Greenhouse Gas Emissions.** CARB's Regulation for the Mandatory Reporting of Greenhouse Gas Emissions (17 CCR 95100–95157) incorporated by reference certain requirements that EPA promulgated in its Final Rule on Mandatory Reporting of Greenhouse Gases (40 CFR 98). Specifically, section 95100(c) of the Mandatory Reporting Regulation incorporated those requirements that EPA promulgated in the Federal Register on October 30, 2009; July 12, 2010; September 22, 2010; October 28, 2010; November 30, 2010; December 17, 2010; and April 25, 2011. In general, entities subject to the Mandatory Reporting Regulation that emit over 10,000 MT CO<sub>2e</sub> per year are required to report annual GHGs through the California Electronic GHG Reporting Tool. Certain sectors, such as refineries and cement plants, are required to report regardless of emission levels. Entities that emit more than the 25,000 MT CO<sub>2e</sub> per year threshold are required to have their GHG emissions report verified by a CARB-accredited third-party.



**EO B-18-12.** EO B-18-12 (April 2012) directed state agencies, departments, and other entities under the Governor’s executive authority to take action to reduce entity-wide GHG emissions by at least 10% by 2015 and 20% by 2020, as measured against a 2010 baseline. EO B-18-12 also established goals for existing state buildings for reducing grid-based energy purchases and water use.

**EO B-30-15.** EO B-30-15 (April 2015) identified an interim GHG-reduction target in support of targets previously identified under S-3-05 and AB 32. EO B-30-15 set an interim target goal of reducing GHG emissions to 40% below 1990 levels by 2030 to keep California on its trajectory toward meeting or exceeding the long-term goal of reducing GHG emissions to 80% below 1990 levels by 2050, as set forth in S-3-05. To facilitate achieving this goal, EO B-30-15 called for CARB to update the Scoping Plan to express the 2030 target in terms of MMT CO<sub>2</sub>e. The EO also called for state agencies to continue to develop and implement GHG emission-reduction programs in support of the reduction targets.

**SB 605 and SB 1383.** SB 605 (2014) requires CARB to complete a comprehensive strategy to reduce emissions of short-lived climate pollutants (SLCPs) in the state (California Health and Safety Code, Section 39730); and SB 1383 (2016) requires CARB to approve and implement that strategy by January 1, 2018 (California Public Resources Code, Sections 42652–43654). SB 1383 also establishes specific targets for the reduction of SLCPs (40% below 2013 levels by 2030 for CH<sub>4</sub> and HFCs, and 50% below 2013 levels by 2030 for anthropogenic black carbon), and provides direction for reductions from dairy and livestock operations and landfills. Accordingly, and as mentioned above, CARB adopted its Short-Lived Climate Pollutant Reduction Strategy (SLCP Reduction Strategy) in March 2017. The SLCP Reduction Strategy establishes a framework for the statewide reduction of emissions of black carbon, methane, and fluorinated gases (CARB 2017b).

**EO B-55-18.** EO B-55-18 (September 2018) establishes a statewide policy for the state to achieve carbon neutrality as soon as possible (no later than 2045), and achieve and maintain net negative emissions thereafter. The goal is an addition to the existing statewide targets of reducing the state’s GHG emissions. CARB will work with relevant state agencies to ensure that future Scoping Plans identify and recommend measures to achieve the carbon neutrality goal.

#### ***Building Energy***

**Title 24, Part 6.** The California Building Standards Code were established in 1978 and serves to enhance and regulate California’s building standards (24 CCR 6). While not initially promulgated to reduce GHG emissions, Part 6 of Title 24 specifically established Building Energy Efficiency Standards that are designed to ensure that new and existing buildings in California achieve energy efficiency and preserve outdoor and indoor environmental quality. These energy efficiency standards are reviewed every few years by the Building Standards Commission and the California Energy Commission (CEC), and revised if necessary (California Public Resources Code, Section 25402[b][1]). The regulations receive input from members of industry, as well as the public, to “reduce the wasteful, uneconomic, inefficient, or unnecessary consumption of energy” (California Public Resources Code, Section 25402). These regulations are carefully scrutinized and analyzed for technological and economic feasibility (California Public Resources Code, Section 25402[d]) and cost effectiveness (California Public Resources Code, Section 25402[b][2–3]). As a result, these standards save energy, increase electricity supply reliability, increase indoor comfort, avoid the need to construct new power plants, and help preserve the environment. The current Title 24 standards are the 2019 Title 24 building energy efficiency standards, which became effective January 1, 2020.

**Title 24, Part 11.** In addition to the CEC's efforts, in 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (Part 11 of Title 24) is commonly referred to as California's Green Building Standards (CALGreen), and establishes minimum mandatory standards and voluntary standards pertaining to the planning and design of sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and interior air quality. The CALGreen standards took effect in January 2011 and instituted mandatory minimum environmental performance standards for all ground-up, new construction of commercial, low-rise residential and state-owned buildings and schools and hospitals. The 2019 CALGreen standards are the current applicable standards.

**Title 20.** Title 20 of the California Code of Regulations requires manufacturers of appliances to meet state and federal standards for energy and water efficiency (20 CCR 1401–1410 et seq.). The CEC certifies an appliance based on a manufacturer's demonstration that the appliance meets the standards. New appliances regulated under Title 20 include: refrigerators, refrigerator-freezers and freezers; room air conditioners and room air-conditioning heat pumps; central air conditioners; spot air conditioners; vented gas space heaters; gas pool heaters; plumbing fittings and plumbing fixtures; fluorescent lamp ballasts; lamps; emergency lighting; traffic signal modules; dishwashers; clothes washers and dryers; cooking products; electric motors; low voltage dry-type distribution transformers; power supplies; televisions and consumer audio and video equipment; and battery charger systems. Title 20 presents protocols for testing each type of appliance covered under the regulations and appliances must meet the standards for energy performance, energy design, water performance, and water design. Title 20 contains three types of standards for appliances: federal and state standards for federally regulated appliances, state standards for federally regulated appliances, and state standards for non-federally regulated appliances.

**SB 1.** SB 1 (2006) established a \$3 billion rebate program to support the goal of the state to install rooftop solar energy systems with a generation capacity of 3,000 megawatts through 2016. SB 1 added sections to the Public Resources Code, including Chapter 8.8 (California Solar Initiative), that require building projects applying for ratepayer-funded incentives for photovoltaic systems to meet minimum energy efficiency levels and performance requirements (California Public Resources Code, Sections 25780–25784). Section 25780 established that it is a goal of the state to establish a self-sufficient solar industry. The goals included establishing solar energy systems as a viable mainstream option for both homes and businesses within 10 years of adoption, and placing solar energy systems on 50% of new homes within 13 years of adoption. SB 1, also termed "Go Solar California," was previously titled "Million Solar Roofs."

**AB 1470 (Solar Water Heating).** This bill established the Solar Water Heating and Efficiency Act of 2007 (California Public Resources Code, Sections 2851–2869). The bill makes findings and declarations of the Legislature relating to the promotion of solar water heating systems and other technologies that reduce natural gas demand. The bill defines several terms for purposes of the act. The bill requires the commission to evaluate the data available from a specified pilot program, and, if it makes a specified determination, to design and implement a program of incentives for the installation of 200,000 solar water heating systems in homes and businesses throughout the state by 2017.

**AB 1109.** Enacted in 2007, AB 1109 required the CEC to adopt minimum energy efficiency standards for general-purpose lighting to reduce electricity consumption by 50% for indoor residential lighting and by 25% for indoor commercial lighting (California Public Resources Code, Section 25402.5.4).

#### ***Renewable Energy and Energy Procurement***

**SB 1078.** SB 1078 (2002) (California Public Resources Code, Section 399.11 et seq.) established the Renewables Portfolio Standard program, which required an annual increase in renewable generation by the utilities equivalent to at least 1% of sales, with an aggregate goal of 20% by 2017. This goal was subsequently accelerated, requiring utilities to obtain 20% of their power from renewable sources by 2010 (see SB 107, EO S-14-08, and S-21-09).

**SB 1368.** SB 1368 (2006), required the CEC to develop and adopt regulations for GHG emission performance standards for the long-term procurement of electricity by local publicly owned utilities (California Public Utilities Code, Section 8340–8341). These standards must be consistent with the standards adopted by the California Public Utilities Commission.

**EO S-14-08.** EO S-14-08 (2008) focused on the contribution of renewable energy sources to meet the electrical needs of California while reducing the GHG emissions from the electrical sector. This EO required that all retail suppliers of electricity in California serve 33% of their load with renewable energy by 2020. Furthermore, the EO directed state agencies to take appropriate actions to facilitate reaching this target. The CNRA, through collaboration with CEC and the California Department of Fish and Wildlife, was directed to lead this effort.

**EO S-21-09 and SBX1-2.** EO S-21-09 (2009) directed CARB to adopt a regulation consistent with the goal of EO S-14-08 by July 31, 2010. CARB was further directed to work with California Public Utilities Commission and CEC to ensure that the regulation builds upon the Renewables Portfolio Standard program and was applicable to investor-owned utilities, publicly owned utilities, direct access providers, and community choice providers. Under this order, CARB was to give the highest priority to those renewable resources that provide the greatest environmental benefits with the least environmental costs and impacts on public health, and those that can be developed the most quickly in support of reliable, efficient, cost-effective electricity system operations. On September 23, 2010, CARB initially approved regulations to implement a Renewable Electricity Standard; however, this regulation was not finalized because of subsequent legislation (SB X1-2) signed by Governor Brown in April 2011.

SB X1-2 expanded Renewables Portfolio Standard by establishing a renewable energy target of 20% of the total electricity sold to retail customers in California per year by December 31, 2013, and 33% by December 31, 2020, and in subsequent years. Under the bill, a renewable electrical generation facility is one that uses biomass, solar thermal, photovoltaic, wind, geothermal, fuel cells using renewable fuels, small hydroelectric generation (30 megawatts or less), digester gas, municipal solid waste conversion, landfill gas, ocean wave, ocean thermal, or tidal current, and that meets other specified requirements with respect to its location.

SB X1-2 applies to all electricity retailers in the state, including publicly owned utilities, investor-owned utilities, electricity service providers, and community choice aggregators. All of these entities must meet the renewable energy goals listed above.

**SB 350.** SB 350 (2015) further expanded the Renewables Portfolio Standard program by establishing a goal of 50% of the total electricity sold to retail customers in California per year by December 31, 2030. In addition, SB 350 included the goal to double the energy efficiency savings in electricity and natural gas final end uses (such as heating, cooling, lighting, or class of energy uses on which an energy-efficiency program is focused) of retail customers through energy conservation and efficiency. The bill also requires the California Public Utilities

Commission, in consultation with the CEC, to establish efficiency targets for electrical and gas corporations consistent with this goal.

**SB 100.** SB 100 (2018) increased the standards set forth in SB 350, establishing that 44% of the total electricity sold to retail customers in California per year by December 31, 2024, 52% by December 31, 2027, and 60% by December 31, 2030, be secured from qualifying renewable energy sources. SB 100 states that it is the policy of the state that eligible renewable energy resources and zero-carbon resources supply 100% of the retail sales of electricity to California. This bill requires that the achievement of 100% zero-carbon electricity resources do not increase the carbon emissions elsewhere in the western grid and that the achievement not be achieved through resource shuffling.

#### **Mobile Sources**

**State Vehicle Standards (AB 1493 and EO B-16-12).** AB 1493 (July 2002) was enacted in a response to the transportation sector accounting for more than half of California’s CO<sub>2</sub> emissions. AB 1493 required CARB to set GHG emission standards for passenger vehicles, light-duty trucks, and other vehicles determined by the state board to be vehicles that are primarily used for noncommercial personal transportation in the state. The bill required that CARB set GHG emission standards for motor vehicles manufactured in 2009 and all subsequent model years. CARB adopted the standards in September 2004. EO B-16-12 (March 2012) required that state entities under the governor’s direction and control support and facilitate the rapid commercialization of zero-emissions vehicles. It ordered CARB, CEC, California Public Utilities Commission, and other relevant agencies to work with the Plug-in Electric Vehicle Collaborative and the California Fuel Cell Partnership to establish benchmarks to help achieve benchmark goals by 2015, 2020, and 2025. On a statewide basis, EO B-16-12 established a target reduction of GHG emissions from the transportation sector equaling 80% less than 1990 levels by 2050. This directive did not apply to vehicles that have special performance requirements necessary for the protection of the public safety and welfare. As explained under the “Federal Vehicle Standards” description above, EPA and NHTSA approved the SAFE Vehicles Rule Part One and Two, which revoked California’s authority to set its own GHG emissions standards and set zero-emission vehicle mandates in California. As the EPA rule is the subject of pending legal challenges and no GHG adjustment factors have been issued for EMFAC by CARB, this analysis continues to utilize the best available information at this time, as set forth in EMFAC.

**Heavy-Duty Diesel.** CARB adopted the final Heavy-Duty Truck and Bus Regulation on December 31, 2014 to reduce diesel particulate matter, a major source of black carbon, and oxides of nitrogen emissions from heavy-duty diesel vehicles (13 CCR 2025). The rule requires diesel particulate matter filters be applied to newer heavier trucks and buses by January 1, 2012, with older vehicles required to comply by January 1, 2015. The rule requires nearly all diesel trucks and buses to be compliant with the 2010 model year engine requirement by January 1, 2023. CARB also adopted an Airborne Toxic Control Measure to limit idling of diesel-fueled commercial vehicles on December 12, 2013. This rule requires diesel-fueled vehicles with gross vehicle weights greater than 10,000 pounds to idle no more than 5 minutes at any location (13 CCR 2485).

**EO S-1-07.** EO S-1-07 (January 2007, implementing regulation adopted in April 2009) sets a declining Low Carbon Fuel Standard for GHG emissions measured in CO<sub>2</sub>e grams per unit of fuel energy sold in California. The target of the Low Carbon Fuel Standard is to reduce the carbon intensity of California passenger vehicle fuels by at least 10% by 2020 (17 CCR 95480 et seq.). The carbon intensity measures the amount of GHG emissions in the lifecycle of a fuel—including extraction/feedstock production, processing, transportation, and final consumption—per unit of energy delivered.

**SB 375.** SB 375 (California Government Code Section 65080) addresses GHG emissions associated with the transportation sector through regional transportation and sustainability plans. SB 375 requires CARB to adopt regional GHG-reduction targets for the automobile and light-truck sector for 2020 and 2035, and to update those targets every 8 years. SB 375 requires the state's 18 regional metropolitan planning organizations to prepare a Sustainable Communities Strategy as part of their Regional Transportation Plan that will achieve the GHG-reduction targets set by CARB. If a metropolitan planning organization is unable to devise a Sustainable Communities Strategy to achieve the GHG-reduction target, it must prepare an Alternative Planning Strategy demonstrating how the GHG-reduction target would be achieved through alternative development patterns, infrastructure, or additional transportation measures or policies.

A Sustainable Communities Strategy does not: (i) regulate the use of land; (ii) supersede the land use authority of cities and counties; or (iii) require that a city's or county's land use policies and regulations, including those in a general plan, be consistent with it (California Government Code Section 65080[b][2][K]). Nonetheless, SB 375 makes regional and local planning agencies responsible for developing those strategies as part of the federally required metropolitan transportation planning process and the state-mandated housing element process.

**Advanced Clean Cars Program and Zero-Emissions Vehicle Program.** The Advanced Clean Cars program (January 2012) is a new emissions-control program for model years 2015 through 2025. The program combines the control of smog- and soot-causing pollutants and GHG emissions into a single coordinated package. The package includes elements to reduce smog-forming pollution, reduce GHG emissions, promote clean cars, and provide the fuels for clean cars (CARB 2012). To improve air quality, CARB has implemented new emission standards to reduce smog-forming emissions beginning with 2015 model year vehicles. It is estimated that in 2025, cars will emit 75% less smog-forming pollution than the average new car sold today. To reduce GHG emissions, CARB, in conjunction with the EPA and the NHTSA, adopted new GHG standards for model year 2017 to 2025 vehicles; the new standards are estimated to reduce GHG emissions by 34% in 2025. The zero-emission vehicle program will act as the focused technology of the Advanced Clean Cars program by requiring manufacturers to produce increasing numbers of zero-emission vehicles and plug-in hybrid electric vehicles in the 2018 to 2025 model years. However, as detailed previously, EPA and NHTSA published the SAFE Vehicles Rule, which revokes California's authority to set its own GHG emissions standards and set zero-emission vehicle mandates in California. The effect of the SAFE Rule on the Advanced Clean Cars program is still to be determined pending the ruling of ongoing litigation.

#### **Water**

**SB X7-7.** SB X7-7 or the Water Conservation Act of 2009, requires that all water suppliers increase their water use efficiency with an overall goal of reducing per capita urban water use by 20% by December 31, 2020. Each urban water supplier shall develop water use targets to meet this goal.

**EO B-29-15.** In response to the ongoing drought in California, EO B-29-15 (April 2015) set a goal of achieving a statewide reduction in potable urban water usage of 25% relative to water use in 2013. The term of the EO extended through February 28, 2016, although many of the directives have become permanent water-efficiency standards and requirements. The EO includes specific directives that set strict limits on water usage in the state. In response to EO B-29-15, the California Department of Water Resources (DWR) has modified and adopted a revised version of the Model Water Efficient Landscape Ordinance that, among other changes, significantly increases the requirements for landscape water use efficiency and broadens its applicability to include new development projects with smaller landscape areas.

**EO B-37-16.** Issued May 2016, EO B-37-16 directs the State Water Resources Control Board (SWRCB) to adjust emergency water conservation regulations through the end of January 2017 to reflect differing water supply conditions across the state. The SWRCB must also develop a proposal to achieve a mandatory reduction of potable urban water usage that builds off the mandatory 25% reduction called for in EO B-29-15. The SWRCB and DWR will develop new, permanent water use targets that build upon the existing state law requirements that the state achieve a 20% reduction in urban water usage by 2020. EO B-37-16 also specifies that the SWRCB will permanently prohibit water-wasting practices such as hosing off sidewalks, driveways, and other hardscapes; washing automobiles with hoses not equipped with a shut-off nozzle; using non-recirculated water in a fountain or other decorative water feature; watering lawns in a manner that causes runoff, or within 48 hours after measurable precipitation; and irrigating ornamental turf on public street medians.

**EO B-40-17.** EO B-40-17 (April 2017) lifted the drought emergency in all California counties except Fresno, Kings, Tulare, and Tuolumne. It also rescinds EO B-29-15, but expressly states that EO B-37-16 remains in effect and directs the SWRCB to continue development of permanent prohibitions on wasteful water use.

#### ***Solid Waste***

**AB 939, AB 341, and AB 1826.** In 1989, AB 939, known as the Integrated Waste Management Act (California Public Resources Code, Sections 40000 et seq.), was passed because of the increase in waste stream and the decrease in landfill capacity. The statute established the California Integrated Waste Management Board, which oversees a disposal reporting system. AB 939 mandated a reduction of waste being disposed where jurisdictions were required to meet diversion goals of all solid waste through source reduction, recycling, and composting activities of 25% by 1995 and 50% by 2000.

AB 341 amended the California Integrated Waste Management Act of 1989 to include a provision declaring that it is the policy goal of the state that not less than 75% of solid waste generated be source-reduced, recycled, or composted by 2020, and annually thereafter. In addition, AB 341 required the California Department of Resources Recycling and Recovery to develop strategies to achieve the state's policy goal.

AB 1826 (Chapter 727, Statutes of 2014, effective 2016) requires businesses to recycle their organic waste (i.e., food waste, green waste, landscape and pruning waste, nonhazardous wood waste, and food-soiled paper waste that is mixed in with food waste) depending on the amount of waste they generate per week. This law also requires local jurisdictions across the state to implement an organic waste recycling program to divert organic waste generated by businesses, including multifamily residential dwellings that consist of five or more units. The minimum threshold of organic waste generation by businesses decreases over time, which means an increasingly greater proportion of the commercial sector will be required to comply.

#### ***Other State Actions***

**SB 97.** SB 97 (2007) directed the Governor's Office of Planning and Research to develop guidelines under CEQA for the mitigation of GHG emissions. In 2008, the Governor's Office of Planning and Research issued a technical advisory as interim guidance regarding the analysis of GHG emissions in CEQA documents. The advisory indicated that the lead agency should identify and estimate a project's GHG emissions, including those associated with vehicular traffic, energy consumption, water usage, and construction activities (OPR 2008). The advisory further recommended that the lead agency determine significance of the impacts and impose all mitigation measures necessary to reduce GHG emissions to a level that is less than significant. The CNRA adopted the State of California CEQA Guidelines (CEQA Guidelines) amendments in December 2009, which became effective in March 2010.

Under the amended CEQA Guidelines, a lead agency has the discretion to determine whether to use a quantitative or qualitative analysis or apply performance standards to determine the significance of GHG emissions resulting from a particular project (14 CCR 15064.4[a]). The CEQA Guidelines require a lead agency to consider the extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions (14 CCR 15064.4[b]). The CEQA Guidelines also allow a lead agency to consider feasible means of mitigating the significant effects of GHG emissions, including reductions in emissions through the implementation of project features or off-site measures. The adopted amendments do not establish a GHG emission threshold, instead allowing a lead agency to develop, adopt, and apply its own thresholds of significance or those developed by other agencies or experts. The CNRA also acknowledges that a lead agency may consider compliance with regulations or requirements implementing AB 32 in determining the significance of a project's GHG emissions (CNRA 2009a).

With respect to GHG emissions, the CEQA Guidelines Section 15064.4(a) state that lead agencies “should make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate” GHG emissions. The CEQA Guidelines note that an agency may identify emissions by either selecting a “model or methodology” to quantify the emissions or by relying on “qualitative analysis or performance based standards” (14 CCR 15064.4[a]). Section 15064.4(b) states that the lead agency should consider the following when assessing the significance of impacts from GHG emissions on the environment: (1) the extent a project may increase or reduce GHG emissions as compared to the existing environmental setting; (2) whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; and (3) the extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions (14, CCR 15064.4[b]).

**EO S-13-08.** EO S-13-08 (November 2008) is intended to hasten California's response to the impacts of global climate change, particularly sea-level rise. Therefore, the EO directs state agencies to take specified actions to assess and plan for such impacts. The final 2009 California Climate Adaptation Strategy report was issued in December 2009 (CNRA 2009b), and an update, Safeguarding California: Reducing Climate Risk, followed in July 2014 (CNRA 2014). To assess the state's vulnerability, the report summarizes key climate change impacts to the state for the following areas: Agriculture, Biodiversity and Habitat, Emergency Management, Energy, Forestry, Ocean and Coastal Ecosystems and Resources, Public Health, Transportation, and Water. Issuance of the Safeguarding California: Implementation Action Plans followed in March 2016 (CNRA 2016). In January 2018, the CNRA released the Safeguarding California Plan: 2018 Update, which communicates current and needed actions that state government should take to build climate change resiliency (CNRA 2018b).

**DWR Climate Action Plan Phase 1 Greenhouse Gas Emissions Reduction Plan.** In July 2020, DWR adopted the Greenhouse Gas Emissions Reduction Plan (GGERP) Update 2020 (GGERP Update 2020) to update strategies for further reduction consistent with legislative changes since the original GGERP in 2012, including the GHG emissions reduction targets established in SB 32, SB 100, EO B-18-12, EO B-30-15, and EO B-55-18 (DWR 2020). DWR's near-term goal in the original GGERP was to reduce its emissions to 50% below 1990 emissions level by 2020, which was achieved 5 years early. For the GGERP Update 2020, DWR identified the following mid-term and long-term GHG emissions reduction goals to guide decision making beyond 2020 (DWR 2020):

- Mid-Term Goal. By 2030, reduce GHG emissions to at least 60% below the 1990 level
- Long-Term Goal. By 2045, supply 100% of electricity load with zero-carbon resources and achieve carbon neutrality

Although GHG emissions will vary from year to year, DWR expects to exceed its mid-term goal by implementing GHG-reduction measures. DWR also anticipates meeting its long-term goal and will provide additional details in the next plan update to reflect evolving technologies and ongoing changes in regulatory policies and their implementation (DWR 2020).

### 3.3.2.4 Local

#### **San Joaquin Air Pollution Control District**

The San Joaquin Air Pollution Control District (SJVAPCD) does not regulate GHG emissions directly through its permitting responsibilities for stationary sources. Thus, there are no SJVAPCD rules or regulations related to GHGs. The SJVAPCD, however, effects reductions of GHGs from new and modified stationary sources when acting as a lead agency for CEQA. The SJVAPCD has adopted the Guidance for Valley Land-Use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA (SJVAPCD 2009a) and the policy Addressing GHG Emission Impacts for Stationary Source Projects under CEQA When Serving as the Lead Agency (SJVAPCD 2009b). The guidance and policy rely on the use of performance-based standards, otherwise known as Best Performance Standards, to assess significance of project-specific GHG emissions on global climate change during the environmental review process. However, SJVAPCD's adopted Best Performance Standards are specifically directed at reducing GHG emissions from stationary sources; therefore, the adopted Best Performance Standards would not generally be applicable to the Modified Project.

#### **Merced County Association of Governments**

The Merced County Association of Governments (MCAG) is the regional planning agency for Merced County and serves as a forum for regional issues relating to transportation, the economy, community development, and the environment. MCAG serves as the federally designated metropolitan planning organization for Merced County. With respect to air quality planning and other regional issues, MCAG has prepared the 2018 Regional Transportation Plan and Sustainable Communities Strategy (2018 RTP/SCS) for the region (MCAG 2018). The 2018 RTP/SCS is a problem-solving guidance document that directly responds to what MCAG has learned about Merced County's challenges through the annual State of the Region report card.

In regards to air quality, the 2018 RTP/SCS sets the policy context in which MCAG participates in and responds to the air district's air quality plans and builds off the air district's air quality plans and processes that are designed to meet health-based criteria pollutant standards in several ways (MCAG 2018). First, it complements air quality plans by providing guidance and incentives for public agencies to consider best practices that support the technology-based control measures in air quality plans. Second, the 2018 RTP/SCS emphasizes the need for local initiatives that can reduce the region's GHG emissions that contribute to climate change, an issue that is largely outside the focus of local attainment plans, which is assessed in Section 8 of the 2018 RTP/SCS. Third, the 2018 RTP/SCS emphasizes the need for better coordination of land use and transportation planning, which heavily influences the emissions inventory from the transportation sectors of the economy. This also minimizes land use conflicts, such as residential development near freeways, industrial areas, or other sources of air pollution.

#### **Merced Vision 2030 General Plan**

As required by state law, Merced County has adopted a general plan to guide land use decisions within the county. The general plan provides goals, policies, standards, and implementation programs to guide the physical



development of a county. At a minimum, the general plan must address the topics of land use, transportation, housing, conservation, open space, noise, and safety. The Merced Vision 2030 General Plan (Merced County General Plan), adopted in 2013, has established the year 2030 as the plan's time horizon. The Air Quality Element sets forth a number of policies and standards to reduce GHG emissions and adapt to climate change. The following goal and policies would apply to the Modified Project (Merced County 2013):

#### *Air Quality Element*

**Goal AQ-1:** Reduce air pollutants and GHG emissions and anticipate adaptation due to future consequences of global and local climate change.

- **Policy AQ-1.1: Energy Consumption Reduction.** Encourage new residential, commercial, and industrial development to reduce air quality impacts from energy consumption.
- **Policy AQ-1.6: Air Quality Improvement.** Support and implement programs to improve air quality throughout the County by reducing emissions related to vehicular travel and agricultural practices.
- **Policy AQ-1.7: Heat Island Effect Reduction.** Require increased tree canopy and reflective surface materials in order to reduce the heat island effect (i.e., increased temperatures due to heat radiation off paved surfaces and rooftops). This includes:
  - a) Preserving agricultural lands, wildlife habitat and corridors, wetlands, watersheds, groundwater recharge areas, and other open space that provide carbon sequestration benefits;
  - b) Establishing a mitigation program for development of those types of open space that provide carbon sequestration benefits;
  - c) Requiring like-kind replacement for, or impose mitigation fees on, land development that results in the loss of carbon sequestering open space; and
  - d) Using mitigation funds generated to protect existing open space.
- **Policy AQ-1.8: Climate Change Adaptation.** Prepare appropriate strategies to adapt to climate change based on peer-reviewed scientific findings of the potential impacts.

### 3.3.3 Thresholds of Significance

The following significance criteria from the 2019 EIS/EIR are used for the purposes of analysis in this SEIR. These criteria, which have not changed from the 2019 EIS/EIR, are identified in Chapter 8, Greenhouse Gas Emissions, of the 2019 EIS/EIR. A significant impact related to GHGs would occur if the Modified Project would:

1. Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.
2. Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

Global climate change is a cumulative impact; a project participates in this potential impact through its incremental contribution combined with the cumulative increase of all other sources of GHGs. There are currently no established thresholds for assessing whether the GHG emissions of a project, such as the Modified Project, would be considered a cumulatively considerable contribution to global climate change; however, all reasonable efforts should be made to minimize a project's contribution to global climate change. In addition, while GHG

impacts are recognized exclusively as cumulative impacts (CAPCOA 2008), GHG emissions impacts must also be evaluated on a project-level under CEQA.

Amendments to Section 15064.4 of the CEQA Guidelines were adopted to assist lead agencies in determining the significance of the impacts of GHG emissions. Section 15064.4 specifies that a lead agency “shall make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project.” Section 15064.4 also provides lead agencies with the discretion to determine whether to assess those emissions quantitatively or to rely on a qualitative analysis or performance-based standards. In addition, the CEQA Guidelines specify that “[w]hen adopting or using thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies, or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence” (14 CCR 15064.7(c)).

#### Construction

DWR’s GGERP Update 2020 identifies construction GHG emission thresholds that distinguish between typical construction projects and Extraordinary Construction Projects. Per DWR’s GGERP Update 2020, a project is an Extraordinary Construction Project if it (DWR 2020):

- Emits more than 25,000 MT CO<sub>2</sub>e in total during the construction phase of the project, or
- Emits more than 12,500 MT CO<sub>2</sub>e in any single year of construction.

These thresholds represent a level of GHG emissions that by themselves could potentially adversely affect DWR’s ability to achieve its GHG emissions reduction goals. Although these thresholds are not established by DWR as CEQA significance thresholds, they have been applied in this analysis as a contextual metric in order to evaluate the level of GHG emissions generated by the construction phase of the Modified Project, because a project exceeding either of these thresholds would represent construction activities exceeding the typical level of construction activity performed by DWR and would exceed the level of construction related emissions contemplated by the cumulative effects analysis in the GGERP Update 2020. As such, if the Modified Project exceeds either one of these thresholds, then the construction emissions must be analyzed and, if necessary, mitigated.

#### Operations

After the construction phase of the Modified Project, only the proposed new campground and improved San Luis Creek Day Use Area would result in long-term GHG emissions. Because these uses are under the jurisdiction of the California Department of Parks and Recreation (CDPR), analyses of these uses in the context of the DWR GGERP Update 2020 is not appropriate. As CDPR does not have a GHG-reduction plan (e.g., climate action plan), other GHG thresholds were considered to evaluate the significance of the operational GHG emissions. In the absence of an adopted numeric threshold by either CDPR or the SJVAPCD, the Modified Project was evaluated according to CEQA Guidelines Section 15064.7(c) by considering whether GHG emissions of the Modified Project meet the 900 MT CO<sub>2</sub>e per year screening level threshold identified by the California Air Pollution Control Officers Association (CAPCOA) (CAPCOA 2008). Notably, SJVAPCD guidance supports the use of the CAPCOA threshold when other thresholds have not been adopted (SJVAPCD 2009c).

The 900 MT CO<sub>2</sub>e per year threshold was developed based on various land use densities and future discretionary project types to determine the size of projects that would likely have a less than cumulatively considerable contribution to climate change. The CAPCOA threshold was developed to ensure capture of 90% or more of likely

future discretionary developments with the objective to set the emissions threshold low enough to capture a substantial fraction of future development while setting the emission threshold high enough to exclude small development projects that would contribute a relatively small fraction of cumulative statewide GHG emissions. CAPCOA's 900 MT CO<sub>2e</sub> per year threshold was developed to meet the target identified by AB 32 of reducing emissions to 1990 levels by year 2020. Subsequent to CAPCOA identifying the 900 MT CO<sub>2e</sub> per year threshold, SB 32 was passed and set a revised statewide reduction target to reduce emissions to 40% below 1990 levels by year 2030. Though the CAPCOA threshold does not consider the reduction targets set by SB 32, the CAPCOA threshold was developed with an aggressive project-level GHG emission capture rate of 90%. Due to the aggressive GHG emission capture rate, the CAPCOA threshold has been determined to be a viable threshold to reduce project GHG emissions and meet SB 32 targets beyond 2020. Furthermore, more stringent state legislative requirements such as Building Energy Efficiency Standards and transportation-related efficiency measures will act to reduce future project GHG emissions and help in meeting State emissions reduction targets. Projects that generate emissions beyond the 900 MT CO<sub>2e</sub> per year screening level threshold are required to implement feasible on-site mitigation measures to reduce their impacts on climate change. Projects that meet or fall below CAPCOA's screening level threshold of 900 MT CO<sub>2e</sub> per year of GHG emissions require no further analysis and are not required to implement mitigation measures to reduce GHG emissions. As such, the CAPCOA threshold of 900 MT CO<sub>2e</sub> per year is used as a quantitative threshold for the analysis of impacts related to GHG emissions generated by long-term operations of the Modified Project.

## 3.3.4 Impacts Analysis

### 3.3.4.1 Approach and Methodology

Emissions from construction and operation of the Modified Project were estimated using the CalEEMod Version 2016.3.2.<sup>3</sup> Specifically, emissions were estimated for the Modified Project's proposed campground construction/day use area improvements and minor additions to contractor work areas. Detailed modeling assumptions are included in Appendix B. The Modified Project's proposed changes in borrow area location would result in shorter haul truck trips than what was assessed in the 2019 EIS/EIR for the Approved Project, which would equate to a comparable reduction in emissions.

#### Construction

Construction of the Modified Project would result in GHG emissions primarily associated with use of off-road construction equipment, on-road hauling, vendor (material delivery) trucks, and worker vehicles. All details for construction criteria air pollutants discussed in Section 3.2, Air Quality, of this SEIR, are also applicable for the estimation of construction-related GHG emissions. As such, see Section 3.2 for a discussion of construction emissions calculation methodology and assumptions used in the GHG emissions analysis.

#### Operations

Emissions from the operational phase of the Modified Project were estimated using CalEEMod Version 2016.3.2. Specifically, emissions were only estimated for the proposed campground construction and day use area improvements, because only those would result in long-term operational emissions. Year 2024 was assumed as

---

<sup>3</sup> CalEEMod is a statewide computer model developed in cooperation with air districts throughout the state to quantify criteria air pollutant emissions associated with the construction and operational activities from a variety of land use projects, such as residential, commercial, and industrial facilities. CalEEMod input parameters were based on information provided by CDPR, or default model assumptions if Modified Project specifics were unavailable.

the first full year of new campground/improved day use area operations. Potential Modified Project-generated operational GHG emissions were estimated for area sources (landscape maintenance), electricity, propane combustion, mobile sources, campfires, solid waste, and water supply and wastewater treatment. For annual emissions, it was assumed that the new campground would have an average occupancy rate of 40% based on input from CDPR (Heberling, pers. comm. 2020). Default CalEEMod values were used where detailed Modified Project information was not available from CDPR or was unknown. For additional details, see Section 3.2 of this SEIR for a discussion of operational emissions calculation methodology and assumptions, specifically for area sources, propane combustion, and mobile sources. Detailed modeling assumptions are included in Appendix B.

#### ***Area Sources***

CalEEMod was used to estimate GHG emissions from operation of gasoline-powered landscape maintenance equipment, which produce minimal GHG emissions. Consumer product use and architectural coatings result in reactive organic gases emissions, which are analyzed in air quality analysis only, and generate little to no GHG emissions.

#### ***Electricity***

GHG emissions associated with electricity usage was estimated based on the annual consumption of 36,600 kilowatt-hours per year (based on annual average of 40% occupancy), as provided by CDPR. Emissions are calculated by multiplying the energy use by the utility carbon intensity (pounds of GHGs per kilowatt-hour) for CO<sub>2</sub> and other GHGs. Emissions factors (in pounds per megawatt-hour) for CH<sub>4</sub> and N<sub>2</sub>O are from CalEEMod for Pacific Gas & Electric Company. The CO<sub>2</sub> emissions factor is from Pacific Gas & Electric Company's reported intensity for 2017 (PG&E 2019).

#### ***Propane Combustion***

A separate workbook was developed to estimate emissions associated with combustion of propane, which would be used to heat water for the campground restroom facilities. According to CDPR, it is anticipated that the new campground would require approximately 1,300 gallons of propane on an annual basis. Emissions factors for propane combustion were from the EPA's AP-42, Section 1.5, Liquefied Petroleum Gas Combustion (EPA 2008), and from A National Methodology and Emission Inventory for Residential Fuel Combustion (Haneke n.d.).

#### ***Mobile Sources***

All details for criteria air pollutants discussed in Section 3.2 of this SEIR are also applicable for the estimation of operational mobile source GHG emissions. Regulatory measures related to mobile sources include AB 1493 and related federal standards. AB 1493 required that CARB establish GHG emissions standards for automobiles, light-duty trucks, and other vehicles determined by CARB to be vehicles that are primarily used for noncommercial personal transportation in the state. In addition, the NHTSA and EPA have established corporate fuel economy standards and GHG emissions standards, respectively, for automobiles and light-, medium-, and heavy-duty vehicles. Implementation of these standards and fleet turnover (replacement of older vehicles with newer ones) will gradually reduce emissions from motor vehicle operation associated with the Modified Project. The

effectiveness of fuel economy improvements was evaluated by using the CalEEMod emission factors for motor vehicles, to the extent it was captured in CalEEMod.<sup>4</sup>

### ***Campfires***

For campfire emissions, the Piled Fuels Biomass and Emissions Calculator (FERA et al. 2014) was used, assuming a campsite would burn a bundle of approximately 0.75 cubic feet of hardwood per night. For annual GHG emissions, it was assumed that 40% of the campsites would have a campfire, based on the anticipated annual average occupancy rate of 40% provided by CDPR.

### ***Solid Waste***

The Modified Project would generate solid waste, and therefore, result in CO<sub>2</sub>e emissions associated with landfill off-gassing. Default values for solid waste generation were used to estimate GHG emissions associated with solid waste for the Modified Project.<sup>5</sup>

### ***Water and Wastewater Treatment***

Supply, conveyance, treatment, and distribution of water for the Modified Project would require the use of electricity, which would result in associated indirect GHG emissions. Similarly, wastewater generated by the Modified Project would require the use of electricity for conveyance and treatment, and would generate GHG emissions during wastewater treatment. Estimates of electricity consumption for water use and wastewater conveyance and treatment were based on an estimated use of 1,488,000 gallons per year for the proposed new campground (based on 40% average annual occupancy). In accordance with details provided by CDPR, all wastewater generated by the campground would be disposed of using on-site wastewater treatment and disposal systems (septic systems).

## 3.3.4.2 Impact Discussion

### **Threshold 1**

***Would the Modified Project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?***

| 2019 EIS/EIR Impact Determination                  | Modified Project Impact Determination              | New Significant Increase in Impact Severity? |
|--|--|--|
| Less than Significant with Mitigation Incorporated | Less than Significant with Mitigation Incorporated | No   |

<sup>4</sup> The Low Carbon Fuel Standard calls for a 10% reduction in the “carbon intensity” of motor vehicle fuels by 2020, which would further reduce GHG emissions. However, the carbon intensity reduction associated with the Low Carbon Fuel Standard was not assumed in CalEEMod 2016.3.2.

<sup>5</sup> Because CalEEMod 2016.3.2 does not include a campground land use, emissions associated with solid waste generation for the campground were modeled using default values for modular/mobile home residential uses. This was considered to generate a high or conservative estimate of potential emissions associated with campground uses.

## Campground Construction and Day Use Area Improvements and Minor Additions to Contractor Work Area

**Construction**

Construction of the Modified Project would result in GHG emissions, which are primarily associated with use of off-road construction equipment, vendor and haul trucks, and worker vehicles. CalEEMod was used to calculate the annual GHG emissions from the Modified Project's minor additions to contractor work areas and proposed campground construction and day use area improvements. A detailed depiction of the construction schedule—including information regarding phasing, equipment utilized during each phase, trucks, and worker vehicles—is included in Appendix B. The estimated unmitigated Modified Project-generated GHG emissions from construction activities are shown in Table 3.3-3.

**Table 3.3-3. Unmitigated Annual Construction GHG Emissions**

|  | CO <sub>2</sub>      | CH <sub>4</sub> | N <sub>2</sub> O | CO <sub>2</sub> e |
|--|----------------------|-----------------|------------------|-------------------|
| Year   | Metric Tons per Year |                 |                  |                   |
| Minor Additions to Contractor Work Area <sup>1</sup>               |                      |                 |                  |                   |
| 2021   | 115.50               | 0.03            | 0.00             | 116.31            |
| Campground Construction and Day Use Area Improvements <sup>1</sup> |                      |                 |                  |                   |
| 2022   | 457.39               | 0.10            | 0.00             | 459.86            |
| 2023   | 511.96               | 0.07            | 0.00             | 513.69            |
| Approved Project Construction <sup>2</sup>                         |                      |                 |                  |                   |
| Annual Average   | 12,787.17            | 0.98            | 0.11             | 12,844.69         |
| Modified Project Annual Construction GHG Emissions                 |                      |                 |                  | 13,934.55         |
| DWR Threshold  |                      |                 |                  | 12,500.00         |
| Threshold Exceeded?  |                      |                 |                  | Yes               |
| Total Approved Project Construction GHG Emissions                  |                      |                 |                  | 128,446.89        |
| Total Modified Project Construction GHG Emissions                  |                      |                 |                  | 129,536.75        |
| DWR Threshold  |                      |                 |                  | 25,000.00         |
| Threshold Exceeded?  |                      |                 |                  | Yes               |

Source: Appendix B.

Notes: CO<sub>2</sub> = carbon dioxide; CH<sub>4</sub> = methane; N<sub>2</sub>O = nitrous oxide; CO<sub>2</sub>e = carbon dioxide equivalent; DWR = California Department of Water Resources; GHG = greenhouse Gas.

- These elements of the Modified Project were modeled using CalEEMod based on the assumptions outlined in Section 3.3.4.1, Approach and Methodology, under Construction.
- In the 2019 EIS/EIR, all haul truck trips were assumed to be 40 miles one-way, which overestimated the associated emissions. This was adjusted herein for haul trucks in order to account for the shorter trip length between the borrow areas and worksites; 15% of total trips were still conservatively assumed to require 40-mile one-way trips, with the remainder of trips occurring on-site with a one-way trip length of 4 miles.

As shown in Table 3.3-3, emissions from construction of the Modified Project's minor additions to the contractor work area and new campground and day use area improvements would be minimal and would not exceed the applied DWR thresholds for Extraordinary Construction Projects. However, when summed with the Approved Project emissions, the unmitigated scenario of the overall Modified Project would exceed the annual and total Modified Project GHG thresholds during construction; therefore, a significant impact would occur. Because the Modified Project would exceed the DWR thresholds during construction, it would be considered an Extraordinary Construction Project and would result in a potentially significant impact related to the generation of GHG emissions, either directly or indirectly, that may have a significant impact on the environment. With

implementation of Mitigation Measures **SEIR-GHG-1 (new mitigation measure) and SEIR-GHG-2 (replaces GHG-1 in the 2019 EIS/EIR)** (see Section 3.3.5, Mitigation Measures), GHG emissions generated by Modified Project construction would be reduced by the use of electric/alternatively fueled equipment where feasible and appropriate and through the facilitation of rideshares for workers, as well as offset below the applied threshold. As such, impacts would be **less than significant after mitigation** and would not be cumulatively considerable.

### Operations

GHG emissions from the operational phase of the Modified Project were only estimated for the proposed campground and improved San Luis Creek Day Use Area, because those are the only components of the Modified Project that would result in long-term operational emissions. Operation of the new campground/improved day use area would generate GHG emissions from area sources (landscaping equipment); energy use (generation of electricity consumed by the Modified Project lighting, campground hook-ups, and amenities); propane combustion; mobile sources (vehicular traffic); wood burning in campfires; solid waste disposal; water supply, treatment, and distribution; and wastewater treatment and disposal. Table 3.3-4 presents the estimated unmitigated annual GHG emissions generated during operation of the Modified Project.

**Table 3.3-4. Unmitigated Annual Operational GHG Emissions**

| Emission Source                                       | CO <sub>2</sub>      | CH <sub>4</sub> | N <sub>2</sub> O | CO <sub>2</sub> e |
|---|----------------------|-----------------|------------------|-------------------|
|   | Metric Tons per Year |                 |                  |                   |
| Campground Construction and Day Use Area Improvements |                      |                 |                  |                   |
| Area Sources  | 0.96                 | <0.01           | 0.00             | 0.98              |
| Electricity   | 3.49                 | <0.01           | <0.01            | 3.53              |
| Propane   | 7.37                 | <0.01           | 0.00             | 7.37              |
| Mobile Sources  | 295.73               | 0.02            | 0.00             | 296.17            |
| Campfires   | 2.85                 | 0.01            | 0.00             | 3.10              |
| Waste   | 7.38                 | 0.44            | 0.00             | 18.28             |
| Water And Wastewater                                  | 0.77                 | 0.34            | <0.01            | 9.57              |
| Total Modified Project Operational Emissions          |                      |                 |                  | 339.00            |
| Screening Level Threshold                             |                      |                 |                  | 900               |
| Threshold Exceeded?                                   |                      |                 |                  | No                |

**Source:** Appendix B.

**Notes:** CO<sub>2</sub> = carbon dioxide; CH<sub>4</sub> = methane; N<sub>2</sub>O = nitrous oxide; CO<sub>2</sub>e = carbon dioxide equivalent.

As shown in Table 3.3-4, estimated annual Modified Project-generated GHG emissions would be approximately 339 MT CO<sub>2</sub>e per year as a result of operations of the new campground and improved San Luis Creek Day Use Area. As such, annual operational GHG emissions would be minimal and would not exceed the applied threshold of 900 MT CO<sub>2</sub>e per year. Therefore, the Modified Project's GHG contribution would be **less than significant** and would not be cumulatively considerable.

### Changes in Borrow Area Location

As discussed in Section 3.3.4.1, Approach and Methodology, Modified Project emissions were estimated only for construction of the proposed campground, day use area improvements, and minor additions to contractor work areas. Changes in borrow area location would result in shorter haul truck trips than what was assessed in the 2019 EIS/EIR, which would equate to a comparable reduction in emissions. This element of the Modified Project

would not generate GHG emissions—either directly or indirectly—that may have a significant impact on the environment. Therefore, the impact from the change in the borrow area location would be **less than significant**.

#### **Additional Construction Assumptions**

As discussed in Chapter 2, Project Description, of this SEIR, the overall construction schedule and assumptions regarding personnel and equipment remain unchanged by the Modified Project. Although dewatering was only briefly mentioned in the 2019 EIS/EIR, this activity would be required for the Approved Project and is not a discreet addition for the Modified Project. Overall, the additional construction assumptions are described for clarification purposes in the SEIR. Based on the above considerations, these elements of the Modified Project would not generate GHG emissions—either directly or indirectly—that may have a significant impact on the environment. Therefore, the impact would be **less than significant**.

In summary, construction of the Modified Project elements would not exceed the DWR thresholds for Extraordinary Construction Projects when summed with the Approved Project emissions, after implementation of mitigation to reduce construction emissions. Operational emissions from the new campground would be minimal and would not exceed the applied screening level threshold. As such, the Modified Project overall would not generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. This impact would be **less than significant after mitigation**.

#### **Comparison to 2019 EIS/EIR**

The additional project components analyzed above would result in less-than-significant impacts with mitigation incorporated and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant with mitigation incorporated (see Section 3.3.5).

#### **Threshold 2**

*Would the Modified Project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?*

| 2019 EIS/EIR Impact Determination                  | Modified Project Impact Determination              | New Significant Increase in Impact Severity? |
|--|--|--|
| Less than Significant with Mitigation Incorporated | Less than Significant with Mitigation Incorporated | No   |

#### **All Modified Project Components**

As outlined in Section 3.3.2, Relevant Plans, Policies, and Ordinances, DWR's GGERP Update 2020 identified the following mid-term and long-term GHG emissions reduction goals to guide decision making beyond 2020 (DWR 2020):

- Mid-Term Goal. By 2030, reduce GHG emissions to at least 60% below the 1990 level
- Long-Term Goal. By 2045, supply 100% of electricity load with zero-carbon resources and achieve carbon neutrality



DWR's construction GHG emissions thresholds (i.e., whether the Modified Project emits more than 25,000 MT CO<sub>2</sub>e in total during the construction phase or emits more than 12,500 MT CO<sub>2</sub>e in any single year of construction) identified in the GGERP Update 2020 distinguish between typical construction projects and Extraordinary Construction Projects and represent a level of GHG emissions that by themselves could adversely affect DWR's ability to achieve its GHG emissions reduction goals. As discussed in Threshold 1, GHG emissions from the Modified Project's minor additions to the contractor work area, construction of the proposed new campground, and day use area improvements would be minimal and would not exceed the applied DWR thresholds for Extraordinary Construction Projects. However, when summed with the Approved Project emissions, the unmitigated scenario of the overall Modified Project would exceed DWR's construction GHG emissions thresholds for both annual and total Modified Project GHG construction emissions. As such, it would be considered an Extraordinary Construction Project and would result in a potentially significant impact because Modified Project emissions could conflict with GHG reduction goals identified by the GGERP Update 2020. However, with implementation of **Mitigation Measures SEIR-GHG-1 and SEIR-GHG-2** (see Section 3.3.5), GHG emissions generated by Modified Project construction would be reduced by (1) the use of electric/alternatively fueled equipment where feasible and appropriate and through the facilitation of rideshares for workers, as well offset below the Extraordinary Construction Project thresholds. Therefore, construction of the Modified Project would be **less than significant after mitigation** and would not conflict with the DWR GGERP. Regarding long-term operations, because only the new campground/improved day use area would result in an increase in GHG emissions, and these uses are under the purview of CDPR, the DWR GGERP 2020 would not apply to operations of the Modified Project.

In regards to consistency with the MCAG 2018 RTP/SCS, the additional campground to be developed under the Modified Project within the San Luis Reservoir State Recreation Area would likely reduce the length of trips made from communities in the nearby coastal regions to access similar recreational camping and boating opportunities farther to the east; thereby resulting in some reduction in net vehicle miles traveled in the region. As such, the Modified Project would not conflict with the goals of the MCAG 2018 RTP/SCS.

Additionally, the CARB Scoping Plan, approved by CARB in 2008 and updated in 2014 and 2017, provides a framework for actions to reduce California's GHG emissions and requires CARB and other state agencies to adopt regulations and other initiatives to reduce GHGs. The Scoping Plan is not directly applicable to specific projects, nor is it intended to be used for project-level evaluations.<sup>6</sup> Under the Scoping Plan, however, there are several state regulatory measures aimed at the identification and reduction of GHG emissions. CARB and other state agencies have adopted many of the measures identified in the Scoping Plan. Most of these measures focus on area source emissions (e.g., energy usage, high-GWP GHGs in consumer products) and changes to the vehicle fleet (i.e., hybrid, electric, and more fuel-efficient vehicles) and associated fuels (e.g., Low Carbon Fuel Standard), among others. The Scoping Plan recommends strategies for implementation at the statewide level to meet the goals of AB 32 and establishes an overall framework for the measures that will be adopted to reduce California's GHG emissions. To the extent that these regulations are applicable to the Modified Project or its uses, the Modified Project would comply with all regulations adopted in furtherance of the Scoping Plan to the extent required by law.

The Modified Project would also not impede the attainment of the GHG reduction goals for 2030 or 2050 identified in SB 32 and EO S-3-05, respectively. EO S-3-05 establishes the following goals: GHG emissions should be reduced to 2000 levels by 2010, to 1990 levels by 2020, and to 80% below 1990 levels by 2050. SB 32

---

<sup>6</sup> The Final Statement of Reasons for the amendments to the CEQA Guidelines reiterates the statement in the Initial Statement of Reasons that "[t]he Scoping Plan may not be appropriate for use in determining the significance of individual projects because it is conceptual at this stage and relies on the future development of regulations to implement the strategies identified in the Scoping Plan" (CNRA 2009a).

establishes a statewide GHG emissions reduction target whereby CARB, in adopting rules and regulations to achieve the maximum technologically feasible and cost-effective GHG emissions reductions, ensures that statewide GHG emissions are reduced to at least 40% below 1990 levels by December 31, 2030. While there are no established protocols or thresholds of significance for that future year analysis; CARB forecasts that compliance with the current Scoping Plan puts the state on a trajectory of meeting these long-term GHG goals, although the specific path to compliance is unknown (CARB 2014).

CARB has expressed optimism with regard to both the 2030 and 2050 goals. It states in the First Update to the Climate Change Scoping Plan that “California is on track to meet the near-term 2020 GHG emissions limit and is well positioned to maintain and continue reductions beyond 2020 as required by AB 32” (CARB 2014). With regard to the 2050 target for reducing GHG emissions to 80% below 1990 levels, the First Update states the following (CARB 2014):

This level of reduction is achievable in California. In fact, if California realizes the expected benefits of existing policy goals (such as 12,000 megawatts of renewable distributed generation by 2020, net zero energy homes after 2020, existing building retrofits under AB 758, and others) it could reduce emissions by 2030 to levels squarely in line with those needed in the developed world and to stay on track to reduce emissions to 80% below 1990 levels by 2050. Additional measures, including locally driven measures and those necessary to meet federal air quality standards in 2032, could lead to even greater emission reductions.

In other words, CARB believes that the state is on a trajectory to meet the 2030 and 2050 GHG reduction targets set forth in AB 32, SB 32, and EO S-3-05. This is confirmed in the Second Update, which states (CARB 2017a):

This Scoping Plan builds upon the successful framework established by the Initial Scoping Plan and First Update, while also identifying new, technologically feasible, and cost-effective strategies to ensure that California meets its GHG reduction targets in a way that promotes and rewards innovation, continues to foster economic growth, and delivers improvements to the environment and public health, including in disadvantaged communities.

As discussed in Threshold 1, after implementing mitigation measures, the Modified Project would be considered to result in an increase in GHG emissions on par with typical DWR projects (i.e., would not be considered an Extraordinary Construction Project) and would not conflict with DWR’s GHG reduction goals identified in the GGERP Update 2020. Over the long-term, the new campground and day use area operations would also result in a minimal increase in emissions. Overall, the Modified Project would be consistent with the applicable strategies and measures in the Scoping Plan and is consistent with, and would not impede, the state’s trajectory toward the aforementioned statewide GHG reduction goals for 2030 or 2050. In addition, because the specific path to compliance for the state in regard to the long-term goals will likely include changes in technology and regulatory standards and controls that are unavailable or unknown at this time, Modified Project operations and users of Modified Project facilities would be subject to these changes and it can be reasonably expected that emissions from Modified Project operations would not conflict with the state’s long-term goals for reducing GHG emissions. With respect to future GHG targets under SB 32 and EO S-3-05, CARB has also made clear its legal interpretation that it has the requisite authority to adopt whatever regulations are necessary, beyond the AB 32 horizon year of 2020, to meet SB 32’s 40% reduction target by 2030 and EO S-3-05’s 80% reduction target by 2050; this legal interpretation by an expert agency provides evidence that future regulations will be adopted to continue the state on its trajectory toward meeting these future GHG targets.

Based on the above considerations, the Modified Project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. This impact would be **less than significant after mitigation**.

#### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant impacts with mitigation incorporated and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant with mitigation incorporated (see Section 3.3.5).

#### 3.3.5 Mitigation Measures

The following mitigation measures are required to reduce GHG emissions from construction of the Modified Project to the extent feasible. Notably, Mitigation Measure SEIR-GHG-2 replaces Mitigation Measure GHG-1 identified in the 2019 EIS/EIR, whereas Mitigation Measure SEIR-GHG-1 has been added as new mitigation. Mitigation Measure GHG-1 was replaced with Mitigation Measure SEIR-GHG-2 to provide additional detail and specificity to guide implementation of this measure and to align the measure with guidance from recent case law pertaining to carbon offsets.

**SEIR-GHG-1 (New mitigation measure): Construction GHG Emissions Reductions.** To reduce greenhouse gas (GHG) emissions generated by equipment during construction, the following measures shall be incorporated into the Modified Project:

- i) The proper tuning and maintenance of all construction equipment in accordance with manufacturer's specifications
- ii) Where feasible, employing the use of electrical or alternative fueled (i.e., non-diesel) construction equipment, including forklifts, concrete/industrial saws, pumps, aerial lifts, air compressors, and other comparable equipment types to the extent commercially available
- iii) To reduce the need for electric generators and other fuel-powered equipment, providing on-site electrical hookups for the use of hand tools such as saws, drills, and compressors used for construction where feasible and appropriate
- iv) Encouraging and providing carpools, shuttle vans, transit passes and/or secure bicycle parking for construction worker commutes

**SEIR-GHG-2 (Replaces GHG-1 in the 2019 EIS/EIR): Carbon Offsets – Construction Emissions.** The California Department of Water Resources (DWR) and Bureau of Reclamation (Reclamation) shall retire carbon offsets in a quantity sufficient to offset the Modified Project's construction greenhouse gas (GHG) emissions to below the DWR thresholds of 25,000 metric ton carbon dioxide equivalent (MT CO<sub>2</sub>e) total and 12,500 MT CO<sub>2</sub>e per year for Extraordinary Construction Projects, consistent with the performance standards and requirements set forth below. Based on modeling conducted to date, a minimum of 104,537 MT CO<sub>2</sub>e would be required to reduce emissions below the project-level significance threshold.

#### **Carbon Offset Standards – Eligible Registries, Acceptable Protocols, and Defined Terms**

"Carbon offset" shall mean an instrument, credit, or other certification verifying the reduction of GHG emissions issued by the Climate Action Reserve, the American Carbon Registry, or Verra

(previously, the Verified Carbon Standard). This shall include, but is not limited to, an instrument, credit or other certification issued by these registries for GHG reduction activities within the Merced County region. Offsets from the Clean Development Mechanism (CDM) registry or generated under CDM protocols shall not be purchased or used to satisfy offset requirements. Qualifying carbon offsets presented for compliance with this mitigation measure may be used provided that each registry shall continue its existing practice of requiring the following for the development and approval of protocols or methodologies:

- i) Adherence to established GHG accounting principles set forth in the International Organization for Standardization (ISO) 14064, Part 2 or the World Resources Institute/World Business Council for Sustainable Development (WRI/WBCSD) Greenhouse Gas Protocol for Project Accounting
- ii) Oversight of the implementation of protocols and methodologies that define the eligibility of carbon offset projects and set forth standards for the estimation, monitoring and verification of GHG reductions achieved from such projects. The protocols and methodologies shall:
  - a. Be developed by the registries through a transparent public and expert stakeholder review process that affords an opportunity for comment and is informed by science
  - b. Incorporate standardized offset crediting parameters that define whether and how much emissions reduction credit a carbon offset project should receive, having identified conservative project baselines and the length of the crediting period and considered potential leakage and quantification uncertainties
  - c. Establish data collection and monitoring procedures, mechanisms to ensure permanency in reductions, and additionality and geographic boundary provisions
  - d. Adhere to the principles set forth in the program manuals of each of the aforementioned registries, as such manuals are updated from time to time

Further, any carbon offset used to reduce the Modified Project's GHG emissions shall be a carbon offset that represents the past or forecasted reduction or sequestration of one MT of CO<sub>2</sub>e that is "not otherwise required" (California Environmental Quality Act [CEQA] Guidelines Section 15126.4(c)(3)). Each carbon offset used to reduce GHG emissions shall achieve additional, real, permanent, quantifiable, verifiable, and enforceable reductions, which are defined for purposes of this mitigation measure as follows:

- i) "Additional" means that the carbon offset is not otherwise required by law or regulation, and not any other GHG emissions reduction that otherwise would occur.
- ii) "Real" means that the GHG reduction underlying the carbon offset results from a demonstrable action or set of actions, and is quantified under the protocol or methodology using appropriate, accurate, and conservative methodologies that account for all GHG emissions sources and sinks within the boundary of the applicable carbon offset project, uncertainty, and the potential for activity-shifting leakage and market-shifting leakage.
- iii) "Verifiable" means that the GHG reduction underlying the carbon offset is well documented, transparent, and set forth in a document prepared by an independent verification body that is accredited through the American National Standards Institute (ANSI).

- iv) “Permanent” means that the GHG reduction underlying the carbon offset is not reversible; or, when GHG reduction may be reversible, that a mechanism is in place to replace any reversed GHG emission reduction.
- v) “Quantifiable” means the ability to accurately measure and calculate the GHG reduction relative to a project baseline in a reliable and replicable manner for all GHG emission sources and sinks included within the boundary of the carbon offset project, while accounting for uncertainty and leakage.
- vi) “Enforceable” means that the implementation of the GHG reduction activity must represent the legally binding commitment of the offset project developer to undertake and carry it out.

The protocols and methodologies of the Climate Action Reserve, the American Carbon Registry, and Verra establish and require carbon offset projects to comply with standards designed to achieve additional, real, permanent, quantifiable, verifiable, and enforceable reductions. The above definitions are provided as criteria and performance standards associated with the use of carbon offsets. Such criteria and performance standards are intended only to further construe the standards under CEQA for mitigation related to GHG emissions (see, e.g., State of California CEQA Guidelines Section 15126.4[a][c]), and are not intended to apply or incorporate the requirements of any other statutory or regulatory scheme not applicable to the Modified Project (e.g., the California Cap-and-Trade Program).

#### 3.3.6 Level of Significance After Mitigation

As discussed in Section 3.3.3, Thresholds of Significance, GHG impacts are recognized exclusively as cumulative impacts (CAPCOA 2008). The Modified Project would result in a potentially significant impact with respect to generating GHG emissions during construction of the Modified Project. Mitigation Measures SEIR-GHG-1 and SEIR-GHG-2, which require strategies to reduce GHGs from construction, as well as the purchase of carbon offsets, would reduce and offset construction GHG impacts to a level below significance. Regarding long-term operations, GHG emissions associated with the Modified Project’s proposed new campground and improved San Luis Creek Day Use Area would be minimal and no mitigation would be required.

Because the Modified Project would exceed the DWR thresholds during construction, it would be considered an Extraordinary Construction Project and would result in a potentially significant impact because it could impact DWR’s ability to attain long-term GHG reduction goals identified by DWR’s GGERP Update 2020. With implementation of Mitigation Measures SEIR-GHG-1 and SEIR-GHG-2, the Modified Project would result in an increase in GHG emissions on par with typical DWR projects (i.e., would not be considered an Extraordinary Construction Project) and would not conflict with DWR’s GHG reduction goals. As noted above, regarding long-term operations, GHG emissions associated with the Modified Project’s proposed new campground and improved San Luis Creek Day Use Area would be minimal and no mitigation would be required. Overall, after mitigation, the Modified Project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions, and this impact would be less than significant.

INTENTIONALLY LEFT BLANK

## 3.4 Flood Protection

This supplemental environmental impact report (SEIR) addresses proposed modifications to the B.F. Sisk Dam Safety of Dams Modification Project, which was previously evaluated in the B.F. Sisk Dam Safety of Dams Modification Project Environmental Impact Statement/Environmental Impact Report (2019 EIS/EIR). The project addressed in the 2019 EIS/EIR is referred to herein as the Approved Project; the Approved Project with proposed modifications identified since certification of the 2019 EIS/EIR is referred to herein as the Modified Project.

This section describes the existing flood protection conditions of the additional impact areas of the previously certified Approved Project site and vicinity, identifies associated regulatory requirements, evaluates potential impacts, and identifies any applicable mitigation measures related to the implementation of the Modified Project.

### Public Scoping and Review Comments Received on 2019 EIS/EIR

The SEIR must consider comments received during public scoping and public review of the 2019 EIS/EIR prepared for the Approved Project. Comments received on the 2019 EIS/EIR relative to flood protection include the following:

- Scoping period comment from the Holiday Inn Express Santa Nella: The commenter expressed concerns over flooding due to a major earthquake.

### 3.4.1 Existing Conditions

#### 3.4.1.1 Regional Watershed

The Modified Project site is located within the San Joaquin River watershed, an approximately 15,600-square-mile region that is bordered to the north by the Sacramento River watershed, the south by the Tulare Basin watershed, to the east by the Sierra Nevada, and to the west by the Pacific Coast Ranges (EPA 2020).

The primary tributary for the San Joaquin River watershed is the San Joaquin River, which originates in the Sierra Nevada and generally flows north through the Central Valley before merging with the Sacramento River. Tributary rivers that flow into the San Joaquin River include (from south to north) the Fresno, Chowchilla, Merced, Tuolumne, Stanislaus, Calaveras, Mokelumne, and Cosumnes Rivers (see Figure 3.1-1, San Joaquin River watershed, in Section 3.1, Water Quality and Groundwater Resources) (EPA 2020).

Water flows in the San Joaquin River have been substantially modified by dams and diversions that collectively remove 95% of the water from the river. These diversions cause the San Joaquin River to be dry for more than 60 miles. However, water diversion structures, such as the Delta–Mendota Canal, have been constructed to replenish some of the water diverted from the San Joaquin River by transporting Sacramento River water to the depleted river channel and agricultural users within the watershed (EPA 2020).

The land area in the San Joaquin River watershed is diverse, ranging from snow-covered peaks to sub-sea level agricultural areas. Extensive forest areas cover the mountain slopes; more than 3,000 square miles of agriculture are present in the Central Valley; and 2 million people live in the major urban centers of Stockton and Fresno, small towns, and rural communities within the watershed (EPA 2020).

### 3.4.1.2 Site Topography and Drainage

The additional impact areas of the Modified Project are located (1) immediately downstream of the central and southern base of the dam (i.e., the additional staging and stockpiling areas); (2) within approximately 0.5 miles downstream of the southern portion of the dam (i.e., Borrow Areas 12 and 14); and (3) on the west shore of O'Neill Forebay (i.e., the proposed campground and existing San Luis Creek Day Use Area) (see Figures 2-4A and 2-4B, Modified Project Detail, in Chapter 2, Project Description). The embankment of the dam is steeply to moderately sloped, undulated, and sparsely vegetated. A concrete-lined spillway conduit of the dam is located within the northern portion of the embankment, immediately east of the Gianelli Pumping-Generating Plant.

Near the southern shoreline of San Luis Reservoir, south of Basalt Road, the Modified Project site consists of moderately to steeply sloped, undulated, and sparsely vegetated hillsides. North of Basalt Road, near the southeastern shoreline of the reservoir, the Modified Project site consists of low-lying flat topography (Figure 2-4B). Runoff in this region infiltrates into the underlying sediment and/or sheet flows directly into San Luis Reservoir.

Southeast of the dam embankment, Borrow Area 12 (Figure 2-4B) consists of an approximately 28-acre grassland hillside that is about 100 feet higher than the surrounding lower-lying area. The top of Borrow Area 12 is relatively flat, having been used in the past as a borrow area for the initial construction of the dam. The adjoining (to the south) 200-acre Borrow Area 14 encompasses four low grassland hills, which are up to 400 feet higher than the downstream base of the dam. Runoff within this area infiltrates into the underlying, pervious soils and/or sheet flows into the low-lying alluvial areas before infiltrating or being transported in drainages toward O'Neill Forebay to the north.

The northwestern and western shoreline of O'Neill Forebay, in the vicinity of the proposed campground and existing San Luis Creek Day Use Area, consists of relatively flat-lying areas adjacent to the shoreline, with east-facing, gentle to moderately sloping hillsides along the western portions of these additional impact areas. Except for a paved road traversing the site, the proposed campground area is unpaved and undeveloped. The existing San Luis Creek Day Use Area includes paved parking lots, boat ramps, roadways, and recreational structures (e.g., gazebos, public restrooms, campsites). However, pervious unpaved areas are present throughout the day use area. This portion of the Modified Project site is moderately vegetated with trees, brush, and grasses (Figure 2-4A). Stormwater from paved areas either sheet flows directly into O'Neill Forebay or flows into unpaved areas within the day use area. Stormwater runoff from these pervious unpaved areas infiltrates into the underlying sediments and/or sheet flows into the forebay.

### 3.4.1.3 Flood Hazards

The San Joaquin River watershed topography and surrounding terrain create flood intensities unseen elsewhere in the United States. Two flood types occur in the Central Valley—widespread rainfall floods in the late fall and winter, and snowmelt floods in the late spring and early summer. However, most floods are produced by extended periods of precipitation during the winter months. Floods can also occur when large amounts of water (due to rapid snowmelt) enter upstream storage reservoirs and require increased releases from dams. Despite construction of many flood control facilities, major floods have continued to occur, and much of today's urban growth is in those flood-prone areas (Merced County 2012).

Channel capacity in rivers downstream of dams is often exceeded due to dam water releases, resulting in damage to adjacent agricultural and urban areas. These issues are especially severe along streams where erosion and



sediment have exacerbated flooding conditions. Historic surface water diversions on the San Joaquin River have contributed to sedimentation and vegetation encroachment that reduces channel capacities. Under present system conditions, the combined discharges from upstream dams regularly exceed the flood system capacity. Major flooding events occurred in February and June of 1969, and four times since 1980. The most recent major flooding event occurred in January 1997, when levees failed in 27 locations throughout the valley floor. The 1997 flood provided the impetus for a new comprehensive evaluation of flood management systems in the Central Valley, although the need for change had been growing for some years (Merced County 2012).

To mitigate the potential damage caused by flooding, Merced County (County) requires the construction of individual stormwater detention basins for new development to limit peak flows to pre-project conditions. On a regional scale, extensive flood control improvements have been undertaken in the county to reduce the percentage of land subject to flooding. As effective as the existing flood control measures have been, flood problems persist in some areas of Merced County (Merced County 2012). Flood control policies and improvements continue to be implemented throughout the county that should reduce future flood considerably, but will not eliminate the problem entirely (Merced County 2014a).

The Federal Emergency Management Agency (FEMA) has prepared Flood Insurance Rate Maps for most of the Central Valley. These maps delineate the areas of known special flood hazards and associated applicable risks to the community. According to FEMA Flood Map No. 06047C0800G, effective December 2, 2008, the Modified Project site is located within Zone D, Area of Undetermined Flood Hazard (FEMA 2020). Flood Zone D designation is used for areas where there are possible but undetermined flood hazards, as no analysis of flood hazards has been conducted. The designation of Zone D is also used when a community incorporates portions of another area where no map has been prepared (FEMA 2011).

Senate Bill (SB) 5, which was enacted in 2007, authorized the California Department of Water Resources (DWR) to develop the Best Available Maps (BAMs) displaying 100- and 200-year floodplains for areas located within the Sacramento–San Joaquin Valley watershed. The BAMs do not replace existing FEMA regulatory floodplains shown on Flood Insurance Rate Maps, but rather identify potential flood risks that may warrant further studies or analyses for land-use decision making (See Section 3.4.2, Relevant Plans, Policies, and Ordinances, for additional information related to SB 5). The floodplains shown in BAMs delineate areas with potential exposure to flooding for three different storm events, including storm flows that have a 1% chance of being equaled or exceeded in any year (100-year flood), storm flows that have a 0.5% chance of being equaled or exceeded in any year (200-year flood), and storms flows that have a 0.2% chance of being equaled or exceeded in any year (500-year flood). These flows and resulting flooded areas are based on the best available floodplain information and may not identify all areas subject to flooding. According to the BAM floodplain map, San Luis Reservoir and O'Neill Forebay are located within a DWR-designated 100-year floodplain. However, no portion of the Modified Project site is located within the 100-year floodplain. As such, the potential for on-site flooding due to a 100-year flood is low (DWR 2020; Merced County 2012).

### 3.4.1.4 Dam Inundation

Protection against dam and levee failures is critical to the safety and well-being of Merced County residents. Dams and levees can be made of soil, concrete, or rockfill. Their failure can occur due to natural and humanmade causes, including poor construction, extensive hydraulic head pressure, and earthquakes. The extensive canal system in Merced County is vulnerable to failure, especially during extreme rainfall events. There are 11 dams within or adjacent to Merced County that pose a significant hazard in the event of a dam failure. For instance, B.F.

Sisk Dam, located near the Ortigalita Fault (see Section 3.13, Geology, Seismicity, and Soils), was built to withstand an earthquake magnitude of 8.3; however, this does not eliminate the possibility of dam failure with resulting floods (Merced County 2012).

Seiches may occur in the event of a major earthquake near San Luis Reservoir and O'Neill Forebay. Seiches are waves occurring in confined bodies of water such as lakes, reservoirs, or bays, and can be initiated by winds, seismic events, or landsliding. Such waves can rapidly erode an earthen dam. Seiches can be expected to occur not only on the reservoirs and lakes within Merced County, but also on those located in adjacent counties, which could flood large areas in the county. Because of the proximity to the extremely active San Andreas and Calaveras Faults, and the less active Ortigalita Fault, San Luis Reservoir likely poses the greatest threat to Merced County (Merced County 2012), including the Modified Project site.

Flooding associated with dam failure on one of the local or upstream dams, while unlikely, would create inundation areas that affect virtually every urban area of Merced County. According to Figure 10-15, Potential Dam Failure Inundation Areas: Los Banos Creek Detention Reservoir, O'Neill Forebay, and San Luis Reservoir, of the 2030 Merced County General Plan Background Report (Merced County 2013a), portions of the Modified Project site—including the southern tip of the existing San Luis Creek Day Use Area, an additional staging/stockpiling area at the south end of the dam, and the northern portions of Borrow Areas 12 and 14 (Figures 2-4A and 2-4B)—are located with the B.F. Sisk Dam inundation area (Figure 3.4-1, Potential Dam Inundation Areas) (Merced County 2012). As such, portions of the Modified Project could be inundated in the unlikely event of dam failure.

### 3.4.2 Relevant Plans, Policies, and Ordinances

#### 3.4.2.1 Federal

##### **National Flood Insurance Program**

The National Flood Insurance Act of 1968 established the National Flood Insurance Program to provide flood insurance within communities that were willing to adopt floodplain management programs to mitigate future flood losses. The act also required the identification of all floodplain areas within the United States and the establishment of flood-risk zones within those areas. FEMA is the primary agency responsible for administering programs and coordinating with communities to establish effective floodplain management standards. FEMA is responsible for preparing Flood Insurance Rate Maps that delineate the areas of known special flood hazards and the risk they pose to the community. The program encourages the adoption and enforcement by local communities of floodplain management ordinances that reduce flood risks.

##### **Floodplain Management: Executive Orders 11988, 12148, and 13690**

Executive Orders (EOs) 11988, 12148, and 13690 encompass a set of requirements to ensure that federal agencies act to reduce the risk of flood loss; minimize the impact of floods on human safety, health, and welfare; and restore and preserve the natural and beneficial values served by floodplains. Before acting, each agency is required to determine whether a project would occur in a designated floodplain. If an agency determines or proposes to conduct, support, or allow a project to be developed in a floodplain, the agency must consider alternatives to avoid adverse effects and incompatible development in the floodplains. Whenever possible, a

project's design and construction should take natural systems, ecosystem processes, and nature-based approaches into consideration when planning to construct within a floodplain.

### **Reclamation Safety of Dams Act**

The 1978 Reclamation Safety of Dams Act (Public Law 95-578, as amended) was enacted to mandate that dams are operated and maintained in a safe manner, ensured through inspections for safety deficiencies, analyses utilizing current technologies, and corrective actions if needed based on current engineering practices. The Safety of Dams program focuses on evaluating and implementing actions to resolve safety concerns at Bureau of Reclamation (Reclamation) dams. Under this program, Reclamation will complete studies and identify and perform needed corrective action on Reclamation dams. The selected course of action relies on assessments of risks and liabilities with environmental and public involvement input to the decision-making process.

### **Federal Guidelines for Emergency Action, FEMA Publication No. 64**

These guidelines provide guidance to help dam owners, in coordination with emergency management authorities, effectively develop and exercise Emergency Action Plans for dams. The guidelines encourage (1) the development of comprehensive and consistent emergency action planning to protect lives and reduce property damage and (2) the participation of emergency management authorities and dam owners in emergency action planning.

### **Federal Guidelines for Dam Safety Risk Management, FEMA Publication No. 1025**

These guidelines enable federal agencies to use the general principles of risk management to make risk-informed decisions. The agencies work to develop and maintain consistent application of risk analysis, risk assessment, risk management, and risk communication, using equivalent procedures and tools. Risk estimates typically reflect the risk at a given dam at the snapshot in time when the risk analysis is performed. Risk management includes structural and nonstructural actions on a given dam, as well as activities such as routine and special inspections, instrumented monitoring, structural analyses, site investigations, development and testing of emergency action plans, and other activities.

#### 3.4.2.2 State

### **California Water Code, Division 3. Dams and Reservoirs, Sections 6101–6102**

These regulations require dam owners to maintain records of, and to report on, maintenance, operation, staffing, and engineering and geologic investigations and to issue orders as necessary to secure maintenance and operations to safeguard life and property. The owner of a dam, or their agent, shall fully and promptly advise DWR of any sudden or unprecedented flood or unusual or alarming circumstance or occurrence affecting the dam or reservoir. These regulations require DWR to periodically inspect dams and reservoirs for the purpose of determining their safety. If required, the dam owner shall perform work necessary to secure maintenance and operation that will safeguard life and property.

### **Governor’s Office of Emergency Services, California Code of Regulations, Title 19 - Public Safety, Division 2 – Office of Emergency Services, Chapter 2 – Emergencies and Major Disaster, Subchapter 4 – Dam Inundation Mapping Procedures.**

These regulations were adopted to implement the provisions of Government Code Section 8589.5, which provide the standards for producing and submitting an inundation map, acquiring a waiver from the inundation mapping requirement, and administering the program. These regulations are not applicable to those structures identified as Debris Basins in DWR’s Division of Safety and Dams Bulletin 17-00, dated July 2000. However, these regulations are not intended to limit the authority of the Governor’s Office of Emergency Services, or any appropriate public agency, to act under the police power of the state, when necessary, to protect life and property from a threatened or actual dam failure.

### **California Department of Water Resources, Division of Safety and Dams**

This division of DWR enforces dam safety requirements, assists with the evaluation of risks posed by existing and proposed dams, and implements inspection programs to ensure that dams are properly maintained and operated. Division engineers and engineering geologists review and approve plans and specifications for the design of dams and oversee construction to ensure compliance with the approved plans and specifications. Reviews include site geology, seismic setting, site investigations, construction material evaluation, dam stability, hydrology, hydraulics, and structural review of appurtenant structures. In addition, Division of Safety and Dams engineers inspect over 1,200 dams on a yearly schedule to ensure those dams are performing and being maintained in a safe manner.

### **Senate Bill 5**

As discussed in Section 3.4.1, Existing Conditions, SB 5 authorized DWR to develop BAMs displaying 100- and 200-year floodplains for areas located within the Sacramento–San Joaquin Valley watershed. DWR has expanded the BAMs to cover all counties in the state and to include 500-year floodplains. SB 5 required each city and county within the Sacramento–San Joaquin Valley, within 24 months of the adoption of a specified flood protection plan by the Central Valley Flood Protection Board, to amend its general plan to include (1) data and analysis contained in that flood protection plan, (2) goals and policies for the protection of lives and property that will reduce the risk of flood damage, and (3) related feasible implementation measures.

### **Central Valley Flood Protection Act**

As mandated by the Central Valley Flood Protection Act of 2008 (Water Code Division 5 – Flood Control, Part 6 – Central Valley Flood Protection, Section 9600–9603), DWR prepared the Central Valley Flood Protection Plan (CVFPP) and established the Central Valley Flood Protection Board (CVFPB), formerly known as the Reclamation Board. AB 5 reconfigured the membership of the CVFPB and required it to be independent of DWR. The mission of the CVFPB is to control flooding along the Sacramento and San Joaquin Rivers, in cooperation with various agencies, and maintain the integrity of the existing flood control system and designated floodways via authority over encroachment permits. Regulations for this agency are found in California Code of Regulations Title 23, Division 1. In the Merced County region, the CVFPB is responsible for operation and maintenance of the Lower San Joaquin River Flood Control Project. The CVFPB has designated floodways on portions of the Merced, Chowchilla, and San Joaquin Rivers in Merced County and has delegated much of the maintenance responsibility to local levee and reclamation districts. A permit from the CVFPB is required for any work that interferes with the operation, integrity, and function of an adopted flood control plan.

The 2012 CVFPP provided a comprehensive framework for system-wide management and flood risk reduction planning for the Sacramento and San Joaquin River Basins (DWR 2012). The adopted CVFPP must be updated every 5 years beginning in 2017. The 2017 CVFPP Update refined the overall near-term and long-term investment needs established in the 2012 CVFPP and included recommendations on policies and financing that aim to support comprehensive flood risk management actions locally, regionally, and system wide (DWR 2017). The 2017 CVFPP Update also initiated a State Systemwide Investment Approach, which included 200-year level of protection for urban and urbanizing areas, as well as 100-year level of protection for small communities, rural-agricultural levee improvements, weir and bypass expansions, flood structure improvements, and ecosystem restoration (DWR 2017). The State Systemwide Investment Approach also encourages further exploring actions such as floodplain transitory storage, groundwater recharge opportunities, reservoir management, and residual risk management.

#### **San Luis Reservoir State Recreation Area Resource Management Plan/General Plan**

The San Luis Reservoir State Recreation Area Resource Management Plan/General Plan (San Luis Reservoir SRA RMP/GP) was prepared to set forth goals and guidelines for management of the San Luis Reservoir State Recreation Area (SRA) and adjacent lands (known as the Plan Area) for the next 25 years. The 27,000-acre Plan Area includes the water surfaces of San Luis Reservoir, O'Neill Forebay, and Los Banos Creek Reservoir, as well as adjacent recreation lands. The California Department of Parks and Recreation (CDPR), DWR, and the California Department of Fish and Wildlife manage the Plan Area lands, which are owned by Reclamation. The San Luis Reservoir SRA RMP/GP was developed through an agreement between Reclamation and CDPR to provide coordinated direction for recreation and resource management of the Plan Area lands, while continuing to serve the primary purpose of water storage, water distribution, and power generation. The San Luis Reservoir SRA RMP/GP sets forth Plan Area-wide management goals and guidelines that will be used to implement Plan Area use and future actions and to measure its success.

The following goal and guidelines would apply to the Modified Project (Reclamation and CDPR 2013):

**Goal RES-WQ4:** Design, construct, and maintain buildings, roads, trails, campsites, boat launches, and associated infrastructure to minimize stormwater runoff, promote groundwater recharge, and prevent soil erosion.

#### **Guidelines:**

- Limit impervious surfaces to minimize runoff; consider the use of permeable materials for new or expanded pedestrian and vehicular surfaces.
- Use silt fences, sedimentation basins, and other control measures to reduce erosion, surface scouring, and discharge to water bodies.

#### **3.4.2.3 Local**

#### **Merced County Multi-Jurisdictional Local Hazard Mitigation Plan**

The Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act) legally requires state, local, tribal, and territorial governments to develop and adopt FEMA-approved hazard mitigation plans as a condition of receiving certain types of non-emergency disaster assistance. The regulations, under Title 44, Chapter 1, Part 201 of the Code of Federal Regulations contain requirements and procedures to implement the hazard mitigation planning provisions of the Stafford Act. The purpose of the Merced County Multi-Jurisdictional Local Hazard

Mitigation Plan is to identify hazards within Merced County, review and assess past disaster occurrences, estimate the probability of future occurrences, and set goals to mitigate potential risks to reduce or eliminate long-term risk to people and property from natural and human-made disasters.

### **Merced Vision 2030 General Plan**

As required by state law, Merced County has adopted a general plan to guide land use decisions within the county. The general plan provides goals, policies, standards, and implementation programs to guide the physical development of a county. At a minimum, the general plan must address the topics of land use, transportation, housing, conservation, open space, noise, and safety. The Merced Vision 2030 General Plan (Merced County General Plan), adopted in 2013, has established the year 2030 as the plan's time horizon. The Public Facility and Services Element of the Merced County General Plan contains goals and policies related to stormwater facilities. Moreover, the Hazard and Safety Element contains goals and policies related to flood protection. The following goal and policies would apply to the Modified Project (Merced County 2013b):

#### ***Public Facilities and Services Element***

**Goal PFS-3:** Ensure the management of stormwater in a safe and environmentally sensitive manner through the provision of adequate storm drainage facilities that protect people, property, and the environment.

- **Policy PFS-3.1:** Stormwater Management Plans. Require stormwater management plans for all Urban Communities to reduce flood risk, protect soils from erosion, control stormwater runoff, and minimize impacts on existing drainage facilities.
- **Policy PFS-3.2:** Stormwater Facilities in New Development. Require that new development in unincorporated communities includes adequate stormwater drainage systems. This includes adequate capture, transport, and detention/retention of stormwater.
- **Policy PFS-3.3:** Community Drainage Systems. Encourage the development of community drainage systems rather than individual project level systems, in order to use land more efficiently and protect people, property and the environment in a more comprehensive manner.
- **Policy PFS-3.4:** Agency Coordination. Coordinate with the U.S. Army Corps of Engineers and other appropriate agencies to develop stormwater detention/retention facilities and recharge facilities that enhance flood protection and improve groundwater recharge.
- **Policy PFS-3.5:** Pre-Development Storm Flows. Require on-site detention/retention facilities and velocity reducers when necessary to maintain pre-development storm flows and velocities in natural drainage systems.
- **Policy PFS-3.6:** Retention/Detention Facility. Encourage stormwater detention/retention project designs that minimize drainage concentrations and impervious coverage, avoid floodplain areas, are visually unobtrusive and, where feasible, provide a natural watercourse appearance and a secondary use, such as recreation.

#### ***Hazard and Safety Element***

- **Policy HS-2.1:** Floodplain Management Priorities. Prepare and adopt a floodplain management program in flood hazard areas that gives priority to regulation of land uses over development of structural controls as a method of reducing flood damage.
- **Policy HS-2.2:** Countywide Flood Emergency Plan. Coordinate with the cities in Merced County to develop a Countywide flood emergency plan that is consistent with city general plans.

- **Policy HS-2.3:** Countywide Flood Control Authority. Work with the cities in Merced County to establish a Countywide flood control authority to coordinate efforts and develop opportunities for expanded Federal funding.
- **Policy HS-2.4:** Coordination to Improve Flood Control. Coordinate with State and local flood management agencies to develop funding mechanisms to finance the design and construction of flood facilities.
- **Policy HS-2.5:** Flood Control Project Funding. Support the efforts of local districts and communities in obtaining funding for local flood control projects.
- **Policy HS-2.6:** Flood Risk Consideration. Prohibit new development in existing undeveloped areas (i.e., area devoted to agriculture or open space that is not designated for development) protected by a State flood control project without appropriately considering significant known flooding risks and taking reasonable and feasible action to mitigate the potential property damage to the new development resulting from a flood.
- **Policy HS-2.7:** Finding of Flood Protection for New Development. The County shall not enter into a development agreement, approve any building permit or entitlement, or approve a tentative or parcel map unless it finds one of the following:
  - The flood control facilities provides 200-year level of protection in urban and non-urban areas consistent with the current Central Valley Flood Protection Plan;
  - Conditions imposed on the development will protect the property at a 200-year level of protection in urban and non-urban areas consistent with the current Central Valley Flood Protection Plan; or
  - The local flood management agency has made “adequate progress” on the construction of a flood protection system which will result in protection equal or greater than the 200-year flood event in urban and non-urban areas consistent with the current Central Valley Flood Protection Plan.
- **Policy HS-2.8:** Floodwater Diversion. Require new flood control projects or developments within areas subject to 100- and 200-year frequency floods are done in a manner that will not cause floodwaters to be diverted onto adjacent property or increase flood hazards to property located elsewhere.
- **Policy HS-2.9:** Minimize Public Facility Impacts. Encourage all agencies that operate public facilities, such as roads, structures, wastewater treatment plants, gas, electrical, and water systems within areas subject to 100- and 200-year frequency floods to locate and construct facilities to minimize or eliminate potential flood damage.
- **Policy HS-2.10:** Essential Facility Location. Prohibit the construction of essential facilities (including hospitals, healthcare facilities, emergency shelters, fire stations, emergency command centers, and emergency communications facilities) in the 100- and 200-year floodplain, unless it can be demonstrated that the structural and operational integrity of the facility can be maintained during flood events.
- **Policy HS-2.11:** National Flood Insurance Program. Continue to participate in the National Flood Insurance Program (NFIP).
- **Policy HS-2.12:** Relocation Assistance. Support State and local flood management agencies to provide relocation assistance or other cost-effective strategies for reducing flood risk to existing economically disadvantaged communities located in non-urbanized areas.
- **Policy HS-2.13:** Open Space Use. Encourage open space uses in flood hazard areas.
- **Policy HS-2.14:** Multi-Purpose Flood Control Projects. Encourage multi-purpose flood control projects that incorporate recreation, resource conservation, preservation of natural riparian habitat, and scenic values of the County’s streams, creeks, and lakes.
- **Policy HS-2.15:** Flood Control Design. Encourage flood control designs that respect the natural topography and vegetation of waterways while retaining dynamic flow and functional integrity.

- **Policy HS-2.16:** Adapting Infrastructure to Climate Change. Encourage increased stormwater and flood protection infrastructure capacity in order to accommodate changes in precipitation and extreme weather events.
- **Policy HS-2.17:** Flood Control Facility Construction. Permit the construction of County flood control facilities in existing developments located within flood hazard areas to proceed only after a complete review of the environmental effects and project costs and benefits.
- **Policy HS-2.18:** Public Awareness Programs. Prepare public awareness programs to inform the general public and potentially affected property owners of flood hazards, potential dam failure inundation, and evacuation plans.
- **Policy HS-2.19:** Mutual Aid Resource. Coordinate and use mutual aid resources to augment local resources in order to perform rescue operations, secure utilities and inundated areas, and control traffic in event of dam failure.
- **Policy HS-2.20:** Multi-Hazard Functional Plan Update. Prepare and include provisions for mutual aid efforts within the County Multi-Hazard Functional Plan.

### 3.4.3 Thresholds of Significance

The following significance criteria from the 2019 EIS/EIR are used for the purposes of analysis in this SEIR. These criteria, which have not changed from the 2019 EIS/EIR, are identified in Chapter 9, Flood Protection of the 2019 EIS/EIR. A significant impact related to flooding and hydrology would occur if the Modified Project would result in:

1. Placement within a 100-year flood hazard area structures which would impede or redirect flood flows;
2. Unaddressed exposure of people or structures to unacceptable risk of loss, injury or death involving flooding, including flooding because of increase in the potential for the failure of a levee or dam;
3. Substantial alteration of the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; or
4. Creation or contribution of runoff water, which would exceed the capacity of existing or planned stormwater drainage systems.

### 3.4.4 Impacts Analysis

#### Threshold 1

***Would the Modified Project result in placement within a 100-year flood hazard area structures that would impede or redirect flood flows?***

| 2019 EIS/EIR Impact Determination | Modified Project Impact Determination | New Significant Increase in Impact Severity? |
|-----------------------------------|---------------------------------------|--|
| No Impact                         | No Impact                             | No   |



### Campground Construction and Day Use Area Improvements

According to FEMA Flood Map No. 06047C0800G, effective December 2, 2008, the Modified Project site, including the proposed campground and San Luis Creek Day Use Area, is located within Zone D, Area of Undetermined Flood Hazard (FEMA 2020). However, according to DWR BAMs, no portion of the Modified Project site is located within a 100-year floodplain. Moreover, the construction and operation of the proposed campground and improvements to the day use area would not result in the impediment or redirection of flood flows. As such, this element of the Modified Project would not result in the placement of structures within a 100-year flood hazard area and would not impede or redirect flood flows. Similar to the Approved Project, **no impacts** would occur with respect to the Modified Project.

### Changes in Borrow Area Location

The Modified Project has identified two additional borrow areas, Borrow Areas 12 and 14, in addition to Borrow Area 6 and the Basalt Hill Borrow Area, which were identified as part of the Approved Project in the 2019 EIS/EIR. Borrow Areas 12 and 14 are within the overall construction footprint identified by the 2019 EIS/EIR, but were identified in that document and analyzed as anticipated contractor staging areas. Near the Basalt Hill Borrow Area, the Modified Project also includes the addition of a new work area proposed for stockpiling extracted materials prior to transporting the materials to the dam construction zone. Like the larger Basalt Hill Borrow Area, this area, shown in Figure 2-4B, was used to extract materials for the original dam construction. An existing access road from Basalt Road would be widened and improved for hauling use as part of the Modified Project. In addition, a remediation plan would be prepared and implemented for these borrow areas, including measures to revegetate and perform final grading to achieve a naturalized appearance and topography. Once construction activities have ceased, use of Borrow Area 12, Borrow Area 14, and the new staging area would be similar to existing conditions.

No portion of Borrow Area 12, Borrow Area 14, or the proposed stockpiling areas are located within a FEMA or DWR 100-year floodplain. Moreover, no structures are proposed to be developed in Borrow Area 12, Borrow Area 14, or the proposed staging area. As such, this element of the Modified Project would not result in the placement of structures within a 100-year flood hazard area and would not impede or redirect flood flows. Similar to the Approved Project, **no impacts** would occur with respect to the Modified Project.

### Minor Additions to Contractor Work Area

The Modified Project includes minor temporary and permanent expansions of contractor work areas downstream of the dam that were not part of the original study area addressed in the Approved Project. These areas include several staging/soil stockpiling areas downstream of B.F. Sisk Dam, which would later be covered by the stability berms and expanded dam embankment, as well as another small area of less than 1 acre immediately west of the dam's right abutment, where a haul road would be widened (Figures 2-4A and 2-4B).

As previously discussed, no portion of the Modified Project site is located within a FEMA or DWR 100-year floodplain. Moreover, contractor work areas would be used for soil stockpiling and overnight parking, fueling, and maintenance of heavy equipment, and would not require the development of permanent structures. As such, this element of the Modified Project would not result in the placement of structures within a 100-year flood hazard area and would not impede or redirect flood flows. Similar to the Approved Project, **no impacts** would occur with respect to the Modified Project.

### Additional Construction Assumptions

Additional construction assumptions include changes to the construction schedule, equipment and personnel specifications, and dewatering specifications for proposed excavations at the base of the dam. These components of the Modified Project would have no relevance to flooding. As such, this element of the Modified Project would not result in the placement of structures within a 100-year flood hazard area and would not impede or redirect flood flows. These additional construction assumptions, which were not included in the Approved Project, would result in **no impacts** related to Modified Project flooding conditions.

### Cumulative Impacts

Although portions of the California High-Speed Rail Project would be constructed across floodplains, proposed structures would not be placed such that flooding would be impeded or redirected. Bridges and culverts associated with the project would be constructed to allow flood flows to pass beneath the rail line unimpeded. The San Luis Reservoir SRA RMP/GP would include new trails and facilities at San Luis Reservoir. None of these facilities would be placed in a 100-year floodplain. The San Luis Transmission Project would include construction of new transmission lines near San Luis Reservoir to connect the San Luis Substation to a new transmission line, which would be developed between the Tracy Substation and the Dos Amigos Substation. The foundation legs of transmission towers are not of sufficient size to impede or redirect any potential flood flows. The San Luis Solar Project, which began construction in 2018, would not place structures within 100-year flood zone, such that those structures would impede or redirect flood flows. The San Luis Reservoir Low Point Improvement Project includes construction of a new dam and reservoir on Pacheco Creek. The proposed dam would be designed to impede flood flows and create a reservoir. Similarly, the B.F. Sisk Dam Raise and Reservoir Expansion Project would be designed to impede flood flows and increase the capacity of the reservoir.

As discussed, the Modified Project would not include construction of structures in a 100-year flood plain. As a result, the Modified Project, in combination with cumulative projects described herein, would not result in cumulatively considerable impacts with respect to placement of structures within a 100-year flood plain. Similar to the Approved Project, cumulative Modified Project impacts would be **less than significant**.

### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in no impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. The Modified Project would continue to result in no impacts.

### Threshold 2

***Would the Modified Project result in unaddressed exposure of people or structures to an unacceptable risk of loss, injury or death involving flooding, including flooding because of increase in the potential for the failure of a levee or dam?***

| 2019 EIS/EIR Impact Determination | Modified Project Impact Determination | New Significant Increase in Impact Severity? |
|-----------------------------------|---------------------------------------|--|
| Less than Significant             | Less than Significant                 | No   |

### Campground Construction and Day Use Area Improvements

As previously discussed under Threshold 1, no portion of the Modified Project, including the proposed campground and San Luis Creek Day Use Area, would be located in, impede, or redirect flood flows of the FEMA- or DWR-designated 100-year flood zones. As discussed in Section 3.4.1, the southern tip of the San Luis Creek Day Use Area is within the B.F. Sisk Dam Inundation Zone (Figure 3.4-1). While studies have indicated that the probability of partial or total dam failure is exceedingly low, studies prepared by Reclamation indicate that there is some risk that a strong seismic event could result in dam failure. The primary purpose of the Approved Project is to address deficiencies in the seismic design of the existing dam, thus reducing the potential for dam failure and increasing protection from inundation for areas downstream of the dam. The Modified Project has no bearing on the seismic safety improvements proposed as part of the Approved Project.

As discussed in the 2019 EIS/EIR, modifications to the dam as part of the Approved Project would require the temporary removal of portions of the dam embankment on the downstream slope and excavation to the dam foundation to support the anchoring of downstream stability berms to bedrock. This temporary removal of embankment material and excavation of portions of the embankment down to bedrock would temporarily reduce the dam capacity until the fill material is replaced. However, final design of the Approved Project would include the development of a construction schedule that calls for embankment removal to occur during periods of the year when reservoir levels are lower to avoid storage capacity conflicts. With the timing of construction to avoid reservoir capacity conflicts, no increases in flooding would be anticipated. As a result, this element of the Modified Project would not result in unaddressed exposure of people or structures in the San Luis Creek Day Use Area to an unacceptable risk of loss, injury, or death involving flooding, including flooding because of an increase in the potential for the failure of a levee or dam. Similar to the Approved Project, flooding impacts associated with the Modified Project would be **less than significant**.

### Changes in Borrow Area Location

As previously discussed under Threshold 1, Borrow Area 12, Borrow Area 14, and the newly proposed stockpiling area would not be in, impede, or redirect flood flows of the FEMA- or DWR-designated 100-year flood zones. Moreover, once construction activities have ceased, Borrow Areas 12 and 14 would be graded and revegetated back to natural landform, and temporary stockpiling areas would be restored to existing conditions. No structures are proposed to be developed within Borrow Area 12, Borrow Area 14, or the temporary staging/stockpiling area.

As discussed in Section 3.4.1, the northern portions of Borrow Areas 12 and 14 (Figure 2-4B), are in the B.F. Sisk Dam Inundation Zone (Figure 3.4-1). However, because these areas are temporary construction-related sites, potential flood inundation of these sites as a result of dam failure would result in no adverse impacts to people or structures. The Approved Project assumed contractor use of these areas; the Modified Project's use of these areas for materials extraction does not represent a change that affects temporary impacts with respect to flood risk. In addition, as described under Campground Construction and Day Use Area Improvements for Threshold 2, temporary removal of embankment material and excavation of portions of the embankment down to bedrock would temporarily reduce the dam capacity until the fill material is replaced. However, final design of the Modified Project would include the development of a construction schedule to time embankment removal during periods of the year when reservoir levels are lower to avoid storage capacity conflicts. With the timing of construction to avoid reservoir capacity conflicts, no increases in flooding would be anticipated. As a result, this element of the Modified Project would not expose people or structures in Borrow Area 12, Borrow Area 14, and the newly proposed stockpiling area to an unacceptable risk of loss, injury, or death involving flooding, including flooding because of an increase in the potential for the failure of a levee or dam. Similar to the Approved Project, flooding impacts associated with the Modified Project would be **less than significant**.

### Minor Additions to Contractor Work Area

As previously discussed under Threshold 1, minor additions to contractor work areas would not be in, impede, or redirect flood flows of the FEMA- or DWR-designated 100-year flood zones. Moreover, contractor work areas would predominately be used for soil stockpiling and overnight parking, fueling, and heavy equipment maintenance, and would not require the development of permanent structures. As discussed in Section 3.4.1, one of the additional impact areas at the south end of the dam is in the B.F. Sisk Dam Inundation Zone (Figure 3.4-1). However, because this additional impact area is a temporary construction-related site, potential flood inundation of these sites as a result of dam failure would result in no adverse impacts to people or structures. As described under Campground Construction and Day Use Area Improvements for Threshold 2, temporary removal of embankment material and excavation of portions of the embankment down to bedrock would temporarily reduce the dam capacity until the fill material is replaced. However, final design of the Modified Project would include the development of a construction schedule to time embankment removal during periods of the year when reservoir levels are lower to avoid storage capacity conflicts. With the timing of construction to avoid reservoir capacity conflicts, no increases in flooding would be anticipated. In addition, proposed stability berms and the expanded dam embankment would be constructed over this work area as part of the Approved Project. As a result, this element of the Modified Project would not expose people or structures in additional contractor work areas to an unacceptable risk of loss, injury, or death involving flooding, including flooding because of an increase in the potential for the failure of a levee or dam. These additional construction assumptions, which were not included in the Approved Project, would result in **no impacts** related to Modified Project flooding conditions.

### Additional Construction Assumptions

Additional construction assumptions include changes to the construction schedule, equipment and personnel specifications, and dewatering specifications for proposed excavations at the base of the dam. These components of the Modified Project would have no relevance to flooding. As such, this element of the Modified Project would not expose people or structures to an unacceptable risk of loss, injury, or death involving flooding, including flooding because of an increase in the potential for the failure of a levee or dam. These additional construction assumptions, which were not included in the Approved Project, would result in **no impacts** related to Modified Project flooding conditions.

### Cumulative Impacts

Portions of the San Luis Transmission Project and the San Luis Solar Project would be constructed within the potential inundation area of San Luis Reservoir. Similarly, the southern tip of the Modified Project's San Luis Creek Day Use Area is in the potential dam inundation zone. While exceedingly rare, partial or total dam failure could occur due to a strong seismic event. However, the Approved Project would address deficiencies in the seismic design of the existing dam, thus reducing dam failure potential and increasing protection from inundation for areas downstream of the dam. This is considered a beneficial impact.

The northern portions of Borrow Areas 12 and 14 are in the dam inundation zones. However, because these additional impact areas are temporary construction-related sites and construction would be timed such that embankment removal would occur during periods of the year when reservoir levels are lower, potential flood inundation of these sites as a result of dam failure would result in no adverse impacts to people or structures. As a result, similar to the Approved Project, the Modified Project, in combination with the cumulative projects, would not result in cumulatively considerable impacts with respect to unaddressed exposure of people or structures to an unacceptable risk of loss, injury, or death involving flooding, including flooding because of an increase in the potential for the failure of a levee or dam. Cumulative Modified Project flooding impacts would be **less than significant**.

### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant or no impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant.

### Threshold 3

***Would the Modified Project result in substantial alteration of the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?***

| 2019 EIS/EIR Impact Determination | Modified Project Impact Determination | New Significant Increase in Impact Severity? |
|-----------------------------------|---------------------------------------|--|
| Less than Significant             | Less than Significant                 | No   |

### Campground Construction and Day Use Area Improvements

Runoff from the undeveloped campground area infiltrates directly into the underlying permeable soils or sheet flows into O'Neill Forebay. Runoff from the San Luis Creek Day Use Area is conveyed through drainages and as sheetflow directly into O'Neill Forebay, or is conveyed into undeveloped portions of land where stormwater is infiltrated. Improvements to the San Luis Creek Day Use Area would not substantially alter the existing drainage pattern of the site. Construction of an additional boat launch lane, six restroom stalls, and a fish cleaning station would not result in additional impervious surfaces sufficient to cause a substantial increase in the rate or amount of surface runoff. Grading for the proposed campground would result in minor changes to internal drainage patterns as a result of grading. Substantial alteration of the existing drainage pattern would not occur. However, campground construction on the currently undeveloped, pervious area would result in an increase in impervious area. Because the existing day use area and proposed campground area are located on east-sloping topography immediately adjacent to the forebay, most stormwater runoff from these additional impact areas would be directed into the forebay, preventing any off-site flooding associated with an increase in impervious surfaces and associated increased runoff. The proposed campground and day use area would continue to include abundant areas of unpaved, pervious areas and the amount of increased runoff would be inconsequential in comparison to the size of the receiving waters (i.e., O'Neill Forebay).

In addition, as discussed in Section 3.1, incorporating Low Impact Development (LID) features and best management practices (BMPs) consistent with CDPR goals and guidelines, including CDPR's Standard Project Requirements and the San Luis Reservoir SRA RMP/GP, would reduce stormwater runoff volumes and flow rates from the proposed campground area during and following construction. Specifically, Goal RES-WQ4 from the San Luis Reservoir SRA RMP/GP requires that CDPR design, construct, and maintain buildings, roads, trails, campsites, boat launches, and associated infrastructure to minimize stormwater runoff, promote groundwater recharge, and prevent soil erosion. The guidelines include limiting impervious surfaces to minimize runoff; considering the use of permeable materials for new or expanded pedestrian and vehicular surfaces; and using silt fences, sedimentation basins, and other control measures to reduce erosion, surface scouring, and discharge to water bodies (Reclamation and CDPR 2013). Similarly, CDPR's Standard Project Requirements requires construction phase and permanent best management practices to reduce or eliminate surface runoff from developed sites (CDPR 2015).

As the Modified Project is still within the project development design phase, CDPR stormwater runoff guidelines and CDPR Standard Project Requirements have not been incorporated into the project design. However, because an increase in impervious surfaces at the proposed campground site would result in increased stormwater runoff that would flow directly into the forebay, and because the campground and day use area would incorporate standard CDPR LID features and BMPs in project design, on- or off-site flooding would not occur. Therefore, this element of the Modified Project would not result in substantial alteration of the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off site. Similar to the Approved Project, drainage impacts associated with the Modified Project would be **less than significant**.

### Changes in Borrow Area Location

Currently, runoff from Borrow Area 12, Borrow Area 14, and the newly identified staging/stockpiling area near Basalt Hill directly infiltrates into the underlying permeable soils. Precipitation that does not infiltrate into on-site soils generates sheet flow runoff into adjacent areas and eventually drains into O'Neill Forebay or San Luis Reservoir. Borrow Area 12 is approximately 28 acres and Borrow Area 14 is approximately 200 acres. Although no impervious surfaces are proposed within Borrow Area 12, Borrow Area 14, or the staging area as part of the Modified Project, removal of vegetation in these large areas would result in an increase in stormwater runoff during the construction period. However, as discussed in more detail in Section 3.1, state and federal National Pollutant Discharge Elimination System requirements include preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP) for projects with cumulative ground disturbance more than 1 acre. In compliance with Construction General Permit requirements, the SWPPP would establish erosion and sediment control BMPs for construction activities. In addition to erosion and sediment control, these BMPs would reduce stormwater runoff velocities, which in turn would minimize the potential for off-site flooding during the construction period. Typical examples of velocity-inhibiting BMPs include silt fences, gravel bags, and fiber rolls installed around the perimeter and downslope of work areas. These measures would reduce stormwater runoff velocities to the maximum extent practical.

In addition, as part of the Modified Project, a remediation plan would be prepared and implemented for these borrow areas, including measures to revegetate and perform final grading to achieve a naturalized appearance and topography. Revegetation and restoration of the topography similar to the existing slope gradients would result in stormwater runoff velocities and volumes similar to existing conditions. While this element of the Modified Project would temporarily (i.e., during construction) alter the internal drainage patterns of Borrow Areas 12 and 14 as a result of removal of large quantities of soil and bedrock, such activities would not result in a substantial increase in the rate or amount of runoff, such that on- or off-site flooding would occur. Similar to the Approved Project, drainage impacts associated with the Modified Project would be **less than significant**.

### Minor Additions to Contractor Work Area

These additional impact areas are unpaved, pervious areas. Precipitation that does not infiltrate into on-site soils generates stormwater runoff that sheet flows into adjacent areas and eventually drains toward O'Neill Forebay. These areas include several staging/soil stockpiling areas downstream of B.F. Sisk Dam, which would later be covered by the stability berms and expanded dam embankment, as well as another small area of less than 1 acre immediately west of the dam right abutment, where a haul road would be widened (Figures 2-4A and 2-4B).

Creation of staging/stockpiling areas involves minimal grading and no paving. However, as described for Borrow Areas 12 and 14, removal of existing vegetation would result in an increase in runoff during the construction period. In compliance with Construction General Permit requirements, a SWPPP would establish erosion and sediment control BMPs, which would also reduce stormwater runoff velocities to the maximum extent practical and minimize the potential for off-site flooding during the construction period. Revegetation following construction would not be required, as proposed stability berms would be constructed over these additional impact areas. This element of the Modified Project would not substantially alter the drainage patterns of these staging/stockpiling areas and would not result in a substantial increase in the rate or amount of runoff such that on- or off-site flooding would occur. Similar to the Approved Project, drainage impacts associated with the Modified Project would be **less than significant**.

### Additional Construction Assumptions

Additional construction assumptions include changes to the construction schedule, equipment and personnel specifications, and dewatering specifications for proposed excavations at the base of the dam. These components of the Modified Project would have no relevance to increased runoff and flooding. As such, this element of the Modified Project would not substantially alter the drainage patterns of the Modified Project site or area, or result in a substantial increase in the rate or amount of runoff, such that on- or off-site flooding would occur. These additional construction assumptions, which were not included in the Approved Project, would result in **no impacts** related to Modified Project drainage conditions.

### Cumulative Impacts

Removal of vegetation, grading, and paving at each of the cumulative project sites could potentially alter the site drainage patterns or result in an increase in the rate or amount of runoff. However, similar to that described above for the Modified Project, National Pollutant Discharge Elimination System requirements include preparation and implementation of a SWPPP for projects with cumulative ground disturbance more than 1 acre. In compliance with Construction General Permit requirements, the SWPPP would establish erosion and sediment control BMPs for construction activities. In addition to erosion and sediment control, these BMPs would reduce stormwater runoff velocities, which in turn would minimize the potential for off-site flooding during the construction period. Typical examples of velocity-inhibiting BMPs include silt fences, gravel bags, and fiber rolls installed around the perimeter and downslope of work areas. These measures would reduce stormwater runoff velocities to the maximum extent practical.

In addition, individual counties and municipalities are cooperating agencies in local MS4 permits, which require implementation of LID features to reduce post-construction, long-term increased stormwater runoff. Permit requirements require all new development to incorporate structural and non-structural BMPs to improve water quality and reduce on- and off-site runoff potential. Cumulative projects within Merced County jurisdiction would be required to incorporate LID BMPs that would evapotranspire, infiltrate, harvest and use, and/or biotreat stormwater to satisfy the point source, volumetric, and flow-based specifications outlined in Ordinance No. 1923 (Merced County 2014b). In addition, cumulative projects within the San Luis Reservoir SRA, as well as adjacent lands owned by Reclamation and managed by CDPR, would be designed and operated in accordance with CDPR goals and guidelines regarding post-construction stormwater runoff rates. Implementation of these guidelines would minimize downstream flooding associated with increased impervious surfaces. As a result, the Modified Project, in combination with cumulative projects, would not result in cumulatively considerable impacts related to increased runoff and associated on- or off-site flooding. Similar to the Approved Project, cumulative Modified Project impacts related to drainage and water quality would be **less than significant**.

### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant.

### Threshold 4

***Would the Modified Project result in the creation or contribution of runoff water which would exceed the capacity of existing or planned stormwater drainage systems?***

| 2019 EIS/EIR Impact Determination | Modified Project Impact Determination | New Significant Increase in Impact Severity? |
|-----------------------------------|---------------------------------------|--|
| Less than Significant             | Less than Significant                 | No   |

### Campground Construction and Day Use Area Improvements

As previously discussed under Threshold 3, construction of an additional boat launch lane, six restroom stalls, and a fish cleaning station at the existing day use area would not result in additional impervious surfaces sufficient to cause a substantial increase in the rate or amount of surface runoff. Campground construction on the currently undeveloped, pervious site would result in an increase in impervious area. Because the existing day use area and proposed campground area are located on east-sloping topography immediately adjacent to the forebay, stormwater runoff from these additional impact areas would be directed into the forebay rather than being directed into a planned stormwater drainage system. The proposed campground and day use area would continue to include abundant areas of unpaved, pervious areas and the amount of increased runoff would be inconsequential in comparison to the size of the receiving waters (i.e., O'Neill Forebay).

Because an increase in impervious surfaces at the proposed campground would result in increased stormwater runoff that would flow directly into the forebay, off-site planned storm drains would not be affected. Therefore, this element of the Modified Project would not result in the creation or contribution of runoff water that would exceed the capacity of existing or planned stormwater drainage systems. Similar to the Approved Project, Modified Project impacts related to drainage would be **less than significant**.

### Changes in Borrow Area Location

As discussed under Threshold 3, although no impervious surfaces are proposed within Borrow Area 12, Borrow Area 14, or the staging area as part of the Modified Project, removal of vegetation in these large areas would result in an increase in stormwater runoff during the construction period. However, in compliance with Construction General Permit requirements, a SWPPP would reduce stormwater runoff velocities to the maximum extent practical, which in turn would minimize the potential for impacts to downstream planned stormwater drainage systems during the construction period, between the borrow areas and O'Neill Forebay.

In addition, as part of the Modified Project, a remediation plan would be prepared and implemented for these borrow areas, including measures to revegetate and perform final grading to achieve a naturalized appearance and topography. Revegetation and restoration of the topography similar to the existing slope gradients would result in stormwater runoff velocities and volumes similar to existing conditions. While this element of the



Modified Project would temporarily (i.e., during construction) alter the drainage patterns of the borrow areas as a result of removal of large quantities of soil and bedrock, such activities would not result in the creation or contribution of runoff water that would exceed the capacity of existing or planned stormwater drainage systems. Similar to the Approved Project, Modified Project impacts related to drainage would be **less than significant**.

### Minor Additions to Contractor Work Area

As discussed under Threshold 3, these additional impact areas are unpaved, pervious areas. Creation of staging/stockpiling areas involves minimal grading and no paving. However, as described for Borrow Areas 12 and 14, removal of existing vegetation would result in an increase in runoff during the construction period. In compliance with Construction General Permit requirements, a SWPPP would establish erosion and sediment control BMPs, which would also reduce stormwater runoff velocities and minimize the potential for adverse impacts to downstream stormwater drainage systems during the construction period, between the borrow areas and O'Neill Forebay. Revegetation following construction would not be required, as proposed stability berms and the expanded dam embankment would be constructed over these additional impact areas. Therefore, this element of the Modified Project would not result in the creation or contribution of runoff water that would exceed the capacity of existing or planned stormwater drainage systems. As a result, similar to the Approved Project, Modified Project impacts related to drainage would be **less than significant**.

### Additional Construction Assumptions

Additional construction assumptions include changes to the construction schedule, equipment and personnel specifications, and dewatering specifications for proposed excavations at the base of the dam. These components of the Modified Project would have no relevance to increased runoff and impacts to downstream storm drains. As such, this element of the Modified Project would not result in the creation or contribution of runoff water that would exceed the capacity of existing or planned stormwater drainage systems. These additional construction assumptions, which were not included in the Approved Project, would result in **no impacts** related to Modified Project drainage conditions.

### Cumulative Impacts

As discussed for Threshold 3, individual counties and municipalities are cooperating agencies in local MS4 permits, which require implementation of LID features to reduce post-construction, long-term increased stormwater runoff. Permit requirements require all new development to incorporate structural and non-structural BMPs to improve water quality and reduce on- and off-site runoff potential. In addition, local jurisdictions typically include stormwater regulations requiring that post-construction stormwater runoff rates be equal or less than preconstruction rates. Cumulative projects within Merced County jurisdiction would be required to incorporate LID BMPs that would evapotranspire, infiltrate, harvest and use, and/or biotreat stormwater to satisfy the point source, volumetric, and flow-based specifications outlined in Ordinance No. 1923. In addition, cumulative projects within the San Luis Reservoir SRA, as well as adjacent lands owned by Reclamation and managed by CDPR, would be designed and operated in accordance with CDPR goals and guidelines, including CDPR's Standard Project Requirements and the San Luis Reservoir SRA RMP/GP that would contribute to reducing stormwater runoff during and following construction. Implementation of these guidelines and requirements would minimize downstream flooding associated with increased impervious surfaces. As a result, the Modified Project, in combination with cumulative projects, would not result in cumulatively considerable impacts related to exceedance of the capacity of existing or planned stormwater drainage systems. Similar to the Approved Project, cumulative Modified Project impacts related to drainage would be **less than significant**.

### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant.

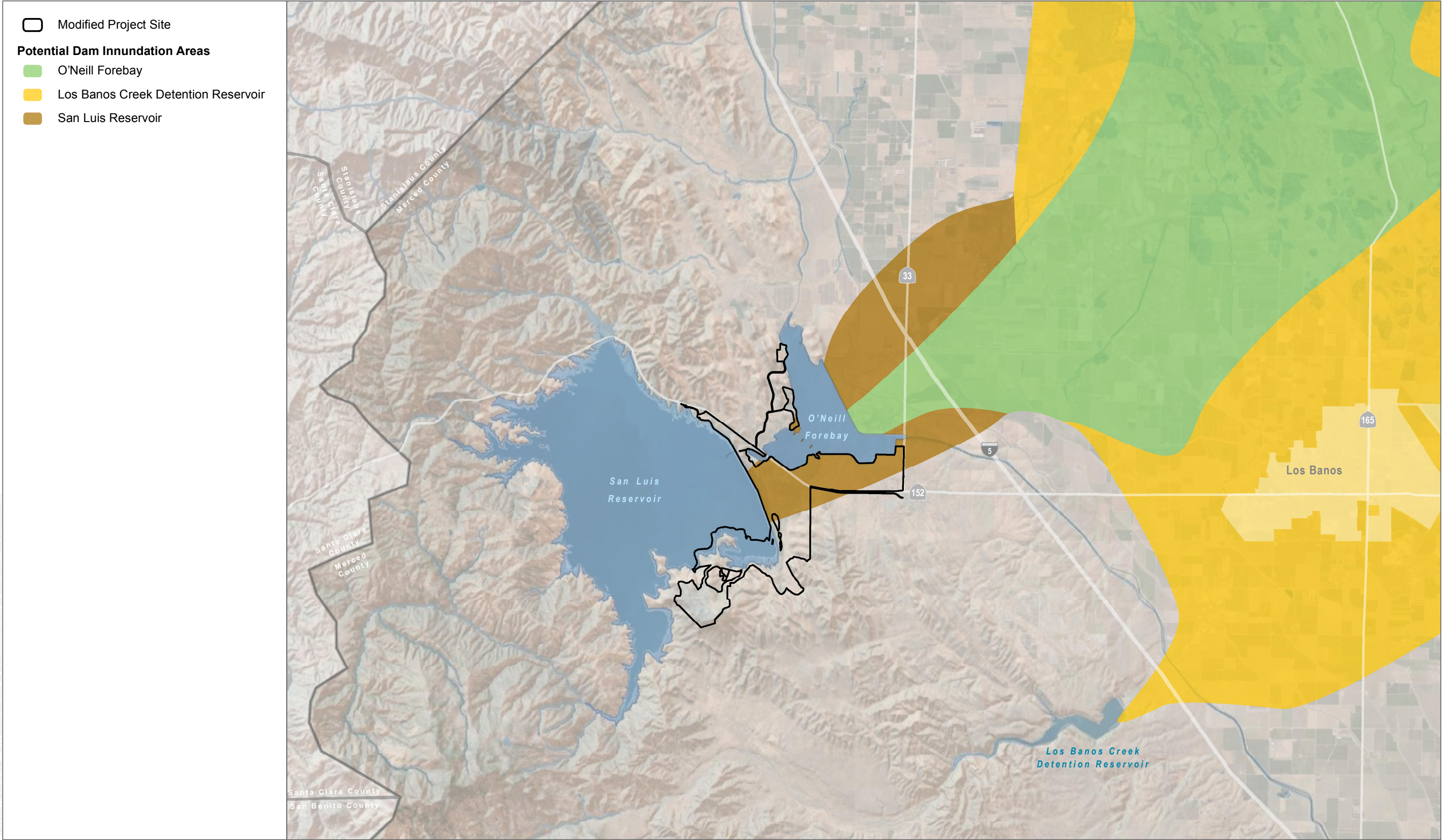
### 3.4.5 Mitigation Measures

Impacts regarding alteration of drainages and flooding from the Modified Project were determined to be less than significant without mitigation. Therefore, no mitigation measures are required, and impacts for the Modified Project remain less than significant.

### 3.4.6 Level of Significance After Mitigation

Flood protection impacts would be less than significant.





INTENTIONALLY LEFT BLANK

## 3.5 Visual Resources

This supplemental environmental impact report (SEIR) addresses proposed modifications to the B.F. Dam Sisk Safety of Dams Modification Project, which was previously evaluated in the B.F. Sisk Dam Safety of Dams Modification Project Environmental Impact Statement/Environmental Impact Report (2019 EIS/EIR). The project addressed in the 2019 EIS/EIR is referred to herein as the Approved Project; the Approved Project with proposed modifications identified since certification of the 2019 EIS/EIR is referred to herein as the Modified Project.

This section describes the existing visual conditions of the Modified Project site and vicinity, identifies associated regulatory requirements, evaluates potential impacts, and identifies any applicable mitigation measures related to implementation of the Modified Project.

### 3.5.1 Existing Conditions

#### 3.5.1.1 Visual Resources Overview

San Luis Reservoir and O'Neill Forebay are near the boundary of the Great Valley (San Joaquin Valley portion) and the Coast Ranges geomorphic provinces (CGS 2002). As a result, the landscape includes relatively flat terrain that abuts rolling hillsides and mountainous topography on the west. The area around San Luis Reservoir is dominated by agricultural land uses to the east and publicly owned parkland to the west that provide open, scenic vistas of undeveloped land and open water. These scenic qualities are enhanced by the surrounding undeveloped landscape consisting of “open grassland, expansive vistas of the rolling terrain and the adjacent Diablo range” (Reclamation and CDPR 2013).

Authorized through Public Law 89-72, Federal Water Projects Recreation Act, as amended, a Managing Partner Agreement was signed between the Bureau of Reclamation and the California Department of Parks and Recreation for management of San Luis Reservoir and related facilities for recreation and fish and wildlife benefits. The San Luis Reservoir State Recreation Area (SRA) spans approximately 27,000 acres of federal lands and includes major facilities such as San Luis Reservoir, O'Neill Forebay, and Los Banos Reservoir (Reclamation and CDPR 2013). The San Luis Reservoir SRA contains five use areas (areas designated as major public recreational facilities)—Basalt, Dinosaur Point, Los Banos Creek, Medeiros, and San Luis Creek—and one minor use area for off-highway-vehicle use. The primary activities at each use area vary, but collectively, the San Luis Reservoir SRA provides opportunities for boating, swimming, windsurfing, camping, and fishing (Reclamation and CDPR 2013).

Pacheco State Park lies directly west of the San Luis Reservoir SRA. The park is only partially open to the public for day use recreation, such as hiking and bicycling. Pacheco State Park offers an approximately 25-mile-long trail system, including 15 designated trails. The remainder of the park is used for equestrian activities, cattle grazing, and a wind turbine farm that generates energy for 3,500 homes.

San Luis Reservoir is considered to provide unusual, unique, or outstanding scenic quality, and O'Neill Forebay has elements that provide both unusual and unique quality and an ordinary or common scenic quality. Of the major viewer groups at the reservoir and reservoir facilities, recreationists at San Luis Reservoir have high visual sensitivity. State Route (SR) 152 is a state-designated scenic highway within Merced County, from the Santa Clara



County line to the junction with Interstate (I) 5 (Caltrans 2019). Views from this route can be considered like those available from the San Luis Reservoir SRA.

### 3.5.1.2 Scenic Vistas

As stated in the San Luis Reservoir SRA Resource Management Plan/General Plan (San Luis Reservoir SRA RMP/GP), a strong characteristic of the local area is the open scenic vistas of undeveloped land and open water. Specifically, the scenic qualities are represented by the surrounding undeveloped landscape, open grassland, and expansive vistas of the rolling terrain and the adjacent Diablo Range. Views of Modified Project component areas (e.g., Borrow Areas 6 and 12 and San Luis Creek Day Use Area) are primarily visible from SR-152 generally from Jasper Sears Road west to the view of O'Neill Forebay.

Scenic attractiveness is an assessment tool used by the U.S. Department of Agriculture's Forest Service Scenic Management System. This assessment tool was used in the 2019 EIS/EIR, so the analysis herein also relies on this tool to classify the visual resources in and scenic quality of the area. The three classes of scenic attractiveness are as follows:

- **Class A, Distinctive:** Areas where landform, vegetation patterns, water characteristics, and cultural features combine to provide unusual, unique, or outstanding scenic quality. These landscapes have strong positive attributes of variety, unity, vividness, mystery, intactness, order, harmony, uniqueness, pattern, and balance.
- **Class B, Typical:** Areas where landform, vegetation patterns, water characteristics, and cultural features combine to provide ordinary or common scenic quality. These landscapes have generally positive, yet common, attributes of variety, unity, vividness, mystery, intactness, order, harmony, uniqueness, pattern, and balance. Normally they would form the basic matrix within the ecological unit.
- **Class C, Indistinctive:** Areas where landform, vegetation patterns, water characteristics, and cultural land use have low scenic quality. Often water and rockform of any consequence are missing in class C landscapes. These landscapes have weak or missing attributes of variety, unity, vividness, mystery, intactness, order, harmony, uniqueness, pattern, and balance.

According to the 2019 EIS/EIR, resources visible from SR-152 near San Luis Reservoir are classified for scenic attractiveness as Class A visual resources.

### 3.5.1.3 Scenic Highways

Officially designated state scenic highways in the Modified Project area are SR-152 from the Santa Clara County line to the junction with I-5 (through the Modified Project area), and I-5 from the junction with SR-152 to the Stanislaus County line (Caltrans 2019).

SR-152 passes through Upper Cottonwood Wildlife Area and around the northern end of San Luis Reservoir. As it curves around through the Lower Cottonwood Wildlife Area toward O'Neill Forebay and its intersection with I-5, SR-152 passes within 0.1 miles of the Romero Overlook and visitor center. Access to the overlook and visitor center is solely available via SR-152. I-5 is located approximately 1.6 miles east of O'Neill Forebay and 4.7 miles northeast of B.F. Sisk Dam.

### 3.5.1.4 Visual Character and Quality

An overview of the area landscape is provided in Section 3.5.1.1, Visual Resources Overview. The following discussion pertains to the existing visual character and quality of components of the Modified Project that are the focus of this SEIR. In addition to a discussion of visual character, groups of people provided views to the new impact areas are identified, and the scenic attractiveness of areas (as previously determined in the 2019 EIS/EIR) are disclosed. Each of the new impact areas discussed below are within the boundary of the San Luis Reservoir SRA.

#### **Proposed Campground Area**

The 40-acre proposed campground area is located along the northwestern shoreline of O'Neill Forebay. Due to the inclusion of a long, mounded hill in the southwest corner, the area features variable terrain that slopes from west to east toward O'Neill Forebay. Terrain ranges in height from 385 feet in the southwest corner to approximately 220 feet in the northeast corner at the shoreline. The long-mounded hill features a narrow dirt access road that extends from the main paved access road to a cylindrical water tank. In addition to bisecting the proposed campground area, the paved road provides access to the 53 developed sites at San Luis Creek Campground. With the exception of the dirt access road, water tank, paved access road, and a paved path that parallels the shoreline (San Luis Creek Accessible Trail), the 40-acre campground area is undeveloped and covered with grasslands and, occasionally, small rock outcrops on high-elevation terrain west of the paved access road.

According to the 2019 EIS/EIR, views from areas surrounding San Luis Reservoir, including campgrounds and day use areas, can be classified as Class A visual resources. Due to its proximity to the San Luis Creek Campground and San Luis Creek Day Use Area, the proposed campground area is considered to display Class A scenic attractiveness.

Photos illustrating the existing visual character of the proposed campground area are included in Figure 3.5-1, Existing Visual Character: Proposed Campground Area.

#### **San Luis Creek Day Use Area (Improvement Area)**

The San Luis Creek Day Use Area is a developed facility located along the western shoreline of O'Neill Forebay, approximately 0.8 miles north of SR-152. Although uncommon in the surrounding landscape, the day use area (except for beach areas) is dotted with trees. Covered picnic facilities are scattered throughout the day use area, and additional facilities/recreational opportunities include a boat launch, restrooms, swimming, and a group campground. Surface parking lots are in the southern portion of the day use area (lots are planted with mature trees), and paved paths wind through the area and provide connectivity to the northerly group campground.

Like the proposed campground area, the San Luis Creek Day Use Area is considered to display Class A scenic attractiveness.

#### **Borrow Areas 12 and 14**

Borrow Area 12 is an area of approximately 28 acres that includes a grassland-covered hill east of B.F. Sisk Dam's south valley section that is approximately 100 feet higher than the surrounding lower-lying area. The highpoint of the hill is situated 685 feet east of Basalt Road and 0.60 miles south of SR-152. The top of the hill is flat, having been used in the past as a borrow area for initial construction of B.F. Sisk Dam, with two unpaved

roads leading to the top from the south. In addition to SR-152 and Basalt Road motorists, Gonzaga Road motorists are provided views to the wide mounded landform of Borrow Area 12.

Borrow Area 14 is an approximately 200-acre area south of Borrow Area 12 situated around four low, east–west mounded hills covered with seasonally gold grasslands. The northernmost hill (i.e., hill nearest SR-152) is the smallest in terms of height and bulk, and at its highpoint is approximately 50 to 70 feet higher in elevation than lands to the west. A wood utility pole supporting a distribution line is located downslope and west of the hill's highpoint. The long, mounded hills to the south feature a narrow, unimproved road leading to the top, with a utility pole installed downslope to the west. An east–west utility line is aligned in the topographical low point/saddle between Borrow Area 14 hillsides and connects Basalt Hill Quarry to the southwest; California Department of Parks and Recreation, Bureau of Reclamation, and California Department of Water Resources administrative facilities near the Gianelli Pumping-Generating Plant (Gianelli Plant) to the northwest; and Kampgrounds of America (KOA) Los Banos West/I-5 campground to the northeast (28485 Gonzaga Road in Los Banos; approximately 0.50 miles east of the SR-33/SR-152 junction).

Due to the presence of existing development and the relatively common frequency of grassland-covered hills in the area, Borrow Areas 12 and 14 are considered to display Class B scenic attractiveness.

Photos illustrating the existing visual character of Borrow Areas 12 and 14 are included in Figure 3.5-2, Existing Visual Character: Borrow Areas 12 and 14.

#### **Minor Additions to Contractor Work Area**

As discussed in Chapter 2, Project Description, the Modified Project includes minor expansion of work areas located downstream of the dam that were not included or addressed in the 2019 EIS/EIR (see Figures 2-4A and 2-4B, Modified Project Detail, in Chapter 2). These additional staging and stockpiling areas encompass a portion of the slope located to the immediate west of the Gianelli Plant, farther downstream near the dam's right abutment, west of the dam's right abutment on exposed shoreline, and on previously disturbed hillsides and valley lands near Basalt Hill Borrow Area.

Regarding the hillsides west of the Gianelli Plant, the landscape has been modified by previous disturbance. Specifically, the hillside was previously cut to accommodate pumping station and spillway conduit construction; however, the east-facing slope is covered with low, seasonally gold grasses and is visually compatible with unaltered hillsides in the surrounding area. In addition, dark horizontal lines created by access roads for construction traverse the hillside and are visible from SR-152.

Farther downstream areas included in the Modified Project generally comprise two low hills that abut the dam's right abutment. As viewed from Basalt Road (approximately 400 feet to the east), the work areas/low hills display a smooth, undulating line and are bisected by a narrow, unimproved access road. Scattered trees are in the topographical saddle between the highpoint of the hills. The low hills are primarily visible from Basalt Road and have brief visibility from SR-152 near Basalt Road.

Fleeting views of exposed shoreline west of the dam's right abutment are available from Basalt Road near the access road to Basalt Campground. Where visible from Basalt Road, the exposed shoreline is approximately 0.5 miles away and appears as a patch of tan and green located between the chalky white of the right abutment to the east and waters of San Luis Reservoir to the west.

Lastly, added contractor work areas near Basalt Hill Borrow Area are located approximately 1.2 miles west of Basalt Campground and comprise a low point in the landscape surrounded by hills to the west, south, and east. Visible from



Basalt Road (located 375 feet away), views to the previously disturbed area that is traversed by access roads, terrain cuts, and color contrast due to the exposure of underlying grey colored soils are available to motorists on the approach to the south boat launch and picnic area along the southeastern shoreline of San Luis Reservoir.

The additions to contractor work areas display Class A and B scenic attractiveness. Specifically, hillsides visible in west-oriented views from SR-152 have Class A scenic attractiveness, and more downstream areas primarily visible from Basalt Road typically display Class B scenic attractiveness.

### **Additional Construction Assumptions**

Construction assumptions included in the Modified Project are addressed within the context of the individual components described above. As noted in Chapter 2, additional construction assumptions primarily consist of the anticipated construction timeframe and personnel for the new campground and day use area improvements (i.e., up to 18 months with up to 20 construction personnel working standard 8-hour dayshifts). These additional construction assumptions have no bearing on visual resources.

#### **3.5.1.5 Light and Glare**

Primary sources of light and glare in the area consist of outdoor lighting fixtures installed at California Department of Parks and Recreation, Bureau of Reclamation, and California Department of Water Resources administrative buildings, and outdoor lighting fixtures installed at the Gianelli Plant. These facilities are clustered south of SR-152 and west of Basalt Road, near the dam's berm at the north valley section. Headlights from vehicles on SR-152 are also a source of light and glare during evening and nighttime hours. However, because these lighting sources are mobile and transient, they are not considered prominent sources of light and glare in the Modified Project area.

#### **3.5.2 Relevant Plans, Policies, and Ordinances**

##### **3.2.2.1 Federal**

There are no federal plans, policies, or ordinances related to visual resources that are relevant to the Modified Project.

##### **3.2.2.2 State**

#### **California Scenic Highway Program**

Created by the Legislature in 1963, the purpose of the state's Scenic Highway Program is to protect and enhance the natural scenic beauty of California highways and adjacent corridors through conservation. State laws governing the Scenic Highway Program are found in the Streets and Highways Code, Sections 260 through 263. The Scenic Highway Program includes a list of highways that have been officially designated as scenic by the California Department of Transportation (Caltrans) (official designation is considered if an acceptable Corridor Protection Program has been adopted at the local level) or are eligible state scenic highways. Two historic parkways (Arroyo Seco Parkway in Pasadena and SR-163 in San Diego) are also included in the Scenic Highway Program.

There are two officially designated state scenic highways in Merced County: SR-152 and I-5. SR-152 is a designated state scenic highway from the junction of I-5 west to the Santa Clara County line (approximately 13.8 miles) (Caltrans 2019). I-5 is a designated state scenic highway from SR-152 north to the Stanislaus County line (approximately 14.9 miles).

**San Luis Reservoir State Recreation Area Resource Management Plan/General Plan**

The San Luis Reservoir SRA RMP/GP defines distinct geographic divisions, or management zones, within the SRA based on physical, social, and management characteristics (Reclamation and CDPR 2013). The management zones are the Administrative and Operations zone (for staff, operations, and maintenance activities), Front Country zone (for most visitor facilities, camping, and concessions), and Backcountry zone (for less-intensive recreation and with limited camping and trails).

The San Luis Reservoir SRA RMP/GP is organized into a system of broad planning areas that include the following:

- Resource Management (RES)
- Visitor Experience, Interpretation and Education (VIS)
- Local and Regional Planning (REG)
- Infrastructure and Operations (OPS)
- Water Operations (WA)

Resource Management is further organized into categories, including Scenic/Aesthetics (RES-S). According to the San Luis Reservoir SRA RMP/GP, “a strong characteristic of the Plan Area is the open scenic vistas of undeveloped land and open water. The scenic qualities are represented by the surrounding undeveloped landscape, open grassland, expansive vistas of the rolling terrain and the adjacent Diablo Range.” Further, the San Luis Reservoir SRA RMP/GP discusses the presence of scenic vistas as follows: “most shoreline areas allow for uninterrupted views of the open water from the three reservoirs” and “in some cases, such as at Los Banos Creek Reservoir, the views from the north and south plateaus provide a vista opportunity of the water and adjacent landscape.”

The following scenic/aesthetics goals and guidelines are applicable to the Modified Project (Reclamation and CDPR 2013):

**Resource Management (RES)**

**Goal RES-S1:** Preserve scenic vistas that overlook open land and water through the identification and definition of significant vista points and viewsheds.

**Guidelines:**

- Before development of new facilities, consider the visual effect of new structures and carefully site features within an identified viewshed.
- where feasible, avoid placement of new structures or other obstructions at or near identified significant vista points and along uninterrupted shorelines and landscapes.

**Goal RES-S2:** Maintain large expanses of open space free of visual and physical interruptions.

**Guideline:**

- Minimize, shield, or use new architectural controls in the development of new structures and reduce existing structures and other features that visually and physically fragment open space.

**Goal RES-S3:** Make new structures architecturally compatible with their use as recreation facilities and distinguishable from the water operations structures but in keeping with overall site character.

**Guidelines:**

- Identify the architectural components (style) and other contributing elements that define the recreation use areas and site character and use this information to assess consistency of new structures.
- Where feasible, ensure that the mass and scale of new structures are compatible with the setting and do not dominate the surrounding landscape.

**Goal RES-S4:** Identify a common and unified set of site-related details and materials (signage, gates, surface materials, fences, etc.) so that new facilities and infrastructure are compatible with the character of the site and are distinctive for recreation facilities.

**Guidelines:**

- Avoid the introduction of materials not in keeping with the local and on-site character.
- Design new details to be compatible with existing materials and finishes while creating a unified image for the Plan Area recreation facilities.
- Develop a signage and wayfinding system that incorporates guidelines and standards for signage as well as the location, distribution, and frequency of signs.

**Goal RES-S5:** Prevent aesthetic and environmental damage from duration and intensity of lighting and fixtures.

**Guidelines:**

- Design and place light fixtures only as needed and in keeping with use and character. Minimize intensity by considering techniques such as low-voltage fixtures and downlighting.
- Design lighting systems and facilities that avoid light pollution on-site and off-site spills to neighboring areas.

### 3.5.2.3 Local

#### **Merced Vision 2030 General Plan**

As required by state law, Merced County has adopted a general plan to guide land use decisions within the county. The general plan provides goals, policies, standards, and implementation programs to guide the physical development of a county. At a minimum, the general plan must address the topics of land use, transportation, housing, conservation, open space, noise, and safety. The Merced Vision 2030 General Plan (Merced County General Plan), adopted in 2013, has established the year 2030 as the plan's time horizon. The Merced County General Plan's Natural Resources Element contains goals and policies applicable to visual resources, and according to Merced County, the rural and agricultural landscapes provide the primary scenic resources in Merced County (Merced County 2013). Relevant goals and policies from the Natural Resources Element are listed below; however, because Modified Project components would be located entirely within the boundary of San Luis

Reservoir SRA, local policies are not expressly applicable to the Modified Project. As such, the following goal and policies from the Merced County General Plan are listed for informational purposes only (Merced County 2013):

### ***Natural Resources Element***

**Goal NR-4:** Protect scenic resources and vistas.

- **Policy NR-4.1: Scenic Resource Protection:** Promote the preservation of agricultural land, ranch lands, and other open space areas as a means of protecting the County’s scenic resources.
- **Policy NR-4.2: Special Review Process for Structures Adjacent to Scenic Highways:** Coordinate with Caltrans, during the review of proposed structures and activities.
- **Policy NR-4.5: Light Pollution Reduction.** Require good lighting practices, such as the use of specific light fixtures that reduce light pollution, minimize light impacts, and preserve views of the night sky.

## 3.5.3 Thresholds of Significance

The following significance criteria from the 2019 EIS/EIR are used for the purposes of analysis in this SEIR. These criteria, which have not changed from the 2019 EIS/EIR, are identified in Chapter 10, Visual Resources, of the 2019 EIS/EIR. A significant impact related to visual resources would occur if the Modified Project would:

1. Have a substantial adverse effect on a scenic vista (areas with Scenic Attractiveness Class A or Class B classifications are considered scenic vistas).
2. Substantially damage scenic resources including, but not limited to, trees, rock outcroppings, and historic buildings, within a state scenic highway corridor.
3. Substantially degrade the existing visual character or quality of the site and its surroundings.
4. Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area.

## 3.5.4 Impacts Analysis

To aid in the assessment of potential impacts to visual resources, conceptual visual simulations of the Modified Project were prepared from Key Observation Points (KOPs) in the surrounding area. KOPs were preliminarily identified during a desktop review of the Modified Project area and the location of components capable of resulting in substantial visual change (i.e., proposed campground area and excavation and reclamation of Borrow Areas 12 and 14). Photographs from KOPs were taken during a site visit conducted in October 2020 when conditions were sunny and visibility was clear. For the proposed campground area, the KOP was established on the access road bisecting the proposed campground area. A conceptual campground design and layout was created using the list of campground amenities developed by the California Department of Parks and Recreation (see Chapter 2) and review of the existing layout of the San Luis Creek Campground. Similar landscaping (i.e., pine and eucalyptus trees) as planted near the San Luis Creek Campground was assumed for the proposed campground and would provide partial visual screening, buffering for adjacent campsites, and a partial wind break. Landscaping in the conceptual visual simulation is depicted at approximately 10 years of growth.

For Borrow Areas 12 and 14, KOPs were established on SR-152 and Basalt Road. SR-152 is the highest-volume roadway in the immediate area, and thus supports the highest number of potential viewers that would experience

visual change associated with excavation and reclamation activities. Basalt Road is the closest regularly travelled public road to the borrow areas, and as such, provides a relatively close view of visual change associated with excavation and reclamation activities. Alteration of terrain was depicted in the conceptual visual simulation using general information provided in Chapter 2 and in the grading plan. The visual simulations depict the post-reclamation scenario, with existing elevations lowered approximately 25 feet and resulting lines softened to preserve existing contours to the greatest extent practicable. During active mining, mobile viewers at KOPs 2 and 3 would experience the gradual visual change associated with excavation activities and the modification of terrain over an 8- to 20-year period. During this time, viewers would also observe construction equipment and vehicles in the borrow areas and straight, horizontal lines associated with excavation of the mounded landforms.

The locations of KOPs in the context of the Modified Project is depicted in Figure 3.5-3, Key Observation Points. Existing conditions photographs and conceptual visual simulations from the selected KOPs are referenced in the impact analysis below, with figure numbers provided.

### Threshold 1

***Would the Modified Project have a substantial adverse effect on a scenic vista (areas with Scenic Attractiveness Class A or Class B classifications are considered scenic vistas)?***

| 2019 EIS/EIR Impact Determination | Modified Project Impact Determination | New Significant Increase in Impact Severity? |
|-----------------------------------|---------------------------------------|--|
| Less than Significant             | Less than Significant                 | No   |

### Campground Construction and Day Use Area Improvements

Construction activities associated with the new campground and improvements to the San Luis Creek Day Use area would introduce heavy equipment and associated construction equipment and vehicles into the viewshed of the northern and western portions of O'Neill Forebay. Construction equipment and vehicles, and alteration of the primarily undisturbed grasslands comprising the proposed campground area, would be temporarily visible to motorists using the adjacent public road to access San Luis Creek Campground and to users of San Luis Creek Accessible Trail. San Luis Creek Accessible Trail parallels the shoreline of O'Neill Forebay crossing through the western extent of the proposed campground area and running along the shoreline of O'Neill Forebay through the San Luis Creek Day Use Area farther south.

An existing northeasterly view from the access road across the proposed campground area toward the waters of O'Neill Forebay is shown in Figure 3.5-4a, Key Observation Point 1: Proposed Campground Area from Access Road (Existing Conditions). Construction of the new campground and improvements to the day use area would take place over an 18-month timeframe and would require up to 20 construction personnel working standard 8-hour dayshifts, Monday through Friday.

Due to the location of the new campground and day use area, the availability of views of construction—including equipment and vehicles, and, at the new campground area, resulting form, line, and color contrasts and reduced landscape intactness associated with vegetation removal and disturbance to construct campground features—would be limited to the adjacent unnamed access road and users of San Luis Creek Accessible Trail. Despite the visibility of campground construction activities that would be in the foreground of motorists and trail users, construction activities would be temporary, and distinctive features in the landscape—including tan grass-covered

rolling hills and the waters of O'Neill Forebay against a backdrop of mounded, tan grass-covered hills—would remain characteristic of the wider landscape throughout the construction period.

Construction activities associated with proposed improvements to the San Luis Creek Day Use Area would temporarily introduce construction equipment and vehicles into the viewshed in an existing developed day use area with abundant vegetative screening that would act to limit views into the day use area from the adjacent roadway. During periods when the San Luis Creek Day Use Area remains open while improvements are ongoing, temporary construction disturbance and associated equipment and activities would be viewable to users of the day use area. However, construction impacts would be temporary, would occur within an existing developed campground, and would be consistent with typical and periodic improvements to existing day use area facilities.

Because construction activities associated with the new campground and day use area improvements would be temporary and would primarily be viewed by mobile viewer groups who would experience effects as short-term and fleeting, impacts associated with construction of the proposed facilities would be consistent with existing recreational facilities in the SRA, and would display intactness and harmony within the wider landscape, impacts to scenic vistas and scenic attractiveness resulting from temporary construction activities would be **less than significant**.

A conceptual visual simulation of the proposed campground is provided in Figure 3.5-4b, Key Observation Point 1: Proposed Campground Area from Access Road (Conceptual Visual Simulation). As shown in the conceptual visual simulation, the existing quality of the view at KOP 1, as shown in Figure 3.5-4a, would be altered through the introduction of landscape trees that would be scattered throughout the campground area. In addition, new access roads through the area, parking stalls, amenities at campsites, and the vehicles of campers would alter the existing character of the currently undeveloped site. However, the vegetative patterns would remain perceivable due to foreground and background terrain covered in grasslands, and the campground would be appropriately scaled, consistent with other developed campgrounds and recreational facilities in the SRA, and would display intactness and harmony within the wider landscape.

New campground facilities would alter easterly and westerly views from the unnamed access road as motorists proceed through the footprint of the campground area. Specifically, the presence of visitors, vehicles, and amenities (e.g., picnic tables) at campsites; the low, rectangular form of restroom and shower buildings and a campfire center; new access roads; and trees would alter the existing open and unencumbered nature of existing views to the shoreline and open water of O'Neill Forebay available to motorists and recreationists traveling through the campground area in the existing condition. However, the segment of the unnamed road that traverses the footprint of the new campground is relatively short in length (approximately 0.35 miles long), and characteristic views of the mountain and valley landscape (i.e., areas with Class A scenic attractiveness) would remain available through the campground area, and existing views to the shoreline and open water of O'Neill Forebay would remain available from other segments of the unnamed road. Also, the campground would afford additional shoreline access that would provide views to O'Neill Forebay and surrounding lands. In total, development of the new campground would alter a small portion of San Luis Reservoir and the Central Valley landscape considered to display Class A scenic attractiveness.

Once installed, new amenities at the San Luis Creek Day Use Area would not be visually prominent, and the addition of new amenities would not substantially alter the existing quality of the landscape. Further, the introduction of an additional boat launch lane and boarding float in the North or South Beach area, new fish-cleaning station, and six restroom stalls would not obstruct or otherwise affect an existing scenic view of the valley and mountain landscape as experienced from the day use area or the unnamed public access road near the day use area. In addition, due to the distance between developed facilities in the day use area and the

unnamed access road (approximately 0.25 miles), and due to the relatively dense clustering of trees, it is likely that the new amenities at the day use area would be visually screened from view of motorists on the unnamed access road. Therefore, alteration of the undeveloped landscape comprising the new campground area and improvements to the existing day use area would result in a **less-than-significant impact** to scenic vistas.

### Changes in Borrow Area Location

As described in Section 3.5.1, Existing Conditions, Borrow Areas 12 and 14 are considered to display Class B scenic attractiveness due to the presence of existing development and relatively common frequency of grassland-covered hills in the surrounding area.

During construction, temporary effects to existing views and scenic quality/attractiveness would result from the presence of construction equipment and vehicles, including haul-truck trips travelling from the borrow areas to the dam site. Because the use of Borrow Areas 12 and 14 would not require crossing SR-152, haul-truck trips would primarily be experienced by motorists on Basalt Road, and as a result, viewer volume would be low. In addition to haul-truck trips that would occur and be visible throughout the 10- to 12-year (and possibly up to 20 years) construction timeline previously associated with the Approved Project, existing visual quality (e.g., intactness and unity) would be reduced by materials extraction that would occur within Borrow Areas 12 and 14. Materials extraction would consist of excavation and related activities, and although the existing topographic contours of the borrow areas would be preserved to the greatest extent practicable, elevation of existing hills and ridges would be lowered up to 25 feet from their current elevation. For example, at Borrow Area 12, the elevation of the existing flat-topped, mounded landform (approximately 443 feet above mean sea level at the high point) could incrementally be reduced by up to 25 feet over 10 to 12 years (and possibly up to 20 years), resulting in a high point elevation of 418 feet above mean sea level, which is a reduction of 6% of its existing height. However, the hill would generally maintain its current flat-top appearance. Similarly, the four low and long grassland-covered hills would be visibly and incrementally altered by extraction activities; however, the long, mounded lines displayed by ridgelines would be preserved (to the extent practicable). An existing view from SR-152 across the road toward Borrow Areas 12 and 14 is included in Figure 3.5-5a, Key Observation Point 2: Borrow Areas 12 and 14 from SR-152 (Existing Conditions). At Key View 2, the borrow areas are approximately 0.5 miles away.

Modifications of existing hills within Borrow Areas 12 and 14 would result in adverse effects to the landscape, which was inventoried and found to display Class B scenic attractiveness. Specifically, the gradual alteration of hills would negatively affect the existing intactness and unity of the landscape. Further, active extractive operations, including the presence of equipment, vehicles, and personnel (and gradual changes to the seen landscape), would be experienced by nearby viewers over a 10- to 12-year (and potentially, up to 20-year) timeframe. Borrow area work would also result in long-term effects to identified hills as existing ridgelines and elevations are gradually (and noticeably) lowered and softened. Construction activities in borrow areas would attract the attention of nearby viewers accustomed to Class B landscapes; however, due to the presence of similar hills and valley views in the immediate area, the panoramic nature of views from SR-152 and Basalt Road, and the relatively low exposure of mobile viewers to scenes of the borrow areas, the overall influence of distraction associated with daytime construction within Borrow Areas 12 and 14 would be reduced. In addition, long-term effects to existing lines and elevations of the hill terrain would be reduced by the presence of previously altered terrain in the same area and by the prominence of unaltered hills and mountains in the surrounding area. Further, and as stated in Chapter 2, a goal of reclamation of the areas is to preserve existing contours to the greatest extent practicable.

A conceptual visual simulation of the borrow areas post-reclamation is depicted in Figure 3.5-5b, Key Observation Point 2: Borrow Areas 12 and 14 from SR-152 (Visual Simulation). In addition, an existing photo and visual simulation of the borrow areas is included in Figure 3.5-6a, Key Observation Point 3: Borrow Areas 12 and 14 from Basalt Road (Existing Conditions), and Figure 3.5-6b, Key Observation Point 3: Borrow Areas 12 and 14 from Basalt Road (Visual Simulation, Post-Project Condition). As shown in the figures, terrain in the borrow areas would be noticeably shorter due to excavation activities that would occur over a 10- to 12-year (and possibly up to 20-year) period. However, in the post-reclamation scenario in which terrain would be lowered by approximately 25 feet in elevation, the landforms would display soft, mounded lines that would complement and conform to existing hill terrain in the immediate area. As such, changes to the borrow area locations would result in a **less-than-significant impact** to visual resources and scenic attractiveness.

### Minor Additions to Contractor Work Area

In most instances, expanded work areas would occur in locations that have been subject to previous disturbance, and as such, overall impacts to existing visual quality would be reduced. For example, new staging and stockpiling areas west of the Gianelli Plant would be visible from SR-152 and would attract the attention of passing motorists. However, these expanded staging and stockpiling areas are proposed where the terrain has been permanently modified by the construction of dam infrastructure and visually prominent electrical transmission lines. Therefore, expanded work areas near the Gianelli Plant would be visible, but due to the presence of previous disturbance, dam and electrical transmission infrastructure, and the prevailing speed of traffic on SR-152, these new features would have a somewhat muted impact on the wider visual landscape. Similarly, expanded contractor work areas near the dam's right abutment would be located on a low area that has been previously disturbed by access road and dam construction. Staging and stockpiling operations in this area would be visible to passing motorists on Basalt Road. Due to distance, however, activities in these expanded work areas are unlikely to be visible from SR-152 (located more than 1 mile away). Regarding views from Basalt Road, existing modifications from dam construction mark the landscape, and the addition of temporary work areas to views would not substantially alter the existing qualities contributing to the common (Class B) scenic quality of the area. Because the existing landscape includes prominent landform and landscape modifications (e.g., B.F. Sisk Dam), the temporary presence of a contractor work area near the dam's right abutment would not result in a change to the scenic quality of the area. For similar reasons, the presence of contractor work areas farther downstream would not result in substantial adverse effects to scenic vistas (i.e., areas with Class B scenic attractiveness). As such, impacts to scenic vistas and scenic attractiveness due to minor additions to contractor work areas would be **less than significant**.

### Additional Construction Assumptions

Please refer to discussions above for campground construction and day use area improvements, changes in borrow area locations, and minor additions to contractor work areas.

### Cumulative Impacts

Projects considered in the cumulative scenario include those previously identified in the 2019 EIS/EIR for visual resources (e.g., California High-Speed Rail Project: San Jose to Merced section, San Luis Reservoir SRA RMP/GP, San Luis Transmission Project, San Luis Solar Project), and the San Luis & Delta–Mendota Water Authority B.F. Sisk Dam Raise and Reservoir Expansion Project (reservoir expansion project) (SLDMWA and Reclamation 2020). Although the five projects considered in this cumulative assessment are currently active projects, environmental analysis for the reservoir expansion project began in 2020.



As proposed, the California High-Speed Rail Project: San Jose to Merced section would construct a new railway and railway tunnels across Pacheco Pass generally parallel to SR-152 near San Luis Reservoir. The tunnel would exit north of San Luis Reservoir, and between McCabe Road and I-5, the high-speed rail alignment could feature aerial/viaduct, embankment, at-grade, and trench sections (California High Speed Rail Authority n.d.). Adopted in 2013, the San Luis Reservoir SRA RMP/GP established goals and guidelines for the management of the SRA for a 25-year period. For visual resources, facilities expansion and construction, including additional visitor facilities (e.g., day use, camping, shoreline, and water surface facilities), are the primary management consideration that could affect existing views and scenery near the reservoir and forebay areas. Regarding the San Luis Transmission Project and San Luis Solar Project, these projects would involve construction of new facilities downstream of B.F. Sisk Dam that would be visible from SR-152 and a limited number of nearby local roads. Lastly, the reservoir expansion project would result in an increase in storage capacity of San Luis Reservoir by raising the dam crest an additional 10 feet above the 12-foot embankment raise identified in the 2019 EIS/EIR (SLDMWA and Reclamation 2020).

Construction of the projects identified and described above would include equipment, vehicles, and activities that would be visible from San Luis Reservoir, SR-152, and local roads. Further, construction activities associated with the identified cumulative projects would result in adverse effects on scenic vistas, and more specifically, areas near San Luis Reservoir with scenic attractiveness Class A or Class B classifications. If construction of the Modified Project, and specifically, extraction activities in Borrow Areas 12 and 14, were to overlap with these cumulative projects, an adverse effect to scenic vistas could occur due to the introduction of construction equipment and vehicles and visible alterations in the landscape. However, as identified above, the overall influence of distraction associated with daytime construction within Borrow Areas 12 and 14 would be reduced to less than significant due to the presence of similar hills and valley views in the immediate area, the panoramic nature of views from SR-152 and Basalt Road, and the relatively low exposure of mobile viewers to scenes of the borrow areas. For similar reasons, the temporary distraction associated with construction of cumulative projects as experienced from mobile vantage points in the surrounding area would be reduced by the typical scenic attractiveness (i.e., Class B) of the landscape and exposure of mobile viewers (motorists). In the long term, effects to the existing landscape due to borrow area activities would be reduced through implementation of the Modified Project's reclamation and revegetation plan that would address land scars and vegetation removal through the construction of natural-appearing ridgelines and native grassland plantings. Therefore, although construction of the Modified Project could combine with other projects to temporarily affect existing views and scenic vistas as experienced from San Luis Reservoir and SR-152, the gradual visual change resulting from extraction activities over a 10- to 12-year (or up to 20-year period), **would not be cumulatively considerable**.

#### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant.

## Threshold 2

*Would the Modified Project substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings, within a state scenic highway?*

| 2019 EIS/EIR Impact Determination | Modified Project Impact Determination | New Significant Increase in Impact Severity? |
|-----------------------------------|---------------------------------------|--|
| Less than Significant             | Less than Significant                 | No   |

Officially designated state scenic highways in the Modified Project area are SR-152 from the Santa Clara County line to the junction with I-5, and I-5 from the junction with SR-152 to the Stanislaus County line (Caltrans 2019). Given the distance, differences in elevation, intervening topography and development, and prevailing speeds of motorists, the Modified Project would not be readily visible from this designated portion of I-5. As such, the analysis below focuses on SR-152.

### Campground Construction and Day Use Area Improvements

Construction of the new campground and installation of new amenities at the San Luis Creek Day Use area would occur 2.25 miles and 1 mile north of SR-152, respectively. Due to the presence of several intervening hills between the new campground area and SR-152, construction effects and amenities at the new campground area would not be visible from SR-152. From SR-152, the southern extension of the South Beach shoreline is visible to motorists and is primarily experienced as a series of low, undulating, grassland hills traversed by a regional electrical transmission line and marked by a cluster of mature trees in a topographical saddle. Existing amenities of the day use area are not readily visible or distinct from SR-152. Due to distance and the presence of the low, south-facing slope that screens most of the day use area from SR-152 motorists, proposed improvements would have limited to no visibility from SR-152. Although the installation of new restroom and shower facilities or the campfire center building could require the removal of existing pine and/or eucalyptus trees, the removal of ornamental and windbreak trees is unlikely to be noticeable from SR-152. New amenities would be in currently developed areas, and as such, would not result in substantial damage to scenic resources, including trees, rock outcroppings, and historic buildings. Therefore, campground construction and day use area improvements would result in a **less-than-significant impact** to scenic resources within a state scenic highway.

### Changes in Borrow Area Location

Construction equipment and vehicles, and alteration of hillsides within Borrow Areas 12 and 14, would attract the attention of passing motorists on SR-152. An existing photo from SR-152 toward the borrow areas, and a conceptual visual simulation depiction of the post-reclamation scenario, are included in Figures 3.5-5a and 3.5-5b. Although proposed construction activities and effects in Borrow Areas 12 and 14 would not result in damage to existing trees, rock outcroppings, or historic buildings, hills would be visibly altered. As discussed previously, the alteration of hills via borrow area activities would detract from the existing visual quality of the landscape by heightening contrasts in form, line, and color between borrow areas and adjacent undisturbed terrain. However, the distance between SR-152 motorists and Borrow Areas 12 and 14, and the prevailing speeds of traffic would reduce the overall magnitude of potential negative effects on the scenic experience of mobile viewers during the 10- to 12-year (and possibly up to 20-year) construction timeline. Further, Borrow Area 6 that was considered in the 2019 EIS/EIR is located closer to SR-152 than Borrow Areas 12 and 14. Ongoing reclamation and revegetation of the disturbed hills within the borrow areas over the duration of the construction period and

following completion of the Modified Project would reduce anticipated contrasts created during construction such that impacts to the scenic quality of the landscape as experienced from SR-152 would be muted (see Figure 3.5-5b). Therefore, changes in borrow areas would result in **less-than-significant impacts** to scenic resources within a state scenic highway.

### Minor Additions to Contractor Work Area

Except for additional staging and stockpile areas west of the Gianelli Plant, additional contractor work areas considered would not be clearly visible from SR-152. As such, farther downstream contractor work areas are not assessed in the context of potential impacts to scenic resources within a state scenic highway.

Proposed staging and stockpiling areas west of the Gianelli Plant would not result in damage to existing trees, rock outcroppings, or historic buildings. Still, these expanded work areas are proposed in a previously inventoried landscape considered to be distinctive (i.e., display Class A scenic attractiveness). Construction equipment and vehicles, landscape alterations to accommodate staging and stockpile areas, and staging and stockpiling of materials would be visible to passing motorists on SR-152 and would create new perceptible contrasts in the landscape. However, because the duration of views available to motorists would be relatively brief due to prevailing highway speeds, and because of the presence of existing disturbances/alterations in the landscape, including hillside grading and dam and power infrastructure, impacts to scenic resources within the viewshed of SR-152 would be reduced. Further, scenic resources impacts would be reduced due to the short-term nature of staging and stockpile operations. Therefore, minor additions to contractor work areas would result in **less-than-significant impacts** to scenic resources within a state scenic highway.

### Additional Construction Assumptions

Please refer to discussions above for campground construction and day use area improvements, changes in borrow area locations, and minor additions to contractor work areas.

### Cumulative Impacts

The construction of projects considered in the cumulative scenario would include equipment, vehicles, and activities that would be visible from SR-152. Although rock outcroppings and historic buildings would not be disturbed or otherwise impacted, cumulative construction activities could result in the removal of existing trees. In addition, the reservoir expansion project would include improvements to a section of SR-152 at Cottonwood Bay, including raising the elevation of SR-152 by approximately 10 feet. The remaining cumulative projects would disturb the grassland-covered terrain, which is a prominent feature of the SR-152 viewshed. However, due to the wide availability of views to grassland-covered hillsides and vistas from SR-152 and the short duration of mobile views from SR-152, the severity of construction impacts on views would be reduced. Once constructed, cumulative projects (except for the California High-Speed Rail Project: San Jose to Merced section) would visually blend (to the extent practicable) with the surrounding grassland-covered hillside landscape. However, in the vicinity of the Modified Project, the California High-Speed Rail Project: San Jose to Merced section would be constructed in tunnels generally north of SR-152 and would not be visible from the highway. Northeast of Cottonwood Bay and near McCabe Road, the tunnel segments of the California High-Speed Rail Project: San Jose to Merced section would transition to trench, aerial (viaduct), at-grade, and embankment segments on the approach toward I-5. Due to its location northwest and northeast of O'Neill Forebay, the aboveground segments of the California High-Speed Rail Project: San Jose to Merced section are not anticipated to be experienced in combination with the Modified Project and would have limited (if any) visibility from SR-152.

The long-term impacts of the Modified Project (post-reclamation) on views from SR-152 are illustrated in Figure 3.5-5b. As shown in the figure, there would be little change to the experience of SR-152 users as they approach and pass Borrow Areas 12 and 14. Therefore, in the cumulative scenario, cumulative construction and operation impacts on scenic resources within the SR-152 viewshed would be less than significant. The Modified Project's contribution to a potential cumulative impact would **not be cumulatively considerable**.

### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant.

### Threshold 3

***Would the Modified Project substantially degrade the existing visual character or quality of the site and its surroundings?***

| 2019 EIS/EIR Impact Determination | Modified Project Impact Determination | New Significant Increase in Impact Severity? |
|-----------------------------------|---------------------------------------|--|
| Less than Significant             | Less than Significant                 | No   |

### Campground Construction and Day Use Area Improvements

Except for a dirt access road and water tank east of a bisecting access road, and a paved trail that roughly parallels the O'Neill Forebay shore, the 40-acre proposed campground area is undeveloped. As previously detailed, the site features west to east sloping terrain that is covered with grasslands and marked by pockets of rock outcroppings. Construction of the campground would include vegetation removal and site grading; installation of utilities, including sewer, water, and electrical; surfacing roadways and vehicle parking areas with asphalt; and constructing restrooms and associated campground and campsite amenities (e.g., picnic tables, fire rings). Campground amenities and construction would occur east and west of the access road that bisects the proposed campground area. Due to its primarily undeveloped nature, construction activities would visibly alter the existing character of the 40-acre proposed campground area. For example, construction vehicles, equipment, and staff would be present in the area for up to 18 months, and vegetation removal and grading to accommodate campground access and amenities would create striking contrasts when compared to the line and color of existing grassland-covered terrain. Vegetation removal would create unnatural lines in the landscape and reveal bare areas of soils. These contrasts would persist in the views of motorists, boaters, and other water-based recreationists for up to 18 months. It is assumed that the portion of the San Luis Creek Accessibility Trail traversing the proposed campground area would be closed during construction.

A conceptual visual simulation of the proposed campground is included in Figure 3.5-4b. Although the campground in the figure is shown east of the access road (i.e., east of KOP 1), this analysis assumes that campground amenities and development would occur east and west of the access road. As depicted in the conceptual visual simulation, the current undeveloped grasslands character of the site and the quality of existing unencumbered views of O'Neill Forebay and background hills from the access road would be altered. Specifically, the introduction of road, campsites, campground amenities, landscaping, and visitor vehicles would transform the site to a passive recreation facility. Further, these features would block views of O'Neill

Forebay, and depending on setback of facilities from the access road, existing views of the distant hills. Despite the change in character, the proposed campground would complement the surrounding natural landscape by providing low-intensity uses and low-profile facilities (and features) consistent with recreational uses and development elsewhere in the SRA. In addition, as demonstrated in the conceptual visual simulation, the inclusion of landscape trees in the interior and along the perimeter of the future campground area would partially screen vehicles and campground features from view. Also, trees would help break up the perceived scale and footprint of the campground as viewed by motorists and their passengers on the access road (see Figure 3.5-4b). Regarding visual quality, the introduction of a low-intensity campground featuring interior and perimeter landscaping would not have a substantial effect on the existing vividness or intactness of the landscape as viewed from the access road. Unencumbered views from the access road to the waters of O'Neill Forebay would continue to be available south and north of the Modified Project site, and because foreground grasslands and background hills would continue to be experienced, the prominent features of the landscape would largely remain intact. Additionally, the proposed campground would be visually similar to other existing campgrounds in the area that are visible from various locations in the Modified Project area.

As stated previously, new amenities at the San Luis Creek Day Use Area would not be visually prominent and the addition of new amenities would not substantially alter the existing character of the site. Because these amenities are currently available at the day use area, the addition of a boat launch lane and boarding float in the North (or South) Beach area, new fish cleaning station, and six restroom stalls at the existing day use area would be consistent with the existing visual character. Further, the additional amenities would tend to blend into the existing setting and scene. Based on the analysis provided above, campground construction and day use area improvements would result in a **less-than-significant impact** to existing visual character.

#### Changes in Borrow Area Location

Existing photographs of Borrow Areas 12 and 14 as experienced from SR-152 and Basalt Road are provided in Figures 3.5-5a and 3.5-6a, and visual simulations of Modified Project changes as viewed from SR-152 and Basalt Road are included in Figures 3.5-5b and 3.5-6b. Construction equipment and vehicles, and alteration of hillsides within Borrow Areas 12 and 14 would result in noticeable visual change. Further, due to the activity in these areas and disturbance of existing terrain, existing visual character would be degraded, and the intactness of views would be reduced. As discussed previously, modifications to hills via extractive activities would detract from the existing character and quality of the landscape by heightening contrasts in form, line, and color between borrow areas and adjacent undisturbed terrain. However, visual changes would occur gradually over the 10- to 12-year (and possibly up to 20-year) duration of construction, and would occur within the confined area of Borrow Areas 12 and 14. Further, the ridgeline of Borrow Area 12 has experienced visible disturbance (i.e., the landform displays a flat ridgeline that is uncharacteristic of surrounding hilly terrain), and as such, proposed alterations would not substantially impact its existing character or quality. In the long term, reclamation and revegetation of the terrain in Borrow Areas 12 and 14 would incrementally reduce anticipated contrasts and effects to existing visual quality such that noticeable change would be softened and obscured (see Figure 3.5-5a through 3.5-6b). Therefore, with implementation of the reclamation and revegetation plans, long-term changes in borrow areas would result in **less-than-significant impacts** to existing visual character and quality.

#### Minor Additions to Contractor Work Area

As previously stated, proposed staging and stockpiling areas west of the Gianelli Plant are proposed in a previously inventoried landscape considered to be distinctive (i.e., displays Class A scenic attractiveness). Construction activities would be visible to passing motorists on SR-152 and would create new perceptible

contrasts in the landscape that would temporarily degrade existing visual quality and reduce visual quality. However, due to the temporary nature of the experienced contrasts, and due to the inclusion of existing nearby disturbances/alterations in the landscape, including hillside grading and dam and power infrastructure, impacts to existing visual character and quality would be reduced. For similar reasons, other changes to contractor work areas located elsewhere in the Modified Project area would create temporary visual change that would affect visual character and quality over a short duration. Therefore, due to the temporary nature of construction and the presence of existing landscape disturbance and alteration in the immediate surrounding area, minor additions to contractor work areas would result in **less-than-significant impacts** to existing visual character and quality.

#### Additional Construction Assumptions

Please refer to discussions above for campground construction and day use area improvements, changes in borrow area locations, and minor additions to contractor work areas.

#### Cumulative Impacts

Combined with the Modified Project, concurrent construction of the San Luis Transmission Project, San Luis Solar Project, and California High-Speed Rail Project: San Jose to Merced section could result in a cumulative short-term impact on visual character and quality given the introduction of construction equipment, traffic, and personnel and the gradual alteration of the landscape (and views). Although long-term Modified Project impacts to visual character and quality were determined to be less than significant, combined with the other projects in the cumulative scenario, the Modified Project would result in visible changes to existing visual character and quality through development of previously undeveloped areas. For example, the proposed campground is intended to be constructed on a previously undisturbed (primarily) site adjacent to the westerly shores of O'Neill Forebay. Additionally, alteration of hillsides within Borrow Areas 12 and 14 would result in noticeable visual changes that would occur over time during the construction period. However, given that the long-term visual changes resulting from the Modified Project would be limited in these areas and would not substantially degrade visual character (as discussed above), the Modified Project's contribution to a cumulative impact to existing visual character and quality **would not be cumulatively considerable**, and impacts would be less than significant.

#### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant.

#### Threshold 4

***Would the Modified Project create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?***

| 2019 EIS/EIR Impact Determination                  | Modified Project Impact Determination              | New Significant Increase in Impact Severity? |
|--|--|--|
| Less than Significant with Mitigation Incorporated | Less than Significant with Mitigation Incorporated | No   |

### Campground Construction and Day Use Area Improvements

Although most construction activities associated with the new campground and improvements to the San Luis Creek Day Use Area would occur during daytime hours, construction during evening hours may be necessary. For example, in the late winter months, construction activities at the proposed campground area may extend into evening hours after sunset. During these instances, the operation of vehicles and equipment and the use of portable lighting could affect nighttime views available to visitors at San Luis Creek Campground (located 0.2 miles north of the proposed campground area). Because visitors are not permitted in the day use area during evening and nighttime hours, nighttime construction lighting would not impact day use area visitors. Also, due to distance, nighttime construction (and more specifically, the operation of lighting in the day use area) is unlikely to noticeably affect the quality of nighttime views available at San Luis Creek Campground (located 1.3 miles to the north). Other than visitors to the SRA, the nearest uses that could potentially be affected by nighttime construction activities are located east of O'Neill Forebay, off SR-33, in the Santa Nella Village area (approximately 1.9 miles from the day use area). Although there are a limited number of viewers in the surrounding area, lights in the construction area would have a negative impact on nighttime views in the area. However, instances of nighttime construction during the approximately 18-month construction timeline would be limited/infrequent, and if required, lighting at the construction sites would operate for a limited time (i.e., late hours and overnight construction are not anticipated). Further, San Luis Creek Campground is located 0.2 miles (approximately 1,100 feet) and is partially screened from the proposed campground area by existing terrain (west of the access road, the proposed campground area is surrounded on three sides by hills) and trees along the O'Neill Forebay shoreline. Trees within the existing campground would also partially block direct lighting from construction activities at the proposed campground area.

If used, construction lighting would be removed after construction activities associated with the proposed campground and day use area improvements are completed. Minimal new permanent sources of lighting are anticipated to be installed at the new campground and would generally consist of hooded or bollard-style fixtures and elements near restroom/shower facilities and at the campfire center. Because the day use area is not open for nighttime use, no permanent operational lighting is anticipated for the new restroom stalls or other facilities. The operation of limited lighting at the new campground would be consistent with the existing low-light condition in the surrounding area. Also, due to a limited number of viewers, the limited operational lighting at the campground would have an altogether weak effect on the quality of nighttime views currently available to visitors to the San Luis Creek Campground. Based on the analysis presented above, construction and operational lighting at the new campground and day use area would not adversely affect the quality of views in the area. Impacts would be **less than significant**.

### Changes in Borrow Area Location

Grading and other construction activities occurring in Borrow Areas 12 and 14 may occur during nighttime hours during the up to 20-year construction timeline. As stated in Chapter 2, construction work would be performed 24 hours per day, 7 days per week, 12 months per year. As such, construction would require the use of portable lighting and lighting from construction vehicles and equipment to provide proper illumination of work areas and ensure the safety of construction personnel. Although existing lighting operates along the SR-152 corridor near Borrow Areas 12 and 14, lights in the construction area would have a negative effect on nighttime views in the Modified Project area. Further, construction lighting at Borrow Areas 12 and 14 would alter the existing quality of southerly oriented views from SR-152 during evening and nighttime hours. Although Borrow Areas 12 and 14 are located farther from SR-152 compared to Borrow Area 6 that was previously considered in the 2019 EIS/EIR, the duration of construction, the 24/7 nature of construction activities, and the existing low-light environment of the

borrow area landscape would result in a potentially significant impact on nighttime views. However, implementation of **Mitigation Measure VIS-1 (same as VIS-1 in the 2019 EIS/EIR)**, described in Section 3.5.5, Mitigation Measures, would reduce the severity of this potential impact by requiring that portable lighting sources be shielded and directed downward onto the active area of construction. Instances of upward lighting would be prohibited to the extent practicable given the topography of the borrow area locations. With implementation of Mitigation Measure VIS-1, this construction lighting impact would be **less than significant**.

### Minor Additions to Contractor Work Area

See also the analysis under “Changes in Borrow Area Location,” above. In most instances, areas encompassing the additional contractor spaces are visible from nearby roads, including SR-152 and Basalt Road. For example, additional work areas west of the Gianelli Plant would be visible from SR-152, and lighting associated with nighttime construction activities would be experienced by SR-152 users. Although sources of light operate at the Gianelli Plant, lighting associated with stockpiling and staging activities would add to the degraded quality of nighttime views in the area. Similarly, nighttime construction and associated lighting at the expanded contractor work areas near B.F. Sisk Dam’s right abutment would be visible from Basalt Road. This expanded work area generally comprises a low-light environment, and as such, nighttime lighting from construction vehicles and equipment, and portable lighting sources (if required), would alter the quality of existing nighttime views. Similar effects are anticipated at other expanded contractor work areas located farther southwest. Based on the duration of construction, the 24/7 nature of construction activities, and the inclusion of low-light environments in the Modified Project area, the operation of nighttime lighting during construction would have a negative and potentially significant impact on nighttime views in the area. However, with implementation of Mitigation Measure VIS-1, this impact would be reduced to **less than significant**. No new sources of permanent lighting would be associated with the expanded contractor work areas.

### Additional Construction Assumptions

Please refer to discussions above for campground construction and day use area improvements, changes in borrow area locations, and minor additions to contractor work areas.

### Cumulative Impacts

If construction of the San Luis Transmission Project, San Luis Solar Project, California High-Speed Rail Project: San Jose to Merced section, San Luis Reservoir SRA RMP/GP facilities, and the reservoir expansion project overlapped with construction of the Modified Project, there could be a cumulative short-term impact on nighttime views given the operation of portable and stationary lighting and construction vehicles for nighttime construction activities in the Modified Project area. However, up-lighting and light trespass during Modified Project construction would be minimized using shielded and downward-directed fixtures on stationary sources. Vehicle lighting would not be shielded, but mobile sources of lighting would generally operate for a short duration on any given night. Like the Modified Project, projects considered in the cumulative analysis would be expected to implement measures, including shielding and downward-directed lighting, to ensure that off-site light trespass and instances of skyglow are reduced. Therefore, although the Modified Project may combine with other projects to create a cumulatively considerable contribution to significant cumulative visual impacts, the Modified Project’s contribution **would not be cumulatively considerable** with implementation of standard best practices for the use of nighttime lighting (Mitigation Measure VIS-1).



### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant impacts with mitigation incorporated and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant with mitigation incorporated (see Section 3.5.5).

### 3.5.5 Mitigation Measures

The following mitigation measure included in the 2019 EIS/EIR would be implemented to reduce impacts associated with the use of lighting during nighttime construction to less than significant.

**VIS-1 (Same as VIS-1 in 2019 EIS/EIR):** To reduce visual intrusion from light sources, Reclamation shall require the contractors to implement measures to reduce light and glare while meeting minimum safety and security standards. Light reduction measures must include: directing lighting downward to prevent spillover onto nearby areas, utilization of lighting fixtures with directional shielding to focus on areas being lit, and a construction requirement that all lighting in areas not under active construction be shut off. To reduce the amount of glare, building finishes shall be subdued and earth-toned. On-site mechanical equipment roofing materials, and any exposed vents or flashings must be constructed of non-glare finishes that minimizes reflectivity.

### 3.5.6 Level of Significance After Mitigation

As with the Approved Project, the Modified Project would result in less-than-significant impacts with respect to substantial adverse effects on scenic vistas.

As with the Approved Project, the Modified Project would result in less-than-significant impacts with respect to substantial damage to scenic resources within a state scenic highway.

As with the Approved Project, the Modified Project would result in less-than-significant impacts with respect to substantial degradation of existing visual character or quality of the site and its surroundings.

Both the Approved Project and the Modified Project would result in potential significant impacts with respect to creating a new source of substantial light or glare, which would adversely affect day or nighttime views in the area. Implementation of Mitigation Measure VIS-1, which requires implementation of light reduction measures during construction and was identified in the 2019 EIS/EIR for the approved project, would reduce impacts associated with the modified project to less than significant.

INTENTIONALLY LEFT BLANK



Photo A: Proposed Campground Area, West of Access Road.



Photo B: Proposed Campground Area, East of Access Road.

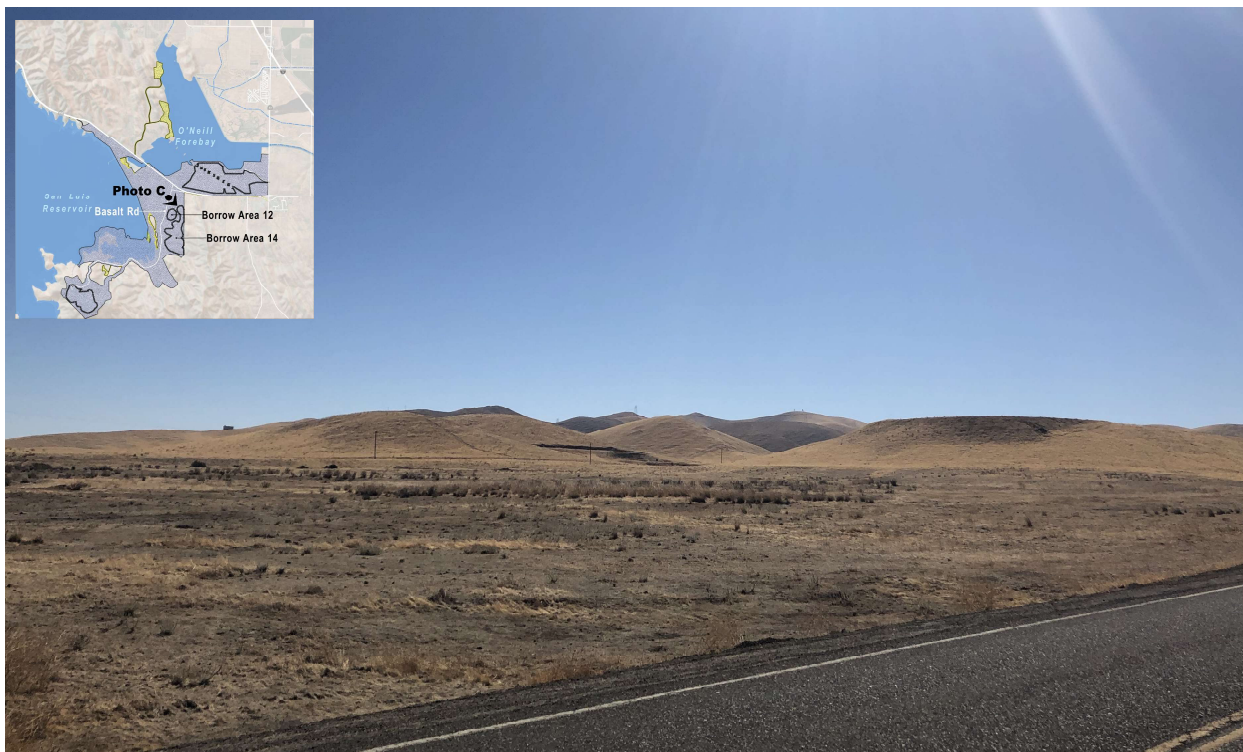
**FIGURE 3.5-1**

Existing Visual Character: Proposed Campground Area

B.F. Sisk Dam Safety of Dams Modification Project SEIR

INTENTIONALLY LEFT BLANK





**Photo C:** Borrow Areas 12 and 14, from Southbound Basalt Road



**Photo D:** Borrow Areas 12 and 14, from Northbound Basalt Road

**FIGURE 3.5-2**

Existing Visual Character: Borrow Areas 12 and 14

B.F. Sisk Dam Safety of Dams Modification Project SEIR

INTENTIONALLY LEFT BLANK





**FIGURE 3.5-3**  
**Key Observation Points**  
 B.F. Sisk Dam Safety of Dams Modification Project SEIR



INTENTIONALLY LEFT BLANK





FIGURE 3.5-4a

Key Observation Point 1: Proposed Campground Area from Access Road (Existing Conditions)

B.F. Sisk Dam Safety of Dams Modification Project SEIR



INTENTIONALLY LEFT BLANK





Note: New landscaping/trees shown at anticipated growth ten (10) years post-installation.

FIGURE 3.5-4b

Key Observation Point 1: Proposed Campground Area from Access Road (Conceptual Visual Simulation)

B.F. Sisk Dam Safety of Dams Modification Project SEIR



INTENTIONALLY LEFT BLANK





FIGURE 3.5-5a

Key Observation Point 2: Borrow Areas 12 and 14 from SR-152 (Existing Conditions)

B.F. Sisk Dam Safety of Dams Modification Project SEIR



INTENTIONALLY LEFT BLANK





FIGURE 3.5-5b

Key Observation Point 2: Borrow Areas 12 and 14 from SR-152 (Visual Simulation)

B.F. Sisk Dam Safety of Dams Modification Project SEIR



INTENTIONALLY LEFT BLANK





Note: As experienced at Key Observation Point 3, Borrow Area 14 is generally located behind (i.e., to the south) of Borrow Area 12

FIGURE 3.5-6a

Key Observation Point 3: Borrow Areas 12 and 14 from Basalt Road (Existing Conditions)

B.F. Sisk Dam Safety of Dams Modification Project SEIR



INTENTIONALLY LEFT BLANK





FIGURE 3.5-6b

Key Observation Point 3: Borrow Areas 12 and 14 from Basalt Road (Visual Simulation)

B.F. Sisk Dam Safety of Dams Modification Project SEIR



INTENTIONALLY LEFT BLANK

## 3.6 Noise and Vibration

This supplemental environmental impact report (SEIR) addresses proposed modifications to the B.F. Sisk Dam Safety of Dams Modification Project, which was previously evaluated in the B.F. Sisk Dam Safety of Dams Modification Project Environmental Impact Statement/Environmental Impact Report (2019 EIS/EIR). The project addressed in the 2019 EIS/EIR is referred to herein as the Approved Project; the Approved Project with proposed additions to the project identified since certification of the 2019 EIS/EIR is referred to herein as the Modified Project. Please refer to Chapter 2 Project Description and Figures 2-3, 2-4A, and 2-4B for a detailed description of the proposed modifications included in the Modified Project.

This section describes the existing noise conditions of the Modified Project site and vicinity, identifies associated regulatory requirements, evaluates potential impacts, and identifies any applicable mitigation measures related to implementation of the of the Modified Project. The analysis is based on noise modeling conducted for the Modified Project as part of the preparation of this SEIR; noise modeling is included as Appendix C of this SEIR.

The Modified Project would expand on the previously Approved Project at the current locations, with the addition of new contractor work areas, revised location of borrow areas, a new campground, and improvements to an existing day use area. The results of the noise modeling are summarized in this section, with additional information included in Appendix C.

### 3.6.1 Existing Conditions

#### 3.6.1.1 Existing Noise Environment

The Modified Project site is located in unincorporated Merced County, approximately 7 miles west of the City of Los Banos, California. The Modified Project elements are bisected north/south by State Route (SR) 152. The most dominant noise source in the general Modified Project area is transportation noise generated from vehicular traffic on the local and regional roadway network; minor recreational and commercial activities in the area contribute to lesser extent. The existing ambient noise environment was quantified through field surveys, sound level measurements, observations during site visits, and through the application of accepted reference data and noise prediction methodologies. Separate discussions of identified major noise sources and their respective effects are provided in the following sections.

#### 3.6.1.2 Existing Noise-Sensitive Land Uses

Certain land uses are particularly sensitive to noise, such as schools, hospitals, and rest homes. Residential areas are also considered noise sensitive, especially during the nighttime hours. Noise-sensitive receptors identified in the immediate vicinity of the Modified Project, and analyzed in this section of the SEIR, include the residential subdivision east of O'Neill Forebay (approximately 10,900 feet from the proposed new campground activity area), the residences south of SR-152 (approximately 11,630 and 10,700 feet to Borrow Areas 12 and 14), and the single-family residence south of the Basalt Hill Borrow Area on Harper Lane (approximately 10,700 feet to the nearest contractor work area added with the Modified Project). For the purpose of the SEIR's analysis of additional project components added since certification of the 2019 EIS/EIR, the nearest noise-sensitive receptors were identified by determining the receptor closest to the nearest proposed project addition included in the Modified

Project (i.e., changes to borrow areas, minor additions to contractor work areas, and campground construction and San Luis Creek Day Use Area improvements; see Figures 1-3, 2-3, and 2-4).

### 3.6.1.3 Existing Ambient Noise Survey

Dudek staff visited the Modified Project site on June 3, 2020, and again on October 29 and 30, 2020, to measure ambient sound levels in the Modified Project vicinity. Short-term measurements were conducted with a calibrated SoftdB Piccolo II ANSI Type II integrating sound-level meter, placed on a tripod with the microphone positioned approximately 5 feet above the ground. A total of four short-term noise measurements were performed; one along Gonzaga Road, north of the subdivision located south of SR-152; one along SR-33, east of residences on Anacapa Avenue and Luis Avenue; one at W. Santa Catalina Avenue, south of residences along Yerba Buena Avenue; and one at the new proposed campground area, on the western shore of O'Neill Forebay. A single long-term noise measurement was performed adjacent to residences along San Luis Drive at the subdivision located south of SR-152. The long-term noise measurement is conducted to capture typical noise levels for a full diurnal cycle in the surrounding Modified Project area and establishes baseline noise conditions for which to compare nightly construction activities. The sound-level meters were calibrated before and after the measurements using a Reed R8090 sound level calibrator to ensure the accuracy of the sound pressure level measurements.

Table 3.6-1 summarizes the dates and times for each noise level measurement, as well as the measured pertinent noise level metrics (e.g., Ldn [day-night noise level], Leq [average equivalent noise level], Lmax [maximum noise level]). The locations are also shown on Figure 3.6-1, Noise Monitoring Sites and Nearby Noise Sensitive Land Uses (NSLU). See Appendix C for field data sheets for each of the field measurement data sheets.

**Table 3.6-1. Existing Ambient Noise Monitoring Results**

| Location          | Date                        | Start Time | Stop Time  | Leq (dBA)                          | Lmax (dBA)                         | Ldn (dBA) <sup>1</sup> |
|-------------------|-----------------------------|------------|------------|------------------------------------|------------------------------------|------------------------|
| ST-1              | 06/03/2020                  | 1:20 p.m.  | 1:50 p.m.  | 59.7                               | 74.7                               | 72                     |
| ST-2              |                             | 2:15 p.m.  | 2:25 p.m.  | 74.4                               | 85.1                               | 84                     |
| ST-3              |                             | 2:40 p.m.  | 3:10 p.m.  | 43.8                               | 63.2                               | 54                     |
| ST-4              |                             | 3:35 p.m.  | 4:05 p.m.  | 39.4                               | 50.3                               | 43                     |
| LT-1 <sup>2</sup> | 10/29/2020 to<br>10/30/2020 | 12:29 p.m. | 12:29 p.m. | Daytime – 58.5<br>Nighttime – 56.8 | Daytime – 79.0<br>Nighttime – 73.8 | 63.8                   |

**Source:** Appendix C.

**Notes:** dBA = A-weighted decibels; Ldn = day-night noise level; Leq = average equivalent noise level; Lmax = maximum noise level; ST = short-term noise measurement monitoring location; LT = long-term noise measurement monitoring location.

<sup>1</sup> Ldn noise at short-term monitoring locations estimated based on hourly noise levels measured at the long-term monitoring location.

<sup>2</sup> Leq and Lmax values presented for LT-1 are average noise levels measured during the monitoring period.

As shown in Table 3.6-1, existing ambient noise levels cataloged during the measurement survey ranged from approximately 39 to 74 A-weighted decibels (dBA) average equivalent noise level (Leq) and 50 to 85 dBA maximum noise level (Lmax). The short-term measurement locations were influenced by traffic noise on SR-152 and SR-33. Elevated noise levels cataloged at short-term measurement location ST-2 were due to a large number of heavy trucks passing the location with several observed to use an engine-brake (i.e., jake-brake), resulting in the maximum noise level of 85 dBA Lmax.

Existing ambient noise levels at the long-term monitoring location ranged from approximately 52 to 62 dBA Leq, with average daytime noise levels of 58.5 dBA and nighttime levels of 56.8 dBA Leq. The quietest hourly period was found to occur during the 12:00 p.m. and 1:00 p.m. hours, which were approximately 12 decibels (dB) below the

measured 24-hour day-night noise level (Ldn) of 63.8 dBA Ldn. During the evening hours, the lowest ambient level was approximately 8.3 dB below the measured Ldn, with the lowest nighttime ambient approximately 8.8 dB below the Ldn. The 24-hour day-night noise level was calculated for each of the short-term measurement locations based on hourly noise levels cataloged during the long-term measurement.

#### 3.6.1.4 Existing Traffic Noise

Existing traffic noise levels were modeled for roadway segments in the Modified Project vicinity based on the Federal Highway Administration (FHWA) Highway Traffic Noise Model 2.5 prediction methodologies (FHWA 1998), and traffic data provided in the most current set of California Department of Transportation (Caltrans) annual traffic volume counts (Caltrans 2019). The FHWA Traffic Noise Model incorporates state-of-the-art sound emission and propagation algorithms, based on well-established theory and accepted international standards. The acoustical algorithms contained within the FHWA Traffic Noise Model have been validated with respect to carefully conducted noise measurement programs and show excellent agreement in most cases for sites with and without noise barriers. The noise modeling accounted for factors such as vehicle volume, speed, vehicle type, roadway configuration, distance to the receiver, and propagation over different types of ground (acoustically soft and hard ground).

Modeled existing traffic noise levels are summarized in Table 3.6-2, for the outdoor activity area of noise-sensitive receptor in closest proximity to the respective roadway segment in the vicinity of the Modified Project. The extent to which existing land uses in the vicinity of the Modified Project are affected by existing traffic noise depends on their respective proximity to the roadways, shielding provided by intervening objects and their individual sensitivity to noise. As shown in Table 3.6-2, traffic noise levels within outdoor activity areas of noise-sensitive land uses adjacent to major roadway segments in the Modified Project vicinity range from approximately 40 to 61 dBA Ldn. As vehicular traffic noise was the most dominant noise source contributing to the ambient noise environment, the evening and nighttime hourly average noise levels were calculated based on the diurnal pattern observed during the long-term monitoring. Evening ambient traffic noise levels ranged from approximately 32 to 52 dBA Leq, with nighttime ambient traffic noise levels ranging from approximately 31 to 51 dBA Leq. Refer to Appendix C modeling inputs and results.

**Table 3.6-2. Summary of Modeled Existing Traffic Noise Levels**

| Noise-Sensitive Receptor |  | Distance from Roadway Centerline to Receiver (feet) | Noise Level, dBA |                          |                            |
|--------------------------|--|---|------------------|--------------------------|----------------------------|
| ID                       | Description  |   | Ldn              | Evening Leq <sup>1</sup> | Nighttime Leq <sup>1</sup> |
| R-1                      | Residential Neighborhood North of SR-152 and west of SR-33 | 11,900  | 45.9             | 37                       | 37                         |
| R-2                      | Residences South of SR-152 at SR-33                        | 1,250   | 60.6             | 52                       | 51                         |
| R-3                      | Residences South of SR-152 at SR-33                        | 1,980   | 57.6             | 49                       | 48                         |
| R-4                      | Residence on Harper Lane                                   | 27,900  | 40.3             | 32                       | 31                         |
| R-5                      | Site of Proposed New Campground                            | 9,375   | 47.4             | 39                       | 38                         |

**Source:** Appendix C.

**Notes:** dBA = A-weighted decibels; Ldn = average day-night noise level; Leq = equivalent hourly noise level; SR = State Route. Average Daily Traffic Volumes (ADTs) for SR-152 are based on California Department of Transportation truck traffic counts for the most recent year (i.e., 2018).

Modeled existing noise levels do not accounting for shielding provided by natural or human-made intervening objects.

<sup>1</sup> Lowest ambient Leq traffic noise levels calculated based on diurnal pattern observed during the long-term noise measurement.

### 3.6.1.5 Existing Aircraft Operations

The Modified Project site is located approximately 8.3 miles west of Los Banos Municipal Airport. The Modified Project site is located more than 7.9 miles outside of the currently adopted 55 dB Community Noise Equivalent Level noise contours of the Airport Land Use Compatibility Plan for the Merced County Airport Land Use Commission (Merced County 2012). No aircraft over-flights were documented during either the short-term or long-term monitoring. Based on the location of the Modified Project in relation to the nearby airports, existing aircraft operations are not anticipated to have a substantial effect on noise levels within the Modified Project area.

### 3.6.1.6 Existing Vibration

The existing vibration environment, similar to that of the noise environment, is dominated by transportation-related vibration from roadways in close proximity or immediately adjacent to the Modified Project boundary. Heavy truck traffic can generate groundborne vibration, which varies considerably depending on vehicle type, weight, and pavement conditions. However, groundborne vibration levels generated from vehicular traffic are not typically perceptible outside of the roadway right-of-way (Caltrans 2020).

## 3.6.2 Relevant Plans, Policies, and Ordinances

### 3.6.2.1 Federal

#### **Federal Noise Control Act**

The U.S. Environmental Protection Agency's (EPA's) Office of Noise Abatement and Control was originally established to coordinate federal noise control activities. After its inception, the EPA's Office of Noise Abatement and Control issued the Federal Noise Control Act of 1972, establishing programs and guidelines to identify and address the effects of noise on public health, welfare, and the environment. In 1981, EPA administrators determined that subjective issues such as noise would be better addressed at more local levels of government. Consequently, in 1982, responsibilities for regulating noise control policies were transferred to state and local governments. However, noise control guidelines and regulations contained in the EPA rulings in prior years are still adhered to by designated federal agencies where relevant. No federal noise regulations are applicable to the Modified Project.

### 3.6.2.2 State

The State of California has adopted noise standards in areas of regulation not preempted by the federal government. State standards regulate noise levels of motor vehicles, sound transmission through buildings, occupational noise control, and noise insulation.

#### **California Department of Transportation Guideline Vibration Damage Potential Threshold Criteria**

There are no state standards for vibration; however, Caltrans compiled a synthesis of research on the effects of vibration with thresholds ranging from 0.08 inches per second (in/sec) peak particle velocity (PPV) to 4.0 in/sec PPV for "fragile historic buildings" and "structures of substantial construction," respectively. Based on the synthesis of research, Caltrans developed recommendations for guideline threshold criteria of 0.3 in/sec PPV for older residential structures and 0.25 in/sec PPV for historic buildings and some old buildings exposed to



continuous/frequent intermittent sources. For extremely fragile historic buildings, ruins, and ancient monuments, Caltrans recommends a threshold of 0.08 in/sec PPV (Caltrans 2020).

### 3.6.2.3 Local

#### Merced Vision 2030 General Plan

As required by state law, Merced County has adopted a general plan to guide land use decisions within the county. The general plan provides goals, policies, standards, and implementation programs to guide the physical development of a county. At a minimum, the general plan must address the topics of land use, transportation, housing, conservation, open space, noise, and safety. The Merced Vision 2030 General Plan (Merced County General Plan), adopted in 2013, has established the year 2030 as the plan's time horizon. The Health and Safety Element of the Merced County General Plan provides standards, goals, and policies regarding noise, including the following (Merced County 2013):

#### *Health and Safety Element*

**Goal HS-7:** Protect residents, employees, and visitors from the harmful and annoying effects of exposure to excessive noise.

- **Policy HS-7.5: Noise Generating Activities (RDR).** Limit noise generating activities, such as construction, to hours of normal business operation.
- **Policy HS-7.7: Noise or Vibration Impacted Residential Area Monitoring (RDR).** Consider any existing residential area “noise or vibration impacted” if the exposure to exterior noise exceeds the standards shown in Table HS-2 of the General Plan [Table 3.6-3 in this SEIR] or if groundborne vibration levels exceed 70 VdB. Identify and evaluate potential noise or groundborne vibration impacted areas and identify possible means to correct the identified noise/land use incompatibilities.
- **Policy HS-7.9: Transportation Project Construction/Improvements (RDR).** Require transportation project proponents to prepare all acoustical analysis for all roadway and railway construction projects in accordance with Policy HS-7.2. Consider noise mitigation measures to reduce traffic and/or rail noise levels to comply with Table HS-1 standards if pre-project noise levels already exceed the noise standards of Table HS-1 and the increase is significant. The County defines a significant increase as follows:

| <u>Pre-Project Noise Environment (Ldn)</u> | <u>Significant Increase</u> |
|--|-----------------------------|
| Less than 60 dB                            | 5+ dB                       |
| 60 - 65 dB                                 | 3+ dB                       |
| Greater than 65 dB                         | 1.5+ dB                     |

- **Policy HS-7.10: Aircraft Noise.** Prohibit new noise-sensitive development within the projected future 60 dB Ldn noise contours of any public or private airports.

**Table 3.6-3. Noise Standards for New Uses Affected by Traffic, Railroad, and Airport Noise**

| New Land Use                | Sensitive Outdoor Area <sup>1</sup> - Ldn | Sensitive Interior Area <sup>2</sup> - Ldn | Notes |
|-----------------------------|---|--|-------|
| All Residential             | 65  | 45   | 3     |
| Transient Lodging           | 65  | 45   | 3,4   |
| Hospitals and Nursing Homes | 65  | 45   | 3,4,5 |

**Table 3.6-3. Noise Standards for New Uses Affected by Traffic, Railroad, and Airport Noise**

| New Land Use                                      | Sensitive Outdoor Area <sup>1</sup> - Ldn | Sensitive Interior Area <sup>2</sup> - Ldn | Notes |
|---|---|--|-------|
| Theaters and Auditoriums                          | —   | 35   | 4     |
| Churches, Meeting Halls, Schools, Libraries, etc. | 65  | 40   | 4     |
|   | 65  | 40   | 4     |
| Office Buildings                                  | 65  | 45   | 4     |
| Commercial Buildings                              | —   | 50   | 4     |
| Playgrounds, Parks, etc.                          | 70  | —  |       |
| Industry  | 65  | 50   | 4     |

Source: Merced County 2013.

**Notes:**

- <sup>1</sup> Sensitive Outdoor Areas include primary outdoor activity areas associated with any given land use at which noise-sensitivity exists and the location at which the County's exterior noise level standards are applied
- <sup>2</sup> Sensitive Interior Areas includes any interior area associated with any given land use at which noise sensitivity exists and the location at which the County's interior noise level standards are applied. Examples of sensitive interior spaces include, but are not limited to, all habitable rooms of residential and transient lodging facilities, hospital rooms, classrooms, library interiors, offices, worship spaces, theaters. Interior noise level standards are applied within noise-sensitive areas of the various land uses with windows and doors in the closed positions.
- <sup>3</sup> Railroad warning horn usage shall not be included in the computation of Ldn.
- <sup>4</sup> Only the interior noise level standard shall apply if there are no sensitive exterior spaces proposed for these uses.
- <sup>5</sup> Since hospitals are often noise-generating uses, the exterior noise level standards are applicable only to clearly identified areas designated for outdoor relaxation by either hospital staff or patients.

Table 3.6-4 shows the interior and exterior noise level standards for noise-sensitive areas affected by existing non-transportation noise sources in Merced County.

**Table 3.6-4. Non-Transportation Noise Standards Median (L50) / Maximum (Lmax)<sup>1</sup>**

| Outdoor Area <sup>2</sup>                         |         |           | Interior <sup>3</sup> |       |
|---|---------|-----------|-----------------------|-------|
| Receiving Land Use                                | Daytime | Nighttime | Day or Night          | Notes |
| All Residential                                   | 55 / 75 | 50 / 70   | 35 / 55               |       |
| Transient Lodging                                 | 55 / 75 | —         | 35 / 55               | 4     |
| Hospitals and Nursing Homes                       | 55 / 75 | —         | 35 / 55               | 5, 6  |
| Theaters and Auditoriums                          | —       | —         | 30 / 50               | 6     |
| Churches, Meeting Halls, Schools, Libraries, etc. | 55 / 75 | —         | 35 / 50               | 6     |
| Office Buildings                                  | 60 / 75 | —         | 45 / 65               | 6     |
| Commercial Buildings                              | 55 / 75 | —         | 45 / 65               | 6     |
| Playgrounds, Parks, etc.                          | 65 / 75 | —         | —                     | 6     |
| Industry  | 60 / 80 | —         | 50 / 70               | 6     |

Source: Merced County 2013.

**Notes:**

- <sup>1</sup> These standards shall be reduced by 5 dB for sounds consisting primarily of speech or music, and for recurring impulsive sounds. If the existing ambient noise level exceeds the standards in this table, then the noise level standards shall be increased at 5 dB increments to encompass the ambient.
- <sup>2</sup> Sensitive Outdoor Areas include primary outdoor activity areas associated with any given land use at which noise-sensitivity exists and the location at which the County's exterior noise level standards are applied.
- <sup>3</sup> Sensitive Interior Areas includes any interior area associated with any given land use at which noise sensitivity exists and the location at which the County's interior noise level standards are applied. Examples of sensitive interior spaces include, but are not limited to, all habitable rooms of residential and transient lodging facilities, hospital rooms, classrooms, library interiors, offices, worship spaces, theaters. Interior noise level standards are applied within noise-sensitive areas of the various land uses with windows and doors in the closed positions.
- <sup>4</sup> Outdoor activity areas of transient lodging facilities are not commonly used during nighttime hours.

- <sup>5</sup> Since hospitals are often noise-generating uses, the exterior noise level standards are applicable only to clearly identified areas designated for outdoor relaxation by either hospital staff or patients.
- <sup>6</sup> The outdoor activity areas of these uses (if any) are not typically used during nighttime hours.
- <sup>7</sup> Where median (L50) noise level data is not available for a particular noise source, average (Leq) values may be substituted for the standards of this table provided the noise source operates for at least 30 minutes. If the source operates less than 30 minutes the maximum noise level standards shown shall apply.

### **Merced County Code**

General limitations state that no sound source should exceed the background sound level at the receiving property line by 10 dBA or more during the daytime hours (7:00 a.m. to 10:00 p.m.) and by 5 dBA or more during the nighttime hours (10:00 p.m. to 7:00 a.m.). The maximum permissible sound levels for residential property are 65 dBA Ldn or 75 dBA Lmax. The maximum permissible sound levels for property other than residential property are 70 dBA Ldn or 80 dBA Lmax.

Merced County's ordinance exempts construction activities, provided that all construction in or adjacent to urban areas shall be limited to the daytime hours between 7:00 a.m. and 6:00 p.m., and all construction equipment shall be properly muffled and maintained. Operation of construction equipment outside of these daytime hours or at any time on a weekend or legal holiday is prohibited (Merced County 2020).

### **Section 18.40.050 Noise**

- E Elevated Noise Level During Construction.** During construction, the noise level may be temporarily elevated. To minimize the impact, all construction in or adjacent to urban areas shall comply with the following procedures for noise control:
  - 1. Construction hours shall be limited to the daytime hours between 7:00 a.m. and 6:00 p.m. daily;
  - 2. Operating or permitting the operation of any tools or equipment used in construction, drilling, earthmoving, excavating, or demolition work between 6:00 p.m. and 7:00 a.m. on a weekday or at any time on a weekend day, or legal holiday, except for emergency work, or when the sound level exceeds any applicable relative or absolute limit specified in MCC Section 10.60.030 is prohibited; and
  - 3. All construction equipment shall be properly muffled and maintained.
- F Noise Barriers.** Refer to Section 18.34.060 (Noise Barrier) of this Zoning Code for design requirements if a noise barrier structure is required to meet the noise standards. (Ord. 1976 § 2, 2019).

### **Section 18.40.080 Vibration, Heat, Electrical Disturbances, and Glare**

No use shall create any disturbing ground vibration, heat, glare, and electrical disturbances based on typical human reaction beyond the boundaries of the subject parcel. No use shall cause electromagnetic interference with normal radio or television reception or with the function of other electronic equipment beyond the property line of the parcel on which they are located (Merced County 2020).

### 3.6.3 Thresholds of Significance

The following significance criteria from the 2019 EIS/EIR are used for the purposes of analysis in this SEIR. These criteria, which have not changed from the 2019 EIS/EIR, are identified in Chapter 11, Noise and Vibration, of the 2019 EIS/EIR. A significant impact related to noise would occur if the Modified Project would result in:

1. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
2. Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.
3. A substantial permanent increase in ambient noise levels in the Modified Project vicinity above levels existing without the Modified Project.
4. A substantial temporary or periodic increase in ambient noise levels in the Modified Project vicinity above levels existing without the Modified Project.
5. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Modified Project expose people residing or working in the Modified Project area to excessive noise levels.

In analyzing noise and vibration impacts associated with the Modified Project, pertinent noise standards identified by the Merced County General Plan and Merced County Code (see Section 3.6.2.3) have been considered in developing the quantified significance standards, below, by which to evaluate the significance of impacts evaluated in accordance with significance criteria from the 2019 EIS/EIR.

- Significance Standard 1. The Modified Project would result in a significant impact if construction or operational activities would generate noise levels exceeding 55 dBA L50 or 75 dBA Lmax between the hours of 6:00 p.m. and 10:00 a.m. or exceeding 50 dBA L50 or 70 dBA Lmax between the hours of 10:00 p.m. and 7:00 a.m.
- Significance Standard 2. The Modified Project would result in a significant impact if groundborne noise or vibration levels exceeding the Caltrans guidance of 0.3 in/sec PPV for older residential structures or the Federal Transit Administration guidance of 70 vibration decibel (VdB) RMS for human annoyance.
- Significance Standard 3. The Modified Project would result in a significant impact if the proposed new campground operations resulted in a 5 dBA Ldn increase in the ambient noise environment at the residences east of O'Neill Forebay, represented by receiver R-1.
- Significance Standard 4. The Modified Project would result in a significant impact if temporary construction noise activities would exceed the ambient noise environment by 10 dB Leq during the hours of 6:00 p.m. to 10:00 p.m., or by 5 dB Leq between the hours of 10:00 p.m. and 7:00 a.m. at the nearest residential receptors.
- Significance Standard 5. The Modified Project would result in a significant impact if the Modified Project would expose people to, or result in new noise-sensitive uses, within the projected future 60 dBA Ldn noise contour of any public or private airports.

### 3.6.4 Impacts Analysis

#### Threshold 1

***Would the Modified Project result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?***

| 2019 EIS/EIR Impact Determination | Modified Project Impact Determination | New Significant Increase in Impact Severity? |
|-----------------------------------|---------------------------------------|--|
| Significant and Unavoidable       | Significant and Unavoidable           | No   |

#### On-Site Construction (Short-Term) Noise

Construction of the Modified Project would generate noise that could expose nearby receptors (i.e., residences and hotel guests) to elevated noise levels that may disrupt communication and routine activities. The magnitude of the impact would depend on the type of construction activity, equipment, duration of the construction phase, distance between the noise source and receiver, and intervening structures. Noise from construction equipment generally exhibits point source acoustical characteristics. Point source sounds typically attenuate (or reduce) at a rate of 6 decibels per doubling of distance from the source for “hard site” conditions and at 7.5 decibels per doubling of distance for “soft site” conditions. These rules apply to the propagation of sound waves with no obstacles between source and receivers, such as topography (ridges or berms) or structures. The range of maximum noise levels for various types of construction equipment is provided in Table 3.6-5.

**Table 3.6-5. Typical Construction Equipment Noise Emission Levels**

| Equipment Description                        | Acoustical Use Factor (%) | Lmax at 50 feet (dBA, slow) <sup>1</sup> |
|--|---------------------------|--|
| Auger Drill Rig                              | 20                        | 85                                       |
| Backhoe                                      | 40                        | 80                                       |
| Compactor (ground)                           | 20                        | 93                                       |
| Compressor (air)                             | 40                        | 80                                       |
| Concrete Mixer Truck                         | 40                        | 85                                       |
| Concrete Pump Truck                          | 20                        | 82                                       |
| Concrete Saw                                 | 20                        | 90                                       |
| Crane  | 16                        | 85                                       |
| Dozer  | 40                        | 85                                       |
| Dump Truck                                   | 40                        | 80                                       |
| Excavator                                    | 40                        | 85                                       |
| Flat Bed Truck                               | 40                        | 84                                       |
| Front End Loader                             | 40                        | 80                                       |
| Generator                                    | 50                        | 82                                       |
| Grader                                       | 40                        | 85                                       |
| Jackhammer <sup>2</sup>                      | 20                        | 85                                       |
| Mounted Impact Hammer (hoe ram) <sup>2</sup> | 20                        | 90                                       |
| Paver  | 50                        | 85                                       |
| Pneumatic Tools                              | 50                        | 85                                       |
| Pumps  | 50                        | 77                                       |

**Table 3.6-5. Typical Construction Equipment Noise Emission Levels**

| Equipment Description        | Acoustical Use Factor (%) | Lmax at 50 feet (dBA, slow) <sup>1</sup> |
|------------------------------|---------------------------|--|
| Rock Drill                   | 20                        | 85                                       |
| Roller                       | 20                        | 85                                       |
| Scraper                      | 40                        | 85                                       |
| Tractor                      | 40                        | 84                                       |
| Vacuum Excavator (Vac-truck) | 40                        | 85                                       |

**Sources:** FHWA 2006; FTA 2018.

**Notes:** Lmax = maximum noise level; dBA = A-weighted decibels.

<sup>1</sup> All equipment fitted with a properly maintained and operational noise control device, per manufacturer specifications.

<sup>2</sup> Impulsive/impact device.

The FHWA's Roadway Construction Noise Model (FHWA 2008) was used to estimate construction noise levels at these noise-sensitive land uses. Although the model was developed by the FHWA, the Roadway Construction Noise Model is often used for non-roadway projects, because the same types of construction equipment used for roadway projects are also used to construct other project types. Input variables for the Roadway Construction Noise Model consist of the receiver/land use types, the equipment type and number of each (e.g., two graders, a loader, a tractor), the duty cycle for each piece of equipment (e.g., percentage of each hour the equipment typically works per day), and the distance between the construction activity and noise-sensitive receivers. No topographical or structural shielding was assumed in the modeling of construction noise (i.e., the receivers are modelled with no obstacles to the travel of sound between the construction activity and receiver location, a worst-case assumption). The noise levels from the proposed construction activities are summarized in Table 3.6-6 through Table 3.6-9. The complete set of Roadway Construction Noise Model input and output data for construction noise is provided in Appendix C.

For construction noise, a concept called the acoustic center is useful in describing average noise levels across the entire construction period for adjacent receivers. The acoustic center is the idealized point from which the energy sum of all construction activity noise near and far would originate, and it is derived by taking the arithmetic mean (i.e., average) of the sum of the shortest distance and the furthest distance. The distance from the acoustic center of the construction activities to the nearest noise-sensitive receptor is used to calculate predicted hourly average noise levels. To calculate the maximum noise level exposure at the noise-sensitive receptors, distance between the nearest construction boundary and the receptor is used.

#### ***Campground Construction and Day Use Area Improvements***

The nearest noise-sensitive receptors are residential located approximately 11,560 feet away (represented by receiver R-1) from the acoustic center of construction activity; the closest construction activities would take place approximately 10,900 feet from the nearest receptors. As shown in Table 3.6-6, typical construction noise levels at the nearest residential receptors to the east of the campground construction activities would range from approximately 26 to 41 dBA Leq and maximum noise level ranging from approximately 29 to 35 dBA Lmax.

**Table 3.6-6. Campground Construction Noise Exposure by Phase at Nearest Receiver**

| Construction Phase    | Leq dBA | Lmax dBA |
|-----------------------|---------|----------|
| Site Preparation      | 37.7    | 32.3     |
| Grading/Trenching     | 40.5    | 29.3     |
| Building Construction | 38.2    | 35.3     |
| Paving                | 33.4    | 31.3     |

**Table 3.6-6. Campground Construction Noise Exposure by Phase at Nearest Receiver**

| Construction Phase    | Leq dBA | Lmax dBA |
|-----------------------|---------|----------|
| Architectural Coating | 25.5    | 32.3     |

**Notes:** Leq = average equivalent noise level; dBA = A-weighted decibels; Lmax = maximum noise level.

Nearest construction activity - 10,900 feet; Acoustic center - 11,560 feet.

See Appendix C for additional construction modeling details.

The lowest existing ambient noise levels at the noise-sensitive receptors represented by R-1 (the residential neighborhood north of SR-152 and west of SR-33) were calculated to be 37 dBA Leq during the evening and nighttime quietest periods. With modeled construction noise levels calculated to reach 40.5 dBA Leq, activities associated with constructing the campground and day use area improvements would generate noise levels up to 3 dB above the existing ambient environment; which would comply with the Merced County increase above ambient criteria of 10 dB for daytime/evening timeframe and the 5 dB nighttime criteria. The modeled construction noise levels would also comply with the Merced County non-transportation thresholds of 55 dBA and 50 dBA Leq daytime and nighttime criteria, respectively. Therefore, impacts associated with campground construction and day use area improvements would be **less than significant**.

#### ***Changes in Borrow Area Location***

For Borrow Area 12, the nearest noise-sensitive residential receivers (represented by receiver R-2) are located approximately 12,240 feet away from the acoustic center of construction activity, with the distance to the nearest construction boundary approximately 11,630 feet. As shown in Table 3.6-1, typical construction noise levels at the residential receptors to the east of the Borrow Area 12 construction activities would range from approximately 27 to 43 dBA Leq and 38 to 47 dBA Lmax.

**Table 3.6-7. Borrow Area 12 Construction Noise Levels by Phase at Nearest Receiver**

| Construction Phase | Leq dBA | Lmax dBA |
|--------------------|---------|----------|
| Blasting           | 26.2    | 46.7     |
| Site Preparation   | 42.3    | 37.7     |
| Grading            | 40.4    | 42.7     |

**Notes:** Leq = average equivalent noise level; dBA = A-weighted decibels; Lmax = maximum noise level.

See Appendix C for additional construction modeling details.

The lowest existing ambient noise levels at the noise-sensitive receptors represented by R-2 (residences south of SR-152 and SR-33) were calculated to be 52 dBA Leq during the evening hours and 51 dBA Leq during nighttime quietest periods (Table 3.6-2, Summary of Modeled Existing Traffic Noise Levels). With modeled construction noise levels calculated to reach 42.3 dBA Leq, the Modified Project would generate noise levels below the existing ambient environment, which would comply with the Merced County increase above ambient criteria of 10 dB for daytime/evening timeframe and the 5 dB nighttime criteria.

For Borrow Area 14, the nearest noise-sensitive residential receivers (represented by receiver R-3) are located approximately 12,300 feet away from the acoustic center of construction activity, with the distance to the nearest construction boundary approximately 10,700 feet. As shown in Table 3.6-8, typical construction noise levels at the residential receptors to the east of the Borrow Area 14 construction activities would range from approximately 27 to 43 dBA Leq and 39 to 48 dBA Lmax.

**Table 3.6-8. Borrow Area 14 Construction Noise Levels by Phase at Nearest Receiver**

| Construction Phase | Leq dBA | Lmax dBA |
|--------------------|---------|----------|
| Blasting           | 26.2    | 47.7     |
| Site Preparation   | 42.3    | 38.4     |
| Grading            | 40.3    | 43.4     |

**Notes:** Leq = average equivalent noise level; dBA = A-weighted decibels; Lmax = maximum noise level.  
See Appendix C for additional construction modeling details.

The lowest existing ambient noise levels at the noise-sensitive receptors represented by R-3 (residences south of SR-152 and SR-33) were calculated to be 49 dBA Leq during the evening hours and 48 dBA Leq during nighttime quietest periods (Table 3.6-2). With modeled construction noise levels calculated to reach 42.3 dBA Leq, construction activities associated with work within Borrow Areas 12 and 14 would generate noise levels below the existing ambient environment, which would comply with the Merced County increase above ambient criteria of 10 dB for daytime/evening timeframe and the 5 dB nighttime criteria. The modeled construction noise levels would also comply with the Merced County non-transportation thresholds of 55 dBA and 50 dBA Leq daytime and nighttime criteria, respectively. Therefore, impacts associated with changes in borrow area location would be **less than significant**.

#### **Minor Additions to Contractor Work Area**

For the minor additions to existing contractor work areas, noise-sensitive receptors (represented by receiver R-4) would be approximately 14,900 feet away from the acoustic center of construction activity and 10,700 feet from the closest point for anticipated construction operations within the additional contractor work areas. As shown in Table 3.6-9, typical construction noise levels at the residential receptors to the south of the Minor Additions to the Existing Contractor Work Areas would range from approximately 36 to 38 dBA Leq and 36 to 39 dBA Lmax.

**Table 3.6-9. Noise Levels from Minor Additions to Contractor Work Area by Phase at Nearest Receiver**

| Construction Phase | Leq dBA | Lmax dBA |
|--------------------|---------|----------|
| Site Preparation   | 35.5    | 35.9     |
| Grading            | 38.0    | 38.3     |

**Notes:** Leq = average equivalent noise level; dBA = A-weighted decibels; Lmax = maximum noise level.  
See Appendix C for additional construction modeling details.

The lowest existing ambient noise levels at the noise-sensitive receptors represented by R-4 (residences on Harper Lane) were calculated to be 32 dBA Leq during the evening hours and 31 dBA Leq during nighttime quietest periods. With modeled construction noise levels calculated to reach 38.0 dBA Leq, construction activities within the additional contractor work areas would generate noise levels up to 7 dB above the existing ambient environment; which would comply with the Merced County increase above ambient criteria of 10 dB for daytime/evening timeframe, but would exceed the 5 dB nighttime criteria. The modeled construction noise levels would also comply with the Merced County non-transportation thresholds of 55 dBA and 50 dBA Leq daytime and nighttime criteria, respectively. Therefore, impacts associated with minor additions to contractor work areas would be potentially significant unless if not mitigated. Mitigation measures to reduce construction noise impacts are identified and discussed below.



### **Construction Summary**

Merced County exempts noise generated from construction activity conducted in or adjacent to urban areas from standard exterior noise exposure limits, providing that the noise generating construction activities (e.g., grading, blasting, site preparation) are restricted to between the hours of 7:00 a.m. and 6:00 p.m. (Merced County 2020, Chapter 10.60.030). The proposed construction operations would not be located in, or adjacent to an urban area; therefore, the limitation on construction operational hours would not be applicable to construction activities associated with the Modified Project. Noise levels generated by construction activities associated with the project additions included in the Modified Project would not exceed Merced County's daytime or nighttime absolute noise level thresholds identified under Section 10.60.030 of the County Code. However, the construction activities associated with the Minor Additions to Contractor Work Areas could exceed the Merced County 5 dB relative increase threshold during nighttime hours. Therefore, construction noise levels associated with additional contractor work areas would result in a potentially significant impact.

Application of the noise control techniques affecting and controlling the construction noise at the source (i.e., heavy equipment, pumps) set forth in Mitigation Measure NOISE-1 identified in the 2019 EIS/EIR can achieve reductions of 3 to 6 dBA; noise control techniques implemented along the path of the noise (i.e., temporary noise barriers, enclosures, relocation of equipment) has been shown to reduce construction noise levels between 2 to 7 dBA (Wu and Keller 2007). The overall noise level reduction achieved through implementation of these mitigation measures is expected to range from 5 to 13 dBA. **Mitigation Measures NOISE-1 through NOISE-3** identified in the 2019 EIS/EIR require implementation of a noise control plan, a blasting plan, and a noise monitoring program that include limitations on construction activities that could generate substantial noise during evening and nighttime hours, use of noise-shielding measures, equipment maintenance requirements and noise planning, among other measures, that would ensure that noise generated from the additional contractor work areas would not increase noise levels over 5 dB above the existing nighttime ambient noise level and would thus comply with Merced County Code and remain below the thresholds of significance identified for this analysis in Section 3.6.3. Impacts from the project additions included in the Modified Project would be **less than significant with mitigation**.

### **Operational Noise**

Operational noise associated with the Modified Project would be limited to the long-term operations of the proposed new campground and the improvements at the San Luis Creek Day Use Area. Sound sources associated with the new campground and improvements to the existing facilities would include a limited number of recreational vehicles and watercraft activities. Based on the type of noise sources associated with the new campground, the proposed improvements and the geographic location of these components of the Modified Project, sound levels associated with the long-term operation would attenuate to levels at or below the existing ambient noise environment at sensitive receptors. Therefore, impacts from noise generated by operation of the proposed campground and additional day use facilities would be **less than significant**.

### **Cumulative Impacts**

Construction of the California High-Speed Rail Project, the San Luis Transmission Project and the San Luis Solar Project could potentially occur at the same time as construction activities near San Luis Reservoir for the Modified Project and would involve a substantial amount of construction equipment and vehicle traffic that could contribute to noise impacts. The proposed alignment of the California High-Speed Rail Project, the San Luis Transmission Project, and the San Luis Solar Project would all be in the vicinity of SR-152. Even with incorporation of Mitigation Measures NOISE-1 through NOISE-3, in combination with other cumulative projects, the Modified Project's incremental increase in construction noise would result in a **significant and unavoidable** cumulative noise impact.

### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant impacts with mitigation incorporated and would not reduce or increase the severity of impacts as determined in the 2019 EIS/EIR (see Section 3.6.5). Impacts of the Modified Project would therefore remain significant and unavoidable as determined in the 2019 EIS/EIR.

### Threshold 2

***Would the Modified Project result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?***

| 2019 EIS/EIR Impact Determination  | Modified Project Impact Determination  | New Significant Increase in Impact Severity? |
|--|--|--|
| Less than Significant (Project Level)<br>Significant and Unavoidable<br>(Cumulative) | Less than Significant (Project Level)<br>Significant and Unavoidable<br>(Cumulative) | No   |

### Construction (Short-Term) Vibration

For construction vibration, this analysis used Caltrans thresholds for structural damage (peak particle velocities greater than 0.3 in/sec) and the Merced County General Plan threshold within residences (70 VdB) at residences where people normally sleep).

During site preparation, grading, and construction activities for the Modified Project groundborne vibration would be produced by heavy-duty construction equipment. The most important equipment relative to generation of vibration, and the vibration levels produced by such equipment, is illustrated in Table 3.6-10.

**Table 3.6-10. Vibration Velocities for Typical Construction Equipment**

| Equipment       | PPV at 25 Feet (in/sec) | Caltrans 0.3 in/sec PPV Threshold Distance (feet) <sup>1</sup> |
|-----------------|-------------------------|--|
| Blasting        | 4.0                     | 112  |
| Large Bulldozer | 0.089                   | 9  |
| Loaded Trucks   | 0.076                   | 8  |
| Drill Rig/Auger | 0.089                   | 9  |
| Jackhammer      | 0.035                   | 5  |
| Small Bulldozer | 0.003                   | 1  |

**Source:** Caltrans 2020.

**Notes:** PPV = peak particle velocity; in/sec = inches per second; Caltrans = California Department of Transportation.

<sup>1</sup> Threshold distances calculated based on Caltrans reference levels and propagation equations.

As shown in Table 3.6-10, use of heavy equipment (e.g., large bulldozer) generates vibration levels of 0.089 inches per second PPV at a distance of 25 feet. Additionally, the table shows the distance at which a sensitive receptor would have to be from the construction activity in order to experience sufficient vibration levels to cause structural damage to buildings (i.e., above the 0.3 in/sec PPV threshold). The nearest residences to the Modified Project (i.e., residences east of proposed new campground; across O'Neill Forebay) would be approximately 11,560 feet from

ground disturbance associated with construction activities to the nearest structures. Vibration levels at these receptors would remain well below the Caltrans building damage threshold of 0.3 inches per second PPV.

With respect to the Merced County vibration threshold, a large bulldozer has a vibration level of 87 VdB measured at 25 feet, at the nearest residences (approximately 11,560 feet) this level would be attenuated to an unperceivable level, while below the Merced County 70 VdB vibration threshold. As such, construction-related vibration associated with the Modified Project would not result in a potentially significant impact. Therefore, groundborne noise and vibration impacts from construction activity to the nearest receptors would be **less than significant**.

### Operation (Long-Term) Vibration

The Modified Project does not contain any components that would result in the generation of ongoing long-term groundborne noise or vibration. Therefore, operational groundborne noise and vibration impacts would be **less than significant**.

### Cumulative Impacts

Construction of the California High-Speed Rail Project, the San Luis Transmission Project, and the San Luis Solar Project could potentially occur at the same time as construction activities near San Luis Reservoir for the Modified Project and would involve a substantial amount of construction equipment and vehicle traffic that could contribute to impacts from groundborne noise or vibration. The proposed alignment of the California High-Speed Rail Project, the San Luis Transmission Project, and the San Luis Solar Project would all be along SR-152. The 2019 EIS/EIR found that the Approved Project would result in a cumulatively considerable contribution to significant cumulative impacts from groundborne noise or vibration when considered with other cumulative projects in the area. The Modified Project includes several additions to the Approved Project and would result in no change in the impact determination made by the 2019 EIS/EIR with respect to cumulative impacts. The Modified Project would contribute to a cumulatively considerable impact associated with groundborne noise or vibration during construction; this impact is considered **significant and unavoidable**. **Mitigation Measures NOISE-1 through NOISE-3** would be implemented to reduce noise impacts from construction activities associated with the Modified Project, but the 2019 EIS/EIR found that impacts of the Approved Project would remain cumulatively considerable.

### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant project level impacts and significant and unavoidable cumulative impacts; therefore, impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant (project level) and significant and unavoidable (cumulative).

### Threshold 3

***Would the Modified Project result in a substantial permanent increase in ambient noise levels in the Modified Project vicinity above levels existing without the Modified Project?***

| 2019 EIS/EIR Impact Determination | Modified Project Impact Determination | New Significant Increase in Impact Severity? |
|-----------------------------------|---------------------------------------|--|
| Less than Significant             | Less than Significant                 | No   |

Construction impacts on ambient noise levels generated by the Modified Project (i.e., changes in borrow area location and minor additions to contractor work areas) would not result in permanent increases in ambient noise levels. Once these portions of the Modified Project are complete, no permanent noise sources would remain. Therefore, long-term operational noise impacts would be **less than significant**.

#### **Campground Construction and Day Use Area Improvements**

The primary purpose of the campground will be for outdoor recreation and leisure activities, including camping, boating, fishing, picnics, and campfires. Similar activities are already present at the existing Medeiros Use Area, San Luis Creek Day Use Area, San Luis Creek RV Campground, and on O'Neill Forebay. This Modified Project component would not result in the doubling of activity in the Modified Project vicinity, which would be necessary to generate a permanent increase of +3 dBA Ldn and exceed the Merced County significant increase thresholds. Additionally, based on the geographic location and distribution of the proposed noise generating activities, operational noise generated from the campground is anticipated to be below ambient levels as they reach the nearest noise-sensitive receptors to the east, across O'Neill Forebay. Therefore, long-term operational noise impacts would be **less than significant**.

#### **Cumulative Impacts**

Construction and operation of the California High-Speed Rail Project, the San Luis Transmission Project, and the San Luis Solar Project could potentially occur at the same time as construction and operational activities near San Luis Reservoir for the Modified Project. Construction of the Modified Project in conjunction with other cumulative projects would not result in a permanent increase in noise levels. The long-term operation of the California High-Speed Rail Project would not produce substantial permanent ambient noise level effects as the passing trains would be intermittent. Operation of the San Luis Transmission Project, the San Luis Reservoir Low Point Improvement Project, and the San Luis Solar Project would not produce permanent ambient noise level effects. Except for the proposed campground, no new additional sources of permanent noise would be introduced. Given the location and nature of the proposed campground, operation of the Modified Project would not cumulatively contribute to a permanent increase in noise levels; cumulative impacts would be **less than significant**.

#### **Comparison to 2019 EIS/EIR**

The additional project components analyzed above would result in less-than-significant impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR, which found that impacts of the Approved Project from a permanent increase in ambient noise levels would be less than significant. Impacts of the Modified Project would remain less than significant.

#### **Threshold 4**

***Would the Modified Project result in substantial temporary or periodic increase in ambient noise levels in the Modified Project vicinity above levels existing without the Modified Project?***

| 2019 EIS/EIR Impact Determination | Modified Project Impact Determination | New Significant Increase in Impact Severity? |
|-----------------------------------|---------------------------------------|--|
| Significant and Unavoidable       | Significant and Unavoidable           | No   |

Please refer to the analysis of short-term construction noise provided for Threshold 1. The construction activities associated with the Modified Project would have the potential to generate temporary or periodic increases in the ambient noise environment in the Modified Project vicinity. Temporary increases in the ambient noise environment associated with the construction noise levels shown above in through , would have the potential to result in an increase in ambient noise levels approximately 7 dB above the existing ambient noise environment at the residence on Harper Lane. As such, the Modified Project construction activities would exceed the Merced County relative increase criteria of +5 dB for existing levels below 60 dB. Therefore, temporary or periodic increases in ambient noise levels would be considered a potentially significant impact. **Mitigation Measures NOISE-1 through NOISE-3** from the 2019 EIS/EIR, which require implementation of a noise control plan, a blasting plan, and noise monitoring program (see Section 3.6.5), would reduce noise impacts from the additional components of the Modified Project to **less than significant**.

#### Cumulative Impacts

For the same reasons discussed under Threshold 1, the Modified Project's incremental increase in construction noise could result in a **significant and unavoidable** cumulative noise impact, even with incorporation of Mitigation Measures NOISE-1 through NOISE-3.

#### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant impacts with mitigation incorporated and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR (see Section 3.6.5). Impacts of the Modified Project would remain significant and unavoidable.

#### Threshold 5

*For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Modified Project expose people residing or working in the Modified Project area to excessive noise levels?*

| 2019 EIS/EIR Impact Determination | Modified Project Impact Determination | New Significant Increase in Impact Severity? |
|-----------------------------------|---------------------------------------|--|
| Less than Significant             | Less than Significant                 | No   |

The nearest airstrip to the Modified Project is the Los Banos Municipal Airport, which is approximately 8.1 miles east of the Modified Project site. As such, the Modified Project would result in no impact, as it pertains to the exposure of people to excessive aircraft noise levels. The Modified Project is not located within 2 miles of a public or private land-based airport. While the 2019 EIS/EIR stated that the San Luis Reservoir Seaplane Base was operational and allows water landings of planes on the reservoir, San Luis Reservoir was closed as an aquaport in 2015. Therefore, noise impacts associated with operation of the Modified Project within an airport land use plan would be **less than significant**.

### Cumulative Impacts

Given distance from Los Banos Municipal Airport and the closure of the San Luis Reservoir Seaplane Base, the Modified Project in combination with other cumulative projects in the San Luis Reservoir area, would not result in a cumulatively considerable impact related to an airport land use plan; cumulative impacts would be **less than significant**.

### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant.

## 3.6.5 Mitigation Measures

Implementation of the following mitigation measure would reduce potentially significant impacts of the Modified Project-related to noise, as identified in Impact Threshold 1 and Threshold 4, to a less-than-significant level. Mitigation Measures NOISE-1 through NOISE-3 identified in the 2019 EIS/EIR apply to construction activities evaluated by this SEIR. The 2019 EIS/EIR does not narrow the applicability of this measure to specific activities or locations within the construction footprint of the Approved Project and the mitigation measure has not been modified.

**NOISE-1** (Same as NOISE-1 in 2019 EIS/EIR): A Noise Control Plan (NCP) will be developed by the construction contractor prior to the start of any construction activities to address increased noise levels as a result of the proposed project and alternatives. The NCP will identify the procedures for predicting construction noise levels at sensitive receptors and will describe the reduction measures required to minimize construction noise. The noise mitigation measures in the NCP will include, but are not limited to:

- Appropriate level of sound attenuation will be used or constructed to minimize noise levels by at least 3 dBA. Potential sound attenuation measures could include, but are not limited to stationary equipment and stockpiles, or otherwise placed between the source(s) of construction noise and noise-sensitive receptors, as appropriate. The feasible measures will be determined by the construction contractor based on an initial evaluation of each construction site.
- Contractor will be responsible for maintaining equipment in best possible working condition and outfitting construction equipment with the most effective locally available commercial mufflers or other noise attenuation devices;
- When feasible, the loudest construction activities will be conducted during Merced County construction noise exempt hours, between 7 a.m. and 6 p.m.;
- Operation of construction equipment between the hours between 6 p.m. and 10 p.m. will be prohibited within 9,100 feet of the subdivision off SR 152. During the hours between 10 p.m. and 6 a.m. the operation of construction equipment will be prohibited within 9,550 feet of the subdivision off SR 152.
- Shutting down equipment that are queued or not in use for 5 minutes or more;

- Pre-construction meeting with contractors and project managers to confirm that noise mitigation procedures are in place;
- Signs shall be posted at the construction sites that include permitted construction days and hours, a day and evening contact number for the job site, and a contact number in the event of problems;
- The public will be kept informed of the construction hours and days;
- List contact information for complaints and respond to noise complaints; and
- An on-site complaint and enforcement manager shall respond to and track complaints and questions related to noise.

#### **NOISE-2**

**(Same as NOISE-2 in 2019 EIS/EIR:** A Blasting Plan for construction shall be prepared and followed that includes the following:

- Identification of blast officer;
- Scaled drawings of blast locations, and neighboring buildings, streets, or other locations which could be inhabited;
- Blasting notification procedures, lead times, and list of those notified. Public notification to potentially affected vibration and nuisance noise receptors describing the expected extent and duration of the blasting;
- Description of means for transportation and on-site storage and security of explosives in accordance with local, State, and Federal regulations;
- Minimum acceptable weather conditions for blasting and safety provisions for potential stray current (if electric detonation);
- Traffic control standards and traffic safety measures (if applicable);
- Required personal protective equipment;
- Minimum standoff distances and description of blast impact zones and procedures for clearing and controlling access to blast danger;
- Procedures for handling, setting, wiring, and firing explosives; and procedures for handling misfires per Federal code;
- Type and quantity of explosives and description of detonation device;
- Methods of matting or covering of blast area to prevent flyrock and excessive air blast pressure;
- Description of blast vibration and air blast monitoring programs;
- Dust control measures in compliance with applicable air pollution control regulations (to interface with general construction dust control plan);
- Emergency Action Plan to provide emergency telephone numbers and directions to medical facilities;
- Procedures for action in the event of injury;
- Material Safety Data Sheets for each explosive or other hazardous materials to be used;
- Evidence of licensing, experience, qualifications of blasters, and description of insurance for the blasting work;
- A sound attenuation plan shall be prepared outlining the sound control measures that would include the use of blasting mats or sound walls;

- If vibration results in damage to any nearby structures or utilities, or scenic rock faces, blasting shall immediately cease. The stability of segmental retaining walls, existing slopes, creek canals, etc., shall be monitored and any evidence of instability due to blasting operations shall result in immediate termination of blasting;
- Explosive materials shall be delivered in specially built vehicles marked with United Nations (UN) hazardous materials placards. Explosives and detonators shall be delivered in separate vehicles or be separated in compartments meeting the Department of Transportation (DOT) rules within the same vehicle. Vehicles shall have at least two ten-pound Class-A fire extinguishers and all sides of the vehicles display placards displaying the UN Standard hazard code for the onboard explosive materials. Drivers shall have commercial driver licenses (CDL) with Hazmat endorsements, and drivers shall carry bill-of-landing papers detailing the exact quantities and code dates of transported explosives or detonators;
- The contractor must comply with U.S. Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) table-of-distance requirements (Code of Federal Regulations [CFR] 27, U.S. Department of Justice, Alcohol, Tobacco, Firearms and Explosives Division Part 555) that restrict explosive quantities based on distance from occupied buildings and public roadways. Employees must also comply with the security requirements of the Safe Explosives Act (Title XI, Subtitle C of Public Law 107-296, Interim Final Rule), implemented in March 2003. These requirements require background checks for all persons that use, handle or have access to explosive materials; and responsible persons on a now required Federal explosives license must submit photographs and fingerprints with the application to ATF.

**NOISE-3** (Same as NOISE-3 in 2019 EIS/EIR): A pre-construction noise survey will be completed during the daytime and nighttime periods at multiple locations across the project area, including identified sensitive receptors, to establish background noise levels at those times. During construction, noise will be periodically monitored at these locations to assess any increases in noise levels that exceed the local noise ordinances. If noise levels are recorded exceeding the background noise level by 10 dBA between 6 p.m. and 10 p.m. or by 5 dBA between 10 p.m. and 7 a.m. or if noise complaints are received, an investigation will be conducted to determine the source of the noise. After the investigation, noise will be reduced using all feasible measures, including mitigation at the receiver impacted by the noise. Potential mitigation at the receiver would include building envelope improvements and acoustical window treatments.

All mitigation requirements will be included in bid documents and construction contracts.

### 3.6.6 Level of Significance After Mitigation

The Modified Project would result in potentially significant impacts with respect exposure of persons to or generations of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. Mitigation Measures NOISE-1 through NOISE-3, which require a noise control plan, a blasting plan, and noise surveys, would reduce impacts from the additional components of the Modified Project to a level below significance. However, the additional components included in the Modified Project do not change the impact determinations made by the 2019 EIS/EIR, which found that impacts would be significant and unavoidable. As such, impacts of the Modified Project with respect to exposure of persons to or generations of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies, would remain significant and unavoidable.



The Modified Project would result in potentially significant impacts with respect to exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels. Mitigation Measures NOISE-1 through NOISE-3, which require a noise control plan, a blasting plan, and noise surveys, would reduce impacts of the Modified Project to a level below significance.

The Modified Project would result in less-than-significant impacts with respect to substantial permanent increase in ambient noise levels in the Modified Project vicinity above levels existing without the Modified Project. Mitigation measures are not required.

The Modified Project would result in potentially significant impacts with respect to substantial temporary or periodic increase in ambient noise levels in the Modified Project vicinity above levels existing without the Modified Project. Mitigation Measures NOISE-1 through NOISE-3, which require a noise control plan, a blasting plan, and noise surveys, would reduce impacts from the additional components of the Modified Project to a level below significance. However, the additional components included in the Modified Project do not change the impact determinations made by the 2019 EIS/EIR, which found that impacts would be significant and unavoidable. As such, impacts of the Modified Project with respect to exposure of persons substantial temporary or periodic increase in ambient noise levels, would remain significant and unavoidable.

The Modified Project would result in less-than-significant impacts with respect to projects located within an airport land use plan or within 2 miles of a public airport or public use airport and if the Modified Project would expose people residing or working in the Modified Project area to excessive noise levels. Mitigation measures are not required.

INTENTIONALLY LEFT BLANK



SOURCE: ESRI 2021

**FIGURE 3.6-1**

Noise Monitoring Sites and Nearby Noise Sensitive Land Uses (NSLU)

B.F. Sisk Dam Safety of Dams Modification Project SEIR

INTENTIONALLY LEFT BLANK



## 3.7 Traffic and Transportation

This supplemental environmental impact report (SEIR) addresses proposed modifications to the B.F. Sisk Dam Safety of Dams Modification Project, which was previously evaluated in the B.F. Sisk Dam Safety of Dams Modification Project Environmental Impact Statement/Environmental Impact Report (2019 EIS/EIR). The project addressed in the 2019 EIS/EIR is referred to herein as the Approved Project; the Approved Project with proposed modifications identified since certification of the 2019 EIS/EIR is referred to herein as the Modified Project.

This section describes the existing transportation conditions of the Modified Project site and vicinity, identifies associated regulatory requirements, evaluates potential impacts, and identifies any applicable mitigation measures related to implementation of the Modified Project.

On September 27, 2013, Senate Bill (SB) 743 was signed into law, which creates a process to change the way that transportation impacts are analyzed under the California Environmental Quality Act (CEQA). SB 743 required the Governor's Office of Planning and Research (OPR) to amend the State of California CEQA Guidelines (CEQA Guidelines) to provide an alternative to level of service (LOS) for evaluating transportation impacts. Under the new transportation guidelines, LOS (or vehicle delay) would no longer be considered an environmental impact under CEQA. The updates to the CEQA Guidelines required under SB 743 were approved on December 28, 2018. These guidelines identify vehicle miles traveled (VMT) as the most appropriate measure of transportation impacts under CEQA and have been implemented as of July 1, 2020.

The following section analyzes the LOS impacts consistent with the 2019 EIS/EIR; it also analyzes the VMT impacts of the Modified Project consistent with SB 743.

### 3.7.1 Existing Conditions

This section describes key roadways, as well as transit, pedestrian, and bicycle facilities within the vicinity of the Modified Project site. The extent of these facilities constitutes the transportation study area evaluated in this analysis and is the same as in the 2019 EIS/EIR. Regional and site access is also described.

The Modified Project site encompasses the area immediately adjacent to and surrounding B.F. Sisk Dam, which is located near the community of Santa Nella in unincorporated Merced County as shown in Figure 1-1, Project Location. O'Neill Forebay lies on the northern section of the Modified Project boundary and includes several existing campground and day-use recreational facilities as part of the San Luis Reservoir State Recreation Area (SRA). State Route (SR) 152, which intersects the Modified Project site, provides regional access to the Modified Project.

#### 3.7.1.1 Roadways and Regional Access

Roadway characteristics and roadway classifications for key vicinity roads are described below. All roadways discussed are within unincorporated Merced County and are shown on Figure 1-1.

##### **Interstate 5**

Interstate (I) 5 is a divided interstate north-south freeway that connects Merced County regionally with Southern California, Northern California, and the Pacific Northwest coast. The freeway is the main regional access point for the surrounding area. Within the vicinity of the study area, I-5 is identified as a four-lane Freeway in the Transportation and Circulation Element in the Merced Vision 2030 General Plan (Merced County General Plan) (Merced County 2013). The posted speed limit is 70 mph.

### **State Route 152**

SR-152 is generally a four-lane, divided highway that occasionally provides passing lanes resulting in five lanes. SR-152 runs east–west within the study area, connecting to I-5 and the communities of Merced County in the east, to Highway 101 and the communities of Santa Clara County in the west. While the freeway is divided with a landscaped median, turn pockets allow for left-turning movements and U-turns at various intervals. SR-152 provides immediate access to B.F. Sisk Dam and the Modified Project site. SR-152 is identified as a Principal Arterial in the Merced County General Plan Transportation and Circulation Element (Merced County 2013). The posted speed limit is 65 mph.

### **State Route 33**

SR-33 is generally a two-lane, undivided highway that runs north–south within the study area, connecting SR-152 to I-5, and the unincorporated community of Santa Nella and City of Gustine to the north. SR-33 is identified as a Principal Arterial in the Merced County General Plan Transportation and Circulation Element (Merced County 2013). The posted speed limit is 55 mph.

### **Basalt Road**

Basalt Road is a two-lane, undivided roadway that runs north–south in the study area and intersects SR-152 and Gonzaga Road. Basalt Road is the main roadway to the Modified Project site and to the existing B.F. Sisk Dam facilities. Basalt Road south of SR-152 also leads to Basalt Campground and Medeiros Campground as part of the San Luis Reservoir SRA. Basalt Road is not identified in the Merced County General Plan Transportation and Circulation Element (Merced County 2013). The posted speed limit is 25 mph and there are no sidewalks, bicycle facilities, or parking facilities along the roadway, other than those provided by the campground parking lots.

### **San Luis Creek Campground Road**

San Luis Creek Campground Road is an unnamed two-lane, undivided roadway that runs north–south in the study area and intersects SR-152 approximately 1 mile west of the Basalt Road/SR-152 intersection. This road allows for access to San Luis Creek Campground, group campground areas, and the San Luis Day Use Area along the western shore of O'Neill Forebay as part of the San Luis Reservoir SRA. This road is not identified in the Merced County General Plan Transportation and Circulation Element (Merced County 2013). The posted speed limit is 35 mph and there are no sidewalks, bicycle facilities, or parking facilities along the roadway, other than those provided by the campground parking lots.

#### **3.7.1.2 Traffic Volumes**

Overall, traffic volumes within the Modified Project area are not expected to have significantly changed since the preparation of the 2019 EIS/EIR; however, to provide a conservative analysis, highway volumes were adjusted at a rate of 0.5% per year to produce the 2020 condition, except for the segment along Basalt Road. This segment of road is not expected to have substantially changed in operation since it is used primarily for recreational activities—and no additional developments that create additional traffic have occurred. Therefore, all traffic volumes analyzed are representative of the year 2020 and match the 2020 traffic volumes as used in the 2019 EIS/EIR. All existing highway and roadway traffic volumes used within the analysis were also provided in the previously certified 2019 EIS/EIR as part of Appendix G1, 2016 Traffic Volumes on California State Highways. All traffic count data used within this analysis is included as Appendix D-1 of this SEIR.

Per the methodology used in the 2019 EIS/EIR, traffic counts along the study area highway segments under daily and peak-hour conditions were obtained from the Caltrans 2016 Traffic Volumes on California State Highways Traffic Census website (Caltrans 2016a) and adjusted accordingly. The roadway segment volume for Basalt Road is the average daily traffic volume between July 2007 and June 2008. Traffic in the area is not expected to have changed due to the rural nature of the road and the lack of development since this time period. All other additional data is gathered from the Bureau of Reclamation (Reclamation) and California Department of Parks and Recreation (Reclamation and CDPR 2013). All other traffic volumes used within the analysis are derived from both sources unless otherwise noted.

### 3.7.1.3 Level of Service and Methodology

LOS is commonly used as a qualitative description of segment and roadway operations and is based on the capacity and the volume of traffic using the segment or roadway. The Highway Capacity Manual, 6th Edition (HCM 6) (TRB 2016) describes the operation of a roadway using a range of LOS from LOS A (free-flow conditions) to LOS F (severely congested conditions). All other relevant LOS and methodology tables used within this analysis were provided in the previously certified 2019 EIS/EIR as part of Appendix G2, Traffic and Transportation Appendix, and further attached as Appendix D-2 of this SEIR. The peak hours of traffic analyzed are typically from the hours of 7:00 a.m. to 9:00 a.m. for the AM peak hour and between 4:00 p.m. and 6:00 p.m. for the PM peak hour.

For all study roadway segments, HCM 6 (TRB 2016) methodology within the Highway Capacity Software 7.0 (HCS 7) was used. Intersections were analyzed per HCM 6 methodology using Synchro LOS software (version 10).

#### Existing LOS

A roadway segment LOS analysis was prepared for the existing conditions for all highway and roadway segments within the study area as provided in the 2019 EIS/EIR. Tables 3.7-1 shows the LOS values based on the daily traffic volume for highway and roadway segments under existing conditions. All segments are located within Merced County and are identified based on the LOS criteria provided in Table 6 of Appendix G2 of the 2019 EIS/EIR, Traffic and Transportation Appendix, and further attached to this report as Appendix D-2. As shown in Table 3.7-1, all of the existing daily highway segments operate at LOS B or better under existing conditions, except for the highway junction between the SR-33/I-5 west junction, which operates at LOS F (14,500 annual average daily traffic volumes).

**Table 3.7-1. Existing Daily Roadway Segment Level of Service**

| Roadway/Junction        | Number of Lanes | Roadway Type                     | AADT <sup>1</sup> | LOS |
|-------------------------|-----------------|----------------------------------|-------------------|-----|
| I-5/SR-152              | 4               | Rural freeway                    | 32,600            | B   |
| SR-152/I-5              | 4               | Rural freeway                    | 31,300            | B   |
| SR-152/SR-33            | 4               | Rural freeway                    | 29,700            | B   |
| SR-33/I-5 West Junction | 2               | Rural non-freeway isolated stops | 14,500            | F   |
| Basalt Road/SR-152      | 2               | Rural non-freeway isolated stops | 191               | B   |

**Source:** Appendix D-2.

**Notes:** AADT = annual average daily traffic volumes; LOS = level of service; I = Interstate; SR = State Route.

<sup>1</sup> At a highway junction, the segment would have two different values for both directions of the road. In order to provide a conservative analysis, the higher AADT value was used for the analysis.

Table 3.7-2 shows the LOS values based on the AM and PM peak-hour operation for highway segments under existing conditions using the HCM 6 methodology for study area segments as provided in the 2019 EIS/EIR under 2020 conditions. All segments are located within Merced County and were evaluated based on the LOS criteria

provided in Tables 2 and 3 of Appendix G2 of the 2019 EIS/EIR, Traffic and Transportation Appendix, and further attached to this report as Appendix D-2. As shown in Table 3.7-2, all of the existing peak hour roadway segments operate at LOS D or better under existing conditions in both peak hours.

**Table 3.7-2. Existing AM and PM Peak Hour Roadway Segment Level of Service**

| Roadway Segment                            | Direction  | AM Peak Hour |                  | PM Peak Hour        |                  |
|--|------------|--------------|------------------|---------------------|------------------|
|  |            | Volume       | LOS <sup>1</sup> | Volume <sup>1</sup> | LOS <sup>1</sup> |
| I-5, South of SR-152                       | Northbound | 2,100        | C                | 2,200               | C                |
|  | Southbound | 1,750        | C                | 1,100               | B                |
| SR-152, West of I-5                        | Eastbound  | 1,200        | B                | 2,000               | C                |
|  | Westbound  | 1,600        | B                | 950                 | A                |
| SR-152, West of SR-33                      | Eastbound  | 200          | A                | 1,900               | C                |
|  | Westbound  | 1,600        | B                | 650                 | A                |
| SR-33, Between I-5 and SR-152 <sup>2</sup> | Northbound | 550          | D                | 650                 | D                |
|  | Southbound | 350          | C                | 300                 | B                |

**Source:** Appendix D-2.

**Notes:** LOS = level of service; I = Interstate; SR = State Route.

- <sup>1</sup> LOS for freeway segments is based on average vehicle density, while LOS for two-lane highway segments is based on percent time-spent-following. All relevant criteria are provided in Tables 2 and 3 of Appendix D-2.
- <sup>2</sup> Maximum segment length allowable for two-lane highway analysis is 3 miles. The 2019 EIS/EIR used a segment length of 3.4 miles. Therefore, this result differs from the 2019 EIS/EIR analysis for 2020 conditions.

An intersection LOS analysis was prepared for the existing conditions using the HCM 6 methodology for unsignalized intersections for the two study area intersections as provided in the 2019 EIS/EIR. Table 3.7-3 shows the LOS values based on the AM and PM peak-hour intersection operations under existing conditions. All intersections are located within Merced County and were evaluated based on the LOS criteria provided in Table 4 Appendix G2 of the 2019 EIS/EIR, and further attached to this report as Appendix D-2. As shown in Table 3.7-3, all of the existing peak-hour intersections operate at LOS A or better. However, when the most delayed movement is analyzed, both intersections in the PM peak hour operate at LOS F. The overall number of vehicles experiencing this delay is equal to or less than 10 vehicles and is expected for such two-way stop-controlled intersections that lie along a separated right-of-way highway with a high degree of through traffic volumes.

**Table 3.7-3. Existing Peak Hour Intersection Level of Service**

|  | AM Peak Hour       |                  | PM Peak Hour       |                  |
|--|--------------------|------------------|--------------------|------------------|
|  | Delay <sup>1</sup> | LOS <sup>2</sup> | Delay <sup>1</sup> | LOS <sup>2</sup> |
| <b>Access Road to Romero Visitor Center/SR-152</b> |                    |                  |                    |                  |
| Average Delay <sup>3</sup>                         | 0.0                | A                | 0.6                | A                |
| Worst Delayed Movement <sup>3</sup>                | 16.7               | C                | 118.4              | F                |
| <b>Basalt Road/SR-152</b>                          |                    |                  |                    |                  |
| Average Delay <sup>3</sup>                         | 0.1                | A                | 0.8                | A                |
| Worst Delayed Movement <sup>3</sup>                | 29.8               | D                | >300               | F                |

**Source:** Appendix D-2.

**Notes:** LOS = level of service; SR = State Route.

- <sup>1</sup> Delay in seconds per vehicle.
- <sup>2</sup> LOS is based on the criteria provided for unsignalized intersections in Table 4 of Appendix D-2.
- <sup>3</sup> LOS at unsignalized intersections is reported for both the total average delay of the intersection and the worst movement of the intersection.



### 3.7.1.4 Transit

The Modified Project site is not directly served by an active transit service. The Bus, Merced's Regional Transit System, provides bus service throughout Merced County; however, the nearest bus routes to the Modified Project site operate within the City of Gustine and the City of Los Banos, both of which are approximately 15 miles from the Modified Project site (The Bus 2019). Therefore, the Modified Project does not have an active transit service connection for daily use.

### 3.7.1.5 Pedestrian and Bicycle Facilities

There are no pedestrian or bicycle facilities located in the San Luis Reservoir region within the vicinity of the Modified Project site. However, there are a variety of multi-use trails and hiking trails that exist within the San Luis Reservoir SRA south of SR-152 and along the perimeter of O'Neill Forebay. The San Luis Reservoir SRA provides a map of trails within the area that surround the southeastern corner of San Luis Reservoir and along the perimeter of O'Neill Forebay (CDPR 2010, 2017).

## 3.7.2 Relevant Plans, Policies, and Ordinances

### 3.7.2.1 Federal

There are no federal plans, policies, or ordinances related to traffic and transportation that are relevant to the Modified Project.

### 3.7.2.2 State

#### **California Senate Bill 743**

CEQA Guidelines Section 15064.3, subdivision (b), focuses on specific criteria for determining the significance of transportation impacts. It is divided into four subdivisions, including (1) land use projects, (2) transportation projects, (3) qualitative analysis, and (4) methodology. Subdivision (b)(3) recognizes that lead agencies may not be able to quantitatively estimate VMT for every project type. In these situations, lead agencies are directed to evaluate factors such as the availability of transit, proximity to other destinations, and other factors that may affect the amount of driving required by a project. Subdivision (b)(3) further indicates that a qualitative analysis of construction traffic is often appropriate. A qualitative analysis of VMT is provided in this section as the Modified Project consists of elements that would generate temporary construction-related traffic. SB 743 requires California to reduce greenhouse gas emissions by 40% below 1990 levels by 2030. The California Air Resources Board has determined that it is not possible to achieve this goal without reducing VMT growth, and specifically, California needs to reduce per-capita VMT across all economic sectors. SB 743 is primarily focused on passenger cars and the reduction in per-capita VMT as it relates to individual trips. The OPR Technical Advisory on Evaluating Transportation Impacts in CEQA (Technical Advisory) (OPR 2018) provides guidance and tools to properly carry out the principles within SB 743 and outlines how to evaluate transportation impacts in CEQA. The OPR Technical Advisory was used within this analysis as the primary source of analysis of VMT, as well as for other transportation-related impacts.

OPR's Technical Advisory does not provide specific guidance to analyze VMT for recreational facilities. However, in 2020, OPR held a series of virtual office hours to discuss implementation of the Technical Advisory, as well as additional questions posed by attendees (OPR 2020). In response to questions regarding recreational facilities,

OPR recommended comparing the total VMT with and without implementation of a proposed project and determining whether a project would draw visitors from further away or reduce the distance visitors would travel by providing closer amenities. This methodology is similar to the OPR guidance for analyzing the effects of retail projects. The OPR Technical Advisory recommends that the effects of a retail project should be analyzed by assessing the change in total VMT as retail projects typically reroute travel from other retail destinations. A retail project might lead to increases or decreases in VMT, depending on previously existing retail travel patterns. Similarly, development of recreational facilities might lead to increases or decreases in VMT, depending on previously existing recreational travel patterns. As such, OPR's guidance for analysis of retail projects is used as the basis for the Modified Project's analysis.

#### California Department of Transportation

As the owner and operator of the State Highway System, the California Department of Transportation (Caltrans) implements established state planning priorities in all functional plans, programs, and activities. Caltrans has the responsibility to coordinate and consult with local jurisdictions when proposed local land use planning and development may impact state highway facilities. Pursuant to Section 21092.4 of the California Public Resources Code, for projects of statewide, regional, or area-wide significance, the lead agency shall consult with transportation planning agencies and public agencies that have transportation facilities that could be affected by a project.

In anticipation of SB 743 implementation, Caltrans released the Vehicle Miles Traveled-Focused Transportation Impact Study Guide (TISG) in May 2020, replacing the 2002 Guide for the Preparation of Traffic Impact Studies. Per the 2020 TISG, Caltrans' primary review focus is now VMT, replacing LOS as the metric used in CEQA transportation analyses. Caltrans recommends use of OPR's recommended thresholds for land use projects and recommends following the guidance on methods of VMT assessment found in OPR's Technical Advisory. Thresholds from the Technical Advisory for residential, office, and retail projects are provided as follows (OPR 2018):

**Residential:** A proposed project exceeding a level of 15% below existing VMT per capita may indicate a significant transportation impact. Existing VMT per capita may be measured as regional VMT per capita or as city VMT per capita. Proposed development referencing a threshold based on city VMT per capita (rather than regional VMT per capita) should not cumulatively exceed the number of units specified in the Sustainable Communities Strategy for that city and should be consistent with the Sustainable Communities Strategy.

**Office:** A proposed project exceeding a level of 15% below existing regional VMT per employee may indicate a significant transportation impact.

**Retail:** A net increase in total VMT may indicate a significant transportation impact.

**Mixed-Use:** Lead agencies can evaluate each component of a mixed-use project independently and apply the significance threshold for each project type included (e.g., residential, office, and retail). Alternatively, a lead agency may consider only the project's dominant use. In the analysis of each use, a project should take credit for internal capture. Combining different land uses and applying one threshold to those land uses may result in an inaccurate impact assessment.

In addition to VMT, the 2020 TISG states that it may request a targeted operational and safety analysis to address a specific geometric or operational issue related to the State Highway System and connections with the State Highway System (Caltrans 2020). Caltrans also notes that a future update of the TISG may include the basis for

requesting transportation impact analysis not based on VMT and define elements to be included in non-VMT analysis. At the time of this study, this update has not been released; however, the following analysis provided includes a mainline segment analysis along Caltrans facilities within the study area.

### Caltrans Transportation Concept Report for State Route 152

Transportation Concept Reports are planning documents that describe Caltrans' basic approach to development of a given state route. The Transportation Concept Report for State Route 152, District 06 is a long-range system planning document that establishes a planning concept for the District 6 state highway corridor through the year 2035 (Caltrans 2016b). The report provides the route, traffic data, and operating characteristics for the current year (2012), and future years 2020 and 2035. In addition, Transportation Concept Reports define the type of facility and LOS for each route. Caltrans attempts to maintain a target LOS at the transition between LOS C and D on state highway facilities, or whichever LOS is feasible to attain. The Concept LOS is a target LOS determined by the importance of the route and environmental factors. A deficiency or a need for improvement is triggered when the actual LOS falls below the Concept LOS. Again, as mentioned above, per the 2020 TISG, Caltrans' primary review focus is now VMT, replacing LOS as the metric used in CEQA transportation analyses.

#### 3.7.2.3 Local

### Merced Vision 2030 General Plan

As required by state law, Merced County has adopted a general plan to guide land use decisions within the county. The general plan provides goals, policies, standards, and implementation programs to guide the physical development of a county. At a minimum, the general plan must address the topics of land use, transportation, housing, conservation, open space, noise, and safety. The Merced County General Plan, adopted in 2013, has established the year 2030 as the plan's time horizon. The following policies from the Merced County General Plan Transportation and Circulation Element are relevant to the Modified Project (Merced County 2013):

#### *Transportation and Circulation Element*

- **Policy CIR-1.5: County Level of Service Standards:** Implement a Countywide roadway system that achieves the following level-of-service (LOS) standards during peak traffic periods:
  - (a) For roadways located within rural areas: LOS "C" or better.
  - (b) For roadways located outside Urban Communities that serve as connectors between Urban Communities: LOS of "D" or better.
  - (c) For roadways located within Urban Communities: LOS of "D" or better.
- **Policy CIR-1.6: Level of Service "E" Exception:** Allow a level of service "E" or worse only on a minor component of the circulation system (such as a left turn movement from a local roadway) if the major component of the circulation system (such as a through movement on a collector or arterial roadway) would be significantly compromised in the process of improving the level of service of the minor component.
- **Policy CIR-1.14: Required Structural Improvements:** Require developers of mining, large commercial, agricultural commercial, and industrial projects to either make appropriate roadway improvements and/or provide a funding mechanism for maintenance of the structural sections of County roadways when such projects could result in appreciable increases to commercial truck traffic and/or compromise the integrity of existing road sections.

### 3.7.3 Thresholds of Significance

The following significance criteria from the 2019 EIS/EIR are used for the purposes of analysis in this SEIR. These criteria, which have not changed from the 2019 EIS/EIR, are identified in Chapter 12, Traffic and Transportation, of the 2019 EIS/EIR. A significant impact related to transportation would occur if the Modified Project would:

1. Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and relevant components of the circulation system, including streets, highways and freeways, and mass transit.
2. Conflict with an applicable congestion management program, including, but not limited to LOS standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways.
3. Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities.
4. Increase traffic substantially in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections).
5. Exceed, either individually or cumulatively, a LOS standard established by the county congestion management agency for designated roads or highways.
6. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
7. Result in inadequate emergency access.

### 3.7.4 Impacts Analysis

#### **Analytical Approach**

##### ***Construction***

Modified Project construction was evaluated to determine study area and roadway network impacts. The Institute of Transportation Engineers' (ITE's) Trip Generation Handbook, 10th Edition (ITE 2017) does not contain trip rates for the construction-related activities that would be associated with the Modified Project. Trip generation estimates for construction projects are based on average or peak number of workers and trucks that would be required for the proposed construction activities. The Modified Project would result in the temporary addition of haul trucks, vendor trucks, and worker vehicles to the circulation network within the study area over the course of the construction period. As stated in Chapter 2, Project Description, the previously approved 2019 EIS/EIR stated that construction of the Approved Project is expected to last approximately 8 to 10 years, assuming no funding constraints are encountered. The 2019 EIS/EIR assumed work would commence in 2020 and would likely be completed within 10 to 12 years and up to 20 years if funding constraints are encountered.

The additional components of the Modified Project analyzed herein include the proposed new campground in the northwest corner of O'Neill Forebay, the improvements to the existing San Luis Creek Day Use Area, and the minor additions to the contractor work area, which are expected to begin in 2022 and occur over a period of 18 months, concluding in 2023. In addition, the additional construction assumptions element of the Modified Project is described for clarification purposes in this SEIR and would result in no change in the emissions or conclusions presented in the 2019 EIS/EIR. According to the construction information provided by Reclamation, and as provided

in Section 3.2, Air Quality, Table 3.2-6, Construction Scenario Assumptions, the peak construction phase between all components of the Modified Project is the Grading/Trenching phase of proposed campground construction. Therefore, all other components of the Modified Project that involve construction are assumed to have a less than or equal to impact than the peak construction phase. Additionally, the construction of all other components of the Modified Project is not expected to change the trip generation estimates, construction trips, and resulting impacts or conclusions as stated in the 2019 EIS/EIR.

Generally, work would be performed 24 hours per day, 7 days per week, 12 months per year. The 24-hour workday would consist of two 10-hour work shifts, with one 30-minute break for lunch each shift, plus a 3-hour maintenance period. However, in order to provide a conservative analysis, all truck trips would be distributed evenly throughout the workday according to a 12-hour shift, while worker trips would result in shift changes at 6:00 a.m. and 6:00 p.m. generating both inbound and outbound trips.

Typically, the AM peak hour analyzed is between the hours of 7:00 a.m. to 9:00 a.m.; therefore, the number of worker trips that would occur during the AM peak hour is zero. However, to provide a conservative analysis, the analysis would assume approximately one-third of outbound workers departing the site in the AM peak hour. The typical PM peak hour analyzed is between the hours of 4:00 p.m. to 6:00 p.m.; therefore, all inbound worker trips would arrive to the site in the PM peak hour.

The construction trip generation assumptions and trip generation table for the Approved Project from the 2019 EIS/EIR was used as base estimate in this analysis. Therefore, all construction scenarios analyzed include the trip generation and trip assignment for the entire Approved Project. The same distribution assumptions also apply—the construction workforce is expected to arrive from the City of Los Banos due to the close proximity of the expected labor population. Trucks are expected to originate from I-5 since it is a major truck hauling route that connects the interior of California and the west coast. It is important to note that the peak construction phase of the Approved Project may or may not occur concurrently with the peak construction phase of the newly added components of the Modified Project discussed below. One other major difference between the 2019 EIS/EIR analysis and assumptions to this analysis is that there would no longer be a temporary signalization of any intersections along SR-152. The intersections of Basalt Road/SR-152 and access road to Romero Visitor Center/SR-152 would remain unsignalized and in their existing configuration for the purposes of this analysis.

#### ***Operation***

As described in Chapter 2 of this SEIR, the Modified Project's operation and maintenance activities would generally remain similar to the existing activities that occur currently within the study area. Operation and maintenance activities associated with all components of the Modified Project would therefore generate nominal new traffic volume to the circulation network, except for the proposed campground. The operation of the proposed new campground located in the northwest section of O'Neill Forebay would generate permanent trips to the study area. The proposed campground is assumed to be operational after 18 months of construction, and therefore, all operational trips associated with the campground would overlap with the peak construction phase of the remainder of the Modified Project. As such, operational trips associated with the campground and peak construction phase of the Modified Project have been analyzed concurrently. Additionally, to compensate for the Modified Project-related closure of the Basalt Day Use Area, improvements made to the San Luis Creek Day Use Area would involve marginal improvements that would generate a nominal number of permanent trips to the area. Trip generation estimates were calculated from the AM and PM peak hour trip generation rates obtained from the ITE's Trip Generation Handbook, 10th Edition (ITE 2017). The daily trip rate was obtained from the (Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region (SANDAG 2002) due to the lack of available data from ITE.

## Threshold 1

*Would the Modified Project conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and relevant components of the circulation system, including streets, highways and freeways, and mass transit?*

| 2019 EIS/EIR Impact Determination | Modified Project Impact Determination | New Significant Increase in Impact Severity? |
|-----------------------------------|---------------------------------------|--|
| Less than Significant             | Less than Significant                 | No   |

## Campground Construction and Day Use Area Improvements

**LOS Analysis**

The construction phasing schedule and vehicle trip assumptions for construction of the proposed campground and San Luis Creek Day Use Areas improvements are provided in Section 3.2, Table 3.2-6. The number of vehicles traveling to and from the Modified Project site during the proposed campground construction and day use area improvements is expected to result in a temporary increase of traffic within the study area, including in all relevant components of the circulation system. However, this increase is temporary and expected to occur over the approximately 18-month construction period. The campground construction would generate approximately 70 daily trips, 10 AM peak-hour trips, and 18 PM peak hour trips. The permanent operations of the proposed campground would generate 316 daily trips, 17 AM peak-hour trips, and 21 PM peak-hour trips. As described in detail below, the permanent operations of the campground would not result in impacts. Therefore, since the construction of the campground is expected to generate fewer overall trips than the operation of the campground, the impacts to the policies establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation, would be **less than significant**.

**VMT Analysis**

OPR's Technical Advisory does not provide specific guidance on the evaluation of VMT related to construction and temporary traffic impacts. Since the construction of the proposed campground and San Luis Creek Day Use Area improvements would both be temporary and result in non-permanent trips, the completion of construction would return VMT to pre-project conditions that match the baseline VMT conditions. Therefore, as the campground construction and day use area improvements would not increase VMT in the area, impacts to VMT policies related to SB 743 would be **less than significant**.

## Changes in Borrow Area Location

**LOS Analysis**

As discussed in Section 2.4.2, Changes in Borrow Area Location, the change in borrow area locations involves the extraction of materials for dam construction from two additional areas, Borrow Area 12 and Borrow Area 14, as shown on Figure 2-3, Approved and Modified Project Footprints, and Figure 2-4B, Modified Project Detail. Borrow Area 12 and Borrow Area 14 are within the overall construction footprint identified in the 2019 EIS/EIR, but were analyzed as contractor staging areas. There are no additional construction worker vehicles or trucks expected with the use of

Borrow Area 12 and 14. While the existing roads near the borrow areas (e.g., access roads and Basalt Road) would need to be widened, the impacts to the policies establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation, would be **less than significant**.

### ***VMT Analysis***

OPR's Technical Advisory does not provide specific guidance on the evaluation of VMT related to construction and temporary traffic impacts. Since the changes in borrow area locations are within the overall construction footprint identified in the 2019 EIS/EIR, and since construction in general would result in temporary and non-permanent trips, the completion of construction within the borrow area locations would return VMT to pre-project conditions that match the baseline VMT conditions. Therefore, as the changes in borrow area locations would not increase VMT in the area, impacts to VMT policies related to SB 743 would be **less than significant**.

### **Minor Additions to Contractor Work Area**

#### ***LOS Analysis***

The construction phasing schedule and vehicle trip assumptions for the construction of the minor additions to contractor work area is provided in Section 3.2, Table 3.2-6. The number of vehicles traveling to and from the Modified Project site during the construction associated with the minor additions to the contractor work area is expected to result in a temporary increase of traffic within the study area, including in all relevant components of the circulation system. However, since this increase is temporary, and because the construction associated with the minor additions to the contractor work area is expected to generate fewer trips than the operation of the proposed campground analyzed above in Campground Construction and Day Use Area Improvements, the impacts to the policies establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation, would be **less than significant**.

### ***VMT Analysis***

OPR's Technical Advisory does not provide specific guidance on the evaluation of VMT related to construction and temporary traffic impacts. Since the minor additions to the contractor work area would not substantially change the construction impacts as analyzed in the 2019 EIS/EIR, and since construction in general would result in temporary and non-permanent trips, the completion of construction for minor additions to the contractor work area would return VMT to pre-project conditions that match the baseline VMT conditions. Therefore, as the construction of the minor additions to contractor work area would not increase VMT in the area, impacts to VMT policies related to SB 743 would be **less than significant**.

### **Additional Construction Assumptions**

As discussed in Chapter 2 of this SEIR, the overall construction schedule and assumptions regarding personnel and equipment remain unchanged by the Modified Project. Overall, the additional construction assumptions are described for clarification purposes in the SEIR. Based on the above considerations, the Modified Project's impacts on the policies establishing measures of effectiveness for the performance of the circulation system, considering all modes of transportation, would be **less than significant**.

### **Campground Operations**

The Modified Project would entail construction of a new campground on the northwest corner of O'Neill Forebay to help offset the temporary loss of Basalt Campground, which would close due to construction of the Approved Project as discussed in the 2019 EIS/EIS. The 79-site Basalt Campground is part of the San Luis Reservoir SRA and is accessible year-round from the Basalt Road/SR-152 intersection. The proposed campground would be constructed to offset the temporary closure of Basalt Campground, and would possess the same number of campsites. Upon completion of the Modified Project, Basalt Campground would reopen to the general public. Additionally, to compensate for the closure of the Basalt Day Use Area, the Modified Project would make marginal improvements to the San Luis Creek Day Use Area that would generate a nominal amount of traffic. Therefore, upon the reopening of Basalt Campground, the operation of the proposed new campground would result in permanently added new vehicle trips to the circulation system and roadway network within the study area. Campground operations are assessed through both an intersection LOS analysis and a VMT analysis and discussed below.

### **LOS Analysis**

To assess the operational impacts of the campground operations, an additional study area intersection was added to the intersection LOS analysis. There is one road that provides access to the proposed campground area from SR-152, and currently it provides access to the existing San Luis Creek Campground, group campgrounds, and day use areas on the western portion of O'Neill Forebay. Therefore, the intersection of San Luis Creek Campground Road/SR-152 was added to assess the potential impact to the intersection.

In order to assess the operations at the intersection, traffic volumes for the southbound movements (outbound movements from San Luis Creek Campground Road onto SR-152) and for eastbound left-turn and westbound right-turn movements (inbound movements from SR-152 onto the San Luis Creek Campground Road) were approximated based on an evaluation of the existing land uses accessible from San Luis Creek Campground Road. Currently, San Luis Creek Campground and the adjacent group campgrounds (primarily intended for large group gatherings and do not provide accommodation for overnight stay) are at the northern terminus of San Luis Creek Campground Road; together San Luis Creek Campground and the group campgrounds consist of approximately 78 campsites. Additionally, the San Luis Creek Day Use Area is located south of the group campgrounds, and provide day use amenities such as picnic locations, tables, grills, swimming areas, and boat launch zones (CDPR 2017). The total area of the San Luis Creek Day Use Area was estimated to be approximately 90 acres, of which two-thirds is directly useable for Public Park amenities.

Since the only accessible uses from this roadway are the aforementioned campground and associated land uses, trip generation estimates were prepared to assess the inbound and outbound AM and PM peak-hour movements at the intersection. As previously shown, the daily trips for this area are already reflected in existing data used within the analysis. Trip generation estimates for a typical weekday period were calculated from the AM and PM peak-hour trip generation rates obtained from ITE (2017). The daily trip rate was obtained from SANDAG (2002) rates due to the lack of available data from ITE. Due to the difference in land use, the San Luis Creek Day Use Area was evaluated as a Public Park land use since, as described in ITE (2017), that land use more closely represents the day use area activities than ITE's Campground/Recreational Vehicle Park land use trip rate. As shown in Table 3.7-4, San Luis Creek Campground generates approximately 18 AM peak-hour trips (7 inbound and 11 outbound) and 28 PM peak-hour trips (18 inbound and 10 outbound). The traffic volumes estimated are similar to those observed from traffic counts at the Basalt Road/SR-152 intersection, which also possess similar land uses including Basalt Campground, Medeiros Campground, and boat launch areas. As stated above, these estimates were used to approximate the AM and PM peak-hour traffic volumes for inbound and outbound movements at the San Luis Creek Campground Road/SR-152 intersection.



**Table 3.7-4. Peak Hour Trip Generation Estimates for Existing San Luis Creek Campground Area Operations**

| Land Use   | ITE Code | Size/Units   | Daily | AM Peak Hour |      |       | PM Peak Hour |      |       |
|--|----------|--------------|-------|--------------|------|-------|--------------|------|-------|
|  |          |              |       | In           | Out  | Total | In           | Out  | Total |
| Trip Rates <sup>1</sup>                                      |          |              |       |              |      |       |              |      |       |
| Campground/Recreational Vehicle Park                         | 416      | Campsites    | 4.00  | 0.08         | 0.13 | 0.21  | 0.18         | 0.09 | 0.27  |
| Public Park  | 411      | Acres        | 0.78  | 0.01         | 0.01 | 0.02  | 0.06         | 0.05 | 0.11  |
| Trip Generation  |          |              |       |              |      |       |              |      |       |
| San Luis Creek Campground and Group Campgrounds <sup>2</sup> | 416      | 78 campsites | 312   | 6            | 10   | 16    | 14           | 7    | 21    |
| North and South Beach Day Use Picnic Area <sup>3</sup>       | 411      | 60 acres     | 47    | 1            | 1    | 2     | 4            | 3    | 7     |
| Total Trip Generation  |          |              | 359   | 7            | 11   | 18    | 18           | 10   | 28    |

**Notes:** ITE = Institute of Transportation Engineers.

<sup>1</sup> Peak hour trip rates from ITE 2017. Daily trip rate from SANDAG 2002.

<sup>2</sup> Group campground number of campsites estimated on number of vehicles allowed per campsite (25 total vehicles, two total group campsites).

<sup>3</sup> Based on an estimate of 2/3 of the total acreage of the day use area.

As stated above, the Modified Project would construct a proposed new campground to replace the temporary closure of Basalt Campground due to construction outlined in the 2019 EIS/EIR. Basalt Campground and the proposed campground would be identical in terms of size, with a capacity of 79 campsites. Upon the reopening of Basalt Campground, the proposed new campground would remain operational, therefore permanent vehicle trips would be added to the circulation system and study area roadway network. Trip generation estimates for a typical weekday period were calculated from the AM and PM peak-hour trip generation rates obtained from ITE (2017). The daily trip rate was obtained SANDAG (2002) rates due to the lack of available data from ITE. As shown in Table 3.7-5, the permanent operation of the proposed campground would be expected to generate approximately 316 daily trips, 17 AM peak-hour trips (6 inbound and 11 outbound), and 21 PM peak-hour trips (14 inbound and 7 outbound).

**Table 3.7-5. Modified Project Trip Generation for Campground Operation**

| Land Use  | ITE Code | Size/Units   | Daily | AM Peak Hour |      |       | PM Peak Hour |      |       |
|---|----------|--------------|-------|--------------|------|-------|--------------|------|-------|
|   |          |              |       | In           | Out  | Total | In           | Out  | Total |
| Trip Rates <sup>1</sup>                           |          |              |       |              |      |       |              |      |       |
| Campground/Recreational Vehicle Park              | 416      | Campsites    | 4.00  | 0.08         | 0.13 | 0.21  | 0.18         | 0.09 | 0.27  |
| Trip Generation                                   |          |              |       |              |      |       |              |      |       |
| Proposed Campground in NW Area of O'Neill Forebay | 416      | 79 campsites | 316   | 6            | 11   | 17    | 14           | 7    | 21    |
| Total Trip Generation                             |          |              | 316   | 6            | 11   | 17    | 14           | 7    | 21    |

**Notes:** ITE = Institute of Transportation Engineers; NW = northwest.

<sup>1</sup> Peak hour trip rates from ITE 2017. Daily trip rate from SANDAG 2002.

As mentioned previously, because permanent campground operations would result in a higher trip generation as compared to all other construction components of the Modified Project, and because these trips would have a permanent contribution to the circulation system and study area roadway network, the campground operations would be analyzed in conjunction with the Approved Project construction trip generation peak as identified in the 2019 EIS/EIR since these periods would overlap and occur concurrently. As shown in Table 3.7-6, trip generation for the peak construction phase of the Approved Project as analyzed in the 2019 EIS/EIR would result in a total 268 daily trips (150 construction personnel trips and 118 construction truck trips), 45 AM peak-hour trips (25 construction personnel trips and 20 construction truck trips), and 95 PM peak-hour trips (75 construction personnel trips, which account for spillover from the previous shift, and 20 construction truck trips).

**Table 3.7-6. Approved Project Trip Generation**

| Vehicle Type <sup>1</sup>              | Time Period  |              |                |             |
|--|--------------|--------------|----------------|-------------|
|  | AM Peak Hour | PM Peak Hour | Off-Peak Hours | Total Daily |
| Construction Truck Trip                | 20           | 20           | 78             | 118         |
| Construction Personnel Trip            | 25           | 75           | 50             | 150         |
| <b>Total Construction-Related Trip</b> | <b>45</b>    | <b>95</b>    | <b>148</b>     | <b>268</b>  |

**Note:**

<sup>1</sup> As provided for the Crest Raise Alternative in Table 12-7 of the 2019 EIS/EIR.

A daily roadway segment LOS analysis was prepared for the Existing plus Approved Project Construction plus Campground Operation by combining the existing conditions analysis with trip generation and traffic volume information in Tables 3.7-5 and 3.7-6. Table 3.7-7 shows the LOS values based on the daily traffic volume for highway and roadway segments. All segments are located within Merced County and are identified based on the LOS criteria provided in Table 6 in Appendix G2 of the 2019 EIS/EIR, and further attached to this report as Appendix D-2. As shown in Table 3.7-7, all of the daily highway segments would continue to operate at LOS B or better under Existing plus Approved Project Construction plus Campground Operation conditions, except for the highway junction between the SR-33/I-5 west junction, which would continue to operate at LOS F (14,642 annual average daily traffic volume). There would be no change to the LOS as it pertains to the daily roadway segment analysis. Therefore, the temporary construction activities associated with the Modified Project would have a **less-than-significant impact**.

**Table 3.7-7. Existing plus Approved Project Construction plus Campground Operation Daily Roadway Segment Level of Service**

| Roadway/Junction        | Existing 2020     |     | Approved Project Peak Construction | Campground Operations | Existing + Approved Project Peak Construction + Campground Operations |     | Change in LOS |
|-------------------------|-------------------|-----|------------------------------------|-----------------------|---|-----|---------------|
|                         | AADT <sup>1</sup> | LOS | Daily Trips                        | Daily Trips           | AADT <sup>1</sup>   | LOS |               |
| I-5/SR-152              | 32,600            | B   | 95                                 | 79                    | 32,774  | B   | None          |
| SR-152/I-5              | 31,300            | B   | 78                                 | 111                   | 31,489  | B   | None          |
| SR-152/SR-33            | 29,700            | B   | 268                                | 158                   | 30,126  | B   | None          |
| SR-33/I-5 West Junction | 14,500            | F   | 95                                 | 47                    | 14,642  | F   | None          |

**Table 3.7-7. Existing plus Approved Project Construction plus Campground Operation Daily Roadway Segment Level of Service**

| Roadway/Junction       | Existing 2020     |     | Approved Project Peak Construction | Campground Operations | Existing + Approved Project Peak Construction + Campground Operations |     | Change in LOS |
|------------------------|-------------------|-----|------------------------------------|-----------------------|---|-----|---------------|
|                        | AADT <sup>1</sup> | LOS | Daily Trips                        | Daily Trips           | AADT <sup>1</sup>   | LOS |               |
| Basalt Road/<br>SR-152 | 191               | B   | 268                                | 0                     | 459   | B   | None          |

**Source:** Appendix D-2.

**Notes:** AADT = annual average daily traffic volumes; LOS = level of service; I = Interstate; SR = State Route.

<sup>1</sup> At a highway junction, the segment would have two different values for both directions of the road. In order to provide a conservative analysis, the higher AADT value was used for the analysis.

A peak-hour roadway segment LOS analysis was prepared for the Existing plus Approved Project Construction plus Campground Operation by combining the existing conditions analysis with trip generation and traffic volume information in Tables 3.7-5 and 3.7-6. Table 3.7-8 shows the LOS values based on the AM and PM peak-hour operation for highway segments. All segments are located within Merced County and were evaluated based on the LOS criteria provided in Tables 2 and 3 in Appendix G2 of the 2019 EIS/EIR, and further attached to this report as Appendix D-2.

As shown in Table 3.7-8, all of the peak hour roadway segments would continue to operate at LOS D or better under Existing plus Approved Project Construction plus Campground Operation conditions. Therefore, the temporary construction activities associated with the Approved Project, combined with operation of the proposed new campground, would have a **less-than-significant impact**.

An intersection LOS analysis was prepared for the Existing plus Approved Project Construction plus Campground Operation by combining the existing conditions analysis with trip generation and traffic volume information in Tables 3.7-5 and 3.7-6. Table 3.7-9 shows the LOS values based on the AM and PM peak hour intersection operations. All intersections are located within Merced County and were evaluated based on the LOS criteria provided in Table 4 in Appendix G2 of the 2019 EIS/EIR and further attached to this report as Appendix D-2.

As shown in Table 3.7-9, all of the peak-hour intersections would continue to have average delays equating to LOS A in both peak hours. However, it should be noted that individual movements at the intersections would continue to operate at LOS F in one or both peak hours. As stated previously, the overall number of vehicles experiencing delays at these individual movements is relatively low and constitutes a small percentage of the total volumes at each intersection. Also, none of the intersections would warrant a traffic signal due to the low volume of side-street peak-hour volumes. During the overlap of the Modified Project construction and the proposed new campground operation, most of the delay would be experienced by the construction personnel and trucks; however, once the Modified Project is constructed, the delay experienced by the proposed campground operation would be equivalent to other existing unsignalized stop-controlled intersections along SR-152. This is expected for such two-way stop-controlled intersections that lie along a separated right-of-way highway with a high degree of through traffic volumes. All study intersections also possess adequate safety measures to allow for turning movements to safely maneuver from higher-speed roadways (e.g., SR-152) to lower-speed local roads. Such safety elements include adequate site distance at each intersection, separate left-turn lanes, a center median for storage, and acceleration lanes. Importantly, the LOS at each of the study intersections would not change and would not result in LOS degradation. The study intersection LOS and function of the intersections would remain consistent with existing conditions.

Therefore, the temporary construction activities associated with the Approved Project, combined with operation of the proposed campground, would have a **less-than-significant impact**.

#### ***VMT Analysis***

Camping at Basalt Campground primarily attracts visitors interested in boating activities at either O'Neill Forebay or San Luis Reservoir. The proposed new campground would attract the same type of visitors. The nearest campground offering similar camping activities is Los Banos Creek Campground, approximately 16 miles to the southeast. Otherwise, additional alternative recreational camping and boating activities would be provided by several reservoirs and lakes within the foothills of the Sierra Nevada, including Hensley Lake, Millerton Lake, Eastman Lake, Lake McClure, and Don Pedro Reservoir. All are located 70 miles or more from the Modified Project site. As such, an additional campground within the San Luis Reservoir SRA would likely reduce trips made from communities in the nearby coastal regions to recreational camping and boating activities further to the east; thereby decreasing the net VMT in the region. Furthermore, as discussed in Section 3.2, the average occupancy rate of Basalt Campground is approximately 40%, based on input from the California Department of Parks and Recreation. Therefore, it is unlikely that the addition of a new, duplicate campground, would largely induce travel demand; rather, campground visitors would be spread across a larger area.

Reopening Basalt Campground upon completion of the Modified Project, in conjunction with operation of the proposed new campground, would permanently add new vehicle trips to the transportation network; however, as described above, trips associated with proposed new campground operations are unlikely to induce additional VMT. Similarly, improvements to the San Luis Creek Day Use Area would produce a nominal number of permanent vehicular trips to the study area, and therefore not increase VMT. Therefore, the net VMT in the region would not increase with the Modified Project, and impacts to VMT policies related to SB 743 would be **less than significant**.

**Table 3.7-8. Existing plus Approved Project Peak Construction plus Campground Operation AM and PM Peak-Hour Roadway Segment Level of Service**

| Roadway Segment                            | Direction  | Existing 2020 |                  |                     |                  | Approved Project Peak Construction |                     | Campground Operations |                     | Existing + Approved Project Peak Construction + Campground Operations |                  |                     |                  | Change in LOS       |                     |
|--|------------|---------------|------------------|---------------------|------------------|------------------------------------|---------------------|-----------------------|---------------------|---|------------------|---------------------|------------------|---------------------|---------------------|
|  |            | AM Peak       |                  | PM Peak             |                  | AM Peak-Hour Volume                | PM Peak-Hour Volume | AM Peak-Hour Volume   | PM Peak-Hour Volume | AM Peak   |                  | PM Peak             |                  | AM Peak-Hour Volume | PM Peak-Hour Volume |
|  |            | Volume        | LOS <sup>1</sup> | Volume <sup>1</sup> | LOS <sup>1</sup> |                                    |                     |                       |                     | Volume <sup>1</sup>   | LOS <sup>1</sup> | Volume <sup>1</sup> | LOS <sup>1</sup> |                     |                     |
| I-5, South of SR-152                       | Northbound | 2,100         | C                | 2,200               | C                | 4                                  | 11                  | 2                     | 5                   | 2,106   | C                | 2,216               | C                | None                | None                |
|  | Southbound | 1,750         | C                | 1,100               | B                | 12                                 | 17                  | 3                     | 2                   | 1,765   | C                | 1,119               | B                | None                | None                |
| SR-152, West of I-5                        | Eastbound  | 1,200         | B                | 2,000               | C                | 23                                 | 31                  | 3                     | 2                   | 1,226   | B                | 2,033               | C                | None                | None                |
|  | Westbound  | 1,600         | B                | 950                 | A                | 6                                  | 19                  | 2                     | 5                   | 1,608   | B                | 974                 | A                | None                | None                |
| SR-152, West of SR-33                      | Eastbound  | 200           | A                | 1,900               | C                | 35                                 | 60                  | 5                     | 3                   | 240   | A                | 1,963               | C                | None                | None                |
|  | Westbound  | 1,600         | B                | 650                 | A                | 10                                 | 35                  | 3                     | 7                   | 1,613   | B                | 692                 | A                | None                | None                |
| SR-33, Between I-5 and SR-152 <sup>2</sup> | Northbound | 550           | D                | 650                 | D                | 12                                 | 17                  | 2                     | 1                   | 564   | D                | 668                 | D                | None                | None                |
|  | Southbound | 350           | C                | 300                 | B                | 4                                  | 11                  | 1                     | 2                   | 355   | C                | 313                 | B                | None                | None                |

**Source:** Appendix D-2.

**Notes:** LOS = Level of Service; I = Interstate; SR = State Route.

<sup>1</sup> LOS for freeway segments is based on average vehicle density, while LOS for two-lane highway segments is based on percent time-spent-following. All relevant criteria are provided in Tables 2 and 3 of Appendix D-2.

<sup>2</sup> Maximum segment length allowable for two-lane highway analysis is 3 miles. The 2019 EIS/EIR used a segment length of 3.4 miles. Therefore, this result differs from the 2019 EIS/EIR analysis for 2020 conditions.

Table 3.7-9. Existing plus Approved Project Peak Construction plus Campground Operation Intersection Level of Service

|  | Existing 2020      |                  |                    |                  | Existing + Approved Project Peak Construction + Campground Operations |                  |                    |                  | Change in LOS       |                     |
|--|--------------------|------------------|--------------------|------------------|---|------------------|--------------------|------------------|---------------------|---------------------|
|  | AM Peak            |                  | PM Peak            |                  | AM Peak   |                  | PM Peak            |                  | AM Peak-Hour Volume | PM Peak-Hour Volume |
|  | Delay <sup>1</sup> | LOS <sup>2</sup> | Delay <sup>1</sup> | LOS <sup>2</sup> | Delay <sup>1</sup>  | LOS <sup>2</sup> | Delay <sup>1</sup> | LOS <sup>2</sup> |                     |                     |
| <b>Access Road to Romero Visitor Center/SR-152</b> |                    |                  |                    |                  |   |                  |                    |                  |                     |                     |
| Average Delay <sup>3</sup>                         | 0.0                | A                | 0.6                | A                | 0.1   | A                | 0.9                | A                | None                | None                |
| Worst Delayed Movement <sup>3</sup>                | 16.7               | C                | 118.4              | F                | 16.9  | C                | 125.7              | F                | None                | None                |
| <b>Basalt Road/SR-152</b>                          |                    |                  |                    |                  |   |                  |                    |                  |                     |                     |
| Average Delay <sup>3</sup>                         | 0.1                | A                | 0.8                | A                | 0.3   | A                | 1.8                | A                | None                | None                |
| Worst Delayed Movement <sup>3</sup>                | 29.8               | D                | >300               | F                | 31.7  | D                | >300               | F                | None                | None                |
| <b>San Luis Creek Campground/SR-152</b>            |                    |                  |                    |                  |   |                  |                    |                  |                     |                     |
| Average Delay <sup>3</sup>                         | 0.3                | A                | 0.1                | A                | 0.5   | A                | 0.3                | A                | None                | None                |
| Worst Delayed Movement <sup>3</sup>                | 65.4               | F                | 57.5               | F                | 72.4  | F                | 59.2               | F                | None                | None                |

**Source:** Appendix D-2.

**Notes:** LOS = level of service; SR = State Route.

<sup>1</sup> Delay in seconds per vehicle.

<sup>2</sup> LOS is based on the criteria provided for unsignalized intersections in Table 4 of Appendix D-2.

<sup>3</sup> LOS at unsignalized intersections is reported for both the total average delay of the intersection and the worst movement of the intersection.

### Cumulative Impacts

As discussed in Chapter 3, Environmental Analysis, and displayed in Table 3-1, Cumulative Projects, there are several projects within the study area and circulation of the Modified Project that may contribute to cumulative impacts. The California High-Speed Rail Project is expected to be under construction during the course of construction of the Modified Project; however, since the Gilroy–Merced alignment of the rail project is currently slated to be placed approximately 15 miles west of the San Luis Reservoir SRA, and 3 miles north of O'Neill forebay, construction or operational traffic for the California High-Speed Rail Project is not expected to influence the study area roadway network.

The Central Valley Project Municipal and Industrial Water Shortage Policy EIS (Reclamation 2015) is a policy statement and not expected to influence the study area roadway network. Additionally, the San Luis Transmission Project is expected to be fully constructed prior to the construction or operation of any component of the Modified Project, and therefore is not expected to influence the study area roadway network. Operation and construction of the San Luis Reservoir Low Point Improvement Project is also not expected to influence the study area roadway network.

It is expected that work associated with the San Luis Reservoir SRA Resource Management Plan/General Plan (San Luis Reservoir SRA RMP/GP) would occur over the course of construction of the Modified Project; however, the San Luis Reservoir SRA RMP/GP does not identify specific projects, as those would be evaluated on a case-by-case basis. Therefore, the San Luis Reservoir SRA RMP/GP cannot be conclusively analyzed and it is not expected to influence the study area roadway network.

The San Luis Solar Project is expected to be partially under construction over the course of construction of the Modified Project, but would not generate trips on I-5 or SR-152. Instead, the San Luis Solar Project would use SR-33 to access McCabe Road and Donohugh Road. However, construction of the San Luis Solar Project would occur in phases and at different sites along the eastern edge of O'Neill Forebay and would not cause a substantial reduction in LOS within the study area roadway network.

The B.F. Sisk Dam Raise and Reservoir Expansion Project (reservoir expansion project) would be constructed within the same general area of San Luis Reservoir as the Modified Project; however, as analyzed within the joint Final EIR and Supplemental EIS for the reservoir expansion project produced by Reclamation and the San Luis & Delta–Mendota Water Authority and released in December 2020, the addition of the reservoir expansion project with the Modified Project would not change the LOS within any of the shared study area roadway segments or intersections.

Once operational, many of the cumulative projects would add only a nominal number of permanent vehicular trips and not substantially degrade the LOS within the study area roadway network. Therefore, because many of the cumulative projects would either generate a nominal number of trips within the study area roadway network or generate temporary construction trips that would not change the LOS within the study area roadway network, the Modified Project including the operation of the proposed campground, along with the cumulative projects listed above, would result in **less-than-significant cumulative impacts** to the policies establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation.

### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant.

## Threshold 2

*Would the Modified Project conflict with an applicable congestion management program, including, but not limited to LOS standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?*

| 2019 EIS/EIR Impact Determination | Modified Project Impact Determination | New Significant Increase in Impact Severity? |
|-----------------------------------|---------------------------------------|--|
| Less than Significant             | Less than Significant                 | No   |

There is no congestion management program currently adopted for Merced County. As such, construction and operation of all components of the Modified Project would not conflict with any applicable congestion management program. Therefore, both in reference to all components of the Modified Project, as well as cumulatively, this impact would be **less than significant**.

## Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant.

## Threshold 3

*Would the Modified Project conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities?*

| 2019 EIS/EIR Impact Determination | Modified Project Impact Determination | New Significant Increase in Impact Severity? |
|-----------------------------------|---------------------------------------|--|
| Less than Significant             | Less than Significant                 | No   |

As described in Section 3.7.2, Relevant Plans, Policies, and Ordinances, the Merced County General Plan Transportation and Circulation Element outlines policies that pertain to the Modified Project as it relates to public transit, bicycle, and pedestrian facilities. Additionally, as described under Section 3.7.1, Existing Conditions, the San Luis Reservoir region within the vicinity of the Modified Project does not have pedestrian or bicycle facilities. Multi-use and hiking trails are provided along the perimeter of O'Neill Forebay and at various other locations within the San Luis Reservoir SRA. Additionally, there is no active transit service that services the Modified Project site, as the nearest transit stops are within the City of Gustine and City of Los Banos. Construction truck traffic could also have temporary and nominal effects on transit service within the study area due to the slow-moving traffic. Therefore, construction of the Modified Project as analyzed would not cause any interruptions to public transit, pedestrian, or bicycle facilities. The permanent operation of the proposed campground would increase active users in the area and would therefore raise the total number of pedestrians and bicyclists in the area and along the multi-use and hiking trails; however, since all trails provide separation between motorized and non-motorized forms of travel, the effect would be negligible. Furthermore, the improvements to the San Luis Creek Day Use Area would generate a nominal number of permanent trips. Therefore, construction of the Modified Project and operation of the proposed campground would not have an effect on any adopted policy, plan, or program regarding public transit, bicycle, or pedestrian facilities, and impacts would be **less than significant**.



### Cumulative Impacts

All of the cumulative projects as analyzed in Threshold 1 would either generate a nominal number of trips within the study area roadway network, as well as temporary construction trips that would not change the general functioning of the study area roadway network. Therefore, addition of the Modified Project, including the operation of the campground, along with the cumulative projects, would not have an effect on any adopted policy, plan, or program regarding public transit, bicycle, or pedestrian facilities, and cumulative impacts would be **less than significant**.

### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant.

### Threshold 4

*Would the Modified Project increase traffic substantially in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?*

| 2019 EIS/EIR Impact Determination | Modified Project Impact Determination | New Significant Increase in Impact Severity? |
|-----------------------------------|---------------------------------------|--|
| Less than Significant             | Less than Significant                 | No   |

### Campground Construction and Day Use Area Improvements

As discussed under Threshold 1, the number of vehicles traveling to and from the Modified Project site during the proposed campground construction and improvements to the San Luis Creek Day Use Area is expected to result in a temporary increase in traffic within the study area, including in all relevant components of the circulation system. However, because this increase is temporary and occurring over the approximately 18-month construction period, and because campground construction is expected to generate fewer overall trips than the operation of the campground, the Modified Project would not result in a substantial increase in traffic and impacts would be **less than significant**.

### Changes in Borrow Area Location

As discussed under Threshold 1, the changes in borrow area locations are within the overall construction footprint identified in the 2019 EIS/EIR, and there will be no additional construction worker vehicles or trucks expected with use of Borrow Area 12 and 14. The existing non-public access roads currently used around San Luis Reservoir, as well as Basalt Road, may need be widened and improved to provide access to the borrow areas. However, the number of trips will remain the same, and therefore would not result in a substantial increase in traffic; impacts would be **less than significant**.

### Minor Additions to Contractor Work Area

As discussed under Threshold 1, the number of vehicles traveling to and from the Modified Project site during construction associated with the minor additions to the contractor work area is expected to result in a temporary increase in traffic within the study area, including in all relevant components of the circulation system. However, because this increase is temporary, and because the construction associated with the minor additions to the contractor work area is expected to generate fewer trips than operation of the campground, the Modified Project would not result in a substantial increase in traffic; impacts would be **less than significant**.

### Additional Construction Assumptions

As discussed in Chapter 2 of this SEIR, the overall construction schedule and assumptions regarding personnel and equipment remain unchanged by the Modified Project. Overall, the additional construction assumptions are described for clarification purposes in the SEIR. Based on the above considerations, these additional assumptions would not result in a substantial increase in traffic; impacts would be **less than significant**.

### Campground Operations

As discussed, and analyzed under Threshold 1, the proposed new campground on the northwest corner of O'Neill Forebay would be constructed as part of the Modified Project to offset the closure of Basalt Campground during the construction of all components of the Modified Project. Upon reopening of Basalt Campground, both campgrounds would remain active, and the operation of the proposed campground would be expected to generate permanent vehicle trips to the study area. Additionally, to compensate for the Modified Project-related closure of the Basalt Day Use Area, improvements made to the San Luis Creek Day Use Area would involve marginal improvements that would generate a nominal number of permanent trips to the area. Because the proposed campground would become operational while construction of the remainder of the Modified Project is ongoing, both the Modified Project peak construction and the campground operations were analyzed together. As shown under Threshold 1, the LOS analysis prepared for daily roadway segments, peak-hour roadway segments, and intersections shows that there would be no degradation of LOS or change in LOS, and there would not be a substantial change to traffic within the study area. Therefore, the combination of the peak traffic condition occurring, which is the peak construction phase of the other components of the Modified Project and the operation of the proposed new campground, would not result in a substantial increase in traffic; impacts would be **less than significant**.

### Cumulative Impacts

As discussed under Threshold 1, the cumulative projects would either generate a nominal number of trips within the study area roadway network, or generate temporary construction trips that would not change the LOS within the study area roadway network. Also, the addition of the Modified Project, including the operation of the proposed new campground, along with the cumulative projects, would not result in cumulative impacts in regard to traffic load and capacity of the street system; cumulative impacts would be **less than significant**.

### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant.

## Threshold 5

***Would the Modified Project exceed, either individually or cumulatively, a LOS standard established by the county congestion management agency for designated roads or highways?***

| 2019 EIS/EIR Impact Determination | Modified Project Impact Determination | New Significant Increase in Impact Severity? |
|-----------------------------------|---------------------------------------|--|
| Less than Significant             | Less than Significant                 | No   |

As discussed under Threshold 2, there is no congestion management program currently adopted for Merced County. As such, the construction and operation of all components of the Modified Project would not conflict with any applicable congestion management program. Additionally, there is no LOS standard established currently by the county congestion management agency. Also, as discussed under Threshold 1, the LOS standards for Merced County and Caltrans facilities would not exceed the thresholds of significance and change LOS values. The expected cumulative contribution would also not be possible to analyze, and similarly is not expected to cause a permanent change in LOS values. Therefore, this impact would be **less than significant**.

#### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant.

## Threshold 6

***Would the Modified Project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?***

| 2019 EIS/EIR Impact Determination                  | Modified Project Impact Determination              | New Significant Increase in Impact Severity? |
|--|--|--|
| Less than Significant with Mitigation Incorporated | Less than Significant with Mitigation Incorporated | No   |

#### Campground Construction and Day Use Area Improvements, Changes in Borrow Area Location, Minor Additions to Contractor Work Area, and Additional Construction Assumptions

As stated in the 2019 EIS/EIR, all haul and access roads on the Modified Project site would be constructed consistent with Reclamation standards. All new roads would be improved and treated to prevent dust, and would be approximately 30 feet wide, with approximately 100 feet of clearance to allow for safe egress and ingress of construction equipment. The construction of all components of the Modified Project would result in an increase in construction equipment, construction personnel vehicles, and construction trucks, along with a potential temporary increase in the vehicle speed limit along Basalt Road, which would increase hazards along every study area roadway and intersection evaluated. The construction of the proposed campground would result in new asphalt and resurfacing of the access road leading to the campground, as well as the internal parking lot of the campground, which could increase hazards between construction equipment and visitors accessing the northwest portion of

O'Neill Forebay. Therefore, the Modified Project would increase hazards, and a significant impact would occur. In order to mitigate for this impact, mitigation is provided (see Section 3.7.5, Mitigation Measures). After application of the construction traffic control plan required by **Mitigation Measure TR-1 (same as TR-1 in the 2019 EIS/EIR)**, which would account for roadway safety signage, lane closures, and any other required changes to the local roadway network to safely accommodate construction, this impact would be **less than significant**.

### Campground Operations

The permanent operations of the proposed campground would provide an additional approximately 79 campsites to the San Luis Creek Campground area, which would generate permanent vehicle trips to the study area as well as the immediate vicinity of the campground. The improvements made to the San Luis Creek Day Use Area would be marginal and would generate a nominal number of permanent trips to the area. However, as discussed under Threshold 1, the number of trips generated would not change the LOS of the study area roadway network, and the overall amount of traffic volumes would be consistent with the existing level of traffic in the San Luis Reservoir SRA. Therefore, operation of the campground would not increase hazards in the area, and impacts would be **less than significant**.

### Cumulative Impacts

As stated in the 2019 EIS/EIR and above, all haul and access roads on the Modified Project site would be constructed consistent with the Reclamation's standards. All new roads would be improved and treated to prevent dust, and would be approximately 30 feet wide, with approximately 100 feet of clearance to allow for safe egress and ingress of construction equipment. The construction of all components of the Modified Project would result in an increase in construction equipment, construction personnel vehicles, and construction trucks, which would increase hazards along every study area roadway and intersection evaluated. Cumulatively, this would be further increased by the contribution of construction vehicles and trucks within the study area, especially for slow-moving traffic along SR-152. Therefore, the Modified Project would cumulatively increase hazards and therefore a cumulative significant impact would occur. In order to mitigate for this impact, mitigation is provided (see Section 3.7.5). After application of the construction traffic control plan required by Mitigation Measure TR-1, the cumulative impact would be **less than significant**.

### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant impacts with mitigation incorporated and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant with mitigation incorporated (see Section 3.7.5).

### Threshold 7

#### *Would the Modified Project result in inadequate emergency access?*

| 2019 EIS/EIR Impact Determination                  | Modified Project Impact Determination              | New Significant Increase in Impact Severity? |
|--|--|--|
| Less than Significant with Mitigation Incorporated | Less than Significant with Mitigation Incorporated | No   |

### **Campground Construction and Day Use Area Improvements, Changes in Borrow Area Location, Minor Additions to Contractor Work Area, and Additional Construction Assumptions**

As stated in the 2019 EIS/EIR, for dam safety and public visitor safety, Reclamation, California Department of Water Resources, and California Department of Parks and Recreation personnel must have access to areas around the reservoir and dam at all times. Overall, as part of the Modified Project, the construction traffic, including personnel and trucks, would hinder or slow down emergency vehicles and their ability to access the reservoir and dam. Construction of the proposed campground would result in new asphalt and resurfacing of the access road leading to the campground, as well as the internal parking lot of the campground, which could lead to further hindrance and delay for emergency vehicles accessing the northwest portion of O'Neill Forebay. Therefore, the Modified Project would result in inadequate emergency access, and a significant impact would occur. In order to mitigate for this impact, mitigation is provided (see Section 3.7.5). After application of the construction traffic control plan required by **Mitigation Measure TR-1**, impacts would be **less than significant**.

### **Campground Operations**

The operation of the campground would result in an additional number of visitors to the San Luis Creek Campground area and to the western edge of O'Neill Forebay. Improvements to the San Luis Creek Day Use Area would generate a nominal increase in visitors. However, all access roads to campsites and associated amenities that would be in operation would be improved and maintained to provide emergency vehicle access in accordance with all Merced County standards. Therefore, the Modified Project would not result in inadequate emergency access, and impacts would be **less than significant**.

### **Cumulative Impacts**

As stated above and in the 2019 EIS/EIR, the cumulative impact of additional construction worker and truck trips, especially slow-moving vehicles along SR-152 from other projects, would further create a hinderance and otherwise impede emergency vehicles within the study area. Therefore, the Modified Project would cumulatively result in inadequate emergency access, resulting in a significant impact. In order to mitigate for this impact, mitigation is provided (see Section 3.7.5). Therefore, after application of the construction traffic control plan required by Mitigation Measure TR-1, the impact would be **less than significant**.

### **Comparison to 2019 EIS/EIR**

The additional project components analyzed above would result in less-than-significant impacts with mitigation incorporated and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant with mitigation incorporated (see Section 3.7.5).

## 3.7.5 Mitigation Measures

The following mitigation measure was identified in the 2019 EIS/EIR for the Approved Project and has been incorporated herein for the Modified Project to reduce impacts associated with traffic generated during construction.

**TR-1 (Same as TR-1 in 2019 EIS/EIR): Construction Traffic Control Plan.** The following construction management actions will be documented in a temporary traffic control plan developed by the contractor as a requirement that will be included in its construction contract. The temporary traffic control plan

will be submitted for Caltrans review and approval during the Encroachment Permit process. Construction contractors shall install signage at affected intersections in accordance with the California Manual on Uniform Traffic Control Devices guidelines warning motorists of slow moving construction traffic and lane closures, including SR-152, Basalt Road, Romero Visitor Center access road, and the San Luis Creek Campground Road. Signage shall also be posted at these intersections one month in advance to allow motorists time to plan for delays or alternate routes. Construction contractors shall implement dust abatement and perform proper construction traffic management actions, including signage warning motorists of construction activity and traffic controls like flaggers or temporary traffic lights where construction equipment will be entering roadways, to reduce conflicts during periods of high traffic volume in and around each construction site and to avoid conflicts with emergency responders entering and existing the area during an emergency. In addition to the temporary traffic control plan, prior to the initiation of any construction actions, construction contractors shall develop and adhere to a health and safety plan outlining all applicable Occupational Safety and Health Administration requirements, important traffic safety plans including identification of emergency access routes in and through construction areas that would will need to be kept clear at all times during construction. The health and safety plan shall include coordination with emergency service personnel to ensure adequate mitigation for all impacts.

### 3.7.6 Level of Significance After Mitigation

The Modified Project would result in a less-than-significant impact with respect to conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system.

The Modified Project would result in a less-than-significant impact for both construction and operational components with respect to conflict with an applicable congestion management program.

The Modified Project would result in a less-than-significant impact for both construction and operational components with respect to conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities.

The Modified Project would result in a less-than-significant impact for both construction and operational components with respect to increase traffic substantially in relation to the existing traffic load and capacity of the street system.

The Modified Project would result in a less-than-significant impact for both construction and operational components with respect to exceeding a LOS standard established by the county congestion management agency or designation roads or highways.

The Modified Project would result in a significant impact for both construction and operational components with respect to substantially increasing hazards due to a geometric design feature or incompatible uses. Mitigation Measure TR-1, which requires a temporary traffic control plan, would reduce impacts to a level below significance.

The Modified Project would result in a significant impact for both construction and operational components with respect to resulting in inadequate emergency access. Mitigation Measure TR-1, which requires a temporary traffic control plan, would reduce impacts to a level below significance.

## 3.8 Hazards and Hazardous Materials

This supplemental environmental impact report (SEIR) addresses proposed modifications to the B.F. Sisk Dam Safety of Dams Modification Project, which was previously evaluated in the B.F. Sisk Dam Safety of Dams Modification Project Environmental Impact Statement/Environmental Impact Report (2019 EIS/EIR). The project addressed in the 2019 EIS/EIR is referred to herein as the Approved Project; the Approved Project with proposed modifications identified since certification of the 2019 EIS/EIR is referred to herein as the Modified Project.

This section describes the existing hazards and hazardous materials conditions of the Modified Project site and vicinity, identifies associated regulatory requirements, evaluates potential impacts, and identifies any applicable mitigation measures related to implementation of the Modified Project.

The hazardous materials analysis includes potential incidental spills during construction and potential for encountering contaminated soil and/or groundwater during construction. The hazards analysis also includes the potential for wildfire and conflict with local airports. Potential impacts associated with other hazards, including flooding, seismic, and landslide risk are analyzed in Section 3.4, Flood Protection, and Section 3.13, Geology, Seismicity, and Soils.

### 3.8.1 Existing Conditions

#### 3.8.1.1 Definition of Hazardous Materials and Hazardous Wastes

As defined in the California Health and Safety Code Section 25501, “hazardous material” means any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant hazard to human health and safety, or to the environment, if released into the workplace or the environment. Hazardous materials include, but are not limited to, hazardous substances, hazardous waste, and any material that a handler or the administering agency has a reasonable basis for believing would be injurious to the health and safety of persons, or harmful to the environment if released into the workplace or the environment.

According to California Code of Regulations, Title 22, Division 4.5, substances characterized by specific levels of toxicity, ignitability, corrosivity, or reactivity are considered hazardous waste. Hazardous wastes are hazardous substances that no longer have a practical use, such as material that has been abandoned, discarded, spilled, contaminated, or are being stored prior to proper disposal.

Other types of hazardous materials include radioactive and biohazardous materials. Radioactive materials and wastes contain radioisotopes, which are atoms with unstable nuclei that emit ionizing radiation to increase stability. Radioactive waste mixed with chemical hazardous waste is referred to as “mixed wastes.” Biohazardous materials and wastes include anything derived from living organisms, which may be contaminated with disease-causing agents, such as bacteria or viruses.

California Code of Regulations, Title 22, Division 4.5, Chapter 11, Article 2, Section 66261.10 provides the following definition for hazardous waste:

[A] waste that exhibits the characteristics that may: (1) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported, or disposed or otherwise managed.

California Health and Safety Code Sections 25517 and 25141 define hazardous waste as a waste that because of its quantity, concentration, or physical, chemical, or infectious characteristics may cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible illness; or pose a substantial present or potential hazard to human health or the environment, due to factors including, but not limited to, carcinogenicity, acute toxicity, chronic toxicity, bioaccumulative properties, or persistence in the environment, when properly treated, stored, transported, or disposed of, or otherwise managed.

If improperly handled, hazardous materials and wastes can cause public health hazards when released to the soil, groundwater, or air. The four basic exposure pathways through which an individual can be exposed to a chemical agent include inhalation, ingestion, bodily contact, and injection. Exposure can come as a result of an accidental release during transportation, storage, or handling of hazardous materials. Disturbance of subsurface soil during construction can also lead to exposure of workers or the public from stockpiling, handling, or transportation of soils contaminated by hazardous materials from previous spills or leaks.

### 3.8.1.2 Regulatory Records Review

Government Code Section 65962.5 requires the California Environmental Protection Agency (CalEPA) to compile a list of hazardous waste and substances sites (Cortese List). While the Cortese List is no longer maintained as a single list, the following databases provide information that meet the Cortese List requirements:

1. List of Hazardous Waste and Substances sites from the California Department of Toxic Substances Control (DTSC) Envirostor database (Health and Safety Codes 25220, 25242, 25356, and 116395).
2. List of Leaking Underground Storage Tank (LUST) Sites by County and Fiscal Year from the State Water Resources Control Board GeoTracker database (Health and Safety Code 25295).
3. List of solid waste disposal sites identified by the State Water Resources Control Board with waste constituents above hazardous waste levels outside the waste management unit (Water Code Section 13273 subdivision (e) and California Code of Regulations Title 14 Section 18051).
4. List of “active” Cease and Desist Orders and Cleanup and Abatement Orders from the State Water Resources Control Board (Water Code Sections 13301 and 13304); and
5. List of hazardous waste facilities subject to corrective action pursuant to Section 25187.5 of the Health and Safety Code, identified by DTSC.

A search of these Cortese List databases was conducted to identify Cortese List sites within 1 mile of the Modified Project site. A search of the GeoTracker database (SWRCB 2020a) indicated the following sites are in the Modified Project vicinity:

**San Luis Reservoir State Recreation Area Maintenance Facility.** Geotracker LUST site T0604700256 is located at the San Luis Reservoir State Recreation Area (SRA) Maintenance Facility on Gonzaga Road (Figure 3.8-1A, Hazardous Materials Sites, Northern Portion, and Figure 3.8-1B, Hazardous Materials Sites, Southern Portion). Leaking gasoline and waste oil underground storage tanks located immediately south of the maintenance shop resulted in petroleum hydrocarbon concentrations in soil and groundwater beneath the site, including gasoline free product floating on groundwater. Soil and groundwater remediation were completed from 1999 to 2009. Additional site assessment is currently being evaluated for this site to determine the extent of groundwater contamination. The impacted groundwater is not considered a drinking water source (SWRCB 2020b).



Geotracker site T0000004714 is located at the same maintenance facility. A concrete vehicle wash pad located on the east side of the maintenance shop drained into a sump, passed through an oil-water separator, and then was discharged through a subsurface pipe into the unpaved area immediately north of the maintenance facility. The area impacted was approximately 60 feet by 60 feet. Soil samples were collected in 2013, to a depth of 15 feet, and analyzed for total petroleum hydrocarbons, volatile organic compounds (including solvents and fuel oxygenates), and metals. No significant concentrations of these constituents were detected. Therefore, the case was closed with respect to regulatory compliance in November 2013, indicating that no further action is required with respect to site assessment and/or remediation (SWRCB 2020c).

**Forebay Chevron Station.** Geotracker LUST site T10000005867 is located near the intersection of State Route (SR) 152 and SR-33, at 29860 Gonzaga Road (Figure 3.8-1A and Figure 3.8-1B). Leaking gasoline underground storage tanks resulted in petroleum hydrocarbon concentrations in soil and groundwater beneath the site. Additional soil sampling will be required to define the lateral and vertical extent of contamination. Installation of monitoring wells will be required also to evaluate the lateral extent of groundwater contamination. As of 2018, the Central Valley Regional Water Quality Control Board (CVRWQCB) has requested that an interim remedial action plan be prepared. The groundwater flow direction is currently unknown, but based on the local topography, groundwater likely flows toward the north, in the direction of O'Neill Forebay and Borrow Area 6 of the Approved Project. Static groundwater levels were measured at a depth of 33 feet beneath the site (SWRCB 2020d).

A search of the EnviroStor database (DTSC 2020) indicated the following site is in the vicinity of the Modified Project:

**Romero Ranch.** EnviroStor site 24020001 is located at the northwest intersection of SR-152 and SR-33 (Figure 3.8-1A and Figure 3.8-1B). A concrete-lined dip tank was used at this ranch to treat cattle for external parasites. Pesticides were introduced with the liquids that were used in the dip tank. Residues of pesticides, including dichloro-diphenyl-trichloroethane (DDT) and toxaphene, have been found in soils in the area around the dip tank and contaminated soils have been removed. The site was included in the DTSC Voluntary Cleanup Program and was closed with respect to regulatory oversight in December 1998, indicating that no further action is required with respect to site assessment and/or remediation.

A search of the Solid Waste Information System database (CalRecycle 2020) indicated that no sites are in the vicinity of the Modified Project. The closest such site is as follows:

**Billy Wright Disposal Site.** This permitted, active solid waste landfill is located on Billy Wright Road, approximately 6 miles east of San Luis Reservoir, at the closest point. This landfill is operated by Merced County Regional Waste Management, under the jurisdiction of Merced County's Department of Public Health, Division of Environmental Health. The facility was inspected four times in 2020 and has no outstanding enforcement actions.

### 3.8.1.3 Site History

Historical aerial photographs and historic topographic maps were reviewed for the Modified Project area (NETR 2020). Online historical aerial photographs were available from 1953, 1967, 1971, 1981, 1982, 1998, 2005, 2009, 2010, 2012, 2014, and 2016. Historic topographic maps were available from 1920, 1922, 1938, 1940,

1947, 1954, 1964, 1972, 1980, 2012, 2015, and 2018. The following is based on a review of these aerial photographs and topographic maps.

- From 1920 to 1953, the Modified Project area was undeveloped, except for a small agricultural area, and one to two residences, immediately east of the present-day dam, on the San Luis Ranch. Pacheco Pass Road traversed the present-day reservoir location.
- By 1967, the dam had been constructed and included the San Luis Reservoir SRA Headquarters, on Gonzaga Road, and the San Luis Reservoir Maintenance Facility, at the north end of Gonzaga Road. Conditions in the vicinity of these facilities and the borrow areas have remained relatively the same up to the present day.
- The San Luis Creek Day Use Area was completed by 1982. The proposed campground area has been undeveloped since at least 1953.

### 3.8.1.4 Pipelines and Oil Drilling Features

A search was conducted for oil drilling features and hazardous pipelines within the Modified Project area that could impact the proposed areas of ground disturbance. The search included the National Pipeline Mapping System (NPMS 2020) and the California Geologic Energy Management Division Well Mapping database (CalGEM 2020). Based on these resources, hazardous liquid pipelines, a gas transmission line, and a dry/abandoned oil well are located immediately east of O'Neill Forebay (Figure 3.8-1A).

### 3.8.1.5 School Sites

No schools are located within 0.25 miles of the Modified Project sites. The closest school is Romero Elementary School, of the Gustine Unified School District, located approximately 1.4 miles northeast of O'Neill Forebay.

### 3.8.1.6 Airports

The Modified Project is not located within an Airport Land Use Plan, and is not it located within 2 miles of a public use airport or private airstrip. The closest airport is the Los Banos Municipal Airport, located approximately 7.5 miles east of O'Neill Forebay. The San Luis Reservoir Seaplane Base, owned by the California Department of Parks and Recreation, allowed water landings on San Luis Reservoir until 2015 when the aquaport was closed (Heberling, pers. comm. 2020).

### 3.8.1.7 Fire Hazards

Fire environments are dynamic systems and are influenced by many types of environmental factors and site characteristics. Fires can occur in any environment where conditions are conducive to ignition and fire movement. The three major components of fire environment are vegetation (fuels), climate, and topography. The state of each of these components and their interactions with each other determines the potential characteristics and behavior of a wildfire. In addition, the type, location, and intensity of a wildfire can affect wildlife, vegetation, air quality, water quality, and slope stability to varying degrees.

Based on Fire Hazard Severity Zone (FHSZ) mapping data (CAL FIRE 2007), most of the Modified Project, including the proposed campground, the San Luis Creek Day Use Area, and dam improvement areas, are in Moderate FHSZs. However, one additional staging/stockpiling area and the Basalt Hill Borrow Area are in High FHSZs (CAL FIRE

2007). The California Department of Forestry and Fire Protection (CAL FIRE) uses FHSZs to classify anticipated fire-related hazards for the entire state and includes classifications for State Responsibility Areas, Local Responsibility Areas, and Federal Responsibility Areas. Fire hazard severity classifications consider vegetation, topography, weather, crown fire production, and ember production and movement. The High and Very High Fire Hazard Severity designations can be attributed to a variety of factors including highly flammable, dense, drought-adapted chaparral vegetation; seasonal, strong winds; and a Mediterranean climate that results in vegetation drying during the fall months. CAL FIRE also maps and ranks areas of fire threat, which indicates the level of fire threat based on the potential fire behavior (fuel rank) and expected fire frequency (fire rotation) at a given location (CAL FIRE 2020a). The proposed campground occurs within areas ranked as moderate, high, and very high fire threat, the San Luis Creek Day Use Area is largely unmapped, though bordered by areas ranked as high and very high fire threat, and the remaining Modified Project areas are ranked as high and very high fire threat. Figure 3.8-2, Fire Hazard Severity Zones, identifies the CAL FIRE FHSZ designations in the vicinity of the Modified Project.

The following sections provide more information regarding the fire environment associated with the Modified Project and potential environmental effects of wildfire burning on or near the Modified Project site.

### **Vegetation/Fuels**

As described in Section 3.9, Biological Resources, there are eight vegetation communities and/or land cover types that occur in the additional impact areas: annual grassland, purple needlegrass grassland, scrub/chaparral, freshwater emergent wetland, valley foothill riparian, lacustrine, eucalyptus woodland, and urban/disturbed. Variations in vegetative cover type and species composition have a direct effect on fire behavior. Some plant communities and their associated plant species have increased flammability based on plant physiology (resin content), biological function (flowering, retention of dead plant material), physical structure (bark thickness, leaf size, branching patterns), and overall fuel loading. For example, grass dominated plant communities become seasonally prone to ignition and produce lower intensity, higher spread rate fires. In comparison, scrub/chaparral can produce higher heat intensity and higher flame lengths under strong, dry wind patterns, but does not typically ignite or spread as quickly as light, flashy grass fuels.

Another important factor is the dynamic nature of vegetation communities. Fire presence and absence at varying cycles or regimes disrupts plant succession, setting plant communities to an earlier state where less fuel is present for a period of time as the plant community begins its succession again. High frequency fires tend to convert shrublands to grasslands or maintain grasslands, while fire exclusion tends to convert grasslands to shrublands, over time. In general, biomass and associated fuel loading will increase over time, assuming that disturbance (fire, grading) or other fuel management efforts are not implemented. It is possible to alter successional pathways for varying plant communities through manual alteration.

### **Wind and Weather**

As described in Section 3.2, Air Quality, the Modified Project lies within the San Joaquin Valley Air Basin. The San Joaquin Valley is in a Mediterranean Climate Zone, influenced by a subtropical high-pressure cell most of the year and characterized by warm, dry summers and cooler winters. Mediterranean climates are characterized by sparse rainfall, which occurs mainly in winter. Summertime maximum temperatures in the San Joaquin Valley often exceed 100°F. Winds in the San Joaquin Valley most frequently blow from the northwesterly direction, especially in the summer. The region's topographic features restrict air movement and channel the air mass towards the southeastern end of the San Joaquin Valley. Marine air can flow into the San Joaquin Valley Air Basin from the Sacramento–San Joaquin River Delta and over Altamont Pass and Pacheco Pass, where it can flow through the San Joaquin Valley, over the Tehachapi

Pass, into the Mojave Desert Air Basin. The Coastal Range and the Sierra Nevada are barriers to air movement to the west and east, respectively. A secondary but significant summer wind pattern is from the southeasterly direction and can be associated with nighttime drainage winds, prefrontal conditions and summer monsoons.

Two significant diurnal wind cycles that occur frequently in the San Joaquin Valley are the sea breeze and mountain-valley upslope and drainage flows. The sea breeze can accentuate the northwest wind flow, especially on summer afternoons. Nighttime drainage flows can accentuate the southeast movement of air down the San Joaquin Valley. In the mountains during periods of weak synoptic scale winds, winds tend to be upslope during the day and downslope at night. Nighttime and drainage flows are pronounced during the winter when flow from the easterly direction is enhanced by nighttime cooling in the Sierra Nevada. Eddies can form in the valley wind flow.

### **Terrain**

Near the southern shoreline of San Luis Reservoir, south of Basalt Road, the Modified Project area consists of moderately to steeply sloped, undulating, and sparsely vegetated hillsides. North of Basalt Road, near the southeastern shoreline of the reservoir, the Modified Project consists of low-lying flat topography (Figure 2-4B, Modified Project Detail). Southeast of the dam embankment, Borrow Area 12 (Figure 2-4B) consists of an approximately 28-acre hillside that is about 100 feet higher than the surrounding lower-lying area. The top of Borrow Area 12 is relatively flat, having been used in the past as a borrow area for the initial construction of the dam. The adjoining (to the south) 200-acre Borrow Area 14 encompasses four low hills, which are up to 400 feet higher than the downstream base of the dam. The northwestern and western shoreline of O'Neill Forebay, in the vicinity of the proposed campground and the existing San Luis Creek Day Use Area, consists of relatively flat-lying areas adjacent to the shoreline, with gentle to moderately sloping hillsides along the western portions of these additional impact areas.

Regionally, the Modified Project is situated along the northeastern edge of the Diablo Range where it slopes easterly down to the San Joaquin Valley. Terrain in this region, and on the Modified Project site, include components that are favorable to wildfire spread including steep slopes, ravines, ridges, mountains, and valleys. These terrain features influence the speed and direction of air movement, which has a direct effect on wildfire behavior. Steep terrain typically results in faster upslope fire spread due to pre-heating of uphill vegetation. Flat areas typically result in slower fire spread when absent of windy conditions. Topographic features such as saddles, canyons, and chimneys (land formations that collect and funnel heated air upward along a slope) may form unique circulation conditions that concentrate winds and funnel or accelerate fire spread. For example, fire generally moves slower downslope than upslope. Terrain may also buffer, shelter, or redirect winds away from some areas based on canyons or formations on the landscape. Saddles occurring at the top of drainages or ridgelines may facilitate the migration of wildfire from one canyon to the next.

### **Fire History**

Fire history data can provide an understanding of fire frequency, fire type, burn severity, significant ignition sources, and other information relevant to understanding the fire and fuels environment in an area. There have been numerous recorded wildfires within the Modified Project area. Fire history data was obtained from CAL FIRE's Fire and Resources Assessment Program database (CAL FIRE 2020b). The Fire and Resources Assessment Program database summarizes fire perimeter data dating to the late 1800s, but which is incomplete due to the fact that it includes only fires over 10 acres in size and has incomplete perimeter data, especially for the first half of the twentieth century (Syphard and Keeley 2016). However, the data does provide a summary of recorded fires and can be used to show whether large fires have occurred in the Modified Project area, which indicates whether they may be possible in the future.

Fire history records document 37 wildfires within 5 miles of the Modified Project area between 1952 and 2016 (CAL FIRE 2020b), primarily between O'Neill Forebay, SR-152, and McCabe Road and along both sides of SR-152 along the north side of San Luis Reservoir. Based on a review of the fire history information, average fire return interval for the area within 5 miles of the Modified Project site is 1.8 years, with intervals ranging from 0 (multiple fires in the same year) to 10 years. Average fire return interval for large fires (greater than 1,000 acres) within 5 miles of the Modified Project site is 6.6 years, with intervals ranging from 1 to 15 years (CAL FIRE 2020b).

### 3.8.2 Relevant Plans, Policies, and Ordinances

#### 3.8.2.1 Federal

##### **Toxic Substances Control Act**

The Toxic Substances Control Act of 1976 provides the U.S. Environmental Protection Agency (EPA) with authority to require reporting, record-keeping, and testing requirements, and restrictions relating to chemical substances and/or mixtures. Certain substances are generally excluded from the Toxic Substances Control Act, including food, drugs, cosmetics, and pesticides.

##### **Hazardous Materials Transportation Act**

Transportation of hazardous materials is regulated by the U.S. Department of Transportation's Office of Hazardous Materials Safety. The office formulates, issues, and revises hazardous materials regulations under the Federal Hazardous Materials Transportation Law. The hazardous materials regulations cover hazardous materials definitions and classifications, hazard communications, shipper and carrier operations, training and security requirements, and packaging and container specifications. The hazardous materials transportation regulations are codified in Title 49, Parts 100–185 of the Code of Federal Regulations.

The hazardous materials transportation regulations require carriers transporting hazardous materials to receive training in the handling and transportation of hazardous materials. Training requirements include pre-trip safety inspections, use of vehicle controls and equipment including emergency equipment, procedures for safe operation of the transport vehicle, training on the properties of the hazardous material being transported, and loading and unloading procedures. All drivers must possess a commercial driver's license as required by Title 49, Part 383 of the Code of Federal Regulations. Vehicles transporting hazardous materials must be properly placarded. In addition, the carrier is responsible for the safe unloading of hazardous materials at the site, and operators must follow specific procedures during unloading to minimize the potential for an accidental release of hazardous materials.

##### **Occupational and Safety Health Act**

The Occupational Safety and Health Administration (OSHA) is responsible at the federal level for ensuring worker safety. OSHA sets federal standards for implementing workplace training, exposure limits, and safety procedures for the handling of hazardous substances and hazardous materials (as well as other hazards). OSHA also establishes criteria by which each state can implement its own health and safety program.

##### **Resource Conservation and Recovery Act**

The Resource Conservation and Recovery Act (RCRA) gives EPA the authority to control hazardous waste from "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986

amendments to RCRA enabled the EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. The Federal Hazardous and Solid Waste Amendments are the 1984 amendments to RCRA that focused on waste minimization and phasing out land disposal of hazardous waste, as well as corrective action for releases. Some of the other mandates of this law include increased enforcement authority for EPA, more stringent hazardous waste management standards, and a comprehensive underground storage tank program.

### **Regional Screening Levels**

The EPA provides regional screening levels for chemical contaminants to provide comparison values for residential and commercial/industrial exposures to soil, air, and tap water (drinking water). Regional Screening Levels (RSLs) are available on the EPA's website and provide a screening level calculation tool to assist risk assessors, remediation project managers, and others involved with risk assessment and decision making. RSLs are also used when a site is initially investigated to determine if potentially significant levels of contamination are present to warrant further investigation. In California, the DTSC Human and Ecological Risk Office (HERO) incorporated the EPA RSLs into the HERO human health risk assessment. HERO created Human Health Risk Assessment Note 3, which incorporates HERO recommendations and DTSC-modified screening levels based on review of the EPA RSLs. The DTSC-modified screening levels should be used in conjunction with the EPA RSLs to evaluate chemical concentrations in environmental media at California sites and facilities.

### **Federal Response Plan**

The Federal Response Plan of 1999, as amended in 2003, is a signed agreement among 27 federal departments and agencies, including the American Red Cross, that (1) provides the mechanism for coordinating delivery of federal assistance and resources to augment efforts of state and local governments overwhelmed by a major disaster or emergency; (2) supports implementation of the Robert T. Stafford Disaster Relief and Emergency Act, as well as individual agency statutory authorities; and (3) supplements other federal emergency operations plans developed to address specific hazards. The Federal Response Plan is implemented in anticipation of a significant event likely to result in a need for federal assistance or in response to an actual event requiring federal assistance under a presidential declaration of a major disaster or emergency.

### **International Fire Code**

The International Fire Code (IFC), created by the International Code Council, is the primary means for authorizing and enforcing procedures and mechanisms to ensure the safe handling and storage of any substance that may pose a threat to public health and safety. The IFC regulates the use, handling, and storage requirements for hazardous materials at fixed facilities. The IFC and the International Building Code use a hazard classification system to determine what measures are required to protect against structural fires. These measures may include construction standards, separations from property lines, and specialized equipment. To ensure that these safety measures are met, IFC employs a permit system based on hazard classification. The IFC is updated every 3 years.

### **National Fire Protection Association Codes, Standards, Practices, and Guides**

National Fire Protection Association (NFPA) codes, standards, recommended practices, and guides ("NFPA Documents") are developed through a consensus standards development process approved by the American National Standards Institute. This process brings together professionals representing varied viewpoints and interests to achieve consensus on fire and other safety issues. NFPA standards are recommended guidelines and nationally accepted good practices in fire protection but are not law or codes unless adopted as such or referenced as such by the California Fire Code (CFC) or the Local Fire Agency.

### Federal Wildland Fire Management Policy

The Federal Wildland Fire Management Policy was developed in 1995, updated in 2001, and again in 2009, by the National Wildfire Coordinating Group, a federal multi-agency group that establishes consistent and coordinated fire management policy across multiple federal jurisdictions. An important component of the Federal Wildland Fire Management Policy is the acknowledgement of the essential role of fire in maintaining natural ecosystems. The Federal Wildland Fire Management Policy and its implementation are founded on the following guiding principles:

- Firefighter and public safety are the first priority in every fire management activity.
- The role of wildland fire as an essential ecological process and natural change agent will be incorporated into the planning process.
- Fire management plans, programs, and activities support land and resource management plans and their implementation.
- Sound risk management is a foundation for all fire management activities.
- Fire management programs and activities are economically viable, based upon values to be protected, costs, and land and resource management objectives.
- Fire management plans and activities are based upon the best available science.
- Fire management plans and activities incorporate public health and environmental quality considerations.
- Federal, state, tribal, local, interagency, and international coordination and cooperation are essential.

Standardization of policies and procedures among federal agencies is an ongoing objective.

### National Fire Plan

The National Fire Plan was a presidential directive in 2000 as a response to severe wildland fires that had burned throughout the United States. The National Fire Plan focuses on reducing fire impacts on rural communities and providing assurance for sufficient firefighting capacity in the future. The plan addresses five key points: Firefighting, Rehabilitation, Hazardous Fuels Reduction, Community Assistance, and Accountability. The plan continues to provide invaluable technical, financial, and resource guidance and support for wildland fire management across the United States. The U.S. Forest Service and the U.S. Department of the Interior are working to successfully implement the key points outlined in the plan.

### 3.8.2.2 State

#### Certified Unified Program

The California Environmental Protection Agency (CalEPA) implements and enforces a statewide hazardous materials program known as the Certified Unified Program, established by Senate Bill 1802 to consolidate, coordinate, and make consistent the administrative requirements, permits, inspections, and enforcement activities for the following environmental and emergency management programs for hazardous materials:

- Hazardous Materials Release Response Plans and Inventories (Business Plans)
- California Accidental Release Prevention Program
- Underground Storage Tank Program
- Aboveground Petroleum Storage Act Requirements for Spill Prevention, Control, and Countermeasure Plans

- Hazardous Waste Generator and On-Site Hazardous Waste Treatment Programs
- California Uniform Fire Code, Hazardous Materials Management Plans, and Hazardous Material Inventory Statements

CalEPA certifies local government agencies as Certified Unified Program Agencies (CUPAs) to implement hazardous waste and materials standards. The Merced County Department of Public Health, Division of Environmental Health, is designated as the local CUPA in Merced County.

### **California Hazardous Waste Control Law**

California Health and Safety Code Division 20, Chapter 6.5 establishes regulations to protect the public health and the environment by assisting generators of hazardous waste in meeting the responsibility for the safe disposal of hazardous waste. The California Hazardous Waste Control Law is administered by CalEPA and pertains to administering a state hazardous waste program in lieu of the federal RCRA program, pursuant to Section 3006 of Public Law 94-580, as amended. Although the Hazardous Waste Control Law is generally more stringent than RCRA, until EPA approves the California hazardous waste control program (which is charged with regulating the generation, treatment, storage, and disposal of hazardous waste), both the state and federal laws apply in California. The Hazardous Waste Control Law lists 791 chemicals and approximately 300 common materials that may be hazardous; establishes criteria for identifying, packaging, and labeling hazardous wastes; prescribes management controls; establishes permit requirements for treatment, storage, disposal, and transportation; and identifies some wastes that cannot be disposed of in landfills.

### **California Accidental Release Prevention Program**

Similar to the Federal Risk Management Program, the California Accidental Release Prevention Program includes additional state requirements and an additional list of regulated substances and thresholds. The regulations of the program are contained in California Code of Regulations, Title 19, Division 2, Chapter 4.5. The intent of the California Accidental Release Prevention Program is to provide first responders with basic information necessary to prevent or mitigate damage to public health, safety, and the environment from the release or threatened release of hazardous materials.

### **California Department of Toxic Substances Control and California Highway Patrol Hazard Transportation Program**

The DTSC administers the transportation of hazardous materials throughout the state. Regulations applicable to the transportation of hazardous waste include Title 22, Division 4.5, Chapter 13, and Chapter 29 of the California Code of Regulations, as well as Division 20, Chapter 6.5, Articles 6.5, 6.6, and 13 of the California Health and Safety Code. The DTSC requires that drivers transporting hazardous wastes obtain a certificate of driver training that shows the driver has met the minimum requirements concerning the transport of hazardous materials, including proper labeling and marking procedures, loading/handling processes, incident reporting and emergency procedures, and appropriate driving and parking rules. The California Highway Patrol (CHP) also requires shippers and carriers to complete hazardous materials employee training before transporting hazardous materials.

### **California Department of Transportation/California Highway Patrol**

Under Title 13 of the California Code of Regulations, Division 2, Chapter 6, California regulates the transportation of hazardous waste originating or passing through the state. The CHP and the California Department of Transportation (Caltrans) have primary responsibility for enforcing federal and state regulations and responding



to hazardous materials transportation emergencies. CHP enforces materials and hazardous waste labeling and packing regulations that prevent leakage and spills of material in transit and provides detailed information to cleanup crews in the event of an incident. Vehicle and equipment inspection, shipment preparation, container identification, and shipping documentation are all part of the responsibility of CHP. CHP conducts regular inspections of licensed transporters to ensure regulatory compliance. Caltrans has emergency chemical spill identification teams at locations throughout the state. Hazardous waste must be regularly removed from generating sites by licensed hazardous waste transporters. Transported materials must be accompanied by hazardous waste manifests.

### **California Health and Safety Code**

The handling and storage of hazardous materials is regulated by Division 20, Chapter 6.95 of the California Health and Safety Code. Under Sections 25500–25543.3, facilities handling hazardous materials are required to prepare a Hazardous Materials Business Plan, which contain basic information on the location, type, quantity, and health risks of hazardous materials stored, used, or disposed of in the state.

Chapter 6.95 of the Health and Safety Code establishes minimum statewide standards for Hazardous Materials Business Plans. Each business shall prepare a Hazardous Materials Business Plan if that business uses, handles, or stores a hazardous material (including hazardous waste) or an extremely hazardous material in quantities greater than or equal to the following:

- 500 pounds of a solid substance
- 55 gallons of a liquid
- 200 cubic feet of compressed gas
- A hazardous compressed gas in any amount (highly toxic with a Threshold Limit Value of 10 parts per million or less)
- Extremely hazardous substances in threshold planning quantities

In addition, a facility that stores quantities of specific acutely hazardous materials above the thresholds set forth by California code is required to prepare a Risk Management Plan and California Accidental Release Plan. The Risk Management Plan and Accidental Release Plan provide information on the potential impact zone of a worst-case release and require plans and programs designed to minimize the probability of a release and mitigate potential impacts.

### **California Occupational Safety and Health Administration Hazard Handling Procedures**

The California Occupational Safety and Health Administration (Cal/OSHA) is the primary agency responsible for worker safety in the handling and use of chemicals in the workplace. Cal/OSHA standards are generally more stringent than federal regulations. The employer is required to monitor worker exposure to listed hazardous substances and notify workers of exposure (8 CCR 337 –340). The regulations specify requirements for employee training, availability of safety equipment, accident prevention programs, and hazardous substance exposure warnings.

### **Environmental Screening Levels**

Environmental Screening Levels (ESLs) provide conservative screening levels for over 100 chemicals found at sites with contaminated soil and groundwater. They are intended to help expedite the identification and evaluation of

potential environmental concerns at contaminated sites. The ESLs were developed by San Francisco Bay Regional Water Quality Control Board; however, ESLs are used throughout the state. While ESLs are not intended to establish policy or regulation, these values can be used as a conservative screening level for sites with contamination. Other agencies in California currently use the ESLs (as opposed to RSLs). In general, the ESLs could be used at any site in the State of California, provided all stakeholders agree. The ESLs are not generally used at sites where the contamination is solely related to a LUST; those sites are instead subject to the Low-Threat Underground Storage Tank Closure Policy.

### **California Department of Forestry and Fire Protection**

CAL FIRE is tasked with reducing wildfire-related impacts and enhancing California's resources. CAL FIRE responds to all types of emergencies including wildland fires and residential/commercial structure fires. In addition, CAL FIRE is responsible for the protection of approximately 31 million acres of private land within the state and, at the local level, is responsible for inspecting defensible space around private residences. CAL FIRE is responsible for enforcing State of California fire safety codes included in the California Code of Regulations and California Public Resources Code. California Public Resources Code 4291 states generally that any person operating any structure located on brush-covered lands or land covered with flammable material is required to maintain defensible space around the structure. California Code of Regulations Title 14 Section 1254 identifies minimum clearance requirements required around utility poles. In State Responsibility Areas within the jurisdiction of CAL FIRE, the Fire Safety Inspection Program is an important tool for community outreach and enforcement of state fire codes.

CAL FIRE also inspects utility facilities and makes recommendations regarding improvements in facility design and infrastructure. Joint inspections of facilities by CAL FIRE and the utility owner are recommended by CAL FIRE so that each entity may assess the current state of the facility and successfully implement fire prevention techniques and policies. Violations of state fire codes discovered during inspections are required to be brought into compliance with the established codes. If a CAL FIRE investigation reveals that a wildfire occurred as a result of a violation of a law or negligence, the responsible party could face criminal and/or misdemeanor charges. In cases where a violation of a law or negligence has occurred, CAL FIRE has established the Civil Cost Recovery Program, which requires parties liable for wildfires to pay for wildfire-related damages.

### **California Fire Code**

The CFC is contained within Title 24, Chapter 9 of the California Code of Regulations. Based on the International Fire Code, the CFC is created by the California Buildings Standards Commission and regulates the use, handling, and storage requirements for hazardous materials at fixed facilities. Similar to the International Fire Code, the CFC and the California Building Code use a hazards classification system to determine the appropriate measures to incorporate to protect life and property.

### **California Public Resources Code**

These regulations are discussed in further detail as follows:

- Public Resource Code 4290 requires minimum fire safety standards related to defensible space that are applicable to state responsibility area lands and lands classified and designated as very high fire hazard severity zones.
- Public Resource Code 4291 requires a reduction of fire hazards around buildings, requiring 100 feet of vegetation management around all buildings, and is the primary mechanism for conducting fire prevention activities on private property within CAL FIRE jurisdiction.

### Fire Hazard Severity Zoning

CAL FIRE mapped FHSZs in Merced County based on fuel loading, slope, fire weather, and other relevant factors as directed by Public Resources Code Sections 4201–4204 and Government Code Sections 51175–51189. FHSZs are ranked from moderate to very high and are categorized for fire protection within a Federal Responsibility Area, State Responsibility Area, or Local Responsibility Area under the jurisdiction of a federal agency, CAL FIRE, or local agency, respectively.

### California Strategic Fire Plan

The 2019 Strategic Fire Plan for California reflects CAL FIRE’s focus on (1) fire prevention and suppression activities to protect lives, property, and ecosystem services; and (2) natural resource management to maintain the state’s forests as a resilient carbon sink to meet California’s climate change goals and to serve as important habitat for adaptation and mitigation. The Strategic Fire Plan for California provides a vision for a natural environment that is more fire resilient; buildings and infrastructure that are more fire resistant; and a society that is more aware of and responsive to the benefits and threats of wildland fire; all achieved through local, state, federal, tribal, and private partnerships (CAL FIRE 2019). The Strategic Fire Plan goals include the following:

- Identify and evaluate wildland fire hazards and recognize life, property, and natural resource assets at risk, including watershed, habitat, social and other values of functioning ecosystems. Facilitate the collaborative development and sharing of all analyses and data collection across all ownerships for consistency in type and kind.
- Promote and support local land use planning processes as they relate to: (a) protection of life, property, and natural resources from risks associated with wildland fire, and (b) individual landowner objectives and responsibilities.
- Support and participate in the collaborative development and implementation of local, county, and regional plans that address fire protection and landowner objectives.
- Increase fire prevention awareness, knowledge and actions implemented by individuals and communities to reduce human loss, property damage and impacts to natural resources from wildland fires.
- Integrate fire and fuels management practices with landowner/land manager priorities across jurisdictions.
- Determine the level of resources necessary to effectively identify, plan and implement fire prevention using adaptive management strategies.
- Determine the level of fire suppression resources necessary to protect the values and assets at risk identified during planning processes.
- Implement post-fire assessments and programs for the protection of life, property, and natural resource recovery.

#### 3.8.2.3 Local

### Certified Unified Program Agency

As previously discussed, CalEPA certifies local government agencies as CUPAs to implement hazardous waste and materials standards. The Merced County Department of Public Health, Division of Environmental Health, is designated as the local CUPA in Merced County. The Division of Environmental Health oversees six state-mandated programs in the county, including (1) Hazardous Materials Business Plan, (2) California Accidental Release Program, (3) Underground Storage Tank Program, (4) Aboveground Storage Tank Program, (5) Hazardous Waste Generator Program, and (6) Tiered Permitting Program. Businesses that are regulated under these programs are routinely inspected by the CUPA team.

### Merced Vision 2030 General Plan

As required by state law, Merced County has adopted a general plan to guide land use decisions within the county. The general plan provides goals, policies, standards, and implementation programs to guide the physical development of a county. At a minimum, the general plan must address the topics of land use, transportation, housing, conservation, open space, noise, and safety. The Merced Vision 2030 General Plan (Merced County General Plan), adopted in 2013, has established the year 2030 as the plan's time horizon. The Health and Safety Element of the Merced County General Plan includes goals and policies related to fire hazards, airport safety, and hazardous materials/waste. The following policies would apply to the Modified Project (Merced County 2013):

#### *Health and Safety Element*

- **Policy HS-3.7:** Road Fire Buffers. Encourage fire buffers along heavily traveled roads within high and extreme hazard zones by thinning, diskings, or controlled burning. Plan parks, golf courses, utility corridors, roads, and open space so they can serve a secondary function as a fuel break.
- **Policy HS-3.13:** Uniform Fire Code. Require the Uniform Fire Code to be used as a guide for project-level prevention and suppression activities, including site access, water supply, fire protection systems, and the use of fire-resistant building materials.
- **Policy HS-4.1:** Airport Land Use Compatibility Plan. Require that development around public use airports be consistent with the safety policies and land use compatibility guidelines contained in the Merced County Airport Land Use Commission's adopted Airport Land Use Compatibility Plan and ensure that development near private airstrips addresses land use compatibility issues and complies with Federal Aviation Administration regulations.
- **Policy HS-4.2:** Compliance with FAA Regulations. Require that development within the airport approach and departure zones is in compliance with Part 77 of the Federal Aviation Administration Regulations (FAA regulations that address objects affecting navigable airspace).
- **Policy HS-5.1:** Compliance with Safety Standards. Require that hazardous materials are used, stored, transported, and disposed of in a safe manner, in compliance with local, State, and Federal safety standards.
- **Policy HS-5.2:** Hazardous Material and Waste Transport. Coordinate with the California Highway Patrol to establish procedures for the movement of hazardous wastes and explosives within the County.
- **Policy HS-5.3:** Incompatible Land Uses. Prohibit incompatible land uses near properties that produce or store hazardous waste.
- **Policy HS-5.4:** Contamination Prevention. Require new development and redevelopment proposals that have suspected or historic contamination to address hazards concerns and protect soils, surface water, and groundwater from hazardous materials contamination by conducting Phase I Environmental Site Assessments (ESAs) according to the American Society for Testing and Materials (ASTM) standards and applicable Department of Toxic Substances Control (DTSC) remediation guidelines. Also, complete additional Phase II Environmental Site Assessments and soil investigations, and any identified or needed remediation when preliminary studies determine such studies are recommended.

### 3.8.3 Thresholds of Significance

The following significance criteria from the 2019 EIS/EIR are used for the purposes of analysis in this SEIR. These criteria, which have not changed from the 2019 EIS/EIR, are identified in Chapter 13, Hazards and Hazardous Materials, of the 2019 EIS/EIR. A significant impact related to hazards and hazardous materials would occur if the Modified Project would:

1. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
2. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.
3. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as result, would it create a significant hazard to the public or the environment.
4. Result in a safety hazard for people residing or working in the Modified Project area for a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport.
5. Result in a safety hazard for people residing within the Modified Project area for a project within the vicinity of a private airstrip.
6. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.
7. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

### 3.8.4 Impacts Analysis

#### Threshold 1

***Would the Modified Project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?***

| 2019 EIS/EIR Impact Determination | Modified Project Impact Determination | New Significant Increase in Impact Severity? |
|-----------------------------------|---------------------------------------|--|
| Less than Significant             | Less than Significant                 | No   |

#### Campground Construction and Day Use Area Improvements

Hazardous materials that may be used during grading and construction for the proposed campground and improvements to the San Luis Creek Day Use Area include gasoline, diesel fuel, oil, lubricants, grease, solvents, and paints. These materials would be used and stored in designated construction staging areas and would be used, transported, handled, and stored in accordance with all applicable federal, state, and local laws and regulations, which are intended to minimize health risk to the public associated with hazardous materials. The use of these

materials for their intended purpose would not pose a significant risk to the public or environment. In addition, as discussed in Section 3.1, Water Quality and Groundwater, a National Pollutant Discharge Elimination System-mandated Stormwater Pollution Prevention Plan would be implemented during grading and construction, including best management practices that would minimize incidental spills of petroleum products and hazardous materials and prevent off-site migration in the event such incidental spills occur. Best management practices would include equipment fueling and maintenance in designated areas not in proximity to the reservoir, use of spill containment booms and absorbent pads in areas of fueling, and maintenance of equipment such that leaks would not occur. Wastes, both hazardous and non-hazardous, accumulated during grading and construction for the proposed campground and improvements to the San Luis Creek Day Use Area, would be handled, documented, and disposed of in accordance with federal, state, and local laws and regulations. Similarly, any small quantities (generally less than 5 gallons) of petroleum products and hazardous materials used for maintenance during campground and day use area operations, such as pesticides, herbicides, gasoline, oil, and grease, would be handled, documented, and disposed of in accordance with federal, state, and local laws and regulations. As a result, this element of the Modified Project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. Impacts would be **less than significant**.

### Changes in Borrow Area Location

In addition to Borrow Area 6 and the Basalt Hill Borrow Area, which were evaluated as part of the Approved Project, Borrow Areas 12 and 14 would also be used as borrow sites under the Modified Project. Borrow Areas 12 and 14 are within the overall construction footprint identified by the Approved Project, but were identified in that document and analyzed as anticipated contractor staging areas. Blasting and soil/rock excavations at all borrow sites would require heavy equipment, which would use petroleum products and small quantities of hazardous materials. The potential for hazardous materials spills impacts at these sites would be like that described for campground/day use area grading, construction, and improvement. For the reasons described above, this element of the Modified Project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. Impacts would be **less than significant**.

### Minor Additions to Contractor Work Area

Contractor work areas would be used for soil stockpiling and overnight parking, fueling, and maintenance of heavy equipment. The potential for hazardous materials spills impacts at these sites would be like that described for campground construction and day use area improvements. For the reasons described above, this element of the Modified Project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. Impacts would be **less than significant**.

### Additional Construction Assumptions

Stability berms would be constructed along the downstream side of the dam to raise the dam crest 12 feet and increase the reservoir's freeboard, or the distance between the water surface and the dam crest. Construction of these stability berms would initially require excavations so that the berm would be keyed into the underlying bedrock. Dewatering would be required in these excavations occurring at the base of the dam. Excavations and dewatering at the base of the dam would require the use of heavy equipment. The potential for hazardous materials spills impacts at these excavation and dewatering sites would be like that described for campground construction and day use area improvements. Dewatering is anticipated to entail installation of temporary deeper wells along with shallower well points that would be installed around each work area requiring dewatering. Water removed from the excavation during this period would be pumped into temporary settling ponds or portable tanks to allow

sediment to drop out and meet permit water quality standards before being discharged into the reservoir or forebay. Dewatering would be subject to permitting approval by the CVRWQCB. As a result, any potentially contaminated groundwater in dewatering wells associated with incidental spills from heavy equipment would not be discharged into the reservoir or forebay. As a result, this element of the Modified Project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. These additional construction assumptions, which were not included in the Approved Project, would result in **less-than-significant** impacts related to Modified Project hazardous materials.

### Cumulative Impacts

Hazardous materials, including gasoline, diesel fuel, oil, lubricants, grease, solvents, and paints, would be used during grading, construction, and operation at each of the cumulative project sites. These materials would be used and stored in designated construction staging areas and maintenance facilities and would be used, transported, handled, and stored in accordance with all applicable federal, state, and local laws and regulations, which are intended to minimize health risk to the public associated with hazardous materials. The use of these materials for their intended purpose would not pose a significant risk to the public or environment. In addition, as discussed in Section 3.1, a National Pollutant Discharge Elimination System–mandated Stormwater Pollution Prevention Plan would be implemented during grading and construction, including best management practices that would minimize incidental spills of petroleum products and hazardous materials and prevent off-site migration in the event such incidental spills occur. Similar to the Modified Project, potential impacts related to incidental spills of hazardous materials would be isolated to each cumulative project site. Although the B.F. Sisk Dam Raise and Reservoir Expansion Project (reservoir expansion project) would generally be located in the same location as the Modified Project, potential incidental spills of hazardous materials would be limited to isolated staging areas, which would vary throughout the construction period for the Modified Project and the reservoir expansion project. As a result, the Modified Project, in combination with cumulative projects, would not result in cumulatively considerable impacts with respect to creation of significant hazards to the public or the environment through the routine transport, use, or disposal of hazardous materials. Cumulative impacts would be **less than significant**.

### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant.

### Threshold 2

***Would the Modified Project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?***

| 2019 EIS/EIR Impact Determination                  | Modified Project Impact Determination              | New Significant Increase in Impact Severity? |
|--|--|--|
| Less than Significant with Mitigation Incorporated | Less than Significant with Mitigation Incorporated | No   |

### Campground Construction and Day Use Area Improvements

A search was completed for oil drilling features and hazardous pipelines within the Modified Project area that could impact the proposed areas of ground disturbance. Based on this search, hazardous liquid pipelines are located approximately 0.8 miles and 1.4 miles east of the proposed campground area; a gas transmission line is located approximately 1.5 miles east of the proposed campground; and an abandoned, dry oil well is located approximately 3.0 miles southeast of the campground (Figure 3.8-1A). Similarly, hazardous liquid pipelines are located approximately 0.8 miles and 1.5 mile northeast of the proposed San Luis Creek Day Use Area improvements; a gas transmission line is located approximately 1.6 mile northeast of the day use area; and the abandoned, dry oil well is located approximately 2.3 miles southeast of the area. Other components of the Modified Project are located at greater distances than those described above. Based on these distances, there is no potential for an accident involving the release of hazardous materials into the environment during construction or operations. As a result, this element of the Modified Project would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. **No impacts** would occur.

### Changes in Borrow Area Location

In addition to Borrow Area 6 and the Basalt Hill Borrow Area, the Modified Project includes materials extraction for dam construction from two more borrow areas, including Borrow Areas 12 and 14. The hazardous liquid pipelines described above are located approximately 1.3 miles and 2.0 miles northeast of Borrow Areas 12 and 14, at the closest point, and the gas transmission line is located approximately 2.0 miles northeast of these borrow areas, at the closest point (Figure 3.8-1A and Figure 3.8-1B). In addition, the abandoned oil well described above is located approximately 1.3 miles northeast of Borrow Areas 12 and 14, at the closest point. Based on these distances, there is no potential for an accident involving the release of hazardous materials into the environment. As a result, this element of the Modified Project would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. **No impacts** would occur.

### Minor Additions to Contractor Work Area

The hazardous liquid pipelines described above are located 1.7 miles northeast of the additional staging and stockpiling areas, at the closest point (Figure 3.8-1A and Figure 3.8-1B). Similarly, the gas transmission line is located approximately 2.2 miles northeast of these areas, at the closest point, and the abandoned oil well described above is located approximately 2.2 miles east of these staging and stockpiling areas, at the closest point. Based on these distances, there is no potential for an accident involving the release of hazardous materials into the environment. As a result, this element of the Modified Project would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. **No impacts** would occur.

### Additional Construction Assumptions

Stability berms would be constructed along the downstream side of the dam to raise the dam crest 12 feet and increase the reservoir's freeboard, or the distance between the water surface and the dam crest. Construction of these stability berms would initially require excavations so that the berm would be keyed into the underlying bedrock. Dewatering would be required in these excavations occurring at the base of the dam.



The hazardous liquid pipelines described above are located 2.6 miles northeast of the proposed stability berms, at the closest point, and the gas transmission line is located approximately 3.4 miles northeast of the proposed berm. In addition, the abandoned oil well described above is located approximately 2.8 miles east of the proposed stability berm. As a result, this element of the Modified Project would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. These additional construction assumptions, which were not included in the Approved Project, would result in **no impacts** related to Modified Project hazardous materials.

### Cumulative Impacts

Hazardous liquid/gas pipelines and oil/gas wells could potentially be located in the vicinity of cumulative projects sites, resulting in the potential for accident involving the release of hazardous materials into the environment during grading, excavations, and operations. However, potential impacts related to accidents would be isolated to each cumulative project site. Although reservoir expansion project would generally be located in the same location as the Modified Project, the Approved Project and the Modified Project would occur before initiation of this cumulative project, resulting in no overlapping construction activities. In addition, as described above, no hazardous liquid/gas pipelines or oil/gas wells are located in the vicinity of proposed borrow areas or dam stabilization/dam raising activities. As a result, the Modified Project, in combination with cumulative projects, would not result in cumulatively considerable impacts with respect to potential creation of a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. **No cumulative impacts** would occur.

### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in no impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts or change the impact determination made by the 2019 EIS/EIR. The 2019 EIS/EIR identified potentially significant impacts and found that impacts would be less than significant with mitigation. Impacts of the Modified Project would remain less than significant with mitigation identified in the 2019 EIS/EIR.

### Threshold 3

***Would the Modified Project be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?***

| 2019 EIS/EIR Impact Determination                  | Modified Project Impact Determination              | New Significant Increase in Impact Severity? |
|--|--|--|
| Less than Significant with Mitigation Incorporated | Less than Significant with Mitigation Incorporated | No   |

### Campground Construction and Day Use Area Improvements

#### *San Luis Reservoir State Recreation Area Maintenance Facility*

An active LUST site is located immediately south of the maintenance shed on Gonzaga Road. Leaking gasoline and waste oil underground storage tanks resulted in petroleum hydrocarbon concentrations in soil and groundwater beneath the site, including gasoline free product floating on groundwater. Soil and groundwater remediation were completed from 1999 to 2009. Additional site assessment is currently being evaluated for this site to determine the extent of groundwater contamination. The 2019 EIS/EIR included an impact determination of less than significant with mitigation, as this site is located approximately 830 feet from proposed permanent downstream fill impacts for dam construction. However, this LUST site is located approximately 2.7 miles south of the proposed campground and approximately 1.1 miles south of the existing San Luis Creek Day Use Area (Figure 3.8-1A). Based on these distances, the potential for exposure of contaminated soil and/or groundwater during construction and operation of the proposed campground and the San Luis Creek Day Use Area does not exist.

A closed Geotracker site is located at the same maintenance facility described above. Soil samples were collected in 2013, to a depth of 15 feet, in the vicinity of a vehicle wash discharge area and analyzed for total petroleum hydrocarbons, volatile organic compounds (including solvents and fuel oxygenates), and metals. No significant concentrations of these constituents were detected; therefore, the case was closed with respect to regulatory compliance in November 2013. Therefore, the potential for exposure of contaminated soil and/or groundwater during construction and operation of the proposed campground and the San Luis Creek Day Use Area does not exist. As a result, this element of the Modified Project would not create a significant hazard to the public or the environment and **no impacts** would occur.

#### *Forebay Chevron Station*

An active LUST site is located near the intersection of SR-152 and SR-33, at 29860 Gonzaga Road. Leaking gasoline underground storage tanks resulted in petroleum hydrocarbon concentrations in soil and groundwater beneath the site. As of 2018, the lateral extent of soil and groundwater contamination has not been defined and the CVRWQCB has requested that an interim remedial action plan be prepared. The groundwater flow direction is currently unknown, but based on the local topography, groundwater likely flows toward the north, toward O'Neill Forebay and Borrow Area 6 of the Approved Project. This LUST site is located approximately 3.8 miles southeast of the proposed campground and approximately 2.7 miles southeast of the existing San Luis Creek Day Use Area (Figure 3.8-1A). Based on these distances, the potential for exposure of contaminated soil and/or groundwater during construction and operation of the proposed campground and the San Luis Creek Day Use Area does not exist. As a result, this element of the Modified Project would not create a significant hazard to the public or the environment and **no impacts** would occur.

#### *Romero Ranch*

A closed EnviroStor site is located at the northwest intersection of SR-152 and SR-33. Residues of pesticides, including DDT and toxaphene, have been found in soils in the area around a cattle dip tank and contaminated soils have been removed. The site was included in the DTSC Voluntary Cleanup Program and was closed with respect to regulatory oversight in December 1998, indicating that no further action is required with respect to site assessment and/or remediation. This site is located approximately 3.5 miles southeast of the proposed campground and approximately 2.5 miles southeast of the existing San Luis Creek Day Use Area (Figure 3.8-1A). Based on this distance, there is no potential for exposure of contaminated soil and/or groundwater during construction and operation of the proposed campground and the San Luis Creek Day Use Area. As a result, this element of the Modified Project would not create a significant hazard to the public or the environment and **no impacts** would occur.

### Changes in Borrow Area Location

The active LUST site and closed Geotracker site at the maintenance facility described above are located approximately 3,000 feet north of Borrow Areas 12 and 14, at the closest point (Figure 3.8-1B). In addition, the active LUST site at the Forebay Chevron station described above is located approximately 2.0 miles northeast of Borrow Areas 12 and 14, at the closest point. Based on these distances, the potential for exposure of contaminated soil while excavating soil and rock at Borrow Areas 12 and 14 does not exist.

The closed EnviroStor site described above is located on a ranch, approximately 2.0 miles northeast of Borrow Areas 12 and 14. This site was included in the DTSC Voluntary Cleanup Program and was closed with respect to regulatory oversight in December 1998, indicating that no further action is required with respect to site assessment and/or remediation. Therefore, the potential for exposure of contaminated soil during excavations at Borrow Areas 12 and 14 does not exist. This element of the Modified Project would not create a significant hazard to the public or the environment and **no impacts** would occur.

### Minor Additions to Contractor Work Area

The active LUST site and closed Geotracker site at the maintenance facility described above are located approximately 1.0 mile southeast of an additional staging and stockpiling area adjacent to the Gianelli Pumping-Generating Plant (Figure 3.8-1A) and 1.6 miles northeast of an additional staging and stockpiling area adjacent to the southern portion of the dam (Figure 3.8-1B). The active LUST site at the Forebay Chevron station described above is located approximately 3.4 miles southeast and 2.4 miles northeast of these staging and stockpiling areas, respectively. In addition, the closed Envirostor site at Romero Ranch is located approximately 3.3 miles southeast 2.3 miles northeast of these staging areas, respectively. Based on these distances, the potential for exposure of contaminated soil and/or groundwater during soil stockpiling and equipment staging does not exist. As a result, this element of the Modified Project would not create a significant hazard to the public or the environment and **no impacts** would occur.

### Additional Construction Assumptions

The active LUST site and closed Geotracker site at the maintenance facility described above are located approximately 3,500 feet east of the closest proposed stability berm (Figure 3.8-1A and Figure 3.8-1B). In addition, this Geotracker site has been closed with respect to regulatory compliance, thus minimizing the potential for soil and/or groundwater contamination to be present. The active LUST site at the Forebay Chevron station is located 2.6 miles east of the closest stability berm. In addition, the closed Envirostor site at Romero Ranch is located approximately 2.5 miles east of the proposed stability berms, at the closest point. Based on these distances, there is no potential for exposure of contaminated soil and/or groundwater during stability berm construction (including dewatering).

Dewatering is anticipated to entail installation of temporary deeper wells along with shallower well points that would be installed around each work area requiring dewatering. Water removed from the excavation during this period would be pumped into temporary settling ponds or portable tanks to allow sediment to drop out and meet permit water quality standards before being discharged into the reservoir or forebay. Dewatering would be subject to permitting approval by the CVRWQCB. As a result, any potentially contaminated groundwater in dewatering wells would not be discharged into the reservoir or forebay. As a result, this element of the Modified Project would not create a significant hazard to the public or the environment. These additional construction assumptions, which were not included in the Approved Project, would result in **less-than-significant** impacts related to Modified Project hazardous materials.

### Cumulative Impacts

Areas of soil and/or groundwater contamination may be present in the vicinity of cumulative project sites. However, potential impacts associated with such contamination would be isolated to each cumulative site. In the event it is suspected that contaminated soil would be present during cumulative project grading and excavations, a soil contingency would likely be in-place in order to properly address such contamination, including soil characterization, off-site transport, and disposal in an appropriate (i.e., for the type/level of contamination) waste disposal facility. In the absence of such a contingency plan, contaminated materials would similarly be required by federal, state, and/or local regulations to be disposed off-site in an approved waste disposal facility. Similarly, in the event that contaminated groundwater is encountered during excavations, dewatering would be required in accordance with a National Pollutant Discharge Elimination System dewatering permit, which would be issued by the CVRWQCB. Although the reservoir expansion project would generally be located in the same location as the Modified Project, the Approved Project and the Modified Project would occur before initiation of this cumulative project, resulting in no overlapping construction activities and therefore no cumulative impact would occur associated with encountering contaminated soil and/or groundwater. Following construction, Modified Project operations would result in no considerable contribution associated with hazard to the public from hazardous materials sites or soil or groundwater contamination. As a result, the Modified Project, in combination with cumulative projects, would not result in cumulatively considerable impacts with respect to creating a significant hazard to the public or the environment as a result of nearby hazardous materials sites. **No cumulative impacts** would occur.

### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant or no impacts, and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts or change the impact determination made by the 2019 EIS/EIR. The 2019 EIS/EIR identified potentially significant impacts and found that impacts would be less than significant with mitigation. Impacts of the Modified Project would remain less than significant with mitigation incorporated.

### Threshold 4

***Would the Modified Project result in a safety hazard for people residing or working in the Modified Project area for a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport?***

| 2019 EIS/EIR Impact Determination                  | Modified Project Impact Determination | New Significant Increase in Impact Severity? |
|--|---------------------------------------|--|
| Less than Significant with Mitigation Incorporated | Less than Significant                 | No   |

### Campground Construction and Day Use Area Improvements

The proposed campground area and the existing San Luis Creek Day Use Area are not located within an Airport Land Use Plan, and are not located within 2 miles of a public use airport. The 2019 EIS/EIR associated with the Approved Project indicated that the San Luis Reservoir Seaplane Base allows water landings on the reservoir and that approximately 25 aircraft operations per year occur at the reservoir. However, the seaplane base was removed from the reservoir in 2015. The reservoir can only be used for emergency landings (Heberling, pers. comm. 2020).

As a result, this element of the Modified Project would not result in a safety hazard for people residing or working in the Modified Project area and **no impacts** would occur. Mitigation Measure HAZ-3 identified in the 2019 EIS/EIR, which requires coordination with the seaplane base, is no longer required.

### Changes in Borrow Area Location

Borrow Areas 12 and 14 are not located within an Airport Land Use Plan, and are not located within 2 miles of a public use airport. As previously discussed, the seaplane base was removed from the reservoir in 2015. As a result, this element of the Modified Project would not result in a safety hazard for people residing or working in the Modified Project area and **no impacts** would occur. Mitigation Measure HAZ-3 identified in the 2019 EIS/EIR, which requires coordination with the seaplane base, is no longer required.

### Minor Additions to Contractor Work Area

Additional staging and stockpiling areas would not be located within an Airport Land Use Plan, and would not be located within 2 miles of a public use airport. As previously discussed, the seaplane base was removed from the reservoir in 2015. As a result, this element of the Modified Project would not result in a safety hazard for people residing or working in the Modified Project area and **no impacts** would occur. Mitigation Measure HAZ-3 identified in the 2019 EIS/EIR, which requires coordination with the seaplane base, is no longer required.

### Additional Construction Assumptions

Additional construction assumptions include changes to the construction schedule, equipment and personnel specifications, and dewatering specifications for proposed excavations at the base of the dam. These Modified Project components would have no relevance to aircraft safety. As a result, this element of the Modified Project would not result in a safety hazard for people residing or working in the Modified Project area and no impacts would occur. Mitigation Measure HAZ-3 identified in the 2019 EIS/EIR, which requires coordination with the seaplane base, is no longer required.

### Cumulative Impacts

Portions of the San Luis Transmission Project, which would be located in Alameda, San Joaquin, Stanislaus, and Merced Counties, and the California High-Speed Rail Project, which would include a 35-mile corridor from Merced to Fresno, may be located within an airport land use plan or within 2 miles of a public airport or public use airport. Potential safety hazard impacts would be isolated to each cumulative project site, with no overlapping aircraft safety hazards. A portion of the San Luis Transmission Project, as well as the San Luis Reservoir SRA Resource Management Plan/General Plan (San Luis Reservoir SRA RMP/GP), the San Luis Solar Project, and reservoir expansion project would be located in the vicinity of the Modified Project. None of these projects are located within an airport land use plan or within 2 miles of a public airport. As a result, the Modified Project, in combination with cumulative projects, would not result in cumulatively considerable safety hazard impacts related to people residing or working in the Modified Project area. Cumulative impacts would be **less than significant**.

### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant or no impacts, and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. For reasons described above, impacts of the Modified Project would be reduced and would no longer require mitigation (see Section 3.8.5).

## Threshold 5

*Would the Modified Project result in a safety hazard for people residing within the Modified Project area for a project within the vicinity of a private airstrip?*

| 2019 EIS/EIR Impact Determination                  | Modified Project Impact Determination | New Significant Increase in Impact Severity? |
|--|---------------------------------------|--|
| Less than Significant with Mitigation Incorporated | Less than Significant                 | No   |

### Campground Construction and Day Use Area Improvements

The proposed campground area and the existing San Luis Creek Day Use Area are not located in the vicinity of a private airstrip. As previously discussed, the seaplane base was removed from the reservoir in 2015. As a result, this element of the Modified Project would not result in a safety hazard for people residing in the Modified Project area and **no impacts** would occur. Mitigation Measure HAZ-3 identified in the 2019 EIS/EIR, which requires coordination with the seaplane base, is no longer required

### Changes in Borrow Area Location

Borrow Areas 12 and 14 are not located in the vicinity of a private airstrip. As previously discussed, the seaplane base was removed from the reservoir in 2015. As a result, this element of the Modified Project would not result in a safety hazard for people residing in the Modified Project area and **no impacts** would occur. Mitigation Measure HAZ-3 identified in the 2019 EIS/EIR, which requires coordination with the seaplane base, is no longer required

### Minor Additions to Contractor Work Area

Additional contractor work areas would not be located in the vicinity of a private airstrip. As previously discussed, the seaplane base was removed from the reservoir in 2015. As a result, this element of the Modified Project would not result in a safety hazard for people residing in the Modified Project area and **no impacts** would occur. Mitigation Measure HAZ-3 identified in the 2019 EIS/EIR, which requires coordination with the seaplane base, is no longer required

### Additional Construction Assumptions

Additional construction assumptions include changes to the construction schedule, equipment and personnel specifications, and dewatering specifications for proposed excavations at the base of the dam. These Modified Project components would have no relevance to aircraft safety. As a result, this element of the Modified Project would not result in a safety hazard for people residing in the Modified Project area and **no impacts** would occur. Mitigation Measure HAZ-3 identified in the 2019 EIS/EIR, which requires coordination with the seaplane base, is no longer required

### Cumulative Impacts

Portions of the San Luis Transmission Project, which would be located in Alameda, San Joaquin, Stanislaus, and Merced Counties, and the California High-Speed Rail Project, which would include a 35-mile corridor from Merced to Fresno, may be located in the vicinity of the a private airstrip. Potential safety hazard impacts would be isolated to each cumulative project site, with no overlapping aircraft safety hazards. A portion of the San Luis Transmission

Project, as well as the San Luis Reservoir SRA RMP/GP, the San Luis Solar Project, and the reservoir expansion project would be located in the vicinity of the Modified Project. None of these projects are located within an airport land use plan or within 2 miles of a public airport. As a result, the Modified Project, in combination with cumulative projects, would not result in cumulatively considerable safety hazard impacts related to people residing in the Modified Project area. Cumulative impacts would be **less than significant**.

#### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant or no impacts, and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. For reasons described above, impacts of the Modified Project would be reduced and would no longer require mitigation (see Section 3.8.5).

#### Threshold 6

***Would the Modified Project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?***

| 2019 EIS/EIR Impact Determination                  | Modified Project Impact Determination              | New Significant Increase in Impact Severity? |
|--|--|--|
| Less than Significant with Mitigation Incorporated | Less than Significant with Mitigation Incorporated | No   |

#### Campground Construction and Day Use Area Improvements

Proposed campground and day use area operations would have no impact with respect to impairment of implementation of or physically interfering with an adopted emergency response plan or emergency evacuation plan. However, the roads within San Luis Creek State Park, SR-152, and Basalt Road would be the main access roads for trucks, equipment, and construction worker access to San Luis Creek State Park during grading and construction. These roads would similarly be the main evacuation route in case of an emergency. Grading and construction associated with the proposed campground and existing day use area would not require road or lane closures. However, excessive construction traffic on these roads could temporarily interfere with an emergency response plan or emergency evacuation plan for the State Responsibility Area. Potential conflicts with emergency vehicles in the form of traffic slowdowns or temporary roadway blockages during construction would be a significant impact, in that this element of the Modified Project would potentially impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

However, implementation of **Mitigation Measure TR-1 (same as TR-1 in the 2019 EIS/EIR)** would reduce impacts to less than significant (refer to Section 3.7.5 for full text of mitigation measure). Mitigation Measure TR-1 would require development of a temporary traffic control plan, to be implemented on SR-152, Basalt Road, and the Romero Visitor Center access road. The traffic control plan, which would be submitted to Caltrans for review and approval, would reduce severity of traffic during grading and construction for the campground and day use area improvements. As a result, potentially significant traffic impacts associated with proposed campground construction and existing day use area improvements would be reduced, which in turn would avoid impairment or interference with an adopted emergency response plan or emergency evacuation plan. Therefore, impacts from the Modified Project would be **less than significant with mitigation incorporated**.

### Changes in Borrow Area Location

SR-152 and Basalt Road would be the main access roads for trucks, equipment, and construction worker access to Borrow Areas 12 and 14. Similarly, these roads would be the main evacuation route in case of an emergency. Borrow excavation activities would not require road or lane closures. However, similar to that described for the proposed campground and existing day use area, potential conflicts with emergency vehicles in the form of traffic slowdowns or temporary roadway blockages during the construction period would be a significant impact, in that this element of the Modified Project would potentially impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. However, as described above for the proposed campground and day use area improvements, Mitigation Measure TR-1 would be implemented; therefore, impacts from the Modified Project would be **less than significant with mitigation incorporated**.

### Minor Additions to Contractor Work Area

Gonzaga Road and Basalt Road would be the main access roads for trucks, equipment, and construction worker access to the staging and stockpiling areas. Similarly, these roads would be the main evacuation routes in case of an emergency. Use of these staging and stockpiling areas would not require road or lane closures. However, similar to that described for the proposed campground and existing day use area, potential conflicts with emergency vehicles in the form of traffic slowdowns or temporary roadway blockages during the construction period would be a significant impact, in that this element of the Modified Project would potentially impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. However, as described above for the proposed campground and day use area improvements, Mitigation Measure TR-1 would be implemented; therefore, impacts from the Modified Project would be **less than significant with mitigation incorporated**.

### Additional Construction Assumptions

Additional construction assumptions include changes to the construction schedule, equipment and personnel specifications, and dewatering specifications for proposed excavations at the base of the dam. These Modified Project components would have no relevance to emergency response plans or evacuation plans. Therefore, this element of the Modified Project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. These additional construction assumptions, which were not included in the Approved Project, would result in **no impacts** related to Modified Project safety hazards.

### Cumulative Impacts

Modified Project operations and cumulative project operations would have no impact with respect to impairment of implementation of or physically interfering with an adopted emergency response plan or emergency evacuation plan. However, in the event that the San Luis Reservoir SRA RMP/GP, the San Luis Transmission Project, and the San Luis Solar Project are constructed at the same time, construction traffic could conflict with emergency response and evacuation plans for the State Responsibility Area. Such a conflict would be a potentially significant cumulative impact. As previously discussed, no road closures would occur in association with the Modified Project. However, excessive construction traffic could result in a slowdown in traffic and impede adopted emergency response plan or emergency evacuation plan. As a result, the Modified Project could contribute to this potentially significant impact. However, as described above for the proposed campground and day use area improvements, Mitigation Measure TR-1 would be implemented; therefore, impacts from the Modified Project would be **less than significant with mitigation incorporated**.



### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant impacts with mitigation incorporated and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant with mitigation incorporated (see Section 3.8.5).

### Threshold 7

***Would the Modified Project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?***

| 2019 EIS/EIR Impact Determination                  | Modified Project Impact Determination              | New Significant Increase in Impact Severity? |
|--|--|--|
| Less than Significant with Mitigation Incorporated | Less than Significant with Mitigation Incorporated | No   |

### Campground Construction and Day Use Area Improvements

The proposed campground area and the existing San Luis Creek Day Use Area are located within Moderate FHSZs, though mapped within or adjacent to areas ranked as having high or very high fire threat. Several historic wildfires have occurred in this area, including seven fires that have burned within or adjacent to the proposed campground area and the San Luis Creek Day Use Area (two fires, the SR-152 Fire (1998) and the Romero Fire (2000) each burned the entirety of the San Luis Creek Day Use Area). During construction, heat or sparks from equipment and vehicles, as well as the use of flammable materials, have the potential to ignite adjacent vegetation and start a fire, especially during weather events that include low humidity and high wind speeds. The following construction activities/equipment would have the potential to generate heat or sparks that could result in wildfire ignition:

- Earthmoving and excavating equipment – heated exhausts or sparks may result in ignition
- Chainsaws and other small gas-powered equipment/tools – may result in vegetation ignition from overheating, spark, fuel leak
- Cranes, tractors, forklifts, trucks, and vehicles – heated exhaust in contact with vegetation may result in ignition
- Welders – open heat source may result in metallic sparks coming into contact with vegetation
- Woodchippers – flammable fuels and hydraulic fluid may overheat and spray onto vegetation with a hose failure

The potential risk of wildfire ignition and spread associated with construction activities for the proposed campground and improvements at the San Luis Creek Day Use Area can be managed and pre-planned to reduce the potential for vegetation ignition. In addition, pre-planning and personnel fire awareness and suppression training not only results in lower probability of ignition, but also in higher probability of fire control and extinguishment in its incipient stages. Data indicate that 95% of all wildfire ignitions are controlled during initial attack (Smalley 2008).

**Mitigation Measures HAZ-1 and HAZ-4 (same as HAZ-1 and HAZ-4 in the 2019 EIS/EIR, respectively)**, which require preparation of a Fire Prevention Plan by the construction contractor, education of construction personnel regarding wildfire prevention, the use of spark arrestors, and restrictions on smoking and campfires, would be implemented during construction of the Modified Project. With implementation of these measures, construction-related impacts for the proposed campground and the San Luis Creek Day Use Area improvements would be less than significant.

During operations, the improvements to the San Luis Creek Day Use Area (additional boat launch lane and boarding float, fish-cleaning station, and six restroom stalls) would not include uses that result in an increase in potential wildfire ignitions as compared with existing conditions and would be considered less than significant for the operations period. During operations of the campground, the potential for wildfire ignitions would be increased as compared with existing conditions. Sources of potential wildfire ignitions include campfires (at the campfire center or at fire rings at individual campsites), barbecues, smoking, vehicles, and the increase in human presence in an area that is currently an undeveloped grassland area. Additionally, maintenance of the campground would necessitate the use of powered tools and equipment periodically, all of which have the potential to ignite adjacent vegetation and start a fire, especially during weather events that include low humidity and high wind speeds.

Implementation of firesafe maintenance practices (**Mitigation Measure SEIR-HAZ-1 [new mitigation measure]**) and modifications to campground operations during periods of high fire hazard (**Mitigation Measure SEIR-HAZ-2 [new mitigation measure]**) would further reduce operations-phase impacts at the new campground; therefore, impacts would be **less than significant with mitigation incorporated**.

### Changes in Borrow Area Location

As noted, Borrow Areas 12 and 14 would also be used as borrow sites under the Modified Project and are located within the overall construction footprint identified by the Approved Project, but were identified in that document and analyzed as anticipated contractor staging areas. Blasting and soil/rock excavations at all borrow sites would require the use of vehicles, heavy equipment, and other powered tools. As noted in the Campground Construction and Improvement discussion, heat or sparks from equipment and vehicles, as well as the use of flammable materials, have the potential to ignite adjacent vegetation and start a fire, especially during weather events that include low humidity and high wind speeds. As described above, Mitigation Measures HAZ-1 (Fire Prevention Plan) and HAZ-4 (contractor education, spark arrestors, and smoking/campfire restrictions) would be implemented during construction of the Modified Project. Impacts would be **less than significant with mitigation incorporated**.

### Minor Additions to Contractor Work Area

As noted, contractor work areas would be used for soil stockpiling and overnight parking, fueling, and maintenance of heavy equipment. The potential for increased wildfire ignitions at these sites would be like that described for campground construction and day use area improvements. As described above, Mitigation Measures HAZ-1 (Fire Prevention Plan) and HAZ-4 (contractor education, spark arrestors, and smoking/campfire restrictions) would be implemented during construction of the Modified Project. Impacts would be **less than significant with mitigation incorporated**.

### Additional Construction Assumptions

Additional construction assumptions include changes to the construction schedule, equipment and personnel specifications, and dewatering specifications for proposed excavations at the base of the dam. As described above, Mitigation Measures HAZ-1 (Fire Prevention Plan) and HAZ-4 (contractor education, spark arrestors, and smoking/campfire restrictions) would be implemented during construction of the Modified Project. Impacts would be **less than significant with mitigation incorporated**.

### **Cumulative Impacts**

Construction activities at each of the cumulative project sites would utilize tools, equipment, vehicles, and flammable materials that have the potential to ignite adjacent vegetation and start a fire, especially during weather events that include low humidity and high wind speeds. Additionally, increased human presence in areas classified as Moderate and High FHSZs could increase the potential for wildfire ignitions. Mitigation Measures HAZ-1 (Fire Prevention Plan) and HAZ-4 (contractor education, spark arrestors, and smoking/campfire restrictions) would be implemented to minimize the potential for wildfire ignitions associated with the Approved Project. Additionally, Mitigation Measures SEIR-HAZ-1 (firesafe maintenance practices) and SEIR-HAZ-2 (modifications to campground operations during periods of high fire hazard) would be implemented to further reduce operations-phase impacts for the Modified Project. Through implementation of these measures, cumulative impacts associated with wildland fire hazard impacts would not be **less than significant with mitigation incorporated**.

### **Comparison to 2019 EIS/EIR**

The additional project components analyzed above would result in less-than-significant impacts with mitigation incorporated and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant with mitigation incorporated (see Section 3.8.5).

## **3.8.5 Mitigation Measures**

The following mitigation measures are required to reduce hazards and hazardous materials impacts. Notably, Mitigation Measures HAZ-1 and HAZ-4 are identical to Mitigation Measures HAZ-1 and HAZ-4 identified in the 2019 EIS/EIR, whereas Mitigation Measures SEIR-HAZ-1 and SEIR-HAZ-2 have been added as new mitigation. Mitigation Measure HAZ-2 identified in the 2019 EIS/EIR is not required to reduce hazards and hazardous materials impacts specifically resulting from new or changed components of the Modified Project as discussed above. However, Mitigation Measure HAZ-2 identified in the 2019 EIS/EIR remains applicable to the Modified Project as determined by the 2019 EIS/EIR.

As discussed previously, the seaplane base is no longer operational. Therefore, Mitigation Measure HAZ-3 identified in the 2019 EIS/EIR, which requires coordination with the seaplane base, is no longer required

**TR-1** See Section 3.7.5 for mitigation measure.

**HAZ-1** **(Same as HAZ-1 in 2019 EIS/EIR):** The construction contractor in coordination with the Lead Agencies shall work with the CDPR and the Central Valley RWQCB to review existing monitoring data of the San Luis Reservoir SRA LUST Cleanup Site to evaluate the potential for interacting with hazardous soil contamination during construction. If the construction contractor and the Lead Agencies (as the responsible party for this potential disturbance) determine that interaction with contaminated soil cannot be avoided and these construction actions could generate a release of this soil to nearby water bodies or elsewhere off site, the construction contractor shall prepare a Contaminated Soil/Groundwater Remediation Plan. This remediation plan will detail the nature of the contaminants on site, measures required to avoid interaction with these contaminants including if necessary a pre-construction cleanup of the site, and a response action plan in the event of an inadvertent release of contaminated soils from the construction site. This plan will be submitted to the CDPR and the Central Valley RWQCB for review and approval prior to any construction taking place.

In addition, the construction contractor shall also prepare a Spill Prevention and Response Plan for preventing spills and responding to chemical or hazardous substance spills. This plan will include spill prevention management, including employee training, hazardous substance inventory, and spill response equipment. The plan will also include a spill response plan, including evacuation procedures, spill containment and cleanup, and reporting a release.

Finally, the construction contractor shall prepare a Fire Prevention Plan to prevent a fire from occurring. The plan must include (Occupational Safety and Health Administration 2018 [as cited in 2019 EIS/EIR]):

- A list of all major fire hazards, proper handling and storage procedures for hazardous materials, potential ignition sources and their control, and the type of fire protection equipment necessary to control each major hazard.
- Procedures to control accumulations of flammable and combustible waste materials.
- Procedures for regular maintenance of safeguards installed on heat-producing equipment to prevent the accidental ignition of combustible materials.
- The name or job title of employees responsible for maintaining equipment to prevent or control sources of ignition or fires.
- The name or job title of employees responsible for the control of fuel source hazards.

*Note that HAZ-1 is identified in the 2019 EIS/EIR and includes additional content that is not required for reduction of significant fire impacts resulting from components of the Modified Project. However, for consistency, the entirety of the mitigation measure is listed here.*

- HAZ-3** (HAZ-3 in 2019 EIS/EIR): This measure is eliminated with the SEIR because the San Luis Reservoir Seaplane Base is no longer operational.
- HAZ-4** (Same as HAZ-4 in 2019 EIS/EIR): The Lead Agencies will include requirements in all construction contracts requiring the use of spark arrestors on all construction equipment. The contract shall also include requirements for the contractor to educate all construction workers about the risk of starting a wildfire and how to avoid it and who to contact in case a wildfire is started. In addition, restrictions shall be placed on smoking and campfires for any personnel utilizing Basalt Campground.
- SEIR-HAZ-1** (New mitigation measure): Maintenance of Modified Project buildings, grounds, and infrastructure, including defensible space areas, shall be conducted using firesafe practices to minimize the potential for wildfire ignitions resulting from equipment use. Firesafe practices shall be consistent with California Public Resources Code Sections 4427, 4428, 4431, and 4442. Maintenance activities shall be ceased during periods of high fire hazard (e.g., red flag warnings), except where necessary to maintain public safety and available water supply for fire suppression purposes.
- SEIR-HAZ-2** (New mitigation measure): Campground operations shall be modified during periods of high fire hazard (e.g., red flag warnings) to reduce the potential for wildfire ignitions. Modifications may include, but are not limited to, banning campfires and open flames, and partially or completely closing the campground to the public.

### 3.8.6 Level of Significance After Mitigation

The Modified Project would result in potentially significant impacts with respect to potential conflicts with emergency vehicles in the form of traffic slowdowns or temporary roadway blockages during construction activities. Mitigation Measure TR-1 which requires implementation of a Construction Traffic Control Plan would reduce impacts to a level below significance.

The potential risk of wildfire ignition and spread associated with construction activities for the Modified Project. Mitigation Measures HAZ-1 and HAZ-4, which require preparation of a Fire Prevention Plan by the construction contractor, education of construction personnel regarding wildfire prevention, the use of spark arrestors, and restrictions on smoking and campfires, would be implemented during construction of the Modified Project. With implementation of these measures, construction-related impacts would be less than significant.

The Modified Project would result in potentially significant impacts related to increased wildfire ignition potential associated with operations of the proposed new campground. The increase in ignition sources during campground usage (e.g., campfires, barbecues, vehicles, humans) and maintenance (e.g., vehicles, powered tools/equipment) in a currently undeveloped area could exacerbate wildfire risk, especially during weather events that include low humidity and high wind speeds. Mitigation Measures SEIR-HAZ-1 and SEIR-HAZ-2, which require implementation of firesafe maintenance practices and modifications to campground operations during periods of high fire hazard, respectively, would reduce impacts to a level below significance.

INTENTIONALLY LEFT BLANK



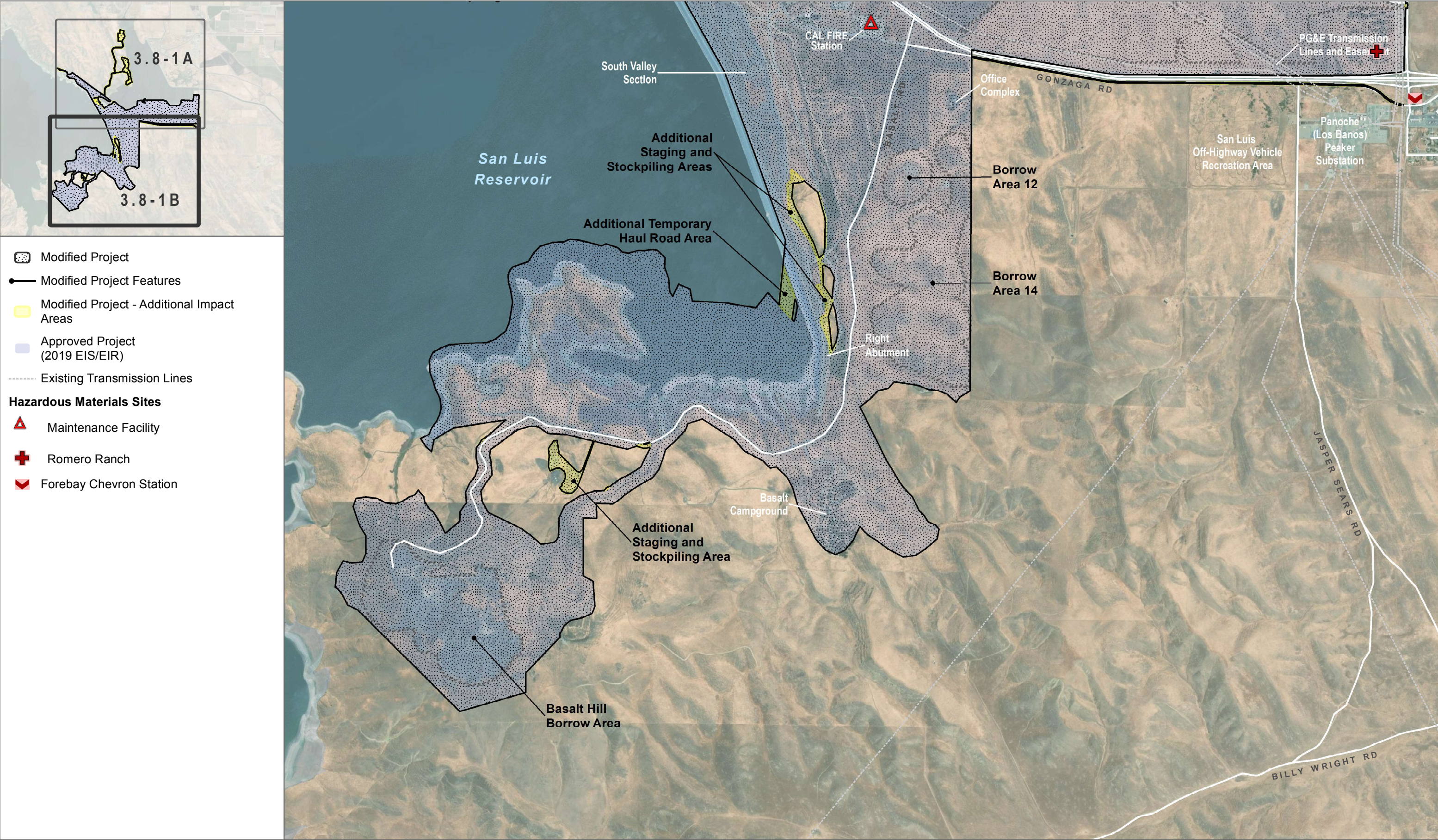


**FIGURE 3.8-1A**  
 Hazardous Materials Sites, Northern Portion  
 B.F. Sisk Dam Safety of Dams Modification Project SEIR



INTENTIONALLY LEFT BLANK



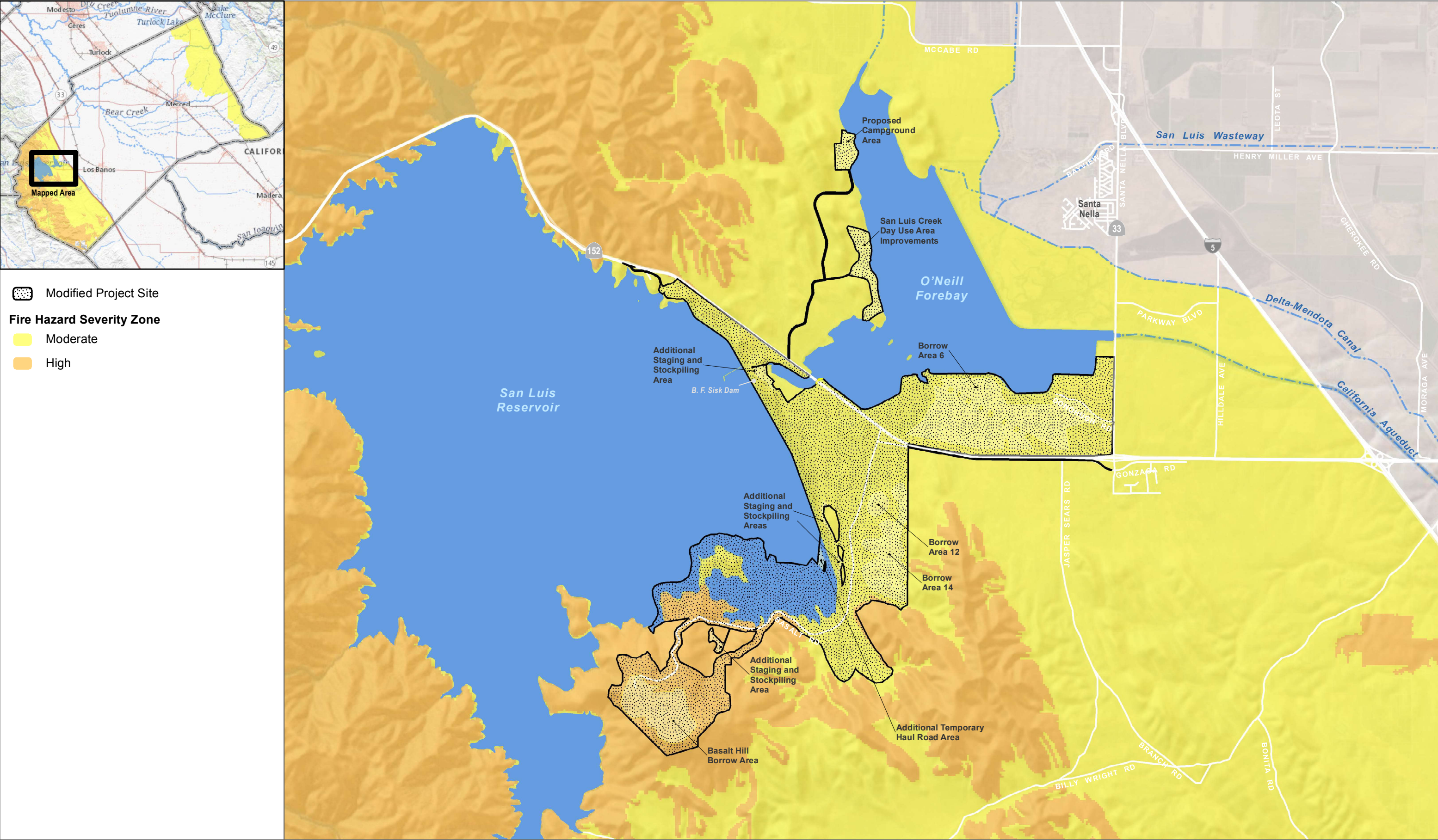


SOURCE: Basemap: ESRI World Imagery  
Project Boundary: Reclamation, 3/14/20  
Previous Boundary: DWR, 4/2019

**FIGURE 3.8-1B**  
**Hazardous Materials Sites, Southern Portion**  
B.F. Sisk Dam Safety of Dams Modification Project SEIR



INTENTIONALLY LEFT BLANK



SOURCE: CALFire

**FIGURE 3.8-2**  
**Fire Hazard Severity Zones**  
B.F. Sisk Dam Safety of Dams Modification Project SEIR

INTENTIONALLY LEFT BLANK

## 3.9 Biological Resources

This supplemental environmental impact report (SEIR) addresses proposed modifications to the B.F. Sisk Dam Safety of Dams Modification Project, which was previously evaluated in the B.F. Sisk Dam Safety of Dams Modification Project Environmental Impact Statement/Environmental Impact Report (2019 EIS/EIR). The project addressed in the 2019 EIS/EIR is referred to herein as the Approved Project; the Approved Project with proposed modifications identified since certification of the 2019 EIS/EIR is referred to herein as the Modified Project.

This section of the SEIR describes the existing biological resources associated with the Modified Project, identifies the applicable regulatory framework, evaluates potential impacts, and describes measures to avoid, minimize, and/or mitigate these impacts. The description of existing conditions and impact analysis focus on the Modified Project (see Section 2.4, Proposed Project Modifications and Clarifications). This includes analysis of the proposed additions to the Approved Project footprint depicted in Figures 2-4A and 2-4B, Modified Project Detail (“additional impact areas”), and change in use of Borrow Areas 12 and 14 (i.e., materials extraction instead of contractor staging area; see Figure 2-3, Approved and Modified Project Footprints). Biological resources within the footprint of the Approved Project (Figure 2-3) are not addressed here unless they are related to resources potentially impacted by proposed modifications associated with the Modified Project (i.e., within additional impact areas) or were not addressed in the 2019 EIS/EIR. These resources are still assumed present (or potentially present) within the Modified Project site but were addressed by the impact analysis and associated mitigation measures in the 2019 EIS/EIR. While the 2019 EIS/EIR addressed terrestrial biological resources and fisheries resources in separate chapters, this SEIR chapter addresses all biological resources for clarity and ease of reference.

### 3.9.1 Existing Conditions

The information in this section is based on a review of pertinent literature (including the 2019 EIS/EIR and supporting technical reports) and biological resource surveys conducted throughout the Modified Project footprint (also referred to herein as the Modified Project site) (Figures 2-4A and 2-4B) from April to July 2020. The literature review included querying the following sources for special-status species and/or sensitive vegetation communities in the region: California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB) (CDFW 2019, 2020a, 2020b), U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation online tool (USFWS 2020), and California Native Plant Society Online Inventory of Rare and Endangered Vascular Plants (CNPS 2020a). The Soil Survey Geographic Database for California (USDA 2019) was also reviewed to identify potentially occurring special-status plants based upon known soil associations. Native plant community classifications used in this report follow a Manual of California Vegetation Online (CNPS 2020b) and California Natural Community List (CDFW 2020c). The 2020 surveys were conducted to more thoroughly examine areas identified as potentially supporting sensitive resources in previous reports and to determine the extent of those resources on the Modified Project site to inform regulatory permitting under federal and state laws discussed in Section 3.9.2. Focused surveys or assessments conducted in 2020 include the following:

- Survey for nesting raptors (including Swainson’s hawk [*Buteo swainsoni*]) — April 13–15, 20
- Rare plant surveys — April 14–18, 20–24, 27–29; June 4–6, 11–12, 16–19, 22–26
- Multi-species burrow assessment and tricolored blackbird (*Agelaius tricolor*) habitat assessment — May 4–8, 12–15, June 25–26
- Delineation of waters potentially subject to CDFW jurisdiction under Section 1602 of the California Fish and Game Code — May 20–21, 26–28; June 26, 30; July 1

- Vegetation community and land cover mapping – June 25–26; September 2–3
- Bat habitat assessment and surveys
  - Reconnaissance survey for roost sites – June 29
  - Mobile acoustic survey – June 29
  - Passive acoustic surveys – June 29–July 2
- Wildlife game camera study – May 22–June 17

### 3.9.1.1 Vegetation Communities and Land Cover Types

The following eight vegetation communities and/or land cover types occur in the additional impact areas: annual grassland, purple needlegrass grassland, scrub/chaparral, freshwater emergent wetland, valley foothill riparian, lacustrine, eucalyptus woodland, and urban/disturbed (Table 3.9-1). Vegetation alliances and associations mapped by Dudek in 2020 in accordance with the Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities (CDFW 2018) are listed under each general vegetation community. Because freshwater emergent wetland and lacustrine are considered jurisdictional aquatic resources, they are described in the Section 3.9.1.2. The remaining vegetation communities are described below.

**Table 3.9-1. Vegetation Communities and Land Cover Types within Additional Impact Areas**

| Alliance  | Association   | State Rank <sup>1</sup> | Acres        |
|---|---|-------------------------|--------------|
| <b>Annual Grassland</b>   |   |                         |              |
| Gum plant patches ( <i>Grindelia [camporum, stricta]</i> ) provisional alliance                               | Not mapped to association level   | S2S3                    | 0.17         |
| Upland mustards and other ruderal forbs ( <i>Brassica nigra</i> – <i>Raphanus</i> spp.) semi-natural alliance | Not mapped to association level   | SNA                     | 3.16         |
| Wild oats and annual brome grasslands ( <i>Avena</i> spp.– <i>Bromus</i> spp.) semi-natural alliance          | Not mapped to association level   | SNA                     | 80.64        |
| Yellow star-thistle fields ( <i>Centaurea [solstitialis, melitensis]</i> ) semi-natural alliance              | Not mapped to association level   | SNA                     | 1.44         |
| <i>Annual Grassland Total</i>   |   |                         | <b>85.40</b> |
| <b>Purple Needle Grass Grassland</b>  |   |                         |              |
| Needle grass–melic grass grassland ( <i>Nassella</i> spp.– <i>Melica</i> spp.) alliance                       | <i>Nassella pulchra</i> , <i>N. cernua</i> , and/or <i>Melica californica</i> | S3S4*                   | 9.86         |
| <i>Purple Needle Grass Grassland Total</i>  |   |                         | <b>9.86</b>  |
| <b>Scrub/Chaparral</b>  |   |                         |              |
| Coyote brush scrub ( <i>Baccharis pilularis</i> ) alliance  | <i>Baccharis pilularis</i> / Annual grass–herb                                | S5                      | 0.83         |
|   | <i>Baccharis pilularis</i> – <i>Artemisia californica</i>                     | S5                      | 0.03         |
| <i>Scrub/Chaparral Total</i>  |   |                         | <b>0.86</b>  |
| <b>Freshwater Emergent Wetland<sup>2</sup></b>  |   |                         |              |
| Cattail marshes ( <i>Typha [angustifolia, domingensis, latifolia]</i> ) alliance                              | <i>Typha (latifolia, angustifolia)</i>  | S5                      | 0.06         |
| Mulefat thickets ( <i>Baccharis salicifolia</i> ) alliance  | <i>Baccharis salicifolia</i>  | S5                      | 0.09         |
| <i>Fresh Emergent Wetland Total</i>   |   |                         | <b>0.14</b>  |



Table 3.9-1. Vegetation Communities and Land Cover Types within Additional Impact Areas

| Alliance   | Association  | State Rank <sup>1</sup> | Acres  |
|--|--|-------------------------|--------|
| <b>Valley Foothill Riparian<sup>2</sup></b>  |  |                         |        |
| California sycamore woodlands ( <i>Platanus racemosa</i> – <i>Quercus agrifolia</i> ) alliance   | <i>Platanus racemosa</i> – <i>Populus fremontii</i> /<br><i>Salix lasiolepis</i> | S3                      | 0.70   |
| Fremont cottonwood forest ( <i>Populus fremontii</i> – <i>Fraxinus velutina</i> – <i>Salix gooddingii</i> ) alliance                                     | <i>Populus fremontii</i> – <i>Salix gooddingii</i>                               | S3                      | 0.22   |
|  | <i>Populus fremontii</i>   | S3                      | 0.31   |
| Valley Foothill Riparian Total   |  |                         | 1.23   |
| <b>Lacustrine</b>  |  |                         |        |
| Not Applicable   | Not Applicable   | N/A                     | 6.47   |
| Lacustrine Total   |  |                         | 6.47   |
| <b>Eucalyptus Woodland</b>   |  |                         |        |
| Eucalyptus–tree of heaven–black locust groves ( <i>Eucalyptus</i> spp.– <i>Ailanthus altissima</i> – <i>Robinia pseudoacacia</i> ) semi-natural alliance | Not mapped to association level  | SNA                     | 42.22  |
| <b>Urban/Disturbed</b>   |  |                         |        |
| Not Applicable   | Not Applicable   | N/A                     | 49.19  |
| Urban/Disturbed Total  |  |                         | 49.19  |
| Grand Total  |  |                         | 195.36 |

Notes: N/A = not applicable; CEQA = California Environmental Quality Act.

<sup>1</sup> State Ranks of S1–S3 are considered sensitive per CEQA (CDFW 2020c).

<sup>2</sup> Considered riparian habitat based on the definition provided by the National Research Council (NRC 2002).

\* The alliance is ranked S3S4; all associations within this alliance are considered sensitive.

### Annual Grassland

Most of the additional impact areas are composed of annual grassland. The majority of the grassland areas have not been grazed recently and are dominated by tall non-native annual grasses and forbs such as wild oat (*Avena* spp.), brome (*Bromus* spp.), barley (*Hordeum* spp.), fescue (*Festuca* spp.), burclover (*Medicago polymorpha*), dove weed (*Croton setiger*), Australian saltbush (*Atriplex semibaccata*), Russian thistle (*Salsola tragus*), and many others. Trees and shrubs may be present at low cover, including coyote brush (*Baccharis pilularis*) and honey mesquite (*Prosopis glandulosa*) within the additional impact areas. Additional alliances containing upland mustards and other ruderal or native forbs (*Brassica nigra*–*Raphanus* spp.), gum plant patches (*Grindelia* [*camporum*, *stricta*]), poison hemlock (*Conium maculatum*) or fennel patches (*Conium maculatum*–*Foeniculum vulgare*), and yellow star-thistle fields (*Centaurea* [*solstitialis*, *melitensis*]) are incorporated into the annual grassland vegetation community. Annual grasslands occur in all topographic settings in foothills, waste places, rangelands, and openings in woodlands. Large amounts of standing dead plant material can be found during summer in years of abundant rainfall and light to moderate grazing pressure. Although annual grassland habitats consist largely of non-native annuals, these effectively prevent the reestablishment of native perennials over large areas and are considered climax communities (Kie 1988). The annual grassland vegetation community is not considered sensitive with the exception of areas within the gum plant patches (*Grindelia* [*camporum*, *stricta*] association).

### Purple Needlegrass Grasslands

Purple needlegrass (*Stipa pulchra*) grassland can be found adjacent to small areas of annual grassland habitat within the additional impact areas. Specifically, this community was found in small patches within the additional staging and stockpiling areas. This community is comprised of purple needlegrass (*Nassella pulchra* association), nodding needlegrass (*Nassella cernua* association), and/or California melicgrass (*Melica californica* provisional association). Perennial grasses are dominant or characteristically present in the herbaceous layer with a number of non-native grasses and native herbs, including wavyleaf soap plant (*Chlorogalum pomeridianum*), clarkia (*Clarkia* spp.), larkspur (*Delphinium* spp.), bluebirds (*Dipterostemon capitatus*), paintbrush (*Castilleja* spp.), California poppy (*Eschscholzia californica*), and sanicle (*Sanicula* spp.), among others. This alliance generally occurs in all topographic locations. Soils may be deep with high clay content, loamy, sandy, or silty derived from mudstone, sandstone, or serpentine substrates. Perennial grassland stands within the Modified Project site occur as relics within habitats now dominated by annual grasses and forbs. The purple needlegrass grassland association is considered sensitive (CDFW 2020c).

### Scrub/Chaparral

The scrub/chaparral community can be found interspersed throughout the annual grassland habitats within the additional impact areas. Specifically, this community was found within the San Luis Creek Day Use Area, and within the additional staging and stockpiling areas. This dominant species within this community is coyote brush (*Baccharis pilularis*), and is comprised of annual grasses and other ruderal forbs. Additional species within this community include California sagebrush, mulefat (*Baccharis salicifolia* ssp. *salicifolia*), black sage (*Salvia mellifera*), tree tobacco (*Nicotiana glauca*), and honey mesquite (*Prosopis glandulosa* var. *torreyana*). In general, this alliance occurs within river mouths, stream sides, terraces, stabilized dunes of coastal bars, spits along the coastline, coastal bluffs, open slopes, and ridges. Soils are variable, sandy to relatively heavy clay. Disturbances such as road cuts or landslides create areas often invaded by scrub communities as light, wind-dispersed seed and tolerance of xeric conditions allow scrub communities to establish in disturbed areas (de Becker 1988). The scrub/chaparral community is not considered sensitive.

### Freshwater Emergent Wetland

Freshwater emergent wetlands consist primarily of emergent wetland vegetation communities dominated by cattail (*Typha latifolia*). Some areas are dominated by mulefat. The alliances that comprise the freshwater emergent wetland vegetation community (i.e., cattail marsh and mulefat thicket) are not considered sensitive natural communities by CDFW (2020c). However, freshwater emergent wetland is considered riparian habitat based on the definition provided by the National Research Council (NRC 2002).

### Valley Foothill Riparian

The valley foothill riparian community occurs in a small stand on the eastern edge (along O'Neill Forebay) of the proposed campground area within the additional impact areas. Typically in valley foothill riparian vegetation communities Fremont cottonwood (*Populus fremontii*) is dominant or co-dominant (greater than 30% to 50% relative cover) with California sycamore (*Platanus racemosa*) and Goodding's willow (*Salix gooddingii*) in the tree canopy of this community, with a sub-canopy of mulefat and red willow (*Salix laevigata*) (CNPS 2020b). The herbaceous layer consists of bulrush, pale spike rush, stinging nettle, and paleyellow iris (*Iris pseudacorus*), among others. The tree canopy is open to continuous and less than 25 meters (82 feet) in height. The shrub canopy is intermittent to open, and the herbaceous layer is variable. This community generally occurs on floodplains, along low-gradient rivers, perennial or seasonally intermittent streams, springs, in lower canyons in desert mountains, in



alluvial fans, and in valleys with a dependable subsurface water supply that varies considerably during the year (CNPS 2020b). The California sycamore woodlands and Fremont cottonwood forest alliances that comprise the valley foothill riparian community on site are considered sensitive (CDFW 2020c) and marked with a state rarity ranking of 3 (i.e., Vulnerable – At moderate risk of extirpation in the jurisdiction due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors) (NatureServe 2020). Valley foothill riparian is also considered riparian habitat based on the definition provided by the National Research Council (NRC 2002).

### **Eucalyptus Woodland**

Eucalyptus woodland is the dominant vegetation community within the San Luis Creek Day Use Area within the additional impact areas. Eucalyptus woodland typically includes one or more Eucalyptus species that dominate the tree canopy. The tree layer forms an open to intermittent canopy at 10 to 15 meters (30 to 50 feet) in height with an understory that usually has a variety of herbaceous species at moderate to high cover. Tree and shrub species that may intermix at low to moderate cover include coast live oak (*Quercus agrifolia*), date palm (*Phoenix dactylifera*), pepper tree species (*Schinus* spp.), and salt-cedar species (*Tamarix* spp.) (CNPS 2020b). Within the San Luis Creek Day Use Area, river redgum (*Eucalyptus camaldulensis*), Tasmanian bluegum (*E. globulus*), redbox (*E. polyanthemos*), red ironbark (*E. sideroxylon*), and black locust (*Robinia pseudoacacia*) were observed. Eucalyptus woodland is an introduced vegetation community and, therefore, is not sensitive.

### **Urban/Disturbed**

Developed/disturbed areas are prevalent within all of the additional impact areas. These areas consist of recreational, commercial, and resource management activity uses. Within the additional impact areas, these areas specifically include the road leading up to the proposed campground area and San Luis Creek Day Use Area, existing developed day use/campground areas within the San Luis Creek Day Use Area, the eastern slope of B.F. Sisk Dam that falls within the additional staging and stockpiling areas, and an existing access road/maintenance area within the additional staging and stockpiling area near Basalt Quarry. Much of these urban/disturbed areas are devoid of vegetation due to composition of the substrate (e.g., asphalt) and maintenance activities (e.g., mowing). Landscaped trees and shrubs such as ornamental pines (*Pinus* spp.), coast live oak, and oleander (*Nerium oleander*) formed discontinuous canopies within areas associated with visitor use, such as parking lots and entrance kiosks.

## 3.9.1.2 Jurisdictional Aquatic Resources

Jurisdictional aquatic resources include waters (i.e., wetlands and non-wetland waters) potentially subject to regulation by the U.S. Army Corps of Engineers (USACE) and Regional Water Quality Control Board (RWQCB) (hereafter referred to as USACE/RWQCB-jurisdictional waters), as well as streams, rivers, lakes, and other features subject to regulation by CDFW (hereafter referred to as CDFW-jurisdictional waters). USACE/RWQCB-jurisdictional waters were delineated by the Bureau of Reclamation (Reclamation) and California Department of Water Resources (DWR) in 2018 (Reclamation and DWR 2018); CDFW-jurisdictional waters were delineated by Dudek in 2020 (Dudek 2020a). For the purposes of this biological resources analysis, USACE/RWQCB-jurisdictional waters and CDFW-jurisdictional waters are hereafter collectively referred to as jurisdictional aquatic resources. Jurisdictional aquatic resources within the additional impact areas total 7.69 acres and consist of the following five feature types: freshwater emergent wetland, drainage ditch, ephemeral drainage, ephemeral swale, and lacustrine. These features are summarized in Table 3.9-2 and depicted on Figure 3.9-1, Vegetation Communities, Land Cover Types, and Jurisdictional Waters. The jurisdictional aquatic resource feature types are described below.

### **Freshwater Emergent Wetland**

Freshwater emergent wetland features occur within the staging and stockpiling areas south of Gianelli Pumping-Generating Plant (Gianelli Plant), west of Basalt Road, and south of San Luis Reservoir in the vicinity of the access roads to/from Basalt Quarry. Freshwater emergent wetland features may be inundated for short or long periods; the hydrology of several of these features are dependent on (via subsurface connection) the hydrology of San Luis Reservoir. Dominant species within the freshwater emergent wetland features include perennial pepperweed (*Lepidium latifolium*), rushes (*Juncus* sp.) and cattails. This feature type was delineated based on the results of previous USACE jurisdictional delineations along with follow-up field assessment and verification conducted as part of Dudek's 2020 delineation effort. A total of four freshwater emergent wetlands were identified as jurisdictional aquatic resources.

### **Drainage Ditch**

Drainage ditches were mapped where it was apparent that a feature was constructed to channelize flow, and where one or more of the following characteristics were present: defined bed and bank, fluvial indicators such as scour, sediment sorting, hydrophytic vegetation, and wrack. Drainage ditches within the additional impact areas generally convey localized runoff generated during rain events and include roadside ditches, which were characterized by their alignment along a gravel, dirt, or paved road and hydrologic connectivity to an upstream or downstream waterbody. Several drainage ditches were disturbed and/or did not support any vegetation; however, where present, vegetation communities include annual grassland, scrub/chaparral, and freshwater emergent wetland. A total of seven drainage ditches were delineated as jurisdictional aquatic resources.

### **Ephemeral Drainage**

Ephemeral drainages are natural stream channels that convey water during precipitation events and for short periods (less than 14 days) thereafter. These features are naturally occurring rather than human made, and such features exhibited a defined bed and bank and fluvial indicators such as scour, sediment sorting, wrack, hydrophytic vegetation, cut banks, and exposed substrates. Groundwater does not influence the duration of flows in ephemeral drainages after precipitation. Ephemeral drainages within the additional impact areas are primarily fed by accumulated waters (from precipitation events) from surrounding hills. These features primarily support upland vegetation including annual grasses, ruderal forbs, and scrub/chaparral. Ephemeral drainages occur sporadically throughout the Modified Project site and function to collect localized flows. A total of two ephemeral drainages were delineated as jurisdictional aquatic resources.

### **Ephemeral Swale**

One ephemeral swale is present in the additional impact areas at the northern end of the San Luis Creek Day Use Area. This feature is topographically confined and would be expected to convey water if flows were present, but a defined bed and bank and typical fluvial indicators were lacking. The ephemeral swale supported upland vegetation, including annual grasses and ruderal forbs.

### **Lacustrine**

Lacustrine features in the additional impact areas include San Luis Reservoir at the temporary haul road west of the right abutment of the dam, and O'Neill Forebay at the location of the temporary haul road below the State Route (SR) 152 overcrossing; jurisdictional aquatic resources at both areas are based on distinct field indicators of top of bank. The water levels within these features fluctuate seasonally based on rainfall as well as reservoir and forebay operations. The extent of these features was confirmed and mapped based on field observation of fluvial and topographic field indicators.

Table 3.9-2. Jurisdictional Aquatic Resources within the Additional Impact Areas <sup>1</sup>

| Aquatic Resource Feature Type | Area (acres) | Length (linear feet) |
|-------------------------------|--------------|----------------------|
| Drainage Ditch                | 0.72         | 7,727                |
| Ephemeral Drainage            | <0.01        | 136                  |
| Ephemeral Swale               | 0.02         | 342                  |
| Freshwater Emergent Wetland   | 0.36         | NA                   |
| Lacustrine                    | 6.59         | NA                   |
| <b>Total</b>                  | <b>7.69</b>  | <b>8,206</b>         |

**Note:**

<sup>1</sup> Includes all jurisdictional aquatic features, not all of which would be impacted during construction. Temporary and permanent impacts are reported in the impact analysis.

**Additional Aquatic Resources Not Analyzed in 2019 EIS/EIR**

As noted above, a delineation of jurisdictional aquatic resources was conducted in 2020. Based on this delineation work, additional jurisdictional aquatic resources were identified in areas that were encompassed by the 2019 EIS/EIR. These additional aquatic resources consist of the following features:

- One (1) freshwater emergent wetland (0.12 acres)
- Twelve (12) drainage ditches ( 0.75 acres)
- Six (6) ephemeral drainages (0.15 acres)
- Eleven (11) ephemeral swales (6.00 acres)
- Two (2) riparian areas (0.65 acres)

In summary, approximately 7.69 acres of jurisdictional aquatic resources are present within the additional impact areas (see Table 3.9-2), and approximately 7.67 acres of additional jurisdictional aquatic resources are present within the Approved Project footprint that were not analyzed in the 2019 EIS/EIR.

### 3.9.1.3 Wildlife Resources

The additional impact areas support habitat for common upland species. Rocky areas (e.g., dam infrastructure), grassland, coastal scrub, woodland, wetland, riparian, and anthropogenic cover types (e.g., disturbed) provide foraging and nesting habitat for migratory and resident birds, and foraging and breeding habitat for reptiles, amphibians, and mammals.

A total of 121 species were observed in the Modified Project site during the 2018 and 2020 surveys, including the additional impact areas (ESA 2018; Dudek 2020b). Of the total species observed, 113 (93%) of these are native wildlife species. Latin and common names of animals follow Crother (2017) for reptiles and amphibians, American Ornithological Society (AOS 2020) for birds, and Wilson and Reeder (2005) for mammals.

**Reptiles and Amphibians**

Common species of reptiles and amphibians occur in all habitats within the Modified Project site. Common species in upland areas include western fence lizard (*Sceloporus occidentalis*), striped racer (*Coluber lateralis*), gophersnake (*Pituophis catenifer*), and western rattlesnake (*Crotalus oreganus*). Sierran treefrog (*Pseudacris sierra*) is common in areas where suitable aquatic breeding habitat is present.

## Birds

A diversity of bird species occurs in all upland, riparian, and wetland habitats within the Modified Project site. Commonly observed species in the additional impact areas include red-tailed hawk (*Buteo jamaicensis*), turkey vulture (*Cathartes aura*), red-winged blackbird (*Agelaius phoeniceus*), killdeer (*Charadrius vociferous*), common raven (*Corvus corax*), house finch (*Haemorhous mexicanus*), northern mockingbird (*Mimus polyglottos*), mourning dove (*Zenaida macroura*), and western kingbird (*Tyrannus verticalis*).

A colony of cliff swallows (*Petrochelidon pyrrhonota*) was observed nesting underneath the SR-152 bridge at the western end of Borrow Area 6 during field surveys conducted by Dudek in May 2020. Dudek biologists observed a colony of birds actively foraging around the bridge and flying to and from the nests. Approximately 500 cliff swallow mud nests were observed at this location.

## Mammals

Several common mammal species were detected widely and in a variety of habitats on the Modified Project site, including black-tailed jackrabbit (*Lepus californicus*), Botta's pocket gopher (*Thomomys bottae*), California vole (*Microtus californicus*), California ground squirrel (*Spermophilus [Otospermophilus] beecheyi*), coyote (*Canis latrans*), and mule deer (*Odocoileus hemionus*). Tule elk (*Cervus canadensis nannodes*) was observed in or near additional impact areas south of SR-152. Several bat species have been detected within or near the additional impact areas. Mexican free-tailed bat (*Tadarida brasiliensis*), Yuma myotis (*Myotis yumanensis*), and silver-haired bat (*Lasionycteris noctivagans*) were detected over a wetland south of the proposed campground area (near the access road), and these species and canyon bat (*Parastrellus hesperus*) were detected in the vicinity of the additional staging and stockpiling areas near the right abutment of the dam. Some dam infrastructure and trees within the additional impact areas likely provide bat roosting habitat.

## Fishes

All documented fish in San Luis Reservoir are a result of direct human introduction, or by water pumped into the reservoir from the Sacramento–San Joaquin River Delta System via the Delta–Mendota Canal and/or the California Aqueduct (Reclamation and CDPR 2013). Species that have become established within the reservoir and forebay include Sacramento blackfish (*Orthodon microlepidotus*), American shad (*Alosa sapidissima*), threadfin shad (*Dorosoma petenense*), largemouth bass (*Micropterus salmoides*), kokanee salmon (*Oncorhynchus nerka*), green sunfish (*Lepomis cyanellus*), blue gill (*Lepomis macrochirus*), white sturgeon (*Acipenser transmontanus*), and white crappie (*Pomoxis annularis*) (Reclamation and CDPR 2013). These species may occur within the temporary haul road area when inundated, or adjacent to the proposed campground area and the San Luis Creek Day Use Area. Recreationally, the most predominant species found in San Luis Reservoir and O'Neill Forebay is the striped bass (*Morone saxatilis*), an anadromous species.

Although both San Luis Reservoir and O'Neill Forebay are connected to the San Joaquin River system, screened upstream pumps prevent the transport of special-status species and other native species from the California Aqueduct and Delta–Mendota Canal into O'Neill Forebay or San Luis Reservoir (Reclamation and CDPR 2013).

## Invertebrates

Although relatively few common invertebrate species have been documented within the Modified Project site, a wide variety of ants, bees, wasps, true bugs, moths, butterflies, beetles, dragonflies and damselflies, spiders, and other invertebrates undoubtedly occur.

### 3.9.1.4 Sensitive Biological Resources

#### Sensitive Vegetation Communities

An alliance and/or association is considered sensitive if indicated with a state rarity rank of S1–S3, or if indicated as sensitive without a rarity ranking in the California Natural Community List (CDFW 2020c). Sensitive vegetation communities found within the additional impact areas include the following (see Table 3.9-1, Vegetation Communities and Land Cover Types within Additional Impact Areas):

- Purple needlegrass grasslands (*Nassella pulchra*, *Nassella cernua*, and *Melica californica* associations)
- Gum plant patches (*Grindelia* [camporum, stricta]) provisional alliance within annual grassland
- Fremont cottonwood forest (*Populus fremontii*–*Fraxinus velutina*–*Salix gooddingii*) alliance within valley foothill riparian habitat
- California sycamore woodlands (*Platanus racemosa*) alliance within valley foothill riparian habitat

Freshwater emergent wetland and valley foothill riparian are considered riparian habitat per the National Research Council (NRC 2002).

Vegetation mapping in 2020 was conducted in accordance with CDFW's Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities (CDFW 2018). Based on this mapping, additional sensitive vegetation communities were identified in areas previously analyzed in the 2019 EIS/EIR. Sensitive vegetation communities mapped during 2020 surveys outside of the additional impact areas that are not addressed in the 2019 EIS/EIR include the following:

- Gum plant patches
- Tarweed fields (*Holocarpha* (*heermannii*, *virgata*)) alliance within annual grassland
- Coyote brush scrub (*Baccharis pilularis*) alliance, *Baccharis pilularis*/(*Nassella pulchra*–*Elymus glaucus*–*Bromus carinatus*) association within scrub/chaparral
- Narrowleaf goldenbush–bladderpod scrub (*Ericameria linearifolia*–*Cleome isomeris*) alliance, *Ericameria linearifolia* association

Other sensitive vegetation communities already addressed in the 2019 EIS/EIR include purple needlegrass grassland and valley foothill riparian.

### Special-Status Plant Species

Special-status plant species include species that meet any of the following criteria (some species may meet several criteria):

- Listed, proposed for listing, or candidates for listing as threatened or endangered under the federal Endangered Species Act (FESA)
- Listed or candidates for listing as threatened or endangered under the California Endangered Species Act (CESA)
- Species with a California Rare Plant Rank of 1A, 1B, 2A, and 2B, and other species that may be considered endangered, rare, or threatened pursuant to the criteria in the State of California Environmental Quality Act (CEQA) Guidelines, Section 15380[d]

Special-status plant surveys were conducted in April and June 2020 within additional impact areas to determine the presence or absence of plant species that are considered endangered, rare, or threatened under CEQA Guidelines, Section 15380 (14 CCR 15000 et seq.). Special-status plant species directly observed during focused surveys or known to occur in the surrounding region are described in Table 3.9-3, Special-Status Plant Species' Potential to Occur in Additional Impact Areas. Table 3.9-3 describes their known occurrences or potential to occur within the additional impact areas based on their primary habitat associations, life form, blooming period, and known elevation range.

#### *Spiny-Sepaled Button-Celery*

Spiny-sepaled button-celery has a California Rare Plant Rank of 1B.2. Spiny-sepaled button-celery is a dicot, California native annual/perennial herb, and is distributed in the Central Valley. Spiny-sepaled button-celery is found in valley and foothill grassland and vernal pools. This species' blooming period is between April and June. Spiny-sepaled button-celery occurs between 260 feet to 3,200 feet in elevation (CNPS 2020a). There are approximately 0.05 acres of occupied spiny-sepaled button-celery habitat within the additional impact areas. Overall, including areas analyzed in the 2019 EIS/EIR, there are 1.65 acres of occupied spiny-sepaled button-celery habitat within the Modified Project site.

Table 3.9-3. Special-Status Plant Species' Potential to Occur in Additional Impact Areas

| Scientific Name                                    | Common Name              | Status <sup>1</sup><br>(Federal/<br>State/Other) | Primary Habitat<br>Associations/Life Form/<br>Blooming Period/<br>Elevation Range (feet)   | Potential to Occur   |
|--|--------------------------|--|--|--|
| <i>Atriplex cordulata</i><br>var. <i>cordulata</i> | Heartscale               | None/None/<br>1B.2                               | Chenopod scrub,<br>meadows and seeps,<br>valley and foothill<br>grassland (sandy); saline<br>or alkaline/annual herb/<br>Apr–Oct/0–1,835 | <b>Low potential to occur.</b> Although suitable grassland habitat is present on the Modified Project site, this species is only known from one CNDDDB occurrence in the region <sup>2</sup> (CDFW 2020a). This 1937 occurrence, which is now considered possibly extirpated, recorded the species growing northwest of Volta along Highway 33 on alkaline soils in association with alkali heath ( <i>Frankenia</i> sp.) and pickleweed ( <i>Salicornia</i> sp.) (CDFW 2020a). Alkaline soils are present within the Modified Project site; however, they only range from slightly alkaline to moderately alkaline (USDA 2020). Heartscale was not observed during 2020 rare plant surveys. |
| <i>Atriplex coronata</i><br>var. <i>vallicola</i>  | Lost Hills<br>crownscale | None/None/<br>1B.2                               | Chenopod scrub, valley<br>and foothill grassland,<br>vernal pools; alkaline/<br>annual herb/Apr–Sep/<br>160–2,080                        | <b>Low potential to occur.</b> Although suitable grassland habitat is present on the Modified Project site, this species appears to be restricted to the Carrisalito Flat area within the region <sup>2</sup> (CDFW 2020a). The two most recent CNDDDB occurrences of this species are in the Piedra Azul Conservation Bank on the margins of alkaline badlands habitat (CDFW 2020a). Alkaline soils are present within the Modified Project site; however, they only range from slightly alkaline to moderately alkaline (USDA 2020). Lost Hills crownscale was not observed during 2020 rare plant surveys.  |
| <i>Balsamorhiza</i><br><i>macrolepis</i>           | Big-scale<br>balsamroot  | None/None/<br>1B.2                               | Chaparral, cismontane<br>woodland, valley and<br>foothill grassland;<br>sometimes serpentinite/<br>perennial herb/Mar–<br>June/145–5,100 | <b>Not expected to occur.</b> Although suitable grassland habitat is present on the Modified Project site, this species is not known to occur within the region <sup>2</sup> (CDFW 2020a). The closest CNDDDB occurrence is located approximately 26 miles west of the Modified Project site on the western side of Pacheco Pass in Coyote Lake County Park (CDFW 2020a). Additionally, serpentine substrates/habitat do not occur within the Modified Project site (Calflora 2020). Big-scale balsamroot was not observed during 2020 rare plant surveys.   |
| <i>Campanula</i><br><i>exigua</i>                  | Chaparral<br>harebell    | None/None/<br>1B.2                               | Chaparral (rocky, usually<br>serpentinite)/annual<br>herb/May–June/<br>900–4,100   | <b>Not expected to occur.</b> No suitable chaparral habitat is present within the Modified Project site. Additionally, serpentine substrates/habitat do not occur within the Modified Project site (Calflora 2020). Chaparral harebell was not observed during 2020 rare plant surveys.  |

Table 3.9-3. Special-Status Plant Species' Potential to Occur in Additional Impact Areas

| Scientific Name                                     | Common Name              | Status <sup>1</sup><br>(Federal/<br>State/Other) | Primary Habitat<br>Associations/Life Form/<br>Blooming Period/<br>Elevation Range (feet)                          | Potential to Occur   |
|---|--------------------------|--|---|--|
| <i>Caulanthus lemmonii</i>                          | Lemmon's jewelflower     | None/None/<br>1B.2                               | Pinyon and juniper woodland, valley and foothill grassland/annual herb/Feb–May/<br>260–5,180                      | <b>Low potential to occur.</b> Although suitable grassland habitat is present on the Modified Project site, this species is only known from one CNDDDB occurrence in the region. <sup>2</sup> This 1986 occurrence recorded the species growing on steep slopes above Los Banos Creek (CDFW 2020a). Lemmon's jewelflower was not observed during 2020 rare plant surveys.  |
| <i>Centromadia parryi</i> ssp. <i>congdonii</i>     | Congdon's tarplant       | None/None/<br>1B.1                               | Valley and foothill grassland (alkaline)/annual herb/<br>May–Oct(Nov)/0–755                                       | <b>Not expected to occur.</b> Although suitable grassland habitat is present on the Modified Project site, this species is not known to occur within the region <sup>2</sup> (CDFW 2020a). The closest CNDDDB occurrence is located approximately 37 miles southwest of the Modified Project site near Watsonville (CDFW 2020a). Congdon's tarplant was not observed during 2020 rare plant surveys.   |
| <i>Chloropyron molle</i> ssp. <i>hispidum</i>       | Hispid bird's-beak       | None/None/<br>1B.1                               | Meadows and seeps, Playas, valley and foothill grassland; alkaline/annual herb (hemiparasitic)/<br>June–Sep/0–510 | <b>Low potential to occur.</b> This species is not known to occur within the vicinity of the Modified Project site, <sup>3</sup> but is present within the region <sup>2</sup> (CDFW 2020a). Although suitable grassland habitat is present, the closest presumed extant CNDDDB occurrence is located approximately 8 miles northeast of the Modified Project site growing in alkaline upland habitat dominated by saltgrass ( <i>Distichlis spicata</i> ), alkali heath ( <i>Frankenia salina</i> ), and iodine bush ( <i>Allenrolfea occidentalis</i> ) (CDFW 2020a). Alkaline soils are present within the Modified Project site; however, they only range from slightly alkaline to moderately alkaline (USDA 2020). Hispid bird's-beak was not observed during 2020 rare plant surveys. |
| <i>Delphinium californicum</i> ssp. <i>interius</i> | Hospital Canyon larkspur | None/None/<br>1B.2                               | Chaparral (openings), cismontane woodland (mesic), coastal scrub/perennial herb/<br>Apr–June/635–3,590            | <b>Low potential to occur.</b> Marginal scrub habitat, but no cismontane woodland habitat, is present on the Modified Project site. This species is only known from one CNDDDB occurrence in the region <sup>2</sup> (CDFW 2020a). This 1995 occurrence is located approximately 9 miles northwest of the Modified Project site in Quinto Creek Canyon along woodland habitat (CDFW 2020a). Hospital Canyon larkspur was not observed during 2020 rare plant surveys.  |



Table 3.9-3. Special-Status Plant Species' Potential to Occur in Additional Impact Areas

| Scientific Name                                     | Common Name                | Status <sup>1</sup><br>(Federal/<br>State/Other) | Primary Habitat<br>Associations/Life Form/<br>Blooming Period/<br>Elevation Range (feet)                                     | Potential to Occur   |
|---|----------------------------|--|--|--|
| <i>Delphinium recurvatum</i>                        | Recurved larkspur          | None/None/<br>1B.2                               | Chenopod scrub, cismontane woodland, valley and foothill grassland; alkaline/perennial herb/<br>Mar–June/ 5–2,590            | <b>Low potential to occur.</b> Suitable grassland habitat is present on the Modified Project site and this species is known to occur within the region <sup>2</sup> (CDFW 2020a). However, the closest CNDDDB occurrence is located approximately 9 miles southeast of the Modified Project site along Salt Creek (CDFW 2020a). Recurved larkspur was not observed during 2020 rare plant surveys. |
| <i>Eryngium spinosepalum</i>                        | Spiny-sepaed button-celery | None/None/<br>1B.2                               | Valley and foothill grassland, vernal pools/annual/perennial herb/<br>Apr–June/260–3,195                                     | <b>Present.</b> Spiny-sepaed button-celery was observed during 2020 rare plant surveys.  |
| <i>Malacothamnus arcuatus</i>                       | Arcuate bush-mallow        | None/None/<br>1B.2                               | Chaparral, cismontane woodland/perennial evergreen shrub/<br>Apr–Sep/45–1,160  | <b>Not expected to occur.</b> No suitable chaparral or cismontane woodland habitat is present within the Modified Project site.  |
| <i>Malacothamnus hallii</i>                         | Hall's bush-mallow         | None/None/<br>1B.2                               | Chaparral, coastal scrub/perennial evergreen shrub/<br>(Apr)May–Sep(Oct)/<br>30–2,490  | <b>Low potential to occur.</b> While this species is known to occur within the region, <sup>2</sup> only marginal scrub habitat is present within the Modified Project site (CDFW 2020a). Hall's bush-mallow was not observed during 2020 rare plant surveys.  |
| <i>Navarretia gowenii</i>                           | Lime Ridge navarretia      | None/None/<br>1B.1                               | Chaparral/annual herb/<br>May–June/590–1,000   | <b>Not expected to occur.</b> No suitable chaparral habitat is present on the Modified Project site.   |
| <i>Navarretia nigelliformis</i> ssp. <i>radians</i> | Shining navarretia         | None/None/<br>1B.2                               | Cismontane woodland, valley and foothill grassland, vernal pools; sometimes clay/annual herb/<br>(Mar)Apr–July/<br>210–3,280 | <b>Low potential to occur.</b> Although suitable grassland habitat is present on the Modified Project site, vernal pool habitat is absent within the Modified Project site. The closest CNDDDB occurrence is located approximately 4 miles south of the Modified Project site along Billie Wright Road (CDFW 2020a). Shining navarretia was not observed during 2020 rare plant surveys.           |

Table 3.9-3. Special-Status Plant Species' Potential to Occur in Additional Impact Areas

| Scientific Name                                 | Common Name               | Status <sup>1</sup><br>(Federal/<br>State/Other) | Primary Habitat<br>Associations/Life Form/<br>Blooming Period/<br>Elevation Range (feet)   | Potential to Occur   |
|---|---------------------------|--|--|--|
| <i>Puccinellia simplex</i>                      | California alkali grass   | None/None/<br>1B.2                               | Chenopod scrub, meadows and seeps, valley and foothill grassland, vernal pools; alkaline, vernal mesic; sinks, flats, and lake margins/annual herb/<br>Mar–May/5–3,050 | <b>Low potential to occur.</b> Although suitable grassland habitat is present on the Modified Project site, vernal pool habitat is absent within the Modified Project site. The closest CNDDDB occurrence recorded in 1986 is located approximately 6.5 miles southeast of the Modified Project site in the vicinity of Los Banos Valley (CDFW 2020a). California alkali grass was not observed during 2020 rare plant surveys.  |
| <i>Sagittaria sanfordii</i>                     | Sanford's arrowhead       | None/None/<br>1B.2                               | Marshes and swamps (assorted shallow freshwater)/perennial rhizomatous herb (emergent)/<br>May–Oct(Nov)/0–2,130  | <b>Low potential to occur.</b> Although marginal marsh habitat is present on the Modified Project site, this species is only known from one CNDDDB occurrence in the region <sup>2</sup> (CDFW 2020a). This 1948 occurrence is 1 mile east of Gustine near Modesto Properties Gun Club (CDFW 2020a). Sanford's arrowhead was not observed during 2020 rare plant surveys.  |
| <i>Senecio aphanactis</i>                       | Chaparral ragwort         | None/None/<br>2B.2                               | Chaparral, cismontane woodland, coastal scrub; sometimes alkaline/<br>annual herb/<br>Jan–Apr(May)/45–2,620  | <b>Low potential to occur.</b> Although marginal scrub habitat is present on the Modified Project site, this species is only known from one CNDDDB occurrence in the region <sup>2</sup> (CDFW 2020a). This 2003 occurrence is west of Orignalita Creek approximately 10.5 miles southeast of the Modified Project site (CDFW 2020a). Chaparral ragwort was not observed during 2020 rare plant surveys.   |
| <i>Streptanthus insignis</i> ssp. <i>lyonii</i> | Arburua Ranch jewelflower | None/None/<br>1B.2                               | Coastal scrub (sometimes serpentinite)/annual herb/Mar–May/<br>750–2,805   | <b>Low potential to occur.</b> Marginal scrub habitat is present on the Modified Project site, and this species is known to occur within the region <sup>2</sup> (CDFW 2020a). The closest CNDDDB occurrence is located approximately 7.5 miles southwest of the Modified Project site in coastal scrub near the South Fork of Los Banos Creek (CDFW 2020a). Additionally, serpentine substrates/habitat do not occur within the Modified Project site (Calflora 2020). Arburua Ranch jewelflower was not observed during 2020 rare plant surveys. |

Table 3.9-3. Special-Status Plant Species' Potential to Occur in Additional Impact Areas

| Scientific Name                                       | Common Name                    | Status <sup>1</sup><br>(Federal/<br>State/Other) | Primary Habitat<br>Associations/Life Form/<br>Blooming Period/<br>Elevation Range (feet)                                 | Potential to Occur  |
|---|--------------------------------|--|--|---|
| <i>Stuckenia<br/>filiformis</i> ssp.<br><i>alpina</i> | Slender-<br>leaved<br>pondweed | None/None/<br>2B.2                               | Marshes and swamps<br>(assorted shallow<br>freshwater)/perennial<br>rhizomatous herb<br>(aquatic)/<br>May–July/980–7,050 | <b>Low potential to occur.</b> Although marginal marsh habitat is present on the Modified Project site, this species is only known from one CNDDDB occurrence in the region <sup>2</sup> (CDFW 2020b). This 1948 occurrence recorded the species growing in a drainage ditch 0.25 miles south of Ingomar (CDFW 2020b). Slender-leaved pondweed was not observed during 2020 rare plant surveys. |

**Notes:** CNDDDB = California Natural Diversity Database; USGS = U.S. Geological Survey.

<sup>1</sup> Status Legend:

FE: Federally listed as endangered

FT: Federally listed as threatened

FC: Federal Candidate for listing

DL: Delisted

SE: State listed as endangered

ST: State listed as threatened

SC: State Candidate for listing

SR: State Rare

CRPR 1A: Plants presumed extirpated in California and either rare or extinct elsewhere

CRPR 1B: Plants rare, threatened, or endangered in California and elsewhere

CRPR 2A: Plants presumed extirpated in California but common elsewhere

CRPR 2B: Plants rare, threatened, or endangered in California but more common elsewhere

CRPR 3: Review List: Plants about which more information is needed

CRPR 4: Watch List: Plants of limited distribution

.1 Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)

.2 Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)

.3 Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

<sup>2</sup> Region is defined as the USGS 7.5 minute San Luis Dam quadrangle in which the Modified Project site is located, and the eight surrounding USGS 7.5-minute quadrangles (Crevison Peak, Howard Ranch, Ingomar, Pacheco Pass, Volta, Mariposa Peak, Los Banos Valley, and Ortigalita Peak N).

<sup>3</sup> Vicinity is defined as the USGS 7.5-minute San Luis Dam quadrangle in which the Modified Project site is located.

### Special-Status Wildlife Species

Special-status wildlife species include species that meet any of the following criteria (some species may meet several criteria):

- Listed, proposed for listing, or candidates for listing as threatened or endangered under FESA
- Listed or candidates for listing as threatened or endangered under CESA
- Designated as a Species of Special Concern by CDFW
- Designated as a Fully Protected species by the California Fish and Game Code
- Protected by the federal Migratory Bird Treaty Act
- Bald and golden eagles protected by the federal Bald and Golden Eagle Protection Act
- Bat species designated as Medium or High Priority by the Western Bat Working Group
- Meet the definition of rare, threatened, or endangered as described in CEQA Guidelines, Section 15380

Table 3.9-4 identifies special-status wildlife species evaluated for their potential to occur in the additional impact areas. The potential to occur is based on documented occurrences in the region, life history and general habitat requirements, and overall suitability of the habitat within the additional impact areas to support such species as evaluated during the habitat assessments and surveys described in Section 3.9.1. Special-status wildlife species observed or detected during surveys (Figure 3.9-2, Special-status Species Observations) or with moderate to high potential to occur are discussed in this section.

**Table 3.9-4. Special-Status Wildlife Species' Potential to Occur in Additional Impact Areas**

| Scientific Name                | Common Name                 | Status <sup>1</sup><br>(Federal/<br>State/Other) | Habitat  | Potential to Occur  |
|--------------------------------|-----------------------------|--|--|---|
| <b>Amphibians</b>              |                             |  |  |   |
| <i>Ambystoma californiense</i> | California tiger salamander | FT/ST, WL/<br>None                               | Annual grassland, valley-foothill hardwood, and valley-foothill riparian habitats; vernal pools, other ephemeral pools, and (uncommonly) along stream courses and anthropogenic pools if predatory fishes are absent | <b>Assumed to occur.</b> The additional staging area northeast of Basalt Hill is within 1.24 miles of suitable aquatic breeding habitat at Basalt Quarry Pond and Willow Spring Pond and is therefore considered potential upland habitat. The additional impact areas west of O'Neill Forebay are also within 1.24 miles of potential breeding sites to the west and are considered potential upland habitat. Known to occur in the region. <sup>2</sup> The nearest CNDDDB occurrence is approximately 2.3 miles southeast of the Modified Project site (CDFW 2020b). |

Table 3.9-4. Special-Status Wildlife Species' Potential to Occur in Additional Impact Areas

| Scientific Name                       | Common Name                         | Status <sup>1</sup><br>(Federal/<br>State/Other) | Habitat   | Potential to Occur   |
|---------------------------------------|-------------------------------------|--|---|--|
| <i>Rana draytonii</i>                 | California red-legged frog          | FT/SSC/None                                      | Lowland streams, wetlands, riparian woodlands, livestock ponds; dense, shrubby or emergent vegetation associated with deep, still or slow-moving water; uses adjacent uplands                                 | <b>Assumed present.</b> Observed in Willow Spring Pond by ESA (2018), near the additional staging area northeast of Basalt Hill. Potential suitable breeding habitat occurs in additional features within 1 mile of the San Luis Creek Day Use Area improvements and the access road to this location.   |
| <i>Spea hammondi</i>                  | Western spadefoot                   | None/SSC/None                                    | Primarily grassland and vernal pools, but also in ephemeral wetlands that persist at least 3 weeks in chaparral, coastal scrub, valley-foothill woodlands, pastures, and other agriculture                    | <b>High potential to occur.</b> Suitable seasonal pools present near the DWR maintenance yard are near suitable upland habitat in the additional staging and stockpiling area adjacent to the Gianelli Pumping-Generating Plant. Other suitable pools may occur elsewhere. The nearest CNDDB occurrence is approximately 2.6 miles southeast of the additional impact areas near the right abutment (CDFW 2020b) |
| <b>Reptiles</b>                       |                                     |  |   |  |
| <i>Actinemys marmorata</i>            | Western pond turtle                 | None/SSC/None                                    | Slow-moving permanent or intermittent streams, ponds, small lakes, and reservoirs with emergent basking sites; adjacent uplands used for nesting and during winter  | <b>Low potential to occur.</b> Suitable aquatic habitat is absent from the additional impact areas, but occurs near the additional staging area (Willow Springs Pond), and may occur in other aquatic habitat elsewhere in the vicinity. There are no CNDDB occurrences for this species within 5 miles of the Modified Project site (CDFW 2020b).   |
| <i>Masticophis flagellum ruddocki</i> | San Joaquin coachwhip (=whipsnake)  | None/SSC/None                                    | Open, dry, treeless areas including grassland and saltbush scrub  | <b>High potential to occur.</b> Suitable habitat (open grassland with no tree cover and abundant small mammal burrows) is present widely in the additional impact areas.   |
| <i>Phrynosoma blainvillii</i>         | Blainville's (=coast) horned lizard | None/SSC/None                                    | Open areas of sandy soil in valleys, foothills, and semi-arid mountains including coastal scrub, chaparral, valley-foothill hardwood, conifer, riparian, pine-cypress, juniper, and annual grassland habitats | <b>Moderate potential to occur.</b> Suitable scrub and grassland habitats are present throughout the additional areas, but this species is relatively conspicuous and has not been observed during extensive surveys.  |

Table 3.9-4. Special-Status Wildlife Species' Potential to Occur in Additional Impact Areas

| Scientific Name  | Common Name          | Status <sup>1</sup><br>(Federal/<br>State/Other) | Habitat   | Potential to Occur   |
|--|----------------------|--|---|--|
| <b>Birds</b>   |                      |  |   |  |
| <i>Agelaius tricolor</i><br>(nesting colony)                         | Tricolored blackbird | BCC/SSC, ST                                      | Nests near freshwater, emergent wetland with cattails or tules, but also in Himalayan blackberry; forages in grasslands, woodland, and agriculture  | <b>Present.</b> Dudek observed a nesting colony in spring 2020, adjacent to the Modified Project site, near the additional staging and stockpiling area adjacent to the right abutment. Suitable breeding and foraging habitat occurs in multiple locations near additional impact areas, including the San Luis Creek Day Use Area improvements and the proposed campground area. |
| <i>Aquila chrysaetos</i><br>(nesting and wintering)                  | Golden eagle         | BCC/FP, WL                                       | Nests and winters in hilly, open/semi-open areas, including shrublands, grasslands, pastures, riparian areas, mountainous canyon land, open desert rimrock terrain; nests in large trees and on cliffs in open areas and forages in open habitats | <b>Present.</b> Dudek observed in the vicinity during surveys for the Gonzaga Ridge Project (Dudek 2019). <b>High potential for foraging</b> within or near all of the additional impact areas; <b>low potential for nesting</b> anywhere on the Modified Project site based on human disturbance near trees.  |
| <i>Athene cunicularia</i><br>(burrow sites and some wintering sites) | Burrowing owl        | BCC/SSC  | Nests and forages in grassland, open scrub, and agriculture, particularly with ground squirrel burrows  | <b>High potential to occur.</b> Not observed, but suitable nesting (ground squirrel burrows) and foraging habitat present within most of the additional impact areas, and known occurrences in vicinity.   |
| <i>Buteo swainsoni</i><br>(nesting)                                  | Swainson's hawk      | BCC/ST   | Nests in open woodland and savanna, riparian, and in isolated large trees; forages in nearby grasslands and agricultural areas such as wheat and alfalfa fields and pasture   | <b>High potential to occur.</b> Nesting not confirmed but suitable foraging habitat is present throughout much of the additional impact areas. Suitable nesting habitat occurs in the proposed campground area, the San Luis Creek Day Use Area improvements, and adjacent to several other areas near the dam.  |
| <i>Circus hudsonius</i><br>(nesting)                                 | Northern harrier     | None/SSC   | Nests in open wetlands (marshy meadows, wet lightly grazed pastures, old fields, freshwater and brackish marshes); also in drier habitats (grassland and grain fields); forages in grassland, scrubs,   | <b>High potential to occur.</b> Nesting not confirmed but suitable nesting habitat (grassland with adequate ground cover) present at various locations within and adjacent to the additional impact areas.   |

Table 3.9-4. Special-Status Wildlife Species' Potential to Occur in Additional Impact Areas

| Scientific Name  | Common Name       | Status <sup>1</sup><br>(Federal/<br>State/Other) | Habitat   | Potential to Occur   |
|--|-------------------|--|---|--|
|  |                   |  | rangelands, emergent wetlands, and other open habitats  |  |
| <i>Elanus leucurus</i><br>(nesting)                        | White-tailed kite | None/FP  | Nests in woodland, riparian, and individual trees near open lands; forages opportunistically in grassland, meadows, scrubs, agriculture, emergent wetland, savanna, and disturbed lands                         | <b>High potential to occur.</b> Not observed but suitable nesting trees present in the proposed campground area, the San Luis Creek Day Use Area improvements, and adjacent to several additional impacts areas near the dam.  |
| <i>Gymnogyps californianus</i>                             | California condor | FE/FP, SE  | Nests in rock formations, deep caves, and occasionally in cavities in giant sequoia trees ( <i>Sequoiadendron giganteus</i> ); forages in relatively open habitats where large animal carcasses can be detected | <b>Moderate potential to occur.</b> Nesting habitat is not present, foraging habitat is present within the San Luis Reservoir Region. Records from GIS tracking show that movements by this species are concentrated east of the Modified Project site, but multiple individuals have been recorded flying over the Modified Project vicinity since 2018 (USGS 2020).  |
| <i>Haliaeetus leucocephalus</i><br>(nesting and wintering) | Bald eagle        | FDL, BCC/<br>FP, SE                              | Nests in forested areas adjacent to large bodies of water, including seacoasts, rivers, swamps, large lakes; winters near large bodies of water in lowlands and mountains                                       | <b>Present.</b> Observed foraging on the Modified Project site during 2020 surveys. Suitable foraging habitat occurs on site around large bodies of water and potentially in grasslands where California ground squirrels ( <i>Spermophilus beecheyi</i> ) are present. Low potential to nest near the additional impact areas. One active nest historically presumed to be present at the south end of the San Luis Recreation Area; however, no nests were discovered during Dudek's 2020 surveys. |
| <i>Lanius ludovicianus</i><br>(nesting)                    | Loggerhead shrike | BCC/SSC  | Nests and forages in open habitats with scattered shrubs, trees, or other perches   | <b>Present.</b> Observed on numerous occasions within and adjacent to the Modified Project site within areas of suitable nesting substrate. Dudek also observed an adult feeding a fledgling near the edge of the Modified Project site, along the south shore of O'Neill Forebay on April 15, 2020.   |

Table 3.9-4. Special-Status Wildlife Species' Potential to Occur in Additional Impact Areas

| Scientific Name                                      | Common Name              | Status <sup>1</sup><br>(Federal/<br>State/Other) | Habitat   | Potential to Occur   |
|--|--------------------------|--|---|--|
| <i>Pelecanus erythrorhynchos</i><br>(nesting colony) | American white pelican   | None/SSC   | Nests colonially on sandy, earthen, or rocky substrates on isolated islands in freshwater lakes; minimal disturbance from predators; access to foraging areas on inland marshes, lakes, or rivers; winters on shallow coastal bays, inlets, and estuaries | <b>Not expected to occur (nesting colony).</b> Observed flying over site by Dudek in 2020. The Modified Project site is outside the species' nesting range, and no nesting habitat is present.   |
| <i>Setophaga petechia</i><br>(nesting)               | Yellow warbler           | BCC/SSC  | Nests and forages in riparian and oak woodlands, montane chaparral, open ponderosa pine, and mixed-conifer habitats   | <b>Moderate potential to occur.</b> Migrant(s) observed by ESA (2018), but specific location unknown. Marginal nesting habitat in riparian vegetation adjacent to O'Neill Forebay within the proposed campground area, but no evidence of nesting observed by Dudek in 2020. |
| <b>Mammals</b>                                       |                          |  |   |  |
| <i>Antrozous pallidus</i>                            | Pallid bat               | None/SSC/<br>None                                | Grasslands, shrublands, woodlands, forests; most common in open, dry habitats with rocky outcrops for roosting, but also roosts in human-made structures and tree cavities  | <b>High Potential to occur.</b> Low potential to roost. Foraging habitat occurs throughout the additional impact areas. Detected during acoustic surveys conducted by Dudek (2019) for Gonzaga Ridge Project. CNDDDB includes no occurrences within 5 miles (CDFW 2020b).    |
| <i>Cervus elaphus nannodes</i>                       | Tule elk                 | None/None/<br>None                               | Grasslands and other open country in semi-desert conditions; also require water and cover, especially for calving   | <b>Present.</b> Species present throughout the Modified Project site north to SR-152. A herd of approximately 700 individuals occupies the area between Interstate 5 and SR-25 in San Benito County, including the Modified Project site.                                    |
| <i>Corynorhinus townsendii</i>                       | Townsend's big-eared bat | None/SSC   | Mesic habitats characterized by coniferous and deciduous forests and riparian habitat, but also xeric areas; roosts in limestone caves and lava tubes, human-made structures, and tunnels   | <b>Moderate potential to occur.</b> No roosting habitat is present in or adjacent to the additional impact areas. However, potentially forages on occasion in much of the additional impact areas.   |



Table 3.9-4. Special-Status Wildlife Species' Potential to Occur in Additional Impact Areas

| Scientific Name                    | Common Name         | Status <sup>1</sup><br>(Federal/<br>State/Other) | Habitat   | Potential to Occur   |
|------------------------------------|---------------------|--|---|--|
| <i>Eumops perotis californicus</i> | Western mastiff bat | None/SSC   | Chaparral, coastal and desert scrub, coniferous and deciduous forest, and woodland; roosts in crevices in rocky canyons and cliffs where the canyon or cliff is vertical or nearly vertical, trees, and tunnels               | <b>High potential to occur.</b> Low potential to roost. Detected during acoustic surveys conducted by Dudek (2019) for Gonzaga Ridge Project. Suitable roosting habitat is probably limited, but may forage on site because of its use of a wide variety of foraging habitats.   |
| <i>Lasiurus blossevillei</i>       | Western red bat     | None/SSC   | Forest, woodland, riparian, mesquite bosque, and orchards, including fig, apricot, peach, pear, almond, walnut, and orange; roosts in tree canopy   | <b>Present.</b> Detected during acoustic survey conducted by ESA (2018) at concrete tunnel northeast of Basalt Quarry on September 12, 2018. Foliage in trees in the proposed campground area and the San Luis Creek Day Use Area improvements, and adjacent to other additional impacts areas near the dam, provide suitable roosting habitat.  |
| <i>Puma concolor</i>               | Mountain lion       | None/SC/<br>Specially<br>Protected<br>Mammal     | Scrubs, chaparral, riparian, woodland, and forest; rests in rocky areas and on cliffs and ledges that provide cover; most abundant in riparian areas and brushy stages of most habitats throughout California, except deserts | <b>Low potential to occur.</b> Mountain lions are unlikely to occur on the Modified Project site due to generally unsuitable habitat.  |
| <i>Taxidea taxus</i>               | American badger     | None/SSC   | Dry, open, treeless areas; grasslands, coastal scrub, agriculture, and pastures, especially with friable soils  | <b>Present.</b> Observed by Dudek in spring 2020. Potentially occurs in a variety of natural habitats occurring in the additional impact areas.  |
| <i>Vulpes macrotis mutica</i>      | San Joaquin kit fox | FE/ST  | Grasslands and scrublands, including those that have been modified; oak woodland, alkali sink scrubland, vernal pool, and alkali meadow   | <b>Assumed present.</b> Presence is assumed based on suitable habitat and prey and nearby occurrences (USFWS 2019). Suitable habitat in the additional impact areas is concentrated south of SR-152. While suitable habitat occurs in the proposed campground area and other grasslands in the Modified Project vicinity north of SR-152, all recent occurrences are from farther south. |

Table 3.9-4. Special-Status Wildlife Species' Potential to Occur in Additional Impact Areas

| Scientific Name                          | Common Name                       | Status <sup>1</sup><br>(Federal/<br>State/Other) | Habitat   | Potential to Occur  |
|--|-----------------------------------|--|---|---|
| <b>Invertebrates</b>                     |                                   |  |   |   |
| <i>Bombus crotchii</i>                   | Crotch bumble bee                 | None/PSE   | Open grassland and scrub communities supporting suitable floral resources   | <b>Low potential to occur.</b> Potentially suitable shrubland for nesting and floral resources for foraging occur on Modified Project site, but there are no occurrences in the Modified Project site or vicinity (CDFW 2020b; iNaturalist 2020) and the nearest occurrence is a museum specimen collected in 1952 approximately 22 miles to the southeast. This species may be extirpated from the region. |
| <i>Branchinecta longiantenna</i>         | Longhorn fairy shrimp             | FE/None  | Sandstone outcrop pools, alkaline grassland vernal pools, and pools within alkali sink and alkali scrub communities                 | <b>Not expected to occur.</b> No seasonal pools occur within any of the additional impact areas.  |
| <i>Branchinecta lynchi</i>               | Vernal pool fairy shrimp          | FT/None  | Vernal pools, seasonally ponded areas within vernal swales, and ephemeral freshwater habitats                                       | <b>Not expected to occur.</b> No seasonal pools occur within any of the additional impact areas.  |
| <i>Desmocerus californicus dimorphus</i> | Valley elderberry longhorn beetle | FT/None  | Occurs only in the Central Valley of California, in association with blue elderberry ( <i>Sambucus nigra</i> ssp. <i>caerulea</i> ) | <b>Not expected to occur.</b> Suitable elderberry shrubs occur near Modified Project site at Basalt Hill, but no adults or exit holes observed to date. No elderberry shrubs were observed in any of the additional impact areas.   |
| <i>Lepidurus packardii</i>               | Vernal pool tadpole shrimp        | FE/None  | Ephemeral freshwater habitats including alkaline pools, clay flats, vernal lakes, vernal pools, and vernal swales                   | <b>Not expected to occur.</b> No seasonal pools occur within any of the additional impact areas.  |

**Notes:** CNDDB = California Natural Diversity Database; DWR= California Department of Water Resources; GIS = geographic information system; SR = State Route; USGS = U.S. Geological Survey.

<sup>1</sup> Status Legend

**Federal**

FE: Federally Endangered

FT: Federally Threatened

BCC: U.S. Fish and Wildlife Service Bird of Conservation Concern

**State**

SSC: California Species of Special Concern

FP: California Fully Protected Species

SE: State Endangered

ST: State Threatened

SC: State Candidate

SCE: State Candidate for Listing as Endangered

SCT: State Candidate for Listing as Threatened

- <sup>2</sup> Region is defined as the USGS 7.5-minute San Luis Dam quadrangle in which the Modified Project site is located, and the either surrounding USGS 7.5-minute quadrangles (Crevison Peak, Howard Ranch, Ingomar, Pacheco Pass, Volta, Mariposa Peak, Los Banos Valley, and Ortigalita Peak N).
- <sup>3</sup> Vicinity is defined as the USGS 7.5-minute San Luis Dam quadrangle in which the Modified Project site is located.

## **Amphibians**

### **California Tiger Salamander**

California tiger salamander (*Ambystoma californiense*) occurs within low-elevation grassland and oak woodland communities of the Central Valley, coastal valleys, and bordering foothills from at least Colusa County south to Santa Barbara and Tulare Counties (Shaffer et al. 1993). They require areas that support fossorial rodents, whose burrows provide underground retreats during the dry nonbreeding season, and with ponds, vernal pools, and intermittent streams that hold water during the winter and spring to provide aquatic breeding habitat (Shaffer et al. 1993). Although breeding by tiger salamanders has been documented in permanent ponds, if there are predatory fish or bullfrogs in the pond, breeding will most likely be unsuccessful. Various trapping studies in Monterey and Solano Counties have shown that most nonbreeding California tiger salamanders reside more than 100 yards but within 0.6 to 1.2 miles of breeding ponds (Ford et al. 2013).

California tiger salamander presence within the Modified Project site has not been verified, but the species is assumed to occur (USFWS 2019). Potential California tiger salamander breeding habitat was identified by ESA in two locations near the Modified Project site, including the 0.17-acre Willow Spring Pond north of Basalt Quarry and a 0.04-acre seasonal pond south of Basalt Road and east of the quarry (also referred to as Basalt Quarry Pond). Additional features potentially providing aquatic breeding habitat in the vicinity of the Modified Project site are depicted in Figure 3.9-3, California Tiger Salamander Aquatic Habitat. There are no barriers to salamander movement into or within the Modified Project site from these potential breeding sites. Throughout these areas, it is reasonable to conclude that all life stages of California tiger salamander are present (USFWS 2019). California tiger salamander has been documented four times within 5 miles of the Modified Project site (CDFW 2020b).

Potential California tiger salamander habitat within the additional impact areas includes grassland into which salamanders could move from nearby breeding habitat and occupy burrows during the dry season. The likelihood of California tiger salamander occurrence is highest in the additional staging and stockpiling area and access road improvement areas north of Basalt Hill, due to their proximity to Willow Spring Pond and Basalt Quarry Pond. The additional impact areas west of O'Neill Forebay could also support California tiger salamanders if potential breeding sites to the west were occupied.

### **California Red-legged Frog**

California red-legged frog (*Rana draytonii*) occurs from sea level to elevations near 5,000 feet. It has been extirpated from 70% of its former range and now is found primarily in coastal drainages of Central California, from Marin County south to northern Baja California, Mexico, and in isolated drainages in the Sierra Nevada, northern Coast, and northern Transverse Ranges. Breeding habitat includes freshwater pools and backwaters within streams and creeks, ponds, marshes, springs, and lagoons. They also frequently breed in artificial impoundments such as stock ponds (USFWS 2002). During the nonbreeding season, California red-legged frogs need moist areas in which to take refuge from the heat and predators, such as intermittent or ephemeral streams with dense riparian vegetation, overhanging banks, and rootwads; springs or spring boxes; rodent burrows; and damp leaf litter in riparian woodlands (Ford et al. 2013). USFWS (2002, 2019) considers freshwater habitat and associated upland habitat within 1 mile as red-legged frog breeding, foraging, and dispersal habitat.

California red-legged frog is known to occur in the vicinity of the Modified Project site, and there are several potential aquatic breeding sites on or within 1 mile of the site (Figure 3.9-4, California Red-legged Frog Aquatic Habitat). ESA (2020) observed a population in Willow Spring Pond north of Basalt Quarry in September 2018 and four adults in an off-site stock pond 0.3 miles west of the Modified Project boundary at Basalt Quarry in March 2020. ESA also identified two off-site ponds potentially suitable for breeding: a spring-fed stock pond 0.8 miles east of the Modified Project boundary at Basalt Quarry and a stock pond 1.2 miles west of the Basalt Quarry Project boundary. There are no barriers to frog movement into or within the Modified Project site from potential breeding sites, and ground squirrel burrows in surrounding grassland provide suitable refugia. Throughout these areas, it is reasonable to conclude that all life stages of California red-legged frog are present (USFWS 2019).

Potential California red-legged frog habitat within the additional impact areas includes grassland through which red-legged frogs could move when dispersing between nearby breeding sites. The likelihood of California red-legged frog occurrence is highest in the additional staging and stockpiling area and access road improvement areas north of Basalt Hill, due to their proximity to Willow Spring Pond and Basalt Quarry Pond. The additional impact areas west of O'Neill Forebay could also support California red-legged frog if potential breeding sites to the west were occupied.

#### **Western Spadefoot**

Western spadefoot (*Spea hammondi*) ranges from the north end of California's Central Valley near Redding, south, west of the Sierras and the deserts, and into northwest Baja California, Mexico (Jennings and Hayes 1994; Stebbins 2003). It is almost completely terrestrial, entering temporal pools and drainages only to breed. The species aestivates within rodent burrows in upland habitats near aquatic breeding sites (Stebbins 1972). The species prefers open areas with sandy or gravelly soils in a variety of habitats, including mixed woodlands, grasslands, coastal sage scrub, chaparral, sandy washes, river floodplains, alluvial fans, playas, and alkali flats (Stebbins 2003).

This species has high potential to occur within the Modified Project site and additional impact areas. The seasonal pools north and west of the DWR maintenance yard provide suitable breeding habitat. These pools are outside the Modified Project site boundary, but spadefoots could move into the additional staging and stockpiling area west of Gianelli Plant, if present in these pools. There is one CNDDDB occurrence for this species approximately 2.2 miles southeast of Basalt Quarry (Occ. No. 1280) (CDFW 2020b).

#### **Reptiles**

##### **San Joaquin Coachwhip (=Whipsnake)**

San Joaquin coachwhip (*Masticophis flagellum ruddocki*) prefers open, dry, often treeless areas including grassland, chaparral, and scrub habitats within its range in Central and Southern California. This species tends to seek cover in rodent burrows and rock piles.

This species has high potential to occur within the Modified Project site and additional impact areas. The grasslands and scrub, especially those areas with abundant rodent burrows, provide suitable habitat. There is one CNDDDB occurrence for this species, approximately 4.9 miles southeast of Basalt Quarry (Occ. No. 19) (CDFW 2020b).

##### **Blainville's (=Coast) Horned Lizard**

The Blainville's horned lizard (*Phrynosoma blainvillii*) typically occurs below 6,000 feet in elevation in open areas of sandy soil in valleys, foothills, and semi-arid foothills including coastal scrub, chaparral, valley-foothill hardwood, conifer, riparian, pine-cypress, juniper, and annual grassland habitats. It requires loose, fine soils for burrowing, open areas for thermoregulation, and shrub cover for protection from predators and weather (Jennings and Hayes 1994).

This species has moderate potential to occur within the Modified Project site and additional impact areas. Suitable scrub and grassland habitats are present throughout the additional impact areas, but this species is relatively conspicuous and has not been observed during extensive surveys.

#### **Birds**

##### **Bald Eagle**

In California, most nesting bald eagles (*Haliaeetus leucocephalus*) are found in the northern part of the state, but pairs nest locally south through the Sierra Nevada, coastal counties in Central and Southern California, and on the Channel Islands. Bald eagles typically nest in one of the largest trees available near water and generally situated with a prominent overview of the surrounding area (Buehler 2020). Bald eagles preferentially forage on fish and waterfowl, but their diet varies regionally and seasonally in response to locally available resources, and often includes a variety of mammals as well as carrion, especially in winter (Todd et al. 1982; Stalmaster 1987; Ewins and Andress 1995; Buehler 2020).

Bald eagles were documented on 11 occasions during Dudek's 2020 surveys and were previously documented within the Modified Project site during ESA's 2018 surveys. Most of Dudek's 2020 observations were of individuals hunting over or soaring near San Luis Reservoir.

No active bald eagle nests were observed during Dudek's 2020 surveys; however, subadult birds were documented on several occasions. An active bald eagle nest has historically occurred along a southern finger of the San Luis Reservoir State Recreation Area (SRA) (CDPR 2006); this may be the same nest that ESA observed "near [the off-site pond approximately 1.2 miles west of Basalt Quarry], on the southwest side of [the reservoir] by Lone Oak Bay" during reconnaissance-level surveys for the B.F. Sisk Dam Raise and Reservoir Expansion Project (reservoir expansion project) (SLDMWA and Reclamation 2020) in March 2020 (ESA 2020).

Suitable bald eagle nesting habitat occurs within the Modified Project site in areas with stands of eucalyptus, cottonwoods, pines, and other trees at the base of B.F. Sisk Dam, as well as immediately outside of the Modified Project site along the reservoir and the edges of O'Neill Forebay where several trees were observed during surveys. Basalt Campground provides suitable nesting habitat for bald eagles with forested stands of pines and eucalyptus trees; however, disturbance by the public in this area may deter bald eagles from nesting. Suitable bald eagle foraging habitat occurs throughout the Modified Project site adjacent to San Luis Reservoir and O'Neill Forebay. Additionally, this species may forage irregularly within the grassland habitats on the Modified Project site.

Potential suitable nesting habitat within the additional impact areas includes the stands of eucalyptus and cottonwoods within the proposed campground area and San Luis Creek Day Use Area; however, disturbance by the public in these areas may deter nesting. Suitable foraging habitat occurs throughout the additional impact areas adjacent to San Luis Reservoir and O'Neill Forebay, as well as within grassland habitats within these areas.

There is one CNDDDB occurrence for bald eagle near the Modified Project site. In 2011, an active nest was observed approximately 4.6 miles northwest of the Romero Visitor Center area of the Modified Project site (Occ. No. 365) (CDFW 2020b).

##### **Burrowing Owl**

Burrowing owl (*Athene cunicularia*) occurs throughout North and Central America west of the eastern edge of the Great Plains south to Panama. In California, it is a year-round resident of lowlands throughout much of the state;

these resident populations may be augmented by migrants from other parts of western North America in the winter (Gervais et al. 2008). Burrowing owl has disappeared as a breeding species from many portions of its former statewide range, especially along the central and southern coasts (Gervais et al. 2008; Wilkerson and Siegel 2010).

Burrowing owls require habitat with three basic attributes, (1) open, well-drained terrain; (2) short, sparse vegetation; and (3) underground burrows or burrow surrogates such as culverts, concrete debris piles, or riprap (Klute et al. 2003). They occupy grasslands, deserts, sagebrush scrub, agricultural areas (including pastures and untilled margins of cropland), earthen levees and berms, coastal uplands, and urban vacant lots, as well as the margins of airports, golf courses, and roads. This species also prefers sandy soils with higher bulk density and less silt, clay, and gravel (Lenihan 2007).

Habitat assessments for burrowing owl were conducted within the Modified Project site in 2018 and 2020, following the guidelines in the Staff Report on Burrowing Owl Mitigation (CDFG 2012). No protocol-level breeding or nonbreeding season surveys<sup>1</sup> have been conducted to date.

Potential suitable habitat within the Modified Project site includes grasslands and open areas adjacent to coyote brush scrub that contain burrows, burrow surrogates, or fossorial mammal dens. Although there is potential suitable habitat within these vegetation communities throughout the Modified Project site, and numerous suitable burrows were detected during transect surveys (including several artificial burrows presumably installed for habitat enhancement in the Medeiros Use Area, no burrowing owls or fresh evidence of burrowing owl presence (e.g., white wash, pellets, feathers, and/or bone fragments in or around burrow entrances) were detected during surveys for this species in 2018 or 2020. Two very old potential burrowing owl burrows were discovered during surveys in 2020 immediately west of Basalt Road, and at the southern end of Borrow Area 14. Old, faint whitewash was observed at both locations; however, no other sign of burrowing owl presence was observed. There is one CNDDDB occurrence for this species that overlaps with the eastern portion of the Modified Project site: two wintering owls were observed in December 2003 about 1 mile southeast of the California Department of Forestry and Fire Protection (CAL FIRE) station and east of the intersection of Basalt Road and Gonzaga Road (Occ. No. 859) (CDFW 2020b). There have been seven additional occurrences reported by CNDDDB within 5 miles of the Modified Project site. In addition, ESA (2020) observed a single burrowing owl approximately 0.3 miles southwest of the Basalt Quarry Project boundary during reconnaissance-level surveys for the reservoir expansion project in March 2020. Given the presence of high-quality habitat and occurrences in the vicinity, this species has high potential to occur on the Modified Project site in the future if burrows remain available.

Potential suitable habitat within the additional impact areas includes grasslands and open areas adjacent to scrub/chaparral that contain burrows, burrow surrogates, or fossorial mammal dens. These areas predominantly occur within the proposed campground area and San Luis Creek Day Use Area; however, the shaded areas of San Luis Creek Day Use Area combined with the high level of public activity likely deter burrowing owls from using this area.

#### **California Condor**

Once on the brink of extinction, captive-bred and some recent wild-bred California condors (*Gymnogyps californianus*) have begun to use portions of their historical range in California, including the Diablo Range (Johnson et al. 2010). Nest sites are typically located in cavities, ledges, and potholes in cliffs and large rock outcrops, and, more rarely, in cavities in giant sequoia trees (*Sequoiadendron giganteum*). Although California condors historically nested over a relatively large portion of the Coast, Transverse, and southern Sierra Nevada

---

<sup>1</sup> A complete breeding season survey consists of at least four survey visits: at least one between February 15 and April 15 and a minimum of three visits, at least 3 weeks apart, between April 15 and July 15, with at least one of these visits after June 15. A complete nonbreeding season survey consists of at least four visits spread evenly between September 1 and January 31 (CDFG 2012).

Ranges in California (Koford 1953; Meretsky and Snyder 1992), current wild California condor nest sites within the state are located primarily within the Los Padres and Angeles National Forests and Pinnacles National Park, which is approximately 40 miles south/southwest of the Modified Project site.

As large opportunistic scavengers, California condors are evolutionarily adapted for feeding on the carcasses of large ungulates, such as deer and elk, as well as whales, seals, and sea lions that wash up along the coast (Emslie 1987). More recently, condors have adapted to forage on carcasses of cattle, sheep, and other domestic grazing animals. As the availability of large carcasses was often unpredictable, condors developed a wide-ranging search behavior. Foraging flights occurred, and continue to occur, over vast areas encompassing hundreds of linear miles of travel each day, typically in association with foothills and mountainous areas where condors can take advantage of updrafts and prevailing winds (Meretsky and Snyder 1992).

Most California condor foraging occurs in open foothill grasslands and oak savannas and occasionally in open scrub vegetation and require fairly open areas in which to access food. California condors prefer areas with relatively steep topography, such as in mountains and hillsides, which, in addition to creating updrafts that provide favorable soaring conditions, also make it easier for condors to take off and land near carcasses (USFWS 1996). The majority of breeding birds forage within 80 to 112 miles of their nesting areas.

Suitable foraging habitat (primarily associated with grassland and oak savanna communities) occurs on the Modified Project site and within the additional impact areas. Condors have never been known to nest within the Modified Project site, additional impact areas, or within the Modified Project vicinity, likely due to a lack of suitable nest habitat (i.e., large rock outcrops and cliffs with appropriate ledges and cavities for nesting).

Based on USFWS/U.S. Geological Survey GPS telemetry data (representing individual condor flights), individual California condors have been documented flying within 10 miles of the Gonzaga Ridge Project, which is located east of the Modified Project Site (Dudek 2019; USGS 2020). Multiple individuals have been recorded flying over the Modified Project vicinity since 2018 (USGS 2020). The nearest documented CNDDDB occurrence for California condor is approximately 40 miles south of the Modified Project site within Rock Spring Peak, east of Pinnacles National Park (Occ. No. 11) (CDFW 2020b).

#### **Golden Eagle**

The golden eagle (*Aquila chrysaetos*) is a year-round, diurnally active species that is a permanent resident and migrant throughout California. Golden eagles are more common in northeast California and the Coast Ranges than in Southern California and the deserts. Foraging habitat for this species includes open habitats with scrub, grasslands, desert communities, and agricultural areas.

Golden eagles breed from January through August, with peak breeding activity occurring from February through July. Nest building can occur almost any time during the year. This species nests on cliffs, rock outcrops, large trees, and artificial structures such as electrical transmission towers, generally near open habitats used for foraging (Johnsgard 1990; Katzner et al. 2020; Scott 1985). Golden eagles commonly build, maintain, and variably use multiple alternative nest sites in their breeding territories, routinely refurbishing and reusing individual nests over many years. Generally, the nests are large platforms composed of sticks, twigs, and greenery that are often 10 feet across and 3 feet high (Zeiner et al. 1990a). Pairs may build more than one nest and attend to them prior to laying eggs (Katzner et al. 2020). Each pair can have up to 10 nests, but only 2 to 3 are generally used in rotation from one year to the next. Some pairs use the same nest each year, and others use alternate nests year after year, and still others apparently nest only every other year. Succeeding generations of eagles may even use the same nest (Terres 1980).

Golden eagles have been documented on numerous occasions within the Gonzaga Ridge Project site, which is located approximately 3 miles northwest of the Basalt Hill Borrow Area. Over 2 years of avian point count surveys conducted for the Gonzaga Ridge Project (a total of 693 point counts were conducted), individual golden eagles were observed on nine different occasions (Dudek 2019). During the fall periods in 2017 and 2018 (October to November) and spring period in 2018 (March to April), Dudek biologists recorded 48 golden eagle observations over a total 150 surveys conducted for the Gonzaga Ridge Project (Dudek 2019). Most of these observations were documented within the northeastern part of the Gonzaga Ridge Project site, approximately 3.3 miles northwest of the Basalt Hill Borrow Area. Dudek assumed that the majority of these individuals were migratory or non-resident individuals given the low number of eagles observed during the year-round point count surveys (Dudek 2019).

Dudek ground-based and aerial nest territory surveys found multiple occupied territories within 10 miles of the Gonzaga Ridge Project site, but all of the occupied territories were farther west than the Modified Project site (Dudek 2019). No active golden eagle nests or territorial eagles were observed within the Gonzaga Ridge Project site. Golden eagle nest territory surveys conducted for the Gonzaga Ridge Project in 2018 did not encompass any part of the Modified Project site, because the entire area east of San Luis Reservoir was considered not suitable for eagle nesting. However, a May 2020 aerial survey for the Gonzaga Ridge Project covered the Gonzaga Ridge transmission corridor, including portions in the Basalt Hill Borrow Area. No golden eagle nests or territorial eagles were detected (BRC 2020).

Golden eagle was not documented on the Modified Project site during ESA's 2018 surveys or any of Dudek's 2020 surveys. Suitable foraging habitat (i.e., grassland) occurs on the Modified Project site, but regular disturbance near trees precludes nesting. This species also typically prefers to nest in more hilly terrain than occurs over most of the Modified Project site.

Potential suitable foraging habitat for golden eagle within the additional impact areas includes grasslands and open areas, which predominantly occur within the proposed campground area. Small patches of suitable grassland foraging habitat occur within the additional staging and stockpiling areas.

There is one CNDDDB occurrence for golden eagle within proximity to the Modified Project site, southwest of Los Banos and approximately 6 miles southeast of Borrow Area 6 within the Medeiros Day Use Area (Occ. No. 120) (CDFW 2020b). This occurrence was an active nesting site in 1987.

#### **Loggerhead Shrike**

Loggerhead shrike (*Lanius ludovicianus*) ranges throughout California in the lowlands and foothills. The largest breeding populations are in portions of the Central Valley, the Coast Ranges, and the southeastern deserts (Humple 2008). The loggerhead shrike is a resident in much of California, and migratory in the north. Winter visitors augment resident populations. Preferred habitats for loggerhead shrikes are open areas that include scattered shrubs, trees, posts, fences, utility lines, or other structures that provide hunting perches with views of open ground, as well as nearby spiny vegetation or human-made structures (e.g., the top of chain-link fences or barbed wire) that provide a location to impale prey items for storage or manipulation (Humple 2008). Loggerhead shrikes occur most frequently in riparian areas along the woodland edge, grasslands with available perch and butcher sites, scrublands, and open canopied woodlands; they can also occur in agricultural areas and rangelands, as well as developed areas such as mowed roadsides, cemeteries, and golf courses. They rarely occur in heavily urbanized areas. For nesting, the height of shrubs and presence of canopy cover are most important (Yosef 2020). Loggerhead shrikes nest in trees and shrubs, especially thorny or spiny ones. In some cases, tumbleweeds and brush or debris (e.g., discarded rolls of barbed wire) piles may be used for nesting (Ricketts, pers. obs. 2013).



Loggerhead shrike was observed on at least five occasions during Dudek's 2020 field surveys (Figure 3.9-2 and by a few game cameras. Loggerhead shrikes were observed adjacent to Borrow Area 6 within the Medeiros Use Area, adjacent to Gianelli Plant, and within/adjacent to the Basalt Campground. At several locations, evidence of nesting was observed, including fledgling birds being fed by adults, independent juveniles, and territorial behavior by adults. Loggerhead shrikes were also observed within the Approved Project site during ESA's 2018 surveys.

The Modified Project site and additional impact areas provide high-quality nesting and foraging habitat for this species. Nesting habitat occurs in the dense riparian vegetation adjacent to Borrow Area 6 and adjacent to the additional staging and stockpiling areas, and stands of vegetation at the base of the dam west of Basalt Road. Additionally, dense riparian vegetation along O'Neill Forebay within the proposed campground area and San Luis Creek Day Use Area provides high-quality nesting habitat. Grasslands throughout the Modified Project site provide foraging habitat.

The nearest CNDDDB occurrence for this species is approximately 13 miles northeast of the Modified Project site within San Luis National Wildlife Refuge (Occ. No. 109) (CDFW 2020b); however, this species is underrepresented in CNDDDB.

#### **Northern Harrier**

The northern harrier (*Circus hudsonius*) breeds throughout most of Canada and Alaska; south through the northern and central Great Basin, Rocky Mountains, and Great Plains; in the northeastern United States; and in scattered locales from central, coastal, and southwestern California south to Baja California, Mexico (Smith et al. 2020). Northern harriers winter across most of the coterminous United States south through Mexico, Central America, the Bahamas, and Cuba. In California, northern harriers breed in the Central Valley, Great Basin, most of the Coast Ranges, and in some coastal areas from San Luis Obispo County southward (Davis and Niemela 2008). Northern harrier inhabits annual grassland, lodgepole pine, and pine meadow habitats in the Central Valley, Sierra Nevada, and northeastern California (Zeiner et al. 1990a). This species is less common in the Central Valley, and permanently resides on the northeastern plateau and coastal areas. Northern harrier breeds from sea level to 5,700 feet and nests on the ground in shrubby vegetation, within tall grasses, and forbs in wetland (Brown and Amadon 1968). Extensive grazing generally precludes nesting by northern harriers, which typically require relatively large tracts of undisturbed habitat (Smith et al. 2020).

Northern harrier was observed on four occasions during Dudek's 2020 field surveys (Figure 3.9-2). On April 13, 2020, one was observed hunting in the grassland south of the proposed campground area on the western side of O'Neill Forebay, and one was observed hunting within the proposed staging and stockpiling area west of Basalt Road. During multi-species burrow mapping surveys in early May 2020, a northern harrier was observed hunting within Borrow Area 6 of the Medeiros Use Area. An additional northern harrier was observed on June 24, 2020, during focused special-status plant surveys near the base of the south valley section of B.F. Sisk Dam. Northern harrier was also observed during ESA's field surveys in September 2018.

No northern harrier nests were discovered during the 2018 or 2020 surveys. Nesting and foraging habitat for this species exists within grasslands throughout the Modified Project site and additional impact areas, including patches of upland mustards and other ruderal forbs.

There are two CNDDDB occurrences for northern harrier near the Modified Project site. On June 21, 2001, several adults and juveniles were observed within the O'Neill Forebay Wildlife Area approximately 1.3 miles north of Borrow Area 6 (Occ. No. 41) (CDFW 2020b). On April 25, 2001, a breeding pair was observed within the Lower Cottonwood Wildlife Area north of SR-152 (Occ. No. 42) (CDFW 2020b).

**Swainson's Hawk**

Swainson's hawk nests in California in the Central Valley, Klamath Basin, Northeastern Plateau, Lassen County, and the Mojave Desert. This species breeds in riparian areas, stands of trees and isolated trees in agricultural environments, oak savannah, and juniper-sage flats. In the San Joaquin Valley, it typically nests in riparian areas and in isolated tree clusters, often near rural residences or other areas with some human disturbance. Alfalfa fields are the favored foraging areas of Swainson's hawk in the Central Valley, but the species also forages in other low-density row crops, undisturbed grasslands, rangelands, and fallow agricultural fields.

Swainson's hawk was observed on 10 occasions during Dudek's 2020 field surveys (Figure 3.9-2). Most of the observations were of individual birds or groups hunting over the grassland areas; however, potential breeding activity was observed within the Basalt Campground. On April 14 and 15, 2020, a pair of Swainson's hawks were observed vocalizing and carrying nesting material (e.g., sticks) within the campground on two separate occasions. An individual Swainson's hawk was observed again in this area on April 20, 2020, but no nests were found, nor were any found on or within 0.5 miles of the Modified Project site.

While Swainson's hawk nesting was not observed within the Modified Project site during Dudek's 2020 field surveys, nesting habitat occurs throughout the Modified Project site within the large stands of eucalyptus, cottonwoods, pines, and other trees. Grasslands that are present throughout the Modified Project site provide suitable foraging habitat for this species.

Potential suitable nesting habitat for Swainson's hawk occurs within trees of suitable size within the additional impact areas, specifically adjacent to several of the additional staging and stockpiling areas, and trees within/along O'Neill Forebay in the proposed campground area and San Luis Creek Day Use Area. Grasslands that are prevalent within and adjacent to these additional impact areas provide suitable foraging habitat for Swainson's hawk.

There are 10 CNDDDB occurrences for Swainson's hawk within 5 miles of the Modified Project site, and 3 occurrences, all from 2006, overlap with the Modified Project site or are within 0.5 miles of the Modified Project site (CDFW 2020b). The 3 occurrences in 2006 all involved active nests: 1 in a eucalyptus tree in the Basalt Campground, approximately 0.2 miles south of the proposed contractor use area near the kiosk on Basalt Road (Occ. No. 2492); 1 in an interior live oak tree immediately adjacent to the southwestern boundary of Borrow Area 6 near the intersection of Basalt Road and SR-152 (Occ. No. 2491); and 1 in a eucalyptus tree adjacent to the southeastern boundary of Borrow Area 6 in the Medeiros Use Area (Occ. No. 2490) (CDFW 2020b).

**Tricolored Blackbird**

Tricolored blackbirds are largely endemic to California, with more than 99% of the global population occurring in the state. Breeding tricolored blackbirds occur in four general areas of the state, the Central Valley, the central coast, the Sierra Nevada foothills, and Southern California. Madera, Merced, and Stanislaus Counties have the greatest numbers of consistently breeding tricolored blackbirds (Meese 2014).

Tricolored blackbirds nest in colonies, primarily in freshwater marshes dominated by dense stands of emergent vegetation such as cattails and bulrushes, but they also nest in willows, blackberries, thistles, and nettles (*Urtica* spp.). They are known to forage up to 5.6 miles from active breeding colonies (UC Davis 2020).

Tricolored blackbird was documented regularly within the Modified Project site during Dudek's April and May of 2020 surveys (Figure 3.9-2). A colony of breeding individuals (approximately 75 birds) was observed west of Basalt Road, immediately east of the proposed expanded embankment and stability berm for the right abutment of the

dam. The colony was occupying a large area of cattail marsh, and nesting behaviors noted included nest building, birds carrying insect prey and nesting materials, and birds persistently visiting potential nest locations deep within the reeds. The colony was intermixed with a colony of red-winged blackbirds. Tricolored blackbird was not documented within the Modified Project site during ESA's 2018 field surveys.

Suitable breeding habitat for this species on site primarily consists of cattail marsh, as well as mixed stands of willows, poison hemlock, and mustard (*Brassica* spp.) that occur throughout the Modified Project site and additional impact areas. Most suitable habitat occurs along the edge of O'Neill Forebay north of Borrow Area 6 in the Medeiros Use Area, as well as along the edge of the forebay in the proposed campground area and San Luis Creek Day Use Area. Suitable habitat also occurs in a few patches at the base of the dam west of Basalt Road (including the observed nesting colony), near the additional staging and stockpiling areas, as well as within the footprint of the northernmost stability berm (i.e., below left abutment of the dam).

There are four CNDDDB occurrences for tricolored blackbird in or near the Modified Project site and six additional occurrences within 5 miles. A colony of 100 to 1,000 birds was observed at the same location as Dudek's 2020 observation at the base of B.F. Sisk Dam between 1998 and 2012 (Occ. No. 355) (CDFW 2020b). A colony of 500 birds was observed at the northwestern side of Borrow Area 6 within the Medeiros Day Use Area in 2006 and 2007 (Occ. No. 648) (CDFW 2020b). In April 2005, a colony of 50 breeding adults was observed at Domengine Spring, immediately south of the Basalt Road kiosk (Occ. No. 432) (CDFW 2020b). Finally, a colony of 150 birds was observed along Basalt Road just north of the Basalt Hill Borrow Area in July 1998 (Occ. No. 354) (CDFW 2020b).

#### **White-tailed Kite**

White-tailed kite (*Elanus leucurus*) inhabits herbaceous and open cismontane habitats (Zeiner et al. 1990a). It is commonly associated with certain types of agricultural areas (Grinnell and Miller 1944). This species is a year-round resident in coastal and valley lowlands, and forages in open grasslands, meadows, farmlands, and emergent wetlands. It will also use marginal habitats such as freeway edges and medians when foraging for voles and mice. Nests are constructed in a variety of trees, with coast live oak perhaps the most common, and placed high in the crown on thin branches (Peeters and Peeters 2005). Riparian areas adjacent to open space areas are also typically used for nesting, and kites prefer dense, broad-leaved deciduous trees for nesting and night roosting (Brown and Amadon 1968). They also nest in young redwoods (*Sequoia sempervirens*) and mid-sized Douglas firs (*Pseudotsuga menziesii*) in Northern California.

White-tailed kite was not observed during ESA's 2018 or Dudek's 2020 field surveys. The eucalyptus stands, cottonwoods pines, and other trees within the Modified Project site and additional impact areas provide suitable nesting habitat for this species, and grasslands provide high-quality foraging habitat. There are several eBird (2020) occurrences in the Modified Project vicinity, including an observation of two individuals in the San Luis Creek Day Use Area on March 24, 2019, and an observation near the Basalt Day Use Area boat ramp on August 23, 2011. The nearest CNDDDB occurrence for this species is a May 1994 observation in Gilroy, approximately 28 miles west of the Modified Project site (Occ. No. 84) (CDFW 2020b).

#### **Yellow Warbler**

Yellow warbler (*Setophaga petechia*) occurs as a migrant and summer resident in California from late March to early October. Despite local declines, yellow warblers currently occupy much of their historic statewide range (i.e., throughout California except for most of the Mojave Desert and the entire Colorado Desert) except for the Central Valley, where it is close to extirpation. It breeds in riparian vegetation along streams and wet meadows from April

to late July. Nests are placed 2 to 16 feet above ground in riparian trees or shrubs such as cottonwoods, willows, and alders (*Alnus* sp.). Riparian woodland or forest used for nesting are typically open or semi-open with a dense shrub understory (Zeiner et al. 1990a; Heath 2008).

ESA observed yellow warbler (presumably a migrant) during their September 2018 surveys; however, Dudek did not observe any during 2020 surveys, which were conducted during the peak of the nesting season. Riparian habitat within the Modified Project site is limited to the small stand of Fremont cottonwood forest southeast of Gianelli Plant; this stand is too small and sparsely vegetated to support nesting by this species. Higher quality habitat occurs along the edges of O'Neill Forebay, adjacent to the proposed campground area and San Luis Creek Day Use Area, but Dudek did not observe yellow warblers in these areas. There are no CNDDDB occurrences within 5 miles of the Modified Project site.

#### **Mammals**

##### **American Badger**

American badger (*Taxidea taxus*) occurs throughout California except for the extreme northwestern coastal area (Zeiner et al. 1990b) and higher elevations of the Sierra Nevada. This species prefers dry, open, treeless areas, as well as grasslands, coastal scrub, agriculture, and pastures, especially with friable soils (Zeiner et al. 1990b). This species is considered somewhat tolerant of human activities (Zeiner et al. 1990b).

American badger was documented within the Modified Project site during Dudek's 2020 surveys (Figure 3.9-2). There were four wildlife camera detections and three direct observations by Dudek staff in the field. On April 15, 2020, Dudek staff documented a deceased American badger (likely due to vehicle strike) south of the eastern end of Borrow Area 6 along SR-152; on May 6, 2020, fresh American badger scat was documented along the northern access road of Borrow Area 6 in the Medeiros Use Area; and on June 23 an individual badger was observed next to a large burrow in the grassland north of Basalt Road east of the Basalt Road kiosk. ESA also observed one badger at the intersection of Basalt Road and Gonzaga Road during spotlighting surveys conducted within the Approved Project site on September 13, 2018.

Potential suitable habitat within the additional impact areas includes grasslands and open areas adjacent to coyote brush scrub that contain burrows, burrow surrogates, or fossorial mammal dens. Suitable grasslands occur throughout the additional impact areas. Numerous suitable American badger burrows were documented during multi-species burrow mapping conducted by Dudek in May 2020.

There are four CNDDDB occurrences within or near the Modified Project site. In February 2009, an individual was observed north of SR-152 and south of Lower Cottonwood Creek Wildlife Area, approximately 0.1 miles northeast of the left abutment of the dam (Occ. No. 344) (CDFW 2020b). Individual badgers were also observed in 2005 north of Basalt Road and the Basalt Road kiosk (Occ. No. 483) and east of the access road to Basalt Campground (Occ. No. 484), and in 2006 south of Borrow Area 6 and Gonzaga Road, west of Jasper-Sears Road (Occ. No. 485) (CDFW 2020b). A total of 10 CNDDDB occurrences have been documented within 5 miles of the Modified Project site.

##### **Mountain Lion**

Mountain lions (*Puma concolor*) are widespread but uncommon throughout most of California except for the Central Valley and regions of the Mojave and Colorado Deserts that do not support mule deer, their preferred food source. The species uses the brushy stages of a variety of habitat types with good cover (Zeiner et al. 1990b).

There are no documented mountain lion occurrences within the Modified Project site or vicinity, and mountain lions are considered to have a low potential for occurrence in all of the additional impact areas. More suitable habitat occurs to the west of the Modified Project site, where the terrain is more rugged and there is more woodland cover.

#### **Pallid Bat**

Pallid bat (*Antrozous pallidus*) inhabits grasslands, shrublands, woodlands, and forests in low elevations in California (Zeiner et al. 1990b). This species occurs throughout California in open, dry habitats with rocky areas for roosting. Pallid bat requires protected areas for day roosting, including caves, crevices, and hollow trees, and may roost at night in more open sites, including buildings.

Pallid bat has not been detected within the Modified Project site, including the additional impact areas. However, it was detected during passive acoustic monitoring surveys conducted from February to October 2018 for the Gonzaga Ridge Project, approximately 5.3 miles to the west (Dudek 2019). Suitable roosting habitat occurs in concrete structures near Basalt Quarry. The species has a low likelihood of establishing day roosts in the additional impact areas, but may roost nearby and forage over the additional impact areas, most of which are suitable foraging habitat for this species.

#### **San Joaquin Kit Fox**

San Joaquin kit fox (*Vulpes macrotis mutica*) is endemic to California, occurring only on the San Joaquin Valley floor, surrounding foothills and ranges, and smaller, adjacent valleys, from northern Ventura and Santa Barbara Counties north to Contra Costa and San Joaquin Counties. The three core populations for the kit fox are in the Ciervo-Panoche region (western Fresno and Merced Counties and eastern San Benito County), western Kern County, and the Carrizo Plain in San Luis Obispo County (USFWS 2010a).

San Joaquin kit fox occurs in arid lands with scattered shrubby vegetation underlain by loose-textured, sandy soils suitable for burrowing and supporting primary prey (e.g., kangaroo rats). Occupied communities and land covers include valley sink scrub, valley saltbush scrub, upper Sonoran subshrub scrub, annual grassland, grazed grasslands, petroleum fields, and urban areas in the southern portion of their range; valley sink scrub, interior coast range saltbush scrub, upper Sonoran subshrub scrub, annual grassland, and the remaining native grasslands in the central portion of their range; and annual grassland and valley oak woodland in the northern part of their range (USFWS 1998). The Modified Project site, including the additional impact areas, falls within the central portion of the range.

CNDDDB includes numerous kit fox occurrences in the Modified Project vicinity from the early 1970s to the early 2000s, with the most recent approximately 0.4 miles south of Basalt Quarry along Billy Wright Road and 2.7 miles southeast of Basalt Quarry in Los Banos Valley (Occ. Nos. 125 and 211, respectively) (CDFW 2020b); both of these occurrences are from 2005 and are associated with the 2005–2007 study by Constable et al. (2009) (see below). An older record, estimated sometime from 1972 to 1975, overlaps with the Modified Project site at the western end of Borrow Area 6 (Occ. No. 875) (CDFW 2020b). Another record from 1989 is located adjacent to and southeast of Borrow Area 6, where an individual kit fox was observed foraging in the Medeiros Use Area on August 19, 1989 (Occ. No. 550) (CDFW 2020b).

The Modified Project site is assumed to be occupied by San Joaquin kit fox, and most of the site supports suitable habitat. USFWS (2019) concludes that the area is likely foraging, denning, breeding, and dispersal habitat due to the presence of suitable habitat and prey, the biology and ecology of the species, and the recent documented occurrences of kit fox in the vicinity. Suitable habitat occurs in grassland throughout the additional impact areas south of SR-152. Suitable habitat also occurs in the proposed campground area. However, based on surveys conducted from 2005 to 2007, researchers from the Endangered Species Recovery Program at California State University concluded that kit fox occurrence north of SR-152 is limited to transient individuals (Constable et al. 2009).

### **Townsend's Big-eared Bat**

Townsend's big-eared bat (*Corynorhinus townsendii*) occurs throughout California, and forages in a wide variety of habitats, except alpine and subalpine habitats (Zeiner et al. 1990b). It roosts in caves, mines, tunnels, buildings, or other human-made structures, and distribution is "strongly correlated with the availability of caves and cave-like roosting habitats" (WBWG 2017).

Townsend's big-eared bat has not been recorded on the Modified Project site, and no roosting habitat occurs in the additional impact areas. However, it has the potential to roost in the vicinity and forage over any of the additional impact areas. CNDDDB includes no occurrences within 5 miles.

### **Tule Elk**

The tule elk was legislatively protected in California in the 1970s, and as a result, reintroduced to a few locations. In the Modified Project vicinity, tule elk was reintroduced in the area that is bounded by Interstate (I) 5, SR-152, and SR-25. First introduced in the south, the original 40 tule elk have now increased their numbers to around 700 and range to SR-152. CDFW provided GPS collar data for several animals that occur within two loose herds in the vicinity. They are good representatives of the ranging of other members of their herds. This subspecies is fairly unique from other elk subspecies in that it does not migrate. Tule elk use nearly the entire area surrounding the reservoir south of SR-152, including the B.F. Sisk Dam facilities. While they are capable of jumping over the fences along SR-152, they apparently do not or rarely cross the highway, instead remaining in areas to the south.

### **Western Mastiff Bat**

Western mastiff bat (*Eumops perotis californicus*) inhabits a wide variety of chaparral, coastal and desert scrub, grasslands, and coniferous and deciduous forest and woodland habitats (Zeiner et al. 1990b). It roosts in crevices in rocky canyons and cliffs where the canyon or cliff is vertical or nearly vertical, trees, and tunnels in San Joaquin Valley and Coastal Ranges from Monterrey County southward to Southern California (WBWG 2017; Zeiner et al. 1990b).

Western mastiff bat has not been detected within the Modified Project site, but it was detected during passive acoustic monitoring surveys for the Gonzaga Ridge Project, approximately 5.3 miles to the west (Dudek 2019). This species is unlikely to roost in the additional impact areas. Concrete structures near Basalt Quarry may provide suitable roosting habitat and western mastiff bats roosting in the vicinity could forage over the additional impact areas.

### **Western Red Bat**

Western red bat inhabits grasslands, shrublands, open woodlands, forests, and croplands throughout California (Zeiner et al. 1990b). This species migrates between summer and winter ranges, and commonly winters in western lowlands and coastal regions south of San Francisco Bay. Western red bat primarily roosts in foliage in trees and shrubs.

Western red bat was detected during a nighttime passive acoustic monitoring survey conducted by ESA near the concrete tunnel northeast of Basalt Quarry on September 12, 2018. Most of the Modified Project site, including the additional impacts areas, is considered suitable foraging habitat for this species. Trees within the San Luis Creek Day Use Area improvements provide suitable roosting habitat, and this species may also roost in trees elsewhere on the Modified Project site and in the vicinity, and forage over any of the additional impact areas.

## ***Invertebrates***

### **Crotch Bumble Bee**

Crotch bumble bee (*Bombus crotchii*) is a candidate species for listing as endangered under CESA. The current range of the Crotch bumble bee is nearly limited to California and generally includes most of the state south of Sacramento (Xerces Society et al. 2018).

Bumble bees have three basic habitat requirements, including suitable nesting sites for colonies, availability of nectar and pollen from floral resources, and suitable overwintering sites for females. Crotch bumble bee inhabits open grassland and scrub habitats and primarily nests underground (Williams et al. 2014, as cited in Xerces Society et al. 2018). Little is known about the nesting and overwintering sites for Crotch bumble bee; however, similar species typically overwinter in soft, disturbed soil (Goulson 2010, as cited in Xerces Society et al. 2018), or under leaf litter or other debris (Williams et al. 2014, as cited in Xerces Society et al. 2018). Nests are often located underground in abandoned holes made by ground squirrels, mice, and rats, or occasionally abandoned bird nests.

Agricultural intensification and rapid urbanization in the Central Valley are threats that are thought to have impacted Crotch bumble bee (Hatfield et al. 2015). However, the species has been detected in agricultural landscapes in Yolo and Contra Costa Counties in recent years (Hatfield et al. 2015). Bumble bees, generally, are threatened by pesticide use, pathogens, and competition with non-native bees (Hatfield et al. 2015).

Generally, activities that significantly disturb native, fallow, or relatively undisturbed soils could affect colonies or overwintering sites, if they are present. Additionally, activities that remove significant concentrations of flowering plants, especially those known to be used by the species, could impact the insect's ability to find suitable pollen and nectar sources (if there are nearby colonies).

Crotch bumble bees are generalist foragers and require open grassland and scrub habitats with floral resources. The plant families most associated with Crotch bumble bee observations or collections include Fabaceae, Apocynaceae, Asteraceae, Lamiaceae, and Boraginaceae (Xerces Society et al. 2018).

Crotch bumble bee has not been observed within the Modified Project site or vicinity (CDFW 2020b; iNaturalist 2020). Potentially suitable Crotch bumble bee habitat was identified during vegetation mapping and focused surveys for special-status plant species (Dudek 2020b). Potentially suitable nesting habitat occurs within scrub/chaparral communities, including the *Baccharis pilularis* associations, *Ericameria linearifolia* association, and *Atriplex lentiformis* association. Areas with high floral diversity, defined as greater than 10% relative cover of forbs within the herbaceous layer, were identified as potential foraging habitat. Potentially suitable foraging habitat for this and other bee species occurs throughout most of the Modified Project site, wherever flowering plants provide nectar resources in the spring, summer, and early fall. Bees' use of such resources varies over the year as they become available. Focused surveys for the Crotch bumble bee were not conducted.

Crotch bumble bee has moderate potential to occur within the Modified Project site. The nearest CNDDB occurrence for this species is a museum specimen collected in 1952 approximately 22 miles to the southeast in Dos Palos (Occ. No. 55) (CDFW 2020b). The lack of occurrences in the site vicinity and recent occurrences in Merced County suggests that this species may be extirpated from the region. Given the presence of suitable habitat and recent observations in similar habitat to the north (Hatfield et al. 2015), however, its presence cannot be ruled out without focused surveys.

### 3.9.1.5 Wildlife Movement

Wildlife movement includes local and regional travels by species intended to satisfy one or more of their needs. Wildlife corridors and habitat linkages help mitigate some of the impacts of habitat fragmentation by facilitating wildlife movement and improving habitat connectivity. Wildlife corridors and habitat linkages are considered sensitive by resource and conservation agencies.

Wildlife corridors are areas that connect suitable wildlife habitat in a region otherwise fragmented by rugged terrain, changes in vegetation, or human disturbance. Natural features, such as canyon drainages, ridgelines, or areas with vegetation cover, provide corridors for wildlife travel. Wildlife corridors are important because they provide access to mates, food, and water; allow the dispersal of wildlife from high-density areas; and facilitate the exchange of genetic traits between populations (Beier and Loe 1992).

Habitat linkages are patches of native habitat that function to join two larger patches of habitat. They serve as connections between habitat patches and help reduce the adverse effects of habitat fragmentation. The linkage represents a potential route for gene flow and long-term dispersal. Habitat linkages may serve as both habitat and avenues of gene flow for small animals such as passerine birds, small mammals, reptiles, and amphibians. Habitat linkages may be continuous patches of habitat or habitat “islands” that function as “stepping-stones” for dispersal.

The additional impact areas may function as a portion of the home ranges (e.g., foraging for food or water, defending territories, searching for mates, breeding areas, or cover) for wider-ranging species. Such species occurring in the area include San Joaquin kit fox and tule elk. San Joaquin kit fox, listed under ESA and CESA, may travel widely in the Modified Project vicinity, and may occasionally move between occupied areas to the south and suitable habitats to the south. Tule elk, a CDFW-managed species occurring south of SR-152, moves widely across the Modified Project vicinity.

#### **Wildlife Movement and the Modified Project Site**

The Modified Project site is located at the boundary of the Diablo Range, which is part of the Coast Ranges, and the San Joaquin Valley at the southern half of the Central Valley. This is a transitional area from steep and rolling foothills to flatter areas associated with ranching and farming. The Modified Project site is situated on the eastern side of San Luis Reservoir and straddles SR-152, which is a major connecting highway between I-5 approximately 3 miles to the east, and Highway 101 approximately 30 miles to the west. O'Neill Forebay abuts SR-152 and, combined with the California Aqueduct, Delta–Mendota Canal, San Luis Wasteway, and I-5, effectively blocks most wildlife movement potential to the north on the eastern side of the reservoir. Some movement potential exists within the Modified Project site on the south side of SR-152 between the O'Neill Forebay connection to San Luis Reservoir and B.F. Sisk Dam. This area is constrained by DWR support facilities, roads, and the dam, leaving a long and linear strip of annual grassland (approximately 200 to 500 feet wide by 2,700 linear feet long) available for wildlife to use and movement. Despite these constraints, camera studies have shown the narrow area at the foot of the dam is used for movement by tule elk (Reclamation 2019). However, this species typically occupies only lands south of SR-152. Also, in a 2019 biological opinion, USFWS (2019) suggested the area along the foot of the dam provided an available link for San Joaquin kit fox dispersing north of SR-152, where they could move along the north side of the O'Neill Forebay crossing to access land west of the forebay. But the biological opinion concluded that San Joaquin kit foxes do not persist in the northern range of the species (which is entirely north of the Modified Project site), and that very few likely attempt to move north of SR-152 (USFWS 2019).



Land is available for wildlife movement along the north shore of the reservoir and south of SR-152 for approximately 5 miles farther northwest. At this point, movement is constrained where an SR-152 causeway crosses Cottonwood Bay at the north end of the reservoir. The slopes on either side of the causeway vary in width between approximately 600 and 2,000 feet, depending on the location and seasonal fluctuation of water levels. The causeway slopes are rocked with riprap that limits movement in the area for most species through this area at high lake levels. To the south and west of the causeway, there are almost no impediments to wildlife movement other than SR-152 to the north.

North of SR-152 and west of O'Neill Forebay, extensive rangeland and other undeveloped lands provide relatively unrestricted wildlife movement for all species. Similarly, the largely undeveloped areas south and southwest of the Modified Project site provide few constraints to wildlife movement. The additional impact areas within the Modified Project site are not readily identifiable as corridors or linkages, because wildlife is not anticipated to normally move through the site due to existing human-made features (e.g., water bodies, roads, facilities, and canals).

## 3.9.2 Relevant Plans, Policies, and Ordinances

### 3.9.2.1 Federal

#### **Federal Endangered Species Act**

FESA (16 USC 1531 et seq.), as amended, is administered by USFWS, National Oceanic and Atmospheric Administration, and National Marine Fisheries Service (NMFS). This legislation is intended to provide a means to conserve the ecosystems upon which endangered and threatened species depend, and provide programs for the conservation of those species, thus preventing extinction of plants and wildlife. As part of this regulatory act, FESA provides for designation of Critical Habitat, defined in FESA Section 3(5)(A) as specific areas within the geographical range occupied by a species where physical or biological features “essential to the conservation of the species” are found and that “may require special management considerations or protection.” Critical Habitat may also include areas outside the current geographical area occupied by the species that are nonetheless “essential for the conservation of the species.” Under provisions of Section 9(a)(1)(B) of FESA, it is unlawful to “take” any listed species. “Take” is defined in Section 3(19) of FESA as, harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting, or attempting to engage in any such conduct.

Section 7(a)(2) of FESA directs federal agencies to consult with USFWS for any actions they authorize, fund, or carry out that may jeopardize the continued existence of any listed species or result in the destruction or adverse modification of federally designated Critical Habitat. Consultation begins when the federal agency submits a written request for initiation to USFWS or NMFS, along with the agency’s Biological Assessment of its proposed action (if necessary), and USFWS or NMFS accepts that sufficient information has been provided to initiate consultation. If USFWS or NMFS concludes that the action is not likely to adversely affect a listed species, the action may be conducted without further review under FESA. Otherwise, USFWS or NMFS must prepare a written Biological Opinion describing how the agency’s action will affect the listed species and its Critical Habitat.

#### **Migratory Bird Treaty Act**

The Migratory Bird Treaty Act prohibits the intentional take of any migratory bird or any part, nest, or eggs of any such bird. Under the Migratory Bird Treaty Act, “take” is defined as pursuing, hunting, shooting, capturing, collecting, or killing, or attempting to do so (16 USC 703 et seq.). In December 2017, Department of the Interior Principal Deputy Solicitor Jorjani issued a memorandum (M-37050) that interprets the Migratory Bird Treaty Act’s “take” prohibition to apply only to affirmative actions that have as their purpose the taking or killing of migratory birds,

their nests, or their eggs; unintentional or accidental take is not prohibited (M-37050). However, in August 2020, a federal court upheld the long-standing interpretation of the Migratory Bird Treaty Act, such that it covers intentional and unintentional take. Additionally, Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, requires that any project with federal involvement address impacts of federal actions on migratory birds with the purpose of promoting conservation of migratory bird populations (66 FR 3853–3856). Executive Order 13186 requires federal agencies to work with USFWS to develop a memorandum of understanding. USFWS reviews actions that might affect migratory bird species.

#### **Clean Water Act**

Pursuant to Section 404 of the Clean Water Act, USACE regulates the discharge of dredged and/or fill material into “waters of the United States.” The term “wetlands” (a subset of waters) is defined as “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas” (33 CFR 328.3[b]). In the absence of wetlands, the limits of USACE jurisdiction in non-tidal waters, such as intermittent streams, extend to the “ordinary high water mark” (33 CFR 328.3[e]).

#### **Bald and Golden Eagle Protection Act**

Bald eagle and golden eagle are federally protected under the Bald and Golden Eagle Protection Act (BGEPA), which was passed in 1940 to protect bald eagles and amended in 1962 to include golden eagles (16 USC 668 et seq.). This act prohibits the take, possession, sale, purchase, barter, offer to sell or purchase, export or import, or transport of bald eagles and golden eagles or their parts, eggs, or nests without a permit issued by USFWS. The definition of “take” includes to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb. The definition of “disturb” has been further clarified by regulation as follows: “Disturb means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle; (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior; or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior” (50 CFR 22.3).

The BGEPA prohibits any form of possession or taking of both eagle species, and the statute imposes criminal and civil sanctions, as well as an enhanced penalty provision for subsequent offenses. Further, the BGEPA provides for the forfeiture of anything used to acquire eagles in violation of the statute. The statute exempts from its prohibitions on possession the use of eagles or eagle parts for exhibition, scientific, or Native American religious uses.

In November 2009, USFWS published the Final Eagle Permit Rule (74 FR 46836–46879) providing a mechanism to permit and allow for incidental (i.e., nonpurposeful) take of bald and golden eagles pursuant to the BGEPA (16 USC 668 et seq.). The previous year, 2008, USFWS adopted Title 50, Part 22.11(a) of the Code of Federal Regulations, which provides that a permit authorizing take under FESA Section 10 applies with equal force to take of golden eagles authorized under the BGEPA. These regulations were followed by issuance of guidance documents for inventory and monitoring protocols and for avian protection plans (USFWS 2010b). In January 2011, USFWS released its Draft Eagle Conservation Plan Guidance aimed at clarifying expectations for acquiring take permits by wind power projects, consistent with the 2009 rule (USFWS 2011a).

On December 16, 2016, USFWS adopted additional regulations regarding incidental take of golden eagles and their nests (81 FR 91494 et seq.). Most of the new regulations address “programmatic eagle nonpurposeful take permits” such as those typically requested by members of the alternative energy industry, including wind farms. For example, the new regulations extend the duration of such permits from 5 to 30 years. In addition, the new

regulations modify the definition of the BGEPA “preservation standard” to mean “consistent with the goals of maintaining stable or increasing breeding populations in all eagle management units and the persistence of local populations throughout the service range of each species” (81 FR 91496–91497). This process has also resulted in standardizing mitigation options for permitted take.

### 3.9.2.2 State

#### **California Endangered Species Act**

CDFW administers CESA (California Fish and Game Code, Section 2050 et seq.), which prohibits the “take” of plant and animal species designated by the Fish and Game Commission as endangered, candidate, or threatened in the State of California. Under CESA Section 86, take is defined as “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.” CESA addresses the take of threatened, endangered, or candidate species by stating the following (California Fish and Game Code, Sections 2080–2085):

No person shall import into this state, export out of this state, or take, possess, purchase, or sell within this state, any species, or any part or product thereof, that the Commission determines to be an endangered species or a threatened species, or attempt any of those acts, except as otherwise provided in this chapter, the Native Plant Protection Act (California Fish and Game Code, Sections 1900–1913), or the California Desert Native Plants Act (Food and Agricultural Code, Section 80001).

Sections 2081(b) and (c) of the California Fish and Game Code authorize take of endangered, threatened, or candidate species if take is incidental to otherwise lawful activity and if specific criteria are met. In certain circumstances, Section 2080.1 of CESA allows CDFW to adopt a federal incidental take statement or a 10(a) permit as its own, based on its findings that the federal permit adequately protects the species and is consistent with state law. A Section 2081(b) permit may not authorize the take of “Fully Protected” species, “specially protected mammal” species, and “specified birds” (California Fish and Game Code, Sections 3505, 3511, 4700, 4800, 5050, 5515, and 5517). If a project is planned in an area where a Fully Protected species, specially protected mammal, or a specified bird occurs, an applicant must design the project to avoid take.

#### **California Fish and Game Code**

##### ***Lake and Streambed Alteration Program***

Under California Fish and Game Code, Section 1602, CDFW has authority to regulate work that will substantially divert or obstruct the natural flow of or substantially change or use any material from the bed, channel, or bank of any river, stream, or lake. CDFW also has authority to regulate work that will deposit or dispose of debris, water, or other material where it may pass into any river, stream, or lake. CDFW’s regulation of work in these resources takes the form of a requirement for a Lake or Streambed Alteration Agreement and is applicable to any person, state, or local governmental agency or public utility (California Fish and Game Code, Section 1601). CDFW jurisdiction includes ephemeral, intermittent, and perennial watercourses (including dry washes) and lakes characterized by the presence of (1) defined bed and banks and (2) existing fish or wildlife resources. In practice, CDFW-jurisdictional limits extend to the top of the stream or lake bank or to the outer edge of riparian vegetation, if present. In some cases, CDFW jurisdiction may extend to the edge of the 100-year floodplain. Because riparian habitats do not always support wetland hydrology or hydric soils, wetland boundaries, as defined by Clean Water Act, Section 404, sometimes include only portions of the riparian habitat adjacent to a river, stream, or lake. Therefore, jurisdictional boundaries under Section 1602 may encompass a greater area than those regulated under Clean Water Act, Section 404.

### **Fully Protected Species and Resident and Migratory Birds**

Sections 3511, 4700, 5050, and 5515 of the California Fish and Game Code designate certain birds, mammals, reptiles and amphibians, and fish as Fully Protected species. Fully Protected species may not be taken or possessed without a permit from the Fish and Game Commission. CDFW may not authorize the take of such species except (1) for necessary scientific research, (2) for the protection of livestock, (3) when the species is a covered species under an approved natural community conservation plan, or (4) as legislatively authorized by the passing of a State Assembly Bill.

In addition, the California Fish and Game Code prohibits the needless destruction of nests or eggs of native bird species (California Fish and Game Code, Section 3503), and it states that no birds in the orders of Falconiformes or Strigiformes (birds of prey) can be taken, possessed, or destroyed (California Fish and Game Code, Section 3503.5).

For the purposes of these state regulations, CDFW currently considers an active nest as one that is under construction or in use and includes existing nests that are being modified. For example, if a hawk is adding to or maintaining an existing stick nest in a transmission tower, then it would be considered to be active and covered under these California Fish and Game Code Sections.

### **California Native Plant Protection Act**

The Native Plant Protection Act of 1977 (California Fish and Game Code, Sections 1900–1913) directed CDFW to carry out the legislature’s intent to “preserve, protect and enhance rare and endangered plants in this State.” The Native Plant Protection Act gave the Fish and Game Commission the power to designate native plants as “endangered” or “rare,” and prohibited take, with some exceptions, of endangered and rare plants. When CESA was amended in 1984, it expanded on the original Native Plant Protection Act, enhanced legal protection for plants, and created the categories of “threatened” and “endangered” species to parallel FESA. The 1984 amendments to CESA also made the exceptions to the take prohibition set forth in Section 1913 of the Native Plant Protection Act applicable to plant species listed as threatened or endangered under CESA. CESA categorized all rare animals as threatened species under CESA, but did not do so for rare plants, which resulted in three listing categories for plants in California: rare, threatened, and endangered. The Native Plant Protection Act remains part of the California Fish and Game Code, and mitigation measures for impacts to rare plants are specified in a formal agreement between CDFW and project proponents.

### **Porter–Cologne Water Quality Control Act**

The intent of the Porter–Cologne Water Quality Control Act is to protect water quality and the beneficial uses of water, and it applies to both surface water and groundwater. Under this law, the State Water Resources Control Board develops statewide water quality plans, and the RWQCBs develop basin plans that identify beneficial uses, water quality objectives, and implementation plans. The RWQCBs have the primary responsibility to implement the provisions of both statewide and basin plans. All waters of the state are regulated under the Porter–Cologne Water Quality Control Act, including isolated waters that are no longer regulated by USACE. Recent changes in state procedures require increased analysis and mitigation. Developments with impact to jurisdictional waters of the state must demonstrate compliance with the goals of the act by developing stormwater pollution prevention plans, standard urban stormwater mitigation plans, and other measures to obtain a Clean Water Act, Section 401 certification and/or Waste Discharge Requirement.

### California Environmental Quality Act

CEQA requires identification of a project's potentially significant impacts on biological resources and feasible mitigation measures and alternatives that could avoid or reduce significant impacts. CEQA Guidelines, Section 15380(b)(1), defines endangered animals or plants as species or subspecies whose "survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors" (14 CCR 15000 et seq.). A rare animal or plant is defined in Section 15380(b)(2) as a species that, although not presently threatened with extinction, exists "in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens; or ... [t]he species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered 'threatened' as that term is used in the federal Endangered Species Act." Additionally, an animal or plant may be presumed to be endangered, rare, or threatened if it meets the criteria for listing, as defined further in CEQA Guidelines, Section 15380(c). CEQA also requires identification of a project's potentially significant impacts on riparian habitats (e.g., wetlands, bays, estuaries, and marshes) and other sensitive natural communities, including habitats occupied by endangered, rare, and threatened species.

### San Luis Reservoir State Recreation Area Resource Management Plan/General Plan

The San Luis Reservoir State Recreation Area Resource Management Plan/General Plan (San Luis Reservoir SRA RMP/GP) was jointly prepared by Reclamation and the California Department of Parks and Recreation to "set forth goals and guidelines for management of the [SRA] and adjacent lands...for the next 25 years" (i.e., until 2038) (Reclamation and CDPR 2013). The 27,000-acre Plan Area includes the water surfaces of San Luis Reservoir, O'Neill Forebay, and Los Banos Creek Reservoir and adjacent recreation lands. The San Luis Reservoir SRA RMP/GP goals and guidelines are organized into five broad planning areas, including (1) Resource Management (RES); (2) Visitor Experience, Interpretation and Education (VIS); (3) Local and Regional Planning (REG); (4) Infrastructure and Operations (OPS); and (5) Water Operations (WA). Resource Management goals encompass all natural and cultural resource or physical elements in the Plan Area, including biological resources.

The San Luis Reservoir SRA RMP/GP identifies a series of policies in the form of goals and guidelines. Goals and guidelines related to the management of biological resources are as follows (Reclamation and CDPR 2013):

#### Vegetation (RES-V) Goals and Guidelines

**Goal RES-V1:** Protect, maintain, and, where appropriate, restore the site's locally and regionally important native plant communities.

##### **Guidelines:**

- Prepare a vegetation management statement and map.
- Identify tools and techniques to manage vegetation, and define areas requiring rehabilitation.

**Goal RES-V2:** Document and protect special-status plants and communities and manage for their perpetuation and enhancement.

##### **Guidelines:**

- Comply with both the CESA and [F]ESA and other applicable regulations aimed at the protection of special-status plant species when planning and implementing projects or management programs.
- Enhance existing inventories to further document and map locations of special-status species.

- Encourage the continuation of research and seek partnerships with research institutions and regulatory agencies to protect and enhance special-status species.

**Goal RES-V3:** Manage invasive and nonnative species, and where feasible, restore the Plan Area's native grasslands.

**Guidelines:**

- Identify invasive and exotic species in the Plan Area and prepare a vegetation management statement to manage and remove these species over time.
- Avoid planting nonnative species. Use locally native species that are defined as indigenous to the Plan Area or closely surrounding areas where possible.
- Incorporate BMPs [best management practices] for native grassland rehabilitation in a vegetation management statement.
- Consult with experts and other agencies for information on the preservation of native grasslands.

**Goal RES-V5:** Reduce the threat for wildland fire.

**Guidelines:**

- Develop and implement a focused vegetation management statement that addresses wildland fire, consistent with the National Fire Plan.
- In collaboration with CAL FIRE [California Department of Forestry and Fire Protection], monitor vegetative fuel loads using regional fire weather information and other fire ecology data to understand on-site fire danger.

**Goal RES-V6:** Identify the most appropriate grazing practices that meet both federal and state policy guidelines (such as Reclamation Directives and Standards LND08-01) and ensure sustainable grazing while protecting watershed conditions and habitats.

**Guidelines:**

- Study and document the effects of grazing to better understand the potential effects and benefits of allowing grazing in the Plan Area.
- Conduct NEPA and CEQA analysis prior to renewal of the grazing lease if grazing continues at Medeiros Use Area.
- Study the potential for grazing to spread invasive exotic plant species.
- Develop a grazing-rest regime that prevents overgrazing and optimizes grassland health.

**Wildlife (RES-W) Goals and Guidelines**

**Goal RES-W1:** Maintain, protect, and enhance wildlife habitat for common, sensitive, and special-status wildlife species.

**Guidelines:**

- Continue to document and monitor wildlife species and their use patterns across the site.
- Minimize disturbance to critical wildlife habitat areas, including native grasslands, riparian, and native shoreline habitats.

- Before construction of facilities and trails, survey site-specific areas of potential impact for the presence of special-status species.
- Reduce wildlife access to human food and garbage by using wildlife-proof trash containers throughout the site, including administration and residence areas.
- Limit use of rodenticide to the minimum application possible, apply in accordance with state law and CSP [California Department of Parks and Recreation] policy, and explore using residential formulations that comply with 2011 USEPA [U.S. Environmental Protection Agency] requirements and offer increased protection for non-target wildlife (USEPA 2011b [as cited in text]).
- Plan new facilities, land uses, and management activities to minimize habitat fragmentation.
- Explore opportunities that will enhance wildlife movement.
- Where necessary, evaluate special-status species in the Plan Area through focused surveys using USFWS protocol to manage for species protection and the development of a future protection program.
- Minimize potential impacts on special-status species through the maintenance of existing open corridor areas for passage.
- Avoid direct construction-related impacts to special-status species and species of special concern by doing preconstruction surveys where necessary.

**Goal RES-W2:** Work with Plan Area stakeholders to provide for Plan Area-wide wildlife management planning and consistency with local and regional conservation strategies.

**Guideline:**

- Review facility plans to minimize habitat degradation and fragmentation.

### 3.9.2.3 Local

#### **Merced Vision 2030 General Plan**

As required by state law, Merced County has adopted a general plan to guide land use decisions within the county. The general plan provides goals, policies, standards, and implementation programs to guide the physical development of a county. At a minimum, the general plan must address the topics of land use, transportation, housing, conservation, open space, noise, and safety. The Merced Vision 2030 General Plan (Merced County General Plan), adopted in 2013, has established the year 2030 as the plan's time horizon. The Natural Resources Element of the Merced County General Plan addresses the protection, preservation, and enhancement of the county's biological resources. The following policies would be applicable to the Modified Project (Merced County 2013):

#### ***Natural Resources Element***

- **Policy NR-1.1: Habitat Protection.** Identify areas that have significant long-term habitat and wetland values including riparian corridors, wetlands, grasslands, rivers and waterways, oak woodlands, vernal pools, and wildlife movement and migration corridors, and provide information to landowners.
- **Policy NR-1.2: Protected Natural Lands.** Identify and support methods to increase the acreage of protected natural lands and special habitats, including but not limited to, wetlands, grasslands, vernal pools, and wildlife movement and migration corridors, potentially through the use of conservation easements.

- **Policy NR-1.3: Forest Protection.** Preserve forests, particularly oak woodlands, to protect them from degradation, encroachment, or loss.
- **Policy NR-1.4: Important Vegetative Resource Protection.** Minimize the removal of vegetative resources which stabilize slopes, reduce surface water runoff, erosion, and sedimentation.
- **Policy NR-1.5: Wetland and Riparian Habitat Buffer.** Identify wetlands and riparian habitat areas and designate a buffer zone around each area sufficient to protect them from degradation, encroachment, or loss.
- **Policy NR-1.6: Terrestrial Wildlife Mobility.** Encourage property owners within or adjacent to designated habitat connectivity corridors that have been mapped or otherwise identified by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service to manage their lands in accordance with such mapping programs. In the planning and development of public works projects that could physically interfere with wildlife mobility, the County shall consult with the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service to determine the potential for such effects and implement any feasible mitigation measures.
- **Policy NR-1.7: Agricultural Practices.** Encourage agricultural, commercial, and industrial uses and other related activities to consult with environmental groups in order to minimize adverse effects to important or sensitive biological resources.
- **Policy NR-1.8: Use of Native Plant Species for Landscaping.** Encourage the use of native plant species in landscaping, and, where the County has discretion, require the use of native plant species for landscaping.
- **Policy NR-1.9: Rural to Urban Redesignations.** Carefully consider the potential impacts on significant habitats from new development when redesignating land from a rural to an urban use.
- **Policy NR-1.10: Aquatic and Waterfowl Habitat Protection.** Cooperate with local, State, and Federal water agencies in their efforts to protect significant aquatic and waterfowl habitats against excessive water withdrawals or other activities that would endanger or interrupt normal migratory patterns or aquatic habitats.
- **Policy NR-1.11: On-Going Habitat Protection and Monitoring.** Cooperate with local, State, and Federal agencies to ensure that adequate on-going protection and monitoring occurs adjacent to rare and endangered species habitats or within identified significant wetlands.
- **Policy NR-1.12: Wetland Avoidance.** Avoid or minimize loss of existing wetland resources by careful placement and construction of any necessary new public utilities and facilities, including roads, railroads, high speed rail, sewage disposal ponds, gas lines, electrical lines, and water/wastewater systems.
- **Policy NR-1.13: Wetland Setbacks.** Require an appropriate setback, to be determined during the development review process, for developed and agricultural uses from the delineated edges of wetlands.
- **Policy NR-1.14: Temporary Residential Uses.** Ensure that buildings and structures approved for temporary residential use in significant wetland areas are not converted to permanent residential uses.
- **Policy NR-1.15: Urban Forest Protection and Expansion.** Protect existing trees and encourage the planting of new trees in existing communities. Adopt an Oak Woodland Ordinance that requires trees larger than a specified diameter that are removed to accommodate development be replaced at a set ratio.
- **Policy NR-1.16: Hazardous Waste Residual Repository Location.** Require new hazardous waste residual repositories (e.g., contaminated soil facilities) to be located at least a mile from significant wetlands, designated sensitive species habitat, and State and Federal wildlife refuges and management areas.



- **Policy NR-1.17: Agency Coordination.** Consult with private, local, State, and Federal agencies to assist in the protection of biological resources and prevention of degradation, encroachment, or loss of resources managed by these agencies.
- **Policy NR-1.18: San Joaquin River Restoration Program Support.** Monitor the San Joaquin River Restoration Program efforts to ensure protection of landowners, local water agencies, and other third parties.
- **Policy NR-1.19: Merced River Restoration Program Support.** Support the restoration efforts for the Merced River consistent with the Merced River Corridor Restoration Plan.
- **Policy NR-1.20: Conservation Easements.** Encourage property owners to work with land trusts and State and Federal agencies to pursue voluntary conservation easements.
- **Policy NR-1.21: Special Status Species Surveys and Mitigation.** Incorporate the survey standards and mitigation requirements of state and federal resource management agencies for use in the County's review processes for both private and public projects.

### 3.9.3 Thresholds of Significance

The following significance criteria from the 2019 EIS/EIR are used for the purposes of analysis in this SEIR. These criteria, which have not changed from the 2019 EIS/EIR, are identified in Chapter 15, Terrestrial Resources, of the 2019 EIS/EIR. A significant impact related to biological resources would occur if the Modified Project would:

1. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as an endangered, threatened, candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW, NMFS, or USFWS.
2. Have a substantial adverse effect on any riparian habitat or other sensitive (or special-status) natural community identified in local or regional plans, policies, regulations, or by the CDFW, NMFS, or USFWS.
3. Have a substantial adverse effect on Federally protected wetlands as defined by Section 404 of the CWA [Clean Water Act] (including, but not limited to, marsh, vernal pool, coast, etc.) through direct removal, filling, hydrological interruption, or other means.
4. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
5. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
6. Conflict with the provisions of an adopted Habitat Conservation Plan (HCP), Natural Communities Conservation Plan (NCCP), or other approved local, regional, or State conservation plan.

### 3.9.4 Impacts Analysis

This section addresses direct, indirect, and cumulative impacts on biological resources that would result from Modified Project and provides an analysis of significance for each. As mentioned in the introduction to this section, this analysis focuses on impacts that would occur within the additional impact areas and from the change in use of Borrow Areas 12 and 14. Impacts to biological resources in other portions of the Modified Project site (i.e., within the footprint of the Approved Project) were addressed in the 2019 EIS/EIR and are not repeated here unless the same impact would occur from implementation of Modified Project modifications (e.g., proposed activities in the additional impact areas) or were not addressed in the 2019 EIS/EIR.

### Direct Impacts

Direct impacts are caused by a project and occur at the same time and place. Direct impacts to vegetation communities and land cover types within the additional impact areas were quantified by overlaying the anticipated limits of ground disturbance on the biological resources map and calculating impacts in a geographic information system. Permanent impacts are those that involve permanent land conversion resulting in the loss of existing biological resources (e.g., vegetation community, species habitat, jurisdictional aquatic resource) and would occur as a result of the Modified Project from construction of the new campground and improvements to the San Luis Creek Day Use Area. Temporary impacts are those that involve disturbance of areas that currently support biological resources but that would be restored to pre-Modified Project conditions after construction is completed. Temporary impacts from the Modified Project would occur from improvements to existing access roads, excavation of fill material from Borrow Areas 12 and 14, construction of the new campground, improvements to the San Luis Creek Day Use Area, and establishment of additional contractor staging and stockpiling areas.

Because vegetation communities and/or land cover types may support multiple biological resources (e.g., wetlands provide habitat for wildlife and are also protected under the CWA), they are not unique to a specific CEQA significance threshold. Direct impacts on vegetation communities and land cover types are therefore presented in Table 3.9-5 for subsequent reference in resource-specific impact discussions, if necessary.

**Table 3.9-5. Direct Impacts on Vegetation Communities and Land Cover Types in Additional Impact Areas**

| <b>Vegetation Community/Land Cover Type</b> | <b>Permanent (acres)</b> | <b>Temporary (acres)</b> | <b>Total (acres)</b> |
|---|--------------------------|--------------------------|----------------------|
| Annual grassland                            | 38.52                    | 46.50                    | 85.03                |
| Purple needlegrass grasslands               | —                        | 9.86                     | 9.86                 |
| Scrub/chaparral                             | 0.08                     | 0.75                     | 0.83                 |
| Freshwater emergent wetland                 | —                        | 0.14                     | 0.14                 |
| Valley foothill riparian                    | 1.23                     | 0.09                     | 1.31                 |
| Lacustrine                                  | 0.13                     | 6.34                     | 6.47                 |
| Eucalyptus woodland                         | —                        | 42.22                    | 42.22                |
| Urban/disturbed                             | 3.96                     | 25.62                    | 29.58                |
| <b>Grand Total<sup>1</sup></b>              | <b>43.92</b>             | <b>131.43</b>            | <b>175.35</b>        |

**Note:**

<sup>1</sup> Totals may not sum due to rounding.

### Indirect Impacts

Indirect impacts are reasonably foreseeable and caused by a project but occur at a different time and place. Indirect impacts may include short-term, temporary impacts on biological resources outside work areas during construction (i.e., occur at a different place), or long-term, permanent impacts on biological resources inside or outside work areas after project completion (i.e., occur at a different time). Temporary indirect impacts during construction may include increased dust, noise, and human activity that disrupts normal wildlife behavior, and construction-related soil erosion and runoff. All Modified Project grading would be subject to regulations that restrict erosion and runoff, however, including the federal Clean Water Act and National Pollution Discharge Elimination System, as well as preparation of a Stormwater Pollution Prevention Plan. These programs minimize erosion and runoff that could indirectly impact biological resources outside the work area during and after construction. Long-term or permanent indirect impacts to biological resources may include invasion by non-native weeds, effects of toxic chemicals (e.g.,

fertilizers, pesticides, herbicides, and other hazardous materials), soil erosion, litter, fire, and hydrological changes (e.g., changes in groundwater level and quality).

### Cumulative Impacts

Cumulative impacts refers to two or more individual effects which, when considered together, are considerable or compound or increase other environmental impacts. The individual effects may be changes resulting from a single project or several separate projects. The cumulative impact from several projects is the change in the environment that results from the incremental impact of a project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time. Table 3-1 lists the cumulative projects considered in this SEIR; all but the reservoir expansion project were evaluated in the 2019 EIS/EIR. The Final EIR/SEIS for the reservoir expansion project (SLDMWA and Reclamation 2020) addressed two categories of impacts, including (1) short-term construction-related impacts and (2) long-term operations-related impacts. The construction footprint for the reservoir expansion project is identical to the Modified Project footprint except for the proposed elevation of SR-152 at Cottonwood Bay by 10 feet and proposed relocation of the Dinosaur Point boat ramp facilities, both of which are on the opposite side of San Luis Reservoir from the Modified Project site. Operational impacts would occur from increased inundation associated with changes in facility operations. The analysis in this section therefore focuses on determining if the Modified Project, considered together with the reservoir expansion project and other projects listed in Table 3-1, result in cumulative impacts on biological resources.

Like the other SEIR sections, the following impact analysis is organized by CEQA significance threshold. In contrast to other sections, however, the analysis under each threshold is organized by resource type (e.g., special-status plants, special-status amphibians and reptiles) instead of Modified Project component (e.g., Campground Construction and Day Use Area Improvements, Changes in Borrow Area Location). Within each discussion, a clear statement about the potential impact to each resource type as it relates to the five Modified Project components is provided. Organization of the impact analysis in this manner helps streamline the analysis and eliminate the need for repetition of impact statements that could apply to multiple Modified Project components. Potential impacts that were not addressed in the 2019 EIS/EIR are discussed under their own subheading, where applicable.

### Threshold 1

***Would the Modified Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as an endangered, threatened, candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW, NMFS, or USFWS?***

| 2019 EIS/EIR Impact Determination                  | Modified Project Impact Determination              | New Significant Increase in Impact Severity? |
|--|--|--|
| Less than Significant with Mitigation Incorporated | Less than Significant with Mitigation Incorporated | No   |

The Modified Project would impact vegetation communities or land cover types that provide habitat for special-status plant and wildlife species and could also result in injury or mortality of species individuals. Indirect impacts on special-status species could also occur. Direct and indirect impacts on special-status species or species groups are further discussed below.

### **Special-Status Plants**

This impact analysis focuses on impacts to spiny-sepaled button-celery. Other special-status plants are not expected to occur or have a low potential to occur, therefore impacts to those species would be less than significant.

#### ***Direct Impacts***

The additional impact areas occur in areas occupied by spiny-sepaled button-celery. Overall, the Modified Project would impact 1.30 acres of occupied spiny-sepaled button-celery habitat.

#### **Campground Construction and Day Use Area Improvements**

Campground construction and day use area improvements would directly impact 0.01 acres of occupied spiny-sepaled button-celery habitat.

#### **Changes in Borrow Area Location**

The change in use of Borrow Areas 12 and 14 from contractor staging to materials extraction would not result in additional impacts on spiny-sepaled button-celery beyond those identified in the 2019 EIS/EIR. The greater scale of proposed construction activities, including extensive excavation and changes to existing landforms, would not cause any new impacts to spiny-sepaled button-celery.

#### **Minor Additions to Contractor Work Area**

Portions of the additional staging and stockpiling areas and expansion of the access roads would directly impact 0.03 acres of occupied spiny-sepaled button-celery habitat.

#### **Additional Construction Assumptions**

None of the additional construction assumptions (e.g., dewatering process at base of dam, timing of construction) would result in new impacts on special-status plants, including spiny-sepaled button-celery. The areas that would be affected by additional construction assumptions are the same as those evaluated in the 2019 EIS/EIR.

#### **Mitigation Site(s)**

Some activities on off-site compensatory mitigation lands, especially those involving ground disturbance, could result in impacts like those described above. Specifically, direct impacts on special-status plant species could occur where such resources are present on the mitigation sites.

The compensatory mitigation plan would be designed, implemented, and monitored consistent with the terms and conditions of the Clean Water Act Section 404 and Section 401 Permits, California Fish and Game Code Section 1602 Streambed Alteration Agreement, FESA, and CESA as they apply to their jurisdiction and resources on site. Potential impacts on site-specific hydrology and downstream resources would be evaluated as a result of implementation of the restoration-related activity. Site-specific best management practices and a stormwater pollution prevention plan would be implemented as appropriate.

### *Indirect Impacts*

Potential indirect impacts to special-status plants include increased competition with nonnative invasive plants and reduced survival from construction-related dust. Although nonnative plant species are already common on the Modified Project site, additional disturbance associated with construction would create new barren substrates into which such species could expand. Dust generated from construction-related traffic could settle on the leaves of special-status plants growing near access roads, adversely affecting photosynthesis, respiration, and transpiration.

### **Campground Construction and Day Use Area Improvements, Minor Additions to Contractor Work Area**

As suitable spiny-sepaed button celery habitat occurs at the proposed campground area and portions of the road extension areas and additional staging and stockpiling areas, any of the above-mentioned indirect impacts could occur during construction at these areas.

### **Changes in Borrow Area Location**

The change in use of Borrow Areas 12 and 14 from contractor staging to materials extraction would result in increased ground disturbance beyond the levels identified in the 2019 EIS/EIR. The greater scale of proposed construction activities, including extensive excavation and changes to existing landforms, could cause indirect impacts on nearby spiny-sepaed button-celery occurrences.

### **Additional Construction Assumptions**

None of the additional construction assumptions (e.g., dewatering process at base of dam, timing of construction) would result in indirect impacts on special-status plants, including spiny-sepaed button-celery. The areas that would be affected by additional construction assumptions are the same as those evaluated in the 2019 EIS/EIR.

### **Mitigation Site(s)**

Some activities on off-site compensatory mitigation lands, especially those involving ground disturbance, could result in indirect impacts like those described above. Specifically, indirect impacts on special-status plant species could occur where such resources are present on the mitigation sites.

### ***Significance Conclusion***

The direct and indirect impacts to special-status plants would be potentially significant because they would constitute a substantial adverse effect, both directly and through habitat modifications, on a special-status species—spiny-sepaed button-celery. The loss of 1.30 acres (79%) of occupied spiny-sepaed button-celery habitat, 0.04 acres of which are within the additional impact areas, could reduce the viability of local populations. In order to mitigate for this impact, mitigation is provided (see Section 3.9.5, Mitigation Measures). **Mitigation Measure TERR-1 (same as TERR-1 in the 2019 EIS/EIR)** would require preconstruction surveys, construction monitoring, and compensatory mitigation, such as preservation or creation of spiny-sepaed button-celery occupied habitat. **Mitigation Measure SEIR-BIO-5b (SEIR-BIO-5 replaces TERR-16 in the 2019 EIS/EIR)** includes a weed control plan that would minimize indirect impacts on special-status plants. Implementation of these measures would reduce impacts to special-status plants to **less than significant with mitigation incorporated**.

### ***Cumulative Impacts***

The Final EIR/SEIS for the reservoir expansion project (SLDMWA and Reclamation 2020) acknowledged the potential presence of special-status plants in the project's footprint. SR-152 and Dinosaur Point modifications associated with the reservoir expansion project would impact an additional 8.9 acres of natural habitat potentially suitable for special-status plants due to construction of work and staging areas. Seasonal inundation associated with reservoir expansion project operations would impact an additional 387.8 acres of vegetation communities potentially supporting special-status plants species.

The 2019 EIS/EIR acknowledged that the other cumulative projects listed in Table 3-1 together with the Approved Project could result in significant cumulative impacts on special-status plants. However, with the implementation of mitigation measures, it determined that the Approved Project's contribution to cumulative impacts would not be cumulatively considerable.

Impacts to special-status plants associated with the reservoir expansion project would be mitigated through focused botanical surveys for special status plants, flagging and avoiding identified rare plant populations, minimizing the removal of areas that could support special status plants, and where avoidance is not possible, plant collection and propagation and compensatory mitigation combined with monitoring to ensure the success of newly established plants. Given the compensatory mitigation provided by the reservoir expansion project and the Modified Project, avoidance and minimization measures provided by both projects, and that it was determined that, with the incorporated mitigation measures, the Approved Project would not contribute to a cumulatively considerable impact to special-status plants, the Modified Project's contribution to cumulative impacts would be **less than significant**.

### **Special-Status Amphibians and Reptiles**

This impact focuses on special-status amphibian and reptile species with moderate to high potential to occur in the additional impact areas, including California tiger salamander, California red-legged frog, western spadefoot, coast horned lizard, and San Joaquin whipsnake. Western pond turtle (*Actinemys marmorata*) has a low potential to occur because of the absence of perennial aquatic habitat in the additional impact areas and lack of CNDDB occurrences within 5 miles of the Modified Project site. Therefore, this species is not discussed further.

### ***Direct Impacts***

The additional impact areas occur in habitat for special-status amphibians and reptiles, including California tiger salamander, California red-legged frog, western spadefoot, coast horned lizard, and San Joaquin whipsnake. Aquatic breeding habitat for California tiger salamander, California red-legged frog, and western spadefoot is absent from the additional impact areas, but several aquatic features potentially suitable for breeding occur nearby and there are no barriers to amphibian movement from these features onto the Modified Project site. Grassland provides suitable upland habitat for California tiger salamander, California red-legged frog, and western spadefoot, as well as coast horned lizard and San Joaquin whipsnake. Direct impacts on special-status amphibians and reptiles from each Modified Project component are briefly described below.

### **Campground Construction and Day Use Area Improvements**

Campground construction and day use area improvements would directly impact habitat for the above-listed species and could result in injury or mortality of individuals. Campground construction and repaving of the existing access road would impact annual grassland that provides upland habitat, including 37.5 acres of permanent

impacts from construction of the new campground. Ground disturbance (e.g., vegetation removal and grading) and vehicle traffic associated with construction could injure or kill special-status amphibian or reptile individuals, if present within the Modified Project footprint.

#### **Changes in Borrow Area Location**

The change in use of Borrow Areas 12 and 14 from contractor staging to materials extraction would not result in additional impacts on special-status species beyond those identified in the 2019 EIS/EIR. The greater scale of proposed construction activities, including extensive excavation and changes to existing landforms, would increase the risk to burrow-dwelling special-status wildlife species (i.e., California tiger salamander, California red-legged frog, burrowing owl, San Joaquin kit fox, and American badger) being injured or killed, but would not cause any new impacts. Implementation of the mitigation measures for these impacts would avoid or minimize injury or mortality of burrow-dwelling special-status wildlife species during construction.

#### **Minor Additions to Contractor Work Area**

Portions of the additional staging and stockpiling areas west of Gianelli Plant, north of the right abutment of the dam, and northeast of the Basalt Hill Borrow Area support grassland, scrub/chaparral, and freshwater emergent wetland/ditch communities that provide habitat for the same special-status amphibians identified above. Direct impacts on species' habitat within these areas (i.e., grassland, scrub/chaparral, freshwater wetland/ditch) would be temporary because all areas would be restored to pre-Modified Project conditions after construction is completed.

#### **Additional Construction Assumptions**

None of the additional construction assumptions (e.g., dewatering process at base of dam, timing of construction) would result in new impacts on special-status amphibians and reptiles. The areas that would be affected by additional construction assumptions are the same as those evaluated in the 2019 EIS/EIR.

#### **Mitigation Site(s)**

Activities on off-site compensatory mitigation lands, especially those involving ground disturbance, could result in direct impacts on special-status amphibians and reptiles if any occur within the footprint of habitat restoration areas (e.g., created wetlands). Impacts on individuals would be avoided or minimized consistent with the terms and conditions of regulatory permits issued by USFWS and CDFW as applicable to their jurisdiction. Potential impacts would also be evaluated as a result of implementation of the restoration-related activity.

#### **Indirect Impacts**

Potential indirect impacts to special-status amphibians and reptiles, including those previously identified in the 2019 EIS/EIR, are effects from nighttime lighting, noise and vibration, increased human presence, vehicle strikes, and trash and food items. Nighttime lighting due to 24-hour construction could disturb special-status amphibians and reptiles during foraging and dispersal activities at night, when they are most active, and could expose them to greater risk of predation. Noise, vibration, and increased human presence from construction could disrupt normal behavioral patterns of any special-status amphibians and reptiles that regularly use or move through affected areas. Traffic from construction could result in vehicle strikes, killing or injuring special-status amphibians and reptiles—particularly because construction will occur during night hours. Trash and food items at construction sites could attract bird species that prey on amphibians and reptiles (e.g., American crow), thus exposing special-status amphibians and reptiles to increased risk of predation.

### **Campground Construction and Day Use Area Improvements, Minor Additions to Contractor Work Area**

As suitable habitat occurs at all of the additional impact areas, including the proposed campground area, the San Luis Creek Day Use Area improvements, the road extension areas, and the additional staging and stockpiling areas, any of the abovementioned indirect impacts could occur during construction at these areas.

### **Changes in Borrow Area Location**

Indirect impacts have been analyzed for the additional borrow areas (12 and 14). Any of the abovementioned indirect impacts to special-status amphibians and reptiles could occur in these areas, even with the lower level of ground disturbance proposed as part of the Approved Project. However, the potential for increased excavation, export of materials, and changes in landform would likely increase the likelihood of these indirect impacts occurring.

### **Additional Construction Assumptions**

No additional indirect impacts to special-status amphibians and reptiles are expected due to the effects from changes related to dewatering or the timing of dam improvement construction. The areas that would be affected by additional construction assumptions are the same as those evaluated in the 2019 EIS/EIR.

### **Mitigation Site(s)**

Activities on off-site compensatory mitigation lands could result in the abovementioned indirect impacts to special-status amphibians and reptiles if present on such lands. These impacts would be evaluated as a result of implementation of the restoration-related activity.

### **Significance Conclusion**

Impacts to special-status amphibians and reptiles would be potentially significant because they would constitute a substantial adverse effect, both directly and through habitat modifications, on special-status species. The loss of 37.5 acres of grassland habitat would further contribute to ongoing habitat loss for these species and mortality of individuals could reduce the viability of local populations. In order to mitigate for this impact, mitigation is provided (see Section 3.9.5). **Mitigation Measures SEIR-BIO-1 (replaces TERR-3 in the 2019 EIS/EIR) and SEIR-BIO-2 (replaces TERR-5 in the 2019 EIS/EIR)** would require preconstruction surveys and species-specific compensation actions such as exclusion fencing for special-status amphibians and reptiles identified in and adjacent to the construction areas. Implementation of these measures would reduce impacts to special-status amphibians and reptiles to **less than significant with mitigation incorporated**.

### **Cumulative Impacts**

The Final EIR/SEIS for the reservoir expansion project (SLDMWA and Reclamation 2020) acknowledged the potential presence of special-status amphibians and reptiles and their habitat in the project's footprint. SR-152 and Dinosaur Point modifications associated with the reservoir expansion project would impact an additional 30.6 acres of potential upland habitat (i.e., annual grassland and blue oak woodland) for special-status amphibians and reptiles due to construction of work and staging areas. Approximately 6.6 acres of this impact would be within designated critical habitat for California red-legged frog at Dinosaur Point. No aquatic habitat would be impacted by construction. Impacts on individuals could also occur, although the Final EIR/SEIS (SLDMWA and Reclamation 2020) concludes that California tiger salamander and California red-legged frog are not expected to occur at the Dinosaur Point construction area due to a lack of nearby aquatic habitat. Seasonal inundation associated with



reservoir expansion project operations would impact one potential California tiger salamander and/or California red-legged frog breeding pond measuring approximately 0.09 acres. Potential upland habitat within the additional 387.8 acres of natural vegetation impacted by reservoir expansion project operations would be permanent lost or seasonally unavailable for use.

The 2019 EIS/EIR acknowledged that the other cumulative projects listed in Table 3-1 together with the Approved Project could result in significant cumulative impacts on special-status amphibians and reptiles. However, with the implementation of mitigation measures, it determined that the Approved Project's contribution to cumulative impacts would not be cumulatively considerable.

Impacts to special-status amphibians and reptiles associated with the reservoir expansion project would be mitigated through preconstruction surveys and biological monitoring, installing exclusion fencing around all construction areas within 100 feet of ponds suitable for special-status amphibian breeding, and providing compensatory mitigation for impacts to aquatic habitat associated with operations. Given the compensatory mitigation provided by the reservoir expansion project and the Modified Project, avoidance and minimization measures provided by both projects, and that it was determined that, with the incorporated mitigation measures, the Approved Project would not contribute to a cumulatively considerable impact to special-status reptiles and amphibians, the Modified Project's contribution to cumulative impacts would be **less than significant**.

### Special-Status and Migratory Birds

Special-status bird species that have the potential to occur within the additional impact areas are discussed in Section 3.9.1. The additional impact areas provide suitable nesting and foraging habitat for tricolored blackbird, burrowing owl, Swainson's hawk, northern harrier, white-tailed kite, and loggerhead shrike. Special-status bird species that were determined to have a low potential to nest in these areas include golden eagle, California condor, and bald eagle (Table 3.9-4, Special-Status Wildlife Species' Potential to Occur in Additional Impact Areas); however, these species are likely to use the additional impact areas for foraging. American white pelican has been observed flying over the site but its special-status designation only applies to nesting colonies and there are no such colonies in the Modified Project vicinity; it is therefore not discussed further in this section. Golden eagle, California condor, bald eagle, and yellow warbler are eliminated from further consideration and discussion herein due to the lack of suitable nesting and foraging habitat within the additional impact areas. Although these species may occasionally forage in the additional impact areas, due to the abundant availability of high-quality foraging habitat within the region, and the overall miniscule reduction in foraging habitat from Modified Project activities, the loss of foraging habitat for these species would be **less than significant**.

For the purposes of this SEIR, migratory birds are defined as native bird species protected under the federal Migratory Bird Treaty Act and California Fish and Game Code, even though not all such species are migratory. The 2019 EIS/EIR included migratory birds in its definition of special-status species, and this approach has been retained here. The terms native and migratory are therefore interchangeable in the following discussion.

### Direct Impacts

The additional impact areas provide suitable nesting and foraging habitat for tricolored blackbird, burrowing owl, Swainson's hawk, northern harrier, white-tailed kite, and loggerhead shrike. Direct impacts on these potentially nesting special-status bird species from each Modified Project component are described below.

### Campground Construction and Day Use Area Improvements

#### Tricolored Blackbird

Mixed stands of freshwater marsh vegetation containing cattail marsh, willows, poison hemlock, and mustard occur along the edge of O'Neill Forebay within and adjacent to the proposed campground area and improvement areas and provide high-quality nesting habitat for tricolored blackbird. Focused surveys for nesting tricolored blackbirds were not conducted within the additional impact areas by ESA in 2018 or Dudek in 2020; however, breeding colonies of this species have been detected within the Modified Project site and within the immediate region. Grassland habitat adjacent to freshwater vegetation provides suitable foraging habitat for tricolored blackbird. Impacts to tricolored blackbird nesting and foraging habitat would occur if freshwater marsh or grassland habitat areas are directly disturbed or altered during proposed campground construction.

#### Burrowing Owl

As noted in Section 3.9.1, burrows suitable for use by burrowing owl were documented throughout the proposed campground construction and day use area improvement areas within existing grassland habitats and along roadsides during surveys conducted by Dudek in 2020. Although focused surveys resulted in no observations of burrowing owl or any sign (e.g., white wash, pellets, feathers, and/or bone fragments in or around burrow entrances), the additional impact areas do support potential nest burrow habitat and foraging habitat for this species. In the event that burrowing owls are present on the site at the time of construction, ground-disturbing activities within grassland habitat areas of the proposed campground construction and day use area improvement areas could result in mortality to owls through entombment in burrows or could result in abandonment of nests and destruction of eggs, nests, or nestlings.

#### Swainson's Hawk

Large trees within and adjacent to the proposed campground area and San Luis Creek Day Use Area provide suitable nesting habitat for Swainson's hawk. Dudek did not find any Swainson's hawk nests on or within 0.5 miles of the Modified Project site during focused surveys in 2020, but individual Swainson's hawks were observed on numerous occasions. The CNDDB has historically documented this species nesting within and adjacent to the Modified Project site (CDFW 2020b). If construction activities within the proposed campground construction and day use area improvement areas remove trees during the nesting season of this species (generally March 1 through August 15), such activities could alter nesting behaviors of adult birds nesting on or in the vicinity such that eggs and young can be left alone for long periods of time, or even abandoned, resulting in harm or mortality to eggs and young.

Grasslands within the proposed campground construction and day use area improvement areas provide suitable foraging habitat for Swainson's hawk. Campground construction activities would result in the loss of grassland foraging habitat for this species, which could result in a reduction in nest productivity if hawks are nesting within the vicinity, and even the loss of hawk territories.

#### Northern Harrier

Grassland habitat within and adjacent to the proposed campground construction and day use area improvement areas provides suitable nesting and foraging habitat for northern harrier. Nests of this species were not detected during surveys conducted in grassland areas by Dudek in 2020; however, individual northern harriers were observed foraging on several occasions, and breeding pairs have been historically documented within the

immediate region (CDFW 2020b). Ground-disturbing activities within grassland habitat areas of the proposed campground construction and day use area improvement areas could result in abandonment of northern harrier nests and destruction of eggs, nests, or nestlings.

#### White-Tailed Kite

Large trees within and adjacent to the proposed campground area and San Luis Creek Day Use Area provide suitable nesting habitat for white-tailed kite. Nests of this species were not detected during nesting raptor surveys conducted throughout the Modified Project site by Dudek in 2020, and individual white-tailed kites were not observed. However, there are several eBird (2020) occurrences in the vicinity of the Modified Project site, including observations of this species within the San Luis Creek Day Use Area. If construction activities within the proposed campground construction and day use area improvement areas remove trees during the nesting season of this species (February 1 through September 15), such activities could result in nest abandonment, which could lead to the mortality of eggs or young.

#### Loggerhead Shrike

Dense riparian vegetation along O'Neill Forebay within the proposed campground area and San Luis Creek Day Use Area provide high-quality nesting habitat for loggerhead shrike. Focused biological surveys to detect loggerhead shrike nesting were not conducted within the additional impact areas by ESA in 2018 or Dudek in 2020; however, as described in Section 3.9.1, this species was observed on at least five occasions during Dudek's 2020 field surveys. At several locations throughout the Modified Project site evidence of loggerhead shrike nesting was observed, including fledgling birds being fed by adults, independent juveniles, and territorial behavior by adults. Additionally, the observations were made during months typically associated with breeding (March and April). Given the availability of suitable habitat and timing of observations within the proposed campground construction and day use area improvement areas, there is a high potential that this species could nest on site and in the vicinity. Ground-disturbing activities within the proposed campground construction and day use area improvement areas could result in loggerhead shrike nest abandonment, which could lead to the mortality of eggs or young if such activities occur during the nesting season (March through July).

#### Migratory Bird Nests

The additional impact areas contain trees and shrubs suitable for nesting by several native bird species. In addition, several migratory ground-nesting species, such as horned larks (*Eremophila alpestris*) and western meadowlarks (*Sturnella neglecta*), have the potential to nest in grasslands that are present throughout the additional impact areas. Suitable nesting trees within and adjacent to the additional impact areas could potentially be used by nesting birds and common raptor species. Ground-disturbing activities associated with construction within the additional impact areas could result in nest abandonment, which could lead to the mortality of eggs or young if such activities occur during the nesting season (February 1 through September 15) of most common bird species in the region.

#### Changes in Borrow Area Location

The change in use of Borrow Areas 12 and 14 from contractor staging materials excavation would not result in additional impacts on special-status bird species beyond those identified in the 2019 EIS/EIR. The greater scale of proposed construction activities, including extensive excavation and changes to existing landforms, would increase the risk to burrow-dwelling special-status wildlife species (i.e., California tiger salamander, California red-legged frog, burrowing owl, San Joaquin kit fox, and American badger), but would not cause any new impacts from loss of habitat.

### **Minor Additions to Contractor Work Area**

Portions of the additional staging and stockpiling areas west of Gianelli Plant, north of the right abutment of the dam, and northeast of the Basalt Hill Borrow Area support grassland, scrub/chaparral, and freshwater emergent wetland/ditch communities that provide nesting and foraging habitat for the same special-status bird species identified above. Additionally, the construction of a temporary road to haul materials underneath the existing bridge that crosses O'Neill Forebay north of SR-152 from Borrow Area 6 to the dam raise work area could directly impact ground-nesting migratory bird species. The construction of the temporary roadway is not expected to directly impact the colony of cliff swallows, or other bridge-nesting species, that use the existing bridge for nesting (see Section 3.9.1). Direct impacts on bird species' habitat within the additional staging and stockpiling areas (i.e., grassland, scrub/chaparral, freshwater wetland/ditch) would be temporary because all areas would be restored to pre-Modified Project conditions after construction is completed.

### **Additional Construction Assumptions**

None of the additional construction assumptions (e.g., dewatering process at base of dam, timing of construction) would result in new impacts on special-status bird species. The areas that would be affected by additional construction assumptions are the same as those evaluated in the 2019 EIS/EIR.

### **Mitigation Site(s)**

Activities on off-site compensatory mitigation lands, especially those involving ground disturbance, could result in direct impacts on special-status birds if any occur within the footprint of habitat restoration areas (e.g., created wetlands). Impacts on individuals would be avoided or minimized consistent with the terms and conditions of regulatory permits issued by USFWS and CDFW as applicable to their jurisdiction. Potential impacts would also be evaluated as a result of implementation of the restoration-related activity.

Restoration and enhancement of aquatic resources may result in the permanent conversion of grassland to wetland or riparian habitat. While such activities would be beneficial for special-status riparian species (for example), they would result in a small but measurable loss of upland habitat that could support nesting and foraging by burrowing owl and northern harrier; and foraging by golden eagle and white-tailed kite.

### **Indirect Impacts**

#### **Campground Construction and Day Use Area Improvements**

##### **Tricolored Blackbird**

Associated noise and the increase in human activity in these areas during construction could result in nest abandonment, which could lead to the mortality of eggs or young if such activities occur during the nesting season (mid-March through August).

##### **Burrowing Owl**

Construction noise and increased levels of human activity could result in abandonment of active burrows. Additionally, indirect impacts that could adversely affect burrowing owls foraging on the site during Modified Project operation include the use of rodenticides to control rodent populations, which could result in secondary poisoning to individual burrowing owls should any be moving through the site during a time when rodent control is being implemented.

### Swainson's Hawk

Construction noise and increased levels of human activity, particularly within approximately 600 feet of an active nest (SHTAC 2000), could alter nesting behaviors of adult birds nesting on or in the vicinity of the additional impact areas such that eggs and young can be left alone for long periods of time, or even abandoned, resulting in harm or mortality to eggs and young. Additionally, the use of rodenticides as part of a rodent-control program could result in secondary poisoning to individual Swainson's hawks and can also minimize the potential for this species to use the campground areas once construction is completed.

### Northern Harrier

Construction noise and increased levels of human activity could result in northern harrier nest abandonment. Additionally, the use of rodenticides as part of a rodent-control program could result in secondary poisoning to individual northern harriers and can also minimize the potential for this species to use the campground areas once construction is completed.

### White-Tailed Kite

Construction noise and increased levels of human activity could result in white-tailed kite nest abandonment. Additionally, the use of rodenticides as part of a rodent-control program could result in secondary poisoning to individual white-tailed kites and can also minimize the potential for this species to use the campground areas once construction is completed.

### Loggerhead Shrike

Associated noise and the increase in human activity during construction could result in nest abandonment, which could lead to the mortality of eggs or young if such activities occur during the nesting season (mid-March through August).

### Migratory Bird Nests

Associated noise and the increase in human activity during construction could result in migratory bird nest abandonment, which could lead to the mortality of eggs or young if such activities occur during the nesting season (February 1 through September 15) of most common bird species in the region.

### **Changes in Borrow Area Location, Minor Additions to Contractor Work Area**

As suitable breeding and foraging habitat occurs at all of the additional impact areas, including the additional borrow areas (12 and 14), proposed campground area, the San Luis Creek Day Use Area improvements, the road extension areas, and the additional staging and stockpiling areas, any of the abovementioned indirect impacts to nesting and foraging special-status bird species could occur during construction at these areas.

### Bridge-Nesting Species

Increased noise and human activity associated with the construction of the temporary haul road underneath the SR-152 bridge could result in bridge-nesting bird species (e.g., cliff swallow, black phoebe [*Sayornis nigricans*], white-throated swift [*Aeronautes saxatalis*]) abandoning their nests if they perceive these activities as a threat. This impact, which could lead to the mortality of eggs or young, could occur during any such construction activities conducted during the bird nesting season (February 1 through September 15).

### Additional Construction Assumptions

No additional indirect impacts are expected due to the effects from changes related to dewatering or the timing of dam improvement construction. The areas that would be affected by additional construction assumptions are the same as those evaluated in the 2019 EIS/EIR.

### Mitigation Site(s)

Activities on off-site compensatory lands could result in the abovementioned indirect impacts to special-status birds if present on such lands. These impacts would be also be evaluated as a result of implementation of the restoration-related activity.

### Significance Conclusion

#### Tricolored Blackbird

Although the additional impact areas provide some suitable foraging habitat for tricolored blackbird, the loss of foraging habitat due to implementation of the Modified Project within these areas would be **less than significant** as abundant suitable foraging habitat remains in the region. To ensure that impacts to nesting tricolored blackbirds would be completely avoided, preconstruction surveys as described in **Mitigation Measure TERR-10 (TERR-10 in 2019 EIS/EIR)** would be implemented.

#### Burrowing Owl

The potential loss of individual burrowing owls and/or active nests would be a potentially significant impact on a special-status species and also a violation of state law protecting active bird nests (California Fish and Game Code Sections 3503 and 3503.5). However, such impacts would be mitigated with the implementation of **Mitigation Measure TERR-9 (TERR-9 in 2019 EIS/EIR)**.

#### Swainson's Hawk

Although the additional impact areas provide suitable foraging habitat for Swainson's hawk, the loss of foraging habitat due to implementation of the Modified Project within these areas would be **less than significant** because (1) abundant suitable foraging habitat remains in the region, (2) Swainson's hawks will utilize a vast landscape of suitable habitat to forage within, and (3) only a relatively small percentage of foraging habitat will be impacted on site. The potential loss of individual Swainson's hawk and/or active nests would be a potentially significant impact as well as a potential take pursuant to CESA. However, implementation of **Mitigation Measure TERR-7 (TERR-7 in 2019 EIS/EIR)** would ensure impacts to nesting Swainson's hawk would be avoided, thus reducing this impact to **less than significant with mitigation incorporated**.

#### Northern Harrier

Although the additional impact areas provide some suitable foraging habitat for northern harrier, the loss of foraging habitat due to implementation of the Modified Project within these areas would be **less than significant** as abundant suitable foraging habitat remains in the region. The potential loss of active northern harrier nests would be a potentially significant impact and a violation of state law protecting active bird nests (California Fish and Game Code Sections 3503 and 3503.5). To ensure that impacts to nesting northern harriers would be completely avoided, preconstruction nesting bird surveys as described in **Mitigation Measure TERR-6 (TERR-6 in 2019 EIS/EIR)** would be implemented. Therefore, impacts to nesting northern harriers would be considered **less than significant with mitigation incorporated**.

### White-Tailed Kite

The potential loss of active white-tailed kite nests would be a potentially significant impact and a violation of state law protecting active bird nests (California Fish and Game Code Sections 3503 and 3503.5). To ensure that impacts to nesting white-tailed kites would be completely avoided, preconstruction nesting bird surveys as described in **Mitigation Measure TERR-6 (TERR-6 in 2019 EIS/EIR)** would be implemented. Therefore, impacts to nesting white-tailed kites would be considered **less than significant with mitigation incorporated**.

### Loggerhead Shrike

The potential loss of active loggerhead shrike nests would be a potentially significant impact and a violation of state law protecting active bird nests (California Fish and Game Code Sections 3503 and 3503.5). To ensure that impacts to nesting loggerhead shrikes would be completely avoided, preconstruction nesting bird surveys as described in **Mitigation Measure TERR-6 (TERR-6 in 2019 EIS/EIR)** would be implemented. Therefore, impacts to nesting loggerhead shrikes would be considered **less than significant with mitigation incorporated**.

### Migratory Bird Nests

In California, active bird nests (with eggs or young) are protected by provisions in Section 3503 of the California Fish and Game Code, therefore the potential loss of active nests due to additional impact area construction would be a potentially significant impact. **Mitigation Measure TERR-6 (TERR-6 in 2019 EIS/EIR)** would ensure that active nests would not be disturbed or destroyed and impacts to nesting birds avoided. Therefore, impacts to migratory nesting birds would be **less than significant with mitigation incorporated**.

### Bridge-Nesting Species

Because active cliff swallow nests, and nests of other bridge-nesting species such as black phoebe (with eggs or young), are protected by provisions in Section 3503 of the California Fish and Game Code, any potential loss of active nests due to construction disturbance associated with the temporary haul road underneath the SR-152 bridge would be a potentially significant impact. Additionally, although temporary, long-term use of the area as a haul road may negatively impact the cliff swallow colony population, which would also be a potentially significant impact. **Mitigation Measure SEIR-BIO-6 (new mitigation measure)** would ensure that active bridge-nesting species nests would not be disturbed or destroyed and impacts to nesting swallows and other bridge-nesting species would be avoided. Therefore, impacts to bridge-nesting species would be **less than significant with mitigation incorporated**.

With implementation of the abovementioned mitigation measures, impacts to special-status and migratory bird species would be **less than significant with mitigation incorporated**.

### Cumulative Impacts

The Final EIR/SEIS for the reservoir expansion project (SLDMWA and Reclamation 2020) acknowledged the potential presence of special-status birds and their nesting and foraging habitat in the project's footprint. SR-152 and Dinosaur Point modifications associated with the reservoir expansion project would temporarily impact additional nesting and foraging habitat for special-status and migratory birds due to construction of work and staging areas. Construction activities within the additional impact areas for the Modified Project could result in impacts to nesting special-status and migratory birds if construction occurs during the nesting season and/or results in destruction of nesting and foraging habitat. In combination with the impacts on nesting special-status and migratory birds for the reservoir expansion project, the work associated with the additional impact areas could result in significant cumulative impacts on special-status birds.

The 2019 EIS/EIR acknowledged that the other cumulative projects listed in Table 3-1 together with the Approved Project could result in significant cumulative impacts on special-status species and nesting migratory birds. However, with the implementation of mitigation measures, it determined that the Approved Project's contribution to cumulative impacts would not be cumulatively considerable.

Impacts to nesting special-status and migratory birds for the reservoir expansion project and additional construction impact areas for the Modified Project would be mitigated through preconstruction surveys for nesting and special-status birds, avoidance of active bird nests, installation of nest exclusion areas, and biological monitoring as described in **Mitigation Measures TERR-6, TERR-7, TERR-10, SEIR-BIO-3 (replaces TERR-9 in the 2019 EIS/EIRS), and SEIR-BIO-6**. Because most of the additional impacts are short-term and temporary on nesting individuals, it is not expected that any extirpation of local or regional special-status bird populations would occur. Therefore, given the temporary and minimal potential impacts to nesting special-status and migratory birds from the reservoir expansion project, and the mitigation measures provided for the reservoir expansion project and for the Modified Project, no significant cumulative impacts would occur.

### **Special-Status Mammals**

Special-status mammal species that have the potential to occur within the additional impact areas are discussed in Section 3.9.1. The additional impact areas provide suitable habitat for denning, foraging, and movement by San Joaquin kit fox and American badger. In addition, the additional impact areas provide suitable foraging habitat for four special-status bat species, including pallid bat, Townsend's big-eared bat, western mastiff bat, and western red bat, as well as suitable day roosting habitat for western red bat. The extensive open spaces of the Modified Project site and vicinity also provide habitat for approximately 700 tule elk that occupy the area from SR-152 southward between I-5 to the east and SR-25 in San Benito County, to the west. While this reintroduced species is legislatively protected in California, it is not listed under ESA or CESA, and it is not a Fully Protected species or a Species of Special Concern in California. Therefore, it is not a special-status species in the sense of other species discussed in this section. In addition, the Modified Project would not result in permanent impacts within the normal range of the tule elk herd (which is entirely south of SR-152), and the temporary impacts from the additional impact areas would be very small in comparison to the large range of the herd. Therefore, direct and indirect impacts to tule elk are not discussed below. Also, while mountain lion is a specially protected species and a candidate for listing under CESA in the region, it is determined to have a low potential to occur within the additional impact areas, and within the Modified Project site generally, which provide poor habitat for the species. Therefore, impacts to this species are not considered below.

### ***Direct Impacts***

All additional impact areas provide suitable habitat for San Joaquin kit fox and American badger, and suitable foraging habitat for special-status bat species, including pallid bat, Townsend's big-eared bat, western mastiff bat, and western red bat. Suitable roosting habitat for tree-roosting bats, especially foliage-roosting bats such as western red bat, occur within the proposed campground area and in the San Luis Creek Day Use Area. Direct impacts on special-status mammal species from each Modified Project component are briefly described below.

### **Campground Construction and Day Use Area Improvements**

#### **San Joaquin Kit Fox**

Campground construction and day use area improvements would directly impact habitat for San Joaquin kit fox and could result in injury or mortality of individuals. Although San Joaquin kit fox is not believed to be resident in the Modified Project site and vicinity north of SR-152, the proposed campground area provides suitable habitat in which San Joaquin kit fox may occur on occasion during dispersal. Removal of this habitat would result in removal of habitat available to this species when dispersing between occupied areas of their range. Campground construction,



improvements to the San Luis Creek Day Use Area, and repaving of the existing access road would result in 37.5 acres of permanent impacts and 25.6 acres of temporary impacts to annual grassland currently available to San Joaquin kit fox for dispersal. Although San Joaquin kit fox is a highly mobile species that can avoid construction equipment, any of this species occupying dens at the time of construction could be injured or killed by construction activities.

#### American Badger

Campground construction and day use area improvements would directly impact habitat for American badger and could result in injury or mortality of individuals. The proposed campground area, portions of the San Luis Creek Day Use Area, and areas adjacent to the access roads provide suitable habitat in which American badgers could establish dens, including natal dens. Within these areas, 37.5 acres of permanent impacts and less than 15 acres of temporary impacts would occur to annual grassland currently available to American badger. Although this species is highly mobile and can avoid construction equipment, any of this species occupying dens at the time of construction—including pups in natal dens—could be injured or killed by construction activities.

#### Pallid Bat, Townsend's Big-Eared Bat, Western Mastiff Bat

As noted in Section 3.9.1, pallid bat, Townsend's big-eared bat, western mastiff bat are not likely to roost in the additional impact areas, including the proposed campground construction and day use area improvement areas, where roosting habitat is limited to trees. None of these species is likely to establish maternity roosts in trees in these areas. Therefore, activities in the proposed campground construction and day use area improvement areas are not likely to result in impacts to individual pallid bat, Townsend's big-eared bat, or western mastiff bats. All of these species forage in a wide variety of habitats, including the grasslands and tree habitats, that occur in these areas. The Modified Project would result in 39.7 acres of permanent and less than 15 acres of temporary impacts to foraging habitat for these species in the proposed campground construction and day use area improvement areas.

#### Western Red Bat

Removal of trees within the proposed campground area and the San Luis Creek Day Use Area would result in removal of suitable roosting habitat for western red bats. The proposed campground construction and day use area improvement areas would result in 1.2 acres in permanent impacts. Up to 5 acres could also be disturbed within the San Luis Creek Day Use Area for improvements being conducted there, but it is unclear whether this would result in removal of any trees in that area, where up to 42.2 acres mapped as eucalyptus–tree of heaven would be potentially subject to temporary impacts. These trees may be suitable western red bat roosting habitat. In addition, western red bats roosting in tree foliage in these areas during construction could be injured or killed due to tree removal, and pups could be lost. As with other special-status bat species potentially occurring in the vicinity, western red bat may forage in nearly any habitat type. Activities associated with the proposed campground construction and day use area improvement areas could result in 39.7 acres in permanent and less than 25 acres in temporary impacts to suitable foraging habitat, which also includes the same areas where this species may roost.

#### Changes in Borrow Area Location

##### San Joaquin Kit Fox

The change in use of Borrow Areas 12 and 14 from contractor staging to materials extraction would not result in additional impacts to San Joaquin kit fox beyond those identified in the 2019 EIS/EIR. The greater scale of proposed construction activities, including extensive excavation and changes to existing landforms, would increase the risk to burrow-dwelling special-status wildlife species (i.e., California tiger salamander, California red-legged frog, burrowing owl, San Joaquin kit fox, and American badger), but would not cause any new impacts from loss of habitat.

### American Badger

The change in use of Borrow Areas 12 and 14 from contractor staging to materials extraction would not result in additional impacts to American badger beyond those identified in the 2019 EIS/EIR. The greater scale of proposed construction activities, including extensive excavation and changes to existing landforms, would increase the risk to burrow-dwelling special-status wildlife species (i.e., California tiger salamander, California red-legged frog, burrowing owl, San Joaquin kit fox, and American badger), but would not cause any new impacts from loss of habitat.

### Special-Status Bats

The change in use of Borrow Areas 12 and 14 from contractor staging to materials extraction would not result in additional impacts to special-status bats beyond those identified in the 2019 EIS/EIR. No roosting habitat for any of these species occurs in these areas.

### Minor Additions to Contractor Work Area

#### San Joaquin Kit Fox

Portions of the additional staging and stockpiling areas west of Gianelli Plant, north of the right abutment of the dam, and northeast of the Basalt Hill Borrow Area support grassland communities that provide habitat for San Joaquin kit fox within an area south of SR-152 considered occupied by USFWS. Although the Modified Project would not result in permanent direct impacts in these areas, it would result in temporary impacts to approximately 30.4 acres of grassland habitats suitable for San Joaquin kit fox. However, all areas would be restored to pre-Modified Project conditions after construction is completed. In addition to direct impacts to habitats, San Joaquin kit fox individuals occupying burrows at the time of construction could be injured or killed by construction activities.

#### American Badger

Portions of the additional staging and stockpiling areas west of Gianelli Plant, north of the right abutment of the dam, and northeast of the Basalt Hill Borrow Area support grassland communities that provide habitat for American Badger. Although the Modified Project would not result in permanent direct impacts in these areas, it would result in temporary impacts to approximately 30.4 acres of grassland habitats suitable for American badger. However, all areas would be restored to pre-Modified Project conditions after construction is completed. In addition to direct impacts to habitats, American badger individuals occupying burrows at the time of construction could be injured or killed by construction activities.

#### Special-Status Bats

No bat roosting habitat occurs in any of the additional staging and stockpiling areas, and no bats would be disturbed while roosting. As bats are highly mobile and able to avoid construction equipment, they would avoid injury or mortality during construction when they are active at night. In addition, no permanent impacts would occur in these areas. However, construction-related activities in these areas would result in 30.7 acres of temporary impacts to bat foraging habitat.

### Additional Construction Assumptions

#### San Joaquin Kit Fox

None of the additional construction assumptions (e.g., dewatering process at base of dam, timing of construction) would result in new direct impacts on San Joaquin kit fox, either through habitat loss or impacts to individual kit foxes. The areas that would be affected by additional construction assumptions are the same as those evaluated in the 2019 EIS/EIR.

### American Badger

None of the additional construction assumptions (e.g., dewatering process at base of dam, timing of construction) would result in new direct impacts on American badger, either through habitat loss or impacts to individual badgers. The areas that would be affected by additional construction assumptions are the same as those evaluated in the 2019 EIS/EIR.

### Special-Status Bats

None of the additional construction assumptions (e.g., dewatering process at base of dam, timing of construction) would result in new direct impacts on special-status bats, either through habitat loss or impacts to individual bats. The areas that would be affected by additional construction assumptions are the same as those evaluated in the 2019 EIS/EIR.

### Mitigation Site(s)

#### San Joaquin Kit Fox

Restoration and enhancement of aquatic resources may result in the permanent conversion of grassland to wetland or riparian habitat. While such activities would be beneficial for special-status vernal pool or riparian species (for example), they would result in a small but measurable loss of upland habitat that could support denning, foraging, or movement by San Joaquin kit fox. However, compensatory mitigation requirements for loss of habitat for San Joaquin kit fox and other species would incorporate the loss of upland habitat for mitigating aquatic resources impacts.

#### American Badger

Restoration and enhancement of aquatic resources may result in the permanent conversion of grassland to wetland or riparian habitat. While such activities would be beneficial for special-status vernal pool or riparian species (for example), they would result in a small but measurable loss of upland habitat that could support denning, foraging, or movement by American badger.

#### Special-Status Bats

Mitigation activities are highly unlikely to result in direct impacts to special-status bats, either through habitat removal or injury or mortality. Mitigation for impacts to aquatic resources is highly unlikely to result in removal of bat roosting habitat, including trees supporting foliage suitable for roosting western red bats. Conversion of upland habitats to wetlands is unlikely to reduce the suitability of habitat for foraging special-status bats.

### ***Indirect Impacts***

The Modified Project has the potential to result in indirect impacts to special-status mammal species. Potential indirect impacts to San Joaquin kit fox and American badger, including those previously reviewed in the 2019 EIS/EIR, are effects from nighttime lighting, noise and vibration, increased human presence, vehicle strikes, and trash and food items. Nighttime lighting due to 24-hour construction could disturb kit foxes or badgers during foraging and dispersal activities at night, when they are most active, and could expose San Joaquin kit foxes to greater risk of predation. Noise, vibration, and increased human presence from construction could disturb these species when denning near construction areas, disrupt breeding activities where natal dens are present, and reduce reproductive success. Traffic from construction could result in vehicle strikes, killing or injuring kit foxes or badgers—particularly because construction will occur during night hours. Trash and food items at construction sites could attract San Joaquin kit foxes, thus exposing them to dangers such as increased risk of predation from other carnivores that may also be attracted by these items.

The 2019 EIS/EIR did not specifically analyze indirect impacts to special-status bats, but generally analyzed potential impacts to roost sites. Potential indirect impacts on special-status bats include noise and human presence, which could potentially disturb bats at roost sites. These indirect impacts, as well as nighttime lighting, could also potentially deter bats from using foraging habitat near construction sites. But bats would still be able to feed in undisturbed and abundant foraging habitat in the area, away from construction sites.

#### **Campground Construction and Day Use Area Improvements, Minor Additions to Contractor Work Area**

##### **San Joaquin Kit Fox**

As suitable habitat occurs at all of the additional impact areas, including the proposed campground area, the San Luis Creek Day Use Area, the road extension areas, and the additional staging and stockpiling areas, any of the abovementioned indirect impacts could occur during construction at these areas.

##### **American Badger**

As suitable habitat occurs at the proposed campground area, the San Luis Creek Day Use Area, and the road extension areas, any of the abovementioned indirect impacts could occur during construction at these areas.

##### **Special-Status Bats**

As the proposed campground area and the San Luis Creek Day Use Area support suitable roosting habitat, indirect impacts to roosting bats, including maternity roosts of western red bats, could occur due to noise and human presence during construction.

#### **Changes in Borrow Area Location**

##### **San Joaquin Kit Fox**

Indirect impacts have been analyzed for the additional borrow areas (12 and 14). Any of the abovementioned indirect impacts to San Joaquin kit fox could occur in these areas, even with the lower level of ground disturbance proposed as part of the Approved Project. However, the potential for increased excavation, export of materials, and changes in landform would likely increase the likelihood of these indirect impacts occurring.

##### **American Badger**

Indirect impacts have been analyzed for the additional borrow areas (12 and 14). Any of the abovementioned indirect impacts to American badger could occur in these areas, even with the lower level of ground disturbance proposed as part of the Approved Project. However, the potential for increased excavation, export of materials, and changes in landform would likely increase the likelihood of these indirect impacts occurring.

##### **Special-Status Bats**

No roosting habitat occurs within Borrow Areas 12 and 14, and indirect impacts to roosting bats are not expected here.

### **Additional Construction Assumptions**

#### **San Joaquin Kit Fox**

No additional indirect impacts to San Joaquin kit fox are expected due to the effects from changes related to dewatering or the timing of dam improvement construction. The areas that would be affected by additional construction assumptions are the same as those evaluated in the 2019 EIS/EIR.

#### **American Badger**

No additional indirect impacts to American badger are expected due to the effects from changes related to dewatering or the timing of dam improvement construction. The areas that would be affected by additional construction assumptions are the same as those evaluated in the 2019 EIS/EIR.

#### **Special-Status Bats**

No additional indirect impacts to special-status bats are expected due to the effects from changes related to dewatering or the timing of dam improvement construction. The areas that would be affected by additional construction assumptions are the same as those evaluated in the 2019 EIS/EIR.

### **Mitigation Site(s)**

#### **San Joaquin Kit Fox**

Some activities on off-site compensatory mitigation lands, especially those involving ground disturbance, could result in indirect impacts to San Joaquin kit fox similar to those described above, if the species is present in the mitigation lands. The compensatory mitigation plan would be designed, implemented, and monitored consistent with the terms and conditions of the Clean Water Act Section 401 and Section 404 Permits, California Fish and Game Code Section 1602 Streambed Alteration Agreement, as they apply to the appropriate jurisdictions and resources on site, and would be compliant with FESA and CESA.

#### **American Badger**

Some activities on off-site compensatory mitigation lands, especially those involving ground disturbance, could result in indirect impacts to American badger similar to those described above, if the species is present in the mitigation lands. The compensatory mitigation plan for these areas would be designed, implemented, and monitored consistent with the terms and conditions of the Clean Water Act Section 401 and 404 Permits, or California Fish and Game Code Section 1602 Streambed Alteration Agreement, as they apply to the appropriate jurisdiction and resources on site.

#### **Special-Status Bats**

Some restoration-related activities for creating compensatory mitigation for impacts to aquatic resources could result in indirect impacts to bat roosts from noise and human presence, as described above, if these activities occur near roosts of special-status bats. The compensatory mitigation plan for these areas would be designed, implemented, and monitored consistent with the terms and conditions of the Clean Water Act Section 401 and 404 Permits, or California Fish and Game Code Section 1602 Streambed Alteration Agreement, as they apply to the appropriate jurisdiction and resources on site.

### ***Significance Conclusion***

#### ***San Joaquin Kit Fox***

Overall, the Modified Project would directly impact habitat for San Joaquin kit fox, including 37.5 acres in permanent impacts and up to approximately 50 acres in temporary impacts. However, with the incorporation of compensatory habitat mitigation via implementation of Mitigation Measure SEIR-BIO-4 (replaces TERR-12 in 2019 EIS/EIR), this impact would be less than significant. Impacts from any loss of individuals during construction could result in the reduction of a small subpopulation at the edge of the species' current range and would be potentially significant. In addition, indirect impacts related to the proposed campground construction and day use area improvement areas and to the minor additions to contractor work areas, increased likelihood of these impacts occurring due to the changes in borrow area locations, and additional indirect impacts from restoration activities at aquatic resources mitigation sites could also result in a reduction of the local subpopulation. These impacts, from noise, vibration, or human presence resulting in loss of reproductive success; from exposure of San Joaquin kit foxes to predation due to Modified Project activities, or their endangerment if attracted to construction sites by trash and food items; or from death or injury from vehicle strikes, would be potentially significant. These impacts would be reduced with implementation of **Mitigation Measures SEIR-BIO-4 and TERR-15 (TERR-15 in 2019 EIS/EIR)**. Mitigation Measure SEIR-BIO-4 requires preconstruction surveys that would identify the location of any San Joaquin kit fox den, including natal dens, and would require measures to avoid impacts to kit foxes occupying these dens. It would also incorporate the USFWS (2011b) standardized measure for avoiding impacts to San Joaquin kit foxes during construction, thus reducing the potential for both direct and indirect impacts. Mitigation Measure TERR-15 requires contractor environmental awareness training and would implement additional site protection measures, further reducing the potential impacts. Implementation of these measures would reduce direct and indirect impacts to San Joaquin kit fox to **less than significant with mitigation incorporated**.

#### ***American Badger***

Overall, the Modified Project would directly impact habitat for American badger, including 37.5 acres in permanent impacts and up to approximately 50 acres in temporary impacts. Additional loss of suitable upland habitat could occur from conversion to wetlands as mitigation for impacts to aquatic resources. The 2019 EIS/EIR determined that impacts to American badger from loss of habitat were less than significant, and these relatively limited additional permanent and temporary impacts would not substantially reduce the available habitat for this species and likely would not substantially reduce the size of the location population. In addition, compensatory habitat mitigation for other species, such as San Joaquin kit fox, would benefit American badger. Therefore, this impact would be less than significant. Impacts from any loss of individuals during construction could result in the reduction of a population already present in low densities, and would be potentially significant. In addition, indirect impacts related to the campground construction and day use area improvement areas and to the minor additions to contractor work areas, increased likelihood of these impacts occurring due to the changes in borrow area locations, and activities at the mitigation sites, could also result in a reduction of the local subpopulation. These impacts, from noise, vibration, or human presence resulting in loss of reproductive success, or from death or injury from vehicle strikes, would be potentially significant. These impacts would be reduced with implementation of **Mitigation Measures TERR-13 (TERR-13 in 2019 EIS/EIR) and TERR-15 (TERR-15 in 2019 EIS/EIR)**. TERR-13 requires preconstruction surveys that would identify the location of any American badger den and describes measures for avoidance, passive relocation, and collapsing of vacated dens so that badgers cannot reoccupy them prior to initiation of construction. TERR-15 requires contractor environmental awareness training and would implement additional site protection measures, further reducing the potential impacts. Implementation of these measures would reduce direct and indirect impacts to American badger to **less than significant with mitigation incorporated**.

### Special-Status Bats

In the 2019 EIS/EIR, impacts to bat roosting and foraging habitat were not considered significant. Permanent impacts to 1.2 acres and the potential removal of some non-native trees within the San Luis Creek Day Use Area would not be a substantial loss of roosting habitat, compared to the remaining available habitat in the area. In addition, the loss of 37.4 acres of natural habitats suitable for foraging by special-status bats, in combination with the loss of 102 acres of such habitats under the Approved Project, would be relatively minor, in comparison to the large areas of undeveloped habitat in the region. Therefore, impacts to special-status bats from loss of roosting and foraging habitat would be less than significant. However, the loss of an active maternity roost could result in reproductive failure and reduce the productivity of a local population. Indirect impacts from noise and human disturbance could similarly result in disturbance of a maternity roost. These impacts would be potentially significant.

**Mitigation Measure TERR-11 (TERR-11 in 2019 EIS/EIR)** would reduce this impact by requiring a preconstruction survey for roosting bats, creating no-disturbance buffers around active bat roosts, and permitting removal of roost trees during the season in which roosting bats would be least affected. Implementation of this measure would reduce direct and indirect impacts to special-status bats to **less than significant with mitigation incorporation**.

### ***Cumulative Impacts***

The Final EIR/SEIS for the reservoir expansion project (SLDMWA and Reclamation 2020) acknowledged the potential presence of special-status mammals and their habitat in the project's footprint. SR-152 and Dinosaur Point modifications associated with the reservoir expansion project would impact an additional 30.6 acres of potential upland habitat (i.e., annual grassland and blue oak woodland) for special-status mammals due to construction of work and staging areas. Impacts could also occur to individual San Joaquin kit foxes, American badgers, and special-status bats. Seasonal inundation associated with reservoir expansion project operations would impact an additional 387.8 acres of vegetation communities potentially supporting special-status mammal species not considered in the cumulative analysis in the 2019 EIS/EIR.

The 2019 EIS/EIR acknowledged that the other cumulative projects listed in Table 3-1 together with the Approved Project could result in significant cumulative impacts on special-status mammals. However, with the implementation of mitigation measures, it determined that the Approved Project's contribution to cumulative impacts would not be cumulatively considerable.

Impacts to mammals associated with the reservoir expansion project would be mitigated through preconstruction surveys, avoidance buffers, and exclusion measures for non-natal dens and for non-maternity roosts for bats; implementation of standardized protection measures for San Joaquin kit fox; and compensatory habitat mitigation at a ratio of 2:1 for San Joaquin kit fox, which would also benefit American badger and foraging bats. Given the compensatory mitigation provided by the reservoir expansion project and the Modified Project, avoidance and minimization measures provided by both projects, and that it was determined that, with the incorporated mitigation measures, the Approved Project would not contribute to a cumulatively considerable impact to special-status mammals, the Modified Project's contribution to cumulative impacts would be **less than significant**.

### **Comparison to 2019 EIS/EIR**

The additional project components analyzed above would result in less-than-significant impacts with mitigation incorporated and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant with mitigation incorporated (see Section 3.9.5).

## Threshold 2

***Would the Modified Project have a substantial adverse effect on any riparian habitat or other sensitive (or special-status) natural community identified in local or regional plans, policies, regulations, or by the CDFW, NMFS, or USFWS?***

| 2019 EIS/EIR Impact Determination                  | Modified Project Impact Determination              | New Significant Increase in Impact Severity? |
|--|--|--|
| Less than Significant with Mitigation Incorporated | Less than Significant with Mitigation Incorporated | No   |

The additional impact areas will result in 175.35 acres of permanent and temporary impacts to vegetation communities and land covers. Direct and indirect impacts to annual grasslands that do not support gum plant patches, scrub/chaparral, eucalyptus woodland, and urban/disturbed would be less than significant because these vegetation communities and land covers are not considered sensitive by CDFW and do not constitute riparian habitat.

### **Sensitive Vegetation and Riparian Habitat**

#### ***Direct Impacts***

##### **Campground Construction and Day Use Area Improvements**

Proposed campground construction and day use area improvement areas would directly impact 1.23 acres of valley foothill riparian habitat.

##### **Changes in Borrow Area Location**

The change in use of Borrow Areas 12 and 14 from contractor staging to materials extraction would not result in additional impacts to riparian habitat or other sensitive natural communities beyond those identified in the 2019 EIS/EIR.

##### **Minor Additions to Contractor Work Area**

Construction of the additional staging and stockpiling areas and San Luis Creek Day Use Area improvements could directly impact up to 0.17 acres of gum plant patches, 9.86 acres of purple needlegrass grassland, 0.06 acres of freshwater emergent wetland, and 0.09 acres of valley foothill riparian. However, the disturbance footprint is larger than actual impacts are expected to be. Direct impacts within these areas would be temporary because all areas would be restored to pre-Modified conditions after construction is completed.

##### **Additional Construction Assumptions**

None of the additional construction assumptions (e.g., dewatering process at base of dam, timing of construction) would result in new impacts to sensitive vegetation or riparian habitat. The areas that would be affected by minor additional construction assumptions are evaluated in the 2019 EIS/EIR and within the overall evaluation of impacts to biological resources provided in this chapter.



### **Mitigation Site(s)**

Activities on off-site compensatory mitigation lands, especially those involving ground disturbance, could result in direct impacts on sensitive vegetation communities if any occur within the footprint of habitat restoration areas (e.g., created wetlands). It is likely that such communities could be avoided during restoration planning. Potential impacts would also be evaluated as a result of implementation of the restoration-related activity.

### ***Indirect Impacts***

### **Campground Construction and Day Use Area Improvements**

Changes to local topography in the proposed campground construction and day use area improvement areas could alter the surface or subsurface hydrology of sensitive vegetation communities and riparian habitats. Hazardous materials associated with construction equipment (e.g., fuel, oil) could adversely affect water quality in wetland and riparian areas.

### **Changes in Borrow Area Location, Minor Additions to Contractor Work Area**

As sensitive vegetation or riparian habitat occurs within the San Luis Creek Day Use Area improvements and the additional staging and stockpiling areas, any of the abovementioned indirect impacts to sensitive vegetation or riparian habitat could occur during construction at these areas.

### **Additional Construction Assumptions**

No additional indirect impacts are expected due to the effects from changes related to dewatering or the timing of dam improvement construction. The areas that would be affected by additional construction assumptions are the same as those evaluated in the 2019 EIS/EIR.

### **Mitigation Site(s)**

Activities on off-site compensatory mitigation lands are unlikely to result in indirect impacts on sensitive vegetation communities. The compensatory mitigation plan would be designed to preserve existing ecological values on mitigation sites (including native vegetation communities) as much as possible. Site-specific best management practices to avoid indirect impacts (e.g., weed control measures) would be implemented as appropriate.

### ***Additional Impacts Not Analyzed in 2019 EIS/EIR***

An additional 6.08 acres of direct impacts to sensitive vegetation communities would occur beyond what was analyzed in the 2019 EIS/EIR, given the updated vegetation map. Annual grassland as mapped in the 2019 EIS/EIR includes gum plant patches (1.63 acres of permanent impact, 2.27 acres of temporary impact) and tarweed fields (0.67 acres of permanent impact, 0.06 acres of temporary impact), which are considered sensitive natural communities by CDFW and were not identified in the 2019 EIS/EIR. In addition, scrub/chaparral as mapped in the 2019 EIS/EIR includes the *Baccharis pilularis*/(*Nassella pulchra*–*Elymus glaucus*–*Bromus carinatus*) (0.09 acres of permanent impact, 0.87 acres of temporary impact) and *Ericameria linearifolia* associations (0.08 acres of permanent impact, 0.41 acres of temporary impact), which are considered sensitive natural communities by CDFW and were not identified in the 2019 EIS/EIR. Impacts to purple needlegrass grassland and riparian habitat are addressed in the 2019 EIS/EIR.

### *Significance Conclusion*

The abovementioned impacts would be potentially significant because they would constitute a substantial adverse effect on sensitive vegetation communities and riparian habitat. In order to mitigate for this impact, **Mitigation Measure SEIR-BIO-5a (SEIR-BIO-5 replaces TERR-16 in the 2019 EIS/EIR)** requires monitoring during construction to ensure avoidance of impacts to sensitive natural communities and provides avoidance and minimization measures for sensitive vegetation and riparian habitat, and **Mitigation Measure SEIR-BIO-5b (SEIR-BIO-5 replaces TERR-16 in the 2019 EIS/EIR)** defines compensatory mitigation requirements to offset impacts to jurisdictional sensitive vegetation and riparian habitat, and includes a weed control plan. **Mitigation Measure HAZ-1 (same HAZ-1 in the 2019 EIS/EIR)** (see Section 3.8, Hazards and Hazardous Materials) requires preparation of a Spill Prevention and Response Plan for preventing spills and responding to chemical or hazardous substance spills to address indirect impacts to sensitive vegetation communities and riparian habitat. Implementation of these measures would reduce impacts to sensitive vegetation communities and riparian habitat to **less than significant with mitigation incorporated**.

### *Cumulative Impacts*

The Final EIR/SEIS for the reservoir expansion project (SLDMWA and Reclamation 2020) acknowledged the potential presence of sensitive vegetation communities in the project's footprint. SR-152 and Dinosaur Point modifications associated with the reservoir expansion project would impact 0.9 acres of blue oak woodland due to construction of work and staging areas. Seasonal inundation associated with reservoir expansion project operations would impact an additional 54.3 acres of blue oak woodland as well as 0.4 acres of riparian habitat (California sycamore woodland) and 4 acres of purple needle grassland.

The 2019 EIS/EIR acknowledged that the other cumulative projects listed in Table 3-1 together with the Approved Project could result in significant cumulative impacts on sensitive habitats including wetland and riparian vegetation communities. However, with the implementation of mitigation measures, it determined that the Approved Project's contribution to cumulative impacts would not be cumulatively considerable.

Impacts to sensitive natural communities associated with the reservoir expansion project would be mitigated by surveying work areas, avoiding impacts where possible, and providing compensatory mitigation and revegetation of sensitive natural communities for unavoidable impacts. Given the compensatory mitigation provided by the reservoir expansion project and the Modified Project, avoidance and minimization measures provided by both projects, and that it was determined that, with the incorporated mitigation measures, the Approved Project would not contribute to a cumulatively considerable impact to sensitive vegetation communities, the Modified Project's contribution to cumulative impacts would be **less than significant**.

### *Comparison to 2019 EIS/EIR*

The additional project components analyzed above would result in less-than-significant impacts with mitigation incorporated and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant with mitigation incorporated (see Section 3.9.5).

### Threshold 3

***Would the Modified Project have a substantial adverse effect on Federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, coast, etc.) through direct removal, filling, hydrological interruption, or other means?***

| 2019 EIS/EIR Impact Determination                  | Modified Project Impact Determination              | New Significant Increase in Impact Severity? |
|--|--|--|
| Less than Significant with Mitigation Incorporated | Less than Significant with Mitigation Incorporated | No   |

The additional impact areas would result in 7.57 acres of permanent and temporary impacts to jurisdictional aquatic resources. Threshold 3 only calls out impacts to federally protected wetlands, but in order to be consistent with the 2019 EIS/EIR, impacts to USACE/RWQCB-jurisdictional waters and CDFW-jurisdictional waters are addressed herein. The total extent of impacted jurisdictional aquatic resources within the additional impact areas includes the following: drainage ditches (0.71 acres; 7,533 linear feet), ephemeral drainages (<0.01 acres; 24 linear feet), ephemeral swale (0.02 acres; 342 linear feet), freshwater emergent wetlands (0.24 acres), and lacustrine (6.59 acres). Descriptions of Modified Project impacts by Modified Project component are provided in the subsequent sections.

#### Direct Impacts

A summary of aquatic resource impacts is identified in Table 3.9-6.

**Table 3.9-6. Summary of Direct Impacts on Aquatic Resources in Additional Impact Areas by Feature Type**

| Aquatic Resource Feature Type | Impacts           |                   |              |
|-------------------------------|-------------------|-------------------|--------------|
|                               | Permanent (acres) | Temporary (acres) | Total Impact |
| Drainage Ditch                | 0.18              | 0.53              | 0.71         |
| Ephemeral Drainage            | <0.01             | —                 | <0.01        |
| Ephemeral Swale               | —                 | 0.02              | 0.02         |
| Freshwater Emergent Wetland   | 0.24              | —                 | 0.24         |
| Lacustrine                    | —                 | 6.59              | 6.59         |
| <b>Totals</b>                 | <b>0.42</b>       | <b>7.14</b>       | <b>7.57</b>  |

#### Campground Construction and Day Use Area Improvements

Campground construction and day use area improvements would directly impact 0.64 acres and 7,625 linear feet of jurisdictional aquatic resources. Features impacted include three drainage ditches and one ephemeral swale.

#### Changes in Borrow Area Location

The change in use of Borrow Areas 12 and 14 from contractor staging to materials extraction would result in additional impacts to jurisdictional aquatic resources beyond those identified in the 2019 EIS/EIR. Four ephemeral swales not previously identified or analyzed are present in these borrow areas and associated staging areas. See Threshold 3 discussion under Additional Impacts Not Analyzed in 2019 EIS/EIR.

### ***Minor Additions to Contractor Work Area***

Minor additions to contractor work areas would directly impact 6.91 acres and 275 linear feet of jurisdictional aquatic resources. Features impacted include three drainage ditches, one ephemeral drainage, two freshwater emergent wetlands, and two lacustrine areas.

### ***Additional Construction Assumptions***

None of the additional construction assumptions (e.g., dewatering process at base of dam, timing of construction) would result in new impacts to jurisdictional aquatic resources. The areas that would be affected by additional construction assumptions are the same as those evaluated in the 2019 EIS/EIR and in this threshold discussion.

### ***Mitigation Site(s)***

Activities on off-site compensatory mitigation lands are not expected to result in direct impacts on jurisdictional aquatic resources. The compensatory mitigation plan would be designed to preserve existing ecological functions and services of mitigation sites (including avoidance of aquatic resources) and restore/enhance existing aquatic resources to the maximum extent practicable.

### ***Indirect Impacts***

#### ***Campground Construction and Day Use Area Improvements***

Changes to local topography in the proposed campground construction and day use area improvement areas could alter the surface or subsurface hydrology of aquatic resources. Hazardous materials associated with construction equipment (e.g., fuel, oil) could adversely affect water quality in existing aquatic resources within and adjacent to the campground construction and day use area improvement areas.

#### ***Changes in Borrow Area Location and Minor Additions to Contractor Work Area***

As aquatic resources occur within the San Luis Creek Day Use Area improvements and the additional staging and stockpiling areas, any of the abovementioned indirect impacts to jurisdictional aquatic resources could occur during construction at these areas.

### ***Additional Construction Assumptions***

No additional indirect impacts are expected due to the effects from changes related to dewatering or the timing of dam improvement construction. The areas that would be affected by additional construction assumptions are the same as those evaluated in the 2019 EIS/EIR.

### ***Mitigation Site(s)***

Activities on off-site compensatory mitigation lands are not expected to result in indirect impacts on jurisdictional aquatic resources. The compensatory mitigation plan would be designed to preserve existing ecological values on mitigation sites (including aquatic resources) as much as possible. Site-specific best management practices to avoid indirect impacts (e.g., weed and erosion control measures) would be implemented as appropriate.

### ***Additional Impacts Not Analyzed in 2019 EIS/EIR***

Based on the delineation of aquatic resources conducted in 2020, an additional 6.59 acres of direct impacts to jurisdictional aquatic resources would occur in the Approved Project footprint, beyond what was analyzed in the

2019 EIS/EIR. These direct impacts are a result of the newly identified jurisdictional aquatic resources (0.36 acres of impact to drainage ditches, 0.13 acres of impact to ephemeral drainages, 6.00 acres of impact to ephemeral swales, and 0.10 acres of impact to riparian areas). A total of 14.16 additional acres of direct impacts to jurisdictional aquatic resources within the Modified Project footprint would occur as a result of Modified Project implementation. This total consists of 7.57 acres located within the additional impact areas, and 6.59 additional acres located within the Approved Project footprint that were not previously analyzed in the 2019 EIS/EIR.

### Significance Conclusion

The abovementioned impacts would be potentially significant because they would constitute a substantial adverse effect on jurisdictional aquatic resources. In order to mitigate for this impact, **Mitigation Measure SEIR-BIO-5a (SEIR-BIO-5 replaces TERR-16 in the 2019 EIS/EIR)** provides avoidance and minimization measures for impacts to jurisdictional aquatic resources. **Mitigation Measure SEIR-BIO-5b** defines compensatory mitigation requirements to offset impacts to jurisdictional aquatic resources. In addition, **Mitigation Measure HAZ-1 (same HAZ-1 in the 2019 EIS/EIR)** requires preparation of a Spill Prevention and Response Plan for preventing spills and responding to chemical or hazardous substance spills to address indirect impacts to jurisdictional aquatic resources. Implementation of these measures would reduce impacts to jurisdictional aquatic resources to **less than significant with mitigation incorporated**.

### Cumulative Impacts

The Final EIR/SEIS for the reservoir expansion project (SLDMWA and Reclamation 2020) acknowledged the presence of jurisdictional aquatic resources in the project's footprint. SR-152 and Dinosaur Point modifications associated with the reservoir expansion project would not result in any impacts on aquatic resources, but seasonal inundation associated with reservoir expansion project operations would impact 3.2 acres of intermittent channel, 0.8 acres of ephemeral channel, 1 acre of freshwater emergent wetland, 0.004 acres of seep, and 12.8 acres of lacustrine resources.

The 2019 EIS/EIR acknowledged that the other cumulative projects listed in Table 3-1 together with the Approved Project could result in significant cumulative impacts on sensitive habitats, including wetland and riparian communities. However, with the implementation of mitigation measures, it determined that the Approved Project's contribution to cumulative impacts would not be cumulatively considerable.

Impacts to aquatic resources associated with the reservoir expansion project would be mitigated by surveying work areas, avoiding impacts where possible, and providing compensatory mitigation for unavoidable impacts. Given the compensatory mitigation provided by the reservoir expansion project and the Modified Project, avoidance and minimization measures provided by both projects, and the determination that, with the incorporated mitigation measures, the Approved Project would not contribute to a cumulatively considerable impact to jurisdictional aquatic resources, the Modified Project's contribution to cumulative impacts would be **less than significant**.

### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant impacts with mitigation incorporated and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant with mitigation incorporated (see Section 3.9.5).

## Threshold 4

***Would the Modified Project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?***

| 2019 EIS/EIR Impact Determination                  | Modified Project Impact Determination              | New Significant Increase in Impact Severity? |
|--|--|--|
| Less than Significant with Mitigation Incorporated | Less than Significant with Mitigation Incorporated | No   |

The 2019 EIS/EIR acknowledged temporary impacts to wildlife movement, but determined these to be less than significant. Because these were temporary construction-related impacts, species affected would be able to reoccupy areas abandoned during construction, and the Approved Project would result in no new barriers to movement. However, construction in the additional impact areas would introduce new permanent impacts (from the proposed campground area) and would require a greater area of temporary disturbance. In addition, activities associated with the Modified Project could result in indirect impacts to wildlife movement from vehicle strikes, noise, and human presence.

#### **Direct Impacts**

##### ***Campground Construction and Day Use Area Improvements***

The proposed campground construction and day use area improvement areas would result in permanent impacts from construction of the new campground and temporary impacts from minor improvements within the San Luis Creek Day Use Area and road improvements north of SR-152. Permanent impacts from construction of the new campground at O'Neill Forebay would remove approximately 42 acres of habitat. This habitat loss would occur adjacent to the forebay, at the edge of a large undeveloped habitat area. Therefore, these permanent impacts would not impede any larger or medium-size species, such as tule elk, American badger, and some common species, from accessing habitat blocks elsewhere or limit movement within an existing corridor. The large area west of the proposed campground area would also continue to support common species that may no longer be able to occupy the campground itself. Impacts associated with the San Luis Creek Day Use Area improvements and repaving of the existing access road would be temporary and therefore would not permanently affect wildlife movement. These Modified Project activities may result in temporary impacts to wildlife movement, but these impacts would occur over a period of only 12 to 18 months, rather than over the duration of the Modified Project.

##### ***Changes in Borrow Area Location***

Although Borrow Areas 12 and 14 would temporarily be unavailable to wildlife accessing these areas, and activities in these areas may result in temporary and local disruptions of wildlife movement, these impacts were analyzed as part of the 2019 EIS/EIR. The change in the nature of the impacts as a result of the Modified Project would not result in new impacts to wildlife movement.

##### ***Minor Additions to Contractor Work Area***

Construction activities related to the additional staging and stockpiling areas and the temporary haul route west of the right abutment of the dam would result in 34.4 acres of new temporary impacts, including 30.9 acres of natural

habitats currently available for wildlife movement, not analyzed in the 2019 EIS/EIR. These additional impact areas are all small areas surrounded by existing temporary and permanent impacts area associated with the Approved Project. Therefore, larger and medium-size wildlife such as tule elk, American badger, San Joaquin kit fox, and common species would not have access to these areas under the Approved Project, and no new impacts would occur in these areas under the Modified Project. Any smaller common species that may be extirpated from these small areas of habitat would be able to reoccupy them after construction.

#### ***Additional Construction Assumptions***

The additional construction assumptions (e.g., dewatering process at base of dam, timing of construction) would not result in construction activities in previously unaffected areas, and therefore they would not result in new direct impacts to wildlife movement.

#### ***Mitigation Site(s)***

A small area of upland habitat may be converted to wetlands as compensation for impacts to aquatic resources, but the extent of this area is expected to be limited, and would not greatly reduce the area available for wildlife movement, even if the area no longer provides movement opportunities.

#### ***Indirect Impacts***

##### ***Campground Construction and Day Use Area Improvements***

The campground construction and day use area improvement areas could result in new indirect impacts to wildlife moving through adjacent areas during construction. Noise and human presence could deter some wildlife from using these areas during construction. Those not deterred by noise and human presence could be subject to collisions with vehicles moving to and from the site. However, a large area of undeveloped habitat would remain available during construction, to the west of the proposed campground area and the San Luis Creek Day Use Area during construction.

##### ***Changes in Borrow Area Location***

Construction activities associated with Borrow Areas 12 and 14 would result in noise and human presence potentially deterring use of surrounding habitats during construction, and some wildlife not deterred by these factors could be subject to collisions with vehicles moving to and from the borrow areas. However, these impacts would be similar to those occurring in these areas under the Approved Project, under which these areas were included as staging and stockpiling areas. In addition, extensive undeveloped areas east of Borrow Area 14 would remain available for occupation and movement by such species as tule elk, American badger, and common wildlife species during the construction.

##### ***Minor Additions to Contractor Work Area***

As noted above under Direct Impacts, the additional staging and stockpiling areas and temporary haul route would occur in small areas surrounded by areas that are part of the Approved Project. Because larger and medium-size species would be excluded from areas surrounding these additional impact areas, the minor additions to the contractor work area would not result in additional indirect impacts to these species.

#### ***Additional Construction Assumptions***

The additional construction assumptions (e.g., dewatering process at base of dam, timing of construction) would not result in construction activities in previously unaffected areas, and therefore they would not result in new indirect impacts to wildlife movement.

### Additional Impacts not Analyzed in 2019 EIS/EIR

The 2019 EIS/EIR determined a less-than-significant impact regarding the effects of construction on tule elk movement, basing this on the assumption that existing fencing would direct tule elk off site. Based on additional information provided by CDFW biologists who have worked with this population for a number of years, it is determined that fencing alone will not address elk usage during construction. The reintroduced tule elk use the entire area around the reservoir south of SR-152 and west of I-5. The individuals form smaller herds, but may rarely intermix from time to time and seasonally. The tule elk herds are accustomed to human disturbance here, and are not hunted, preyed upon, or restricted by seasonal conditions or ability to forage; they generally meander and forage, being able to jump over any of the fences within their territory. Because of this lack of energetic pressure, they have prolonged rut and calving periods. They meander throughout the Modified Project site in fluid mixed, bachelor, and single male/many female herds depending on the season and may range up to the visitor center adjacent to SR-152. It is expected that during construction, tule elk would flush from construction activities. While the effects of construction are not anticipated to affect the health of the general population tule elk, broader movement, or ability to maintain current levels of genetic flow, temporary indirect flushing of smaller herds or individuals toward hazards, including SR-152, would be significant.

### Mitigation Site(s)

Indirect impacts to wildlife movement from restoration activities associated with compensatory mitigation for impacts to aquatic resources would be minor, as these areas are expected to be limited in the area affected, and the activities themselves should be relatively short in duration.

### Significance Conclusion

Permanent impacts to wildlife movement from the Modified Project would occur only in an area between O'Neill Forebay and a large expanse of undeveloped lands to the west that would continue to be available to a variety of terrestrial wildlife. In addition, impacts associated with campground construction and day use area improvement areas would be temporary compared to other Modified Project impacts; the San Luis Creek Day Use Area improvements would occur within an existing day use area already subject to high levels of human activity; other temporary impacts would occur mostly in small, isolated areas surrounded by areas already subject to impacts of the Approved Project; and impacts associated with the mitigation sites would occur in relatively small areas. Flushing of tule elk towards SR-152 would be potentially significant, however, because it would constitute a substantial adverse effect on movement of tule elk and possibly public safety. In order to mitigate for this impact, **Mitigation Measure SEIR-BIO-7 (new mitigation measure)** requires the preparation of a tule elk management plan to outline methods and procedures for herding elk away from construction activities so that they are not trapped between hazards and construction activities. Implementation of this measure would reduce impacts to elk movement to **less than significant with mitigation incorporated**.

### Cumulative Impacts

The Final EIR/SEIS for the reservoir expansion project (SLDMWA and Reclamation 2020) acknowledged the potential temporary disruption of wildlife movement. However, these disruptions are associated more with project activities east of San Luis Reservoir and with the inundation of new areas than with the SR-152 and Dinosaur Point modifications. In general movements along the SR-152 causeway over Cottonwood Bay are presumed to be along the immediate highway shoulder, as the slopes of the causeway are rocked with large riprap. Also, San Joaquin kit fox movement is considered to occur on the east side of the reservoir. Dinosaur Point is a peninsula jutting into San Luis Reservoir, and construction activities related in this area would not substantially limit wildlife movement



opportunities. The 2019 EIS/EIR did not identify any cumulative impacts to wildlife movement from the other projects listed in Table 3-1 and the Approved Project. Given that neither the reservoir expansion nor additional impact areas of the Modified Project would substantially limit wildlife movement, and the determination that the Approved Project would not contribute to any cumulative impacts on wildlife movement, the contribution of the Modified Project to a cumulative impact to wildlife movement would be **less than significant**.

#### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant impacts with mitigation incorporated and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant with mitigation incorporated (see Section 3.9.5).

#### Threshold 5

*Would the Modified Project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?*

| 2019 EIS/EIR Impact Determination | Modified Project Impact Determination | New Significant Increase in Impact Severity? |
|-----------------------------------|---------------------------------------|--|
| No Impact                         | No Impact                             | No   |

The San Luis Reservoir SRA RMP/GP (Reclamation and CDPR 2013) includes policies addressing protection of biological resources. Many of the policies in the plan reinforce protections addressed under other CEQA thresholds, such as protection of natural lands and species habitats (Threshold 1), special-status species surveys and mitigation (Threshold 1), wetland and riparian avoidance and protections (Thresholds 2 and 3), terrestrial wildlife mobility (Threshold 4), and consistency with local and regional conservation strategies (Threshold 6), and therefore are addressed under those thresholds. Additional policies of this plan relate to resources or requirements that do not apply to the Approved Project or the Modified Project, including policies to minimize the effects of agricultural practices, including grazing, on the natural environment and to encourage use of native species in landscaping. The San Luis Reservoir SRA RMP/GP does not include a tree preservation policy, or any other special policy protecting biological resources beyond requirements covered within the CEQA thresholds or state and federal regulations addressed in this SEIR. Therefore, the Modified Project would not result in direct or indirect impacts that would conflict with local policies or ordinances. **No impact** would occur.

#### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in no impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. The Modified Project would continue to result in no impacts.

## Threshold 6

***Would the Modified Project conflict with the provisions of an adopted Habitat Conservation Plan (HCP), Natural Communities Conservation Plan (NCCP), or other approved local, regional, or State conservation plan?***

| 2019 EIS/EIR Impact Determination | Modified Project Impact Determination | New Significant Increase in Impact Severity? |
|-----------------------------------|---------------------------------------|--|
| No Impact                         | No Impact                             | No   |

Merced County, including the San Luis Reservoir region, is within the plan area for Pacific Gas and Electric Company's (PG&E's) San Joaquin Valley Operations and Maintenance Habitat Conservation Plan (PG&E 2006), and there is a PG&E easement under the transmission line that crosses the Modified Project site at Borrow Area 6 and the San Luis Creek Use Area. The habitat conservation plan was prepared to address small-scale temporary effects on threatened and endangered species from PG&E's routine operations and maintenance activities throughout the San Joaquin Valley, including operations and maintenance of their electrical transmission system. The habitat conservation plan's 30-year permit term began in December 2007. Specific activities covered by the habitat conservation plan that may occur within PG&E's easement on the Modified Project site include tower, pole, and equipment inspection; electrical insulator washing by truck or helicopter; outage repair; tower replacement or repair; pole and equipment replacement and repair; and electric line reconductoring.

To compensate for unavoidable impacts on species habitat over the 30-year permit term, the habitat conservation plan includes a conservation strategy focused on the following biological goal and objectives:

**Goal:** Contribute to the conservation of natural communities (wetlands, woodland, grassland, woody riparian, upland scrub) and their associated covered species in the Plan Area. Conservation of natural communities will be achieved by implementing the following three objectives for each natural-community type:

- Objective 1: Acquire, protect, manage, and maintain lands for the benefit of covered species to achieve compensation for project habitat effects.
- Objective 2: Locate compensation lands with the plan regions (north, central, and south San Joaquin Valley) where project effects occur.
- Objective 3: Purchase or dedicate land near other preserved areas to maximize the conservation values of the land and assist in meeting land protection goals of existing recovery plans.

For the purposes of this SEIR, the Modified Project would result in a significant impact if it would preclude PG&E from achieving any of the above plan objectives (i.e., conflict with the provisions of the plan). One of several compensation mechanisms identified in the habitat conservation plan to help achieve these objectives is the purchase of mitigation credits from existing mitigation banks in the San Joaquin Valley. As described in Section 2.4.5, Mitigation Sites, the Modified Project would also purchase mitigation credits from existing mitigation banks to satisfy compensatory mitigation requirements of the 2019 EIS/EIR. Because mitigation credits within each bank are a finite resource tracked by the bank operator, they cannot be allocated among different project proponents. In a hypothetical scenario where DWR and Reclamation and PG&E sought to purchase mitigation credits from the same bank, any credits purchased by DWR and Reclamation for the Modified Project would be independent of, and separate from, those purchased by PG&E. Therefore, the Modified Project's mitigation requirements would not conflict or interfere with PG&E's mitigation requirements under their San Joaquin Valley operations and maintenance habitat conservation plan. There are no other habitat conservation plans, natural communities

conservation plans, or other approved local, regional, or state conservation plans that cover the Modified Project site. Therefore, the Modified Project would have **no impact** on adopted conservation plans.

#### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in no impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. The Modified Project would continue to result in no impacts.

### 3.9.5 Mitigation Measures

The following mitigation measures would be implemented to avoid, minimize, or compensate for potentially significant impacts on biological resources. As indicated below, mitigation measures either are identical to those identified in the 2019 EIS/EIR or replace previously identified mitigation measures. Mitigation Measures SEIR-BIO-6 and SEIR-BIO-7 are included as new mitigation measures. Mitigation Measures TERR-2, TERR-4, TERR-8, and TERR-14 identified in the 2019 EIS/EIR are not required to reduce biological resources impacts specifically resulting from components of the Modified Project as discussed above, and are therefore not included below. However, Mitigation Measures TERR-2, TERR-4, TERR-8, and TERR-14 identified in the 2019 EIS/EIR remain applicable to the Modified Project as determined by the 2019 EIS/EIR.

#### **TERR-1 (Same as TERR-1 in the 2019 EIS/EIR): Special-status Plant Species and Special-Status Natural Communities.**

Surveys of the project area for special-status plant species will be conducted during the identifiable blooming period prior to commencement of work. Special-status plants include: Arcuate bush-mallow (blooms April through September), big-scale balsamroot (blooms March through June), California alkali grass (blooms March through May), chaparral harebell (blooms May through June), Congdon's tarplant (blooms May through October), Hall's bushmallow (blooms May through September), Hispid bird's beak (blooms June through September), Hospital Canyon larkspur (blooms March through June), Lemmon's jewelflower (blooms February through May), Lime Ridge navarretia (blooms May through June), round-leaved filaree (blooms March through May), shining navarretia (blooms April through July), and spiny-sealed button-celery (bloom April through June).

A qualified DWR biologist (qualified biologist) will be present prior to and during construction to ensure avoidance of impacts on special-status plant species and special-status natural communities by implementing one, or more, of the following, as appropriate, per the biologist's recommendation:

- a. Flag the population or natural community areas to be protected;
- b. Allow adequate buffers; and/or,
- c. Time construction or other activities during dormant and/or non-critical life cycle periods.

For unavoidable impacts to special-status plant species, compensatory mitigation may be required based on recommendations of the qualified biologist. If any impacts occur to listed plant species, consultation with USFWS and/or CDFW will be initiated. If deemed necessary based on the type and extent of special-status plant populations affected, compensatory mitigation will entail:

- a. The protection, through land acquisition or a conservation easement, of a population of equal or greater size and health. Or,

- b. If it is not feasible to acquire and preserve a known population of a special-status plant to be impacted, suitable unoccupied habitat capable of supporting the species will be acquired, and used to create a new population. For population creation, the following considerations will also be met:
- Prior to unavoidable and permanent disturbance to a population of a special-status plant species, propagules shall be collected from the population to be disturbed. This may include seed collection or cuttings, and these propagules will be used to establish a new population on suitable, unoccupied habitat as described above. Transplantation may be attempted but will not be used as the primary means of plant salvage and new population creation.
  - Creation of new populations will require identifying suitable locations and researching and determining appropriate and viable propagation or planting techniques for the species. It will also require field and literature research to determine the appropriate seed sampling techniques and harvest numbers for acquisition of seed from existing populations.
  - A minimum ten-year monitoring plan with adaptive management will be implemented to document the success of creating new plant populations. Adequate funding for compensatory mitigation will be provided on an agreed-to schedule, following a discussion with the appropriate regulatory agencies, to ensure long-term protection and management of lands acquired or placed under conservation easement.

**TERR-6 (Same as TERR-6 in the 2019 EIS/EIR): Nesting Bird Surveys.** A qualified biologist would conduct nesting bird surveys prior to construction and supervise avoidance of nests during construction. The generally accepted nesting season extends from February 1 through September 15. If an active nest of a special-status bird is found, construction within 300 feet of the nest (500 feet for raptor nests, excluding Swainson's hawk) would be postponed until the nest is no longer active.

**TERR-7 (Same as TERR-7 in the 2019 EIS/EIR): Preconstruction Surveys for and Avoidance of Swainson's Hawk Nests.** Prior to construction, surveys for active Swainson's hawk nests will be conducted in and around all potential nest trees within 0.5 mile of construction areas. If known or active nests are identified through preconstruction surveys or other means, a 0.5 mile no-disturbance buffer shall be established around all active nest sites if construction cannot be limited to occur outside the nesting season (February 15 through September 15). Buffer sizes may be reduced if approved by CDFW and active nest sites are monitored during construction by a qualified biologist.

Permanent foraging habitat losses (i.e., grasslands) within one mile of active Swainson's hawk nests shall be compensated by preserving in perpetuity suitable foraging habitat at a ratio of 1:1. This includes permanently disturbed construction sites. The CDFW shall approve the location and types of habitats preserved.

**TERR-10 (Same as TERR-10 in the 2019 EIS/EIRS): Tricolored Blackbird.** Prior to construction, appropriately timed surveys for tricolored blackbirds would be conducted in areas supporting potentially suitable habitat within 0.25 mile of construction areas. Habitat within 0.25 mile of tricolored blackbird colonies will be avoided during nesting season, which can begin as early as mid-March and extend through August. If colonies cannot be avoided, CDFW shall be consulted to potentially reduce buffer distances with active monitoring during construction by a qualified biologist.

**TERR-11 (Same as TERR-11 in the 2019 EIS/EIR): Special-Status Bats.** Impacts to special-status bats shall be minimized by performing preconstruction surveys and creating no-disturbance buffers around active bat roosting sites.

Before construction activities (i.e., ground clearing and grading, including trees or shrub removal) within 200 feet of trees that could support special-status bats, a qualified bat biologist shall survey for special-status bats. If no evidence of bats (i.e., direct observation, recorded vocalizations, guano, staining, or strong odors) is recorded, no further mitigation shall be required.

If evidence of bats is observed, the following measures shall be implemented to avoid potential impacts on breeding populations:

- A no-disturbance buffer of 200 feet shall be created around active bat roosts during the breeding season (April 15 through August 15). Bat roosts initiated during construction are presumed to be unaffected by the indirect effects of noise and construction disturbances. However, the direct take of individuals will be prohibited.
- Removal of trees showing evidence of active bat activity shall occur during the period least likely to affect bats, as determined and monitored by a qualified bat biologist (generally between February 15 and October 15 for winter hibernacula, and between August 15 and April 15 for maternity roosts). If the exclusion of bats from potential roost sites is necessary to prevent indirect impacts due to construction noise and human activity adjacent, bat exclusion activities (e.g., installation of netting to block roost entrances) shall also be conducted during these periods. If special-status bats are identified in the dam or special allowances must be made to relocate bats, Reclamation will coordinate the effort in advance with CDFW.

**TERR-13 (Same as TERR-13 in the 2019 EIS/EIR): American Badger.** Impacts on badgers within annual grasslands and oak woodland at San Luis Reservoir will be minimized through a combination of worker training, preconstruction surveys, and passively or actively relocating animals. Concurrent with other required surveys, during winter/spring months before new project activities, and concurrent with other preconstruction surveys (e.g., kit fox and burrowing owl), a qualified biologist shall perform a survey to identify the presence of active or inactive American badger dens. If this species is not found, no further mitigation shall be required. If badger dens are identified within the construction footprint during the surveys or afterwards, they shall be inspected and closed using the following methodology:

When unoccupied dens are encountered outside of work areas but within 100 feet of proposed activities, vacated dens shall be inspected to ensure they are empty and temporarily covered using plywood sheets or similar materials. If badger occupancy is determined at a given site within the work area, work activities at that site should be halted. Depending on the den type, reasonable and prudent measures to avoid harming badgers will be implemented and may include seasonal limitations on project construction near the site (i.e., restricting the construction period to avoid spring-summer pupping season), and/or establishing a construction exclusion zone around the identified site, or resurveying the den at a later time to determine species presence or absence. Badgers may be passively relocated using burrow exclusion (e.g., installing one-way doors on burrows) or similar CDFW-approved exclusion methods. In unique situations it might be necessary to actively relocate badgers (e.g., using live traps) to protect individuals from potentially harmful situations. Such relocation would be performed with advance CDFW coordination and concurrence.

**TERR-15 (Same as TERR-15 in the 2019 EIS/EIR): Contractor Environmental Awareness Training and Site Protection Measures.** All construction personnel working in biologically sensitive areas shall attend an environmental education program delivered by a qualified biologist prior to starting work. The training shall include an explanation as how to best avoid the accidental take of special-status plants and wildlife. The field meeting shall include species identification, life history, descriptions, and habitat requirements. The program shall include an explanation of Federal and State laws protecting endangered species, and avoidance and minimization methods being implemented to protect these species. A qualified biologist will be present on the site at all times during construction. The contractor shall provide closed garbage containers for the disposal of all trash items (e.g., wrappers, cans, bottles, food scraps). Work sites shall be cleaned of litter before closure each day, and placed in wildlife-proof garbage receptacles. Construction personnel shall not feed or otherwise attract any wildlife. No pets, excluding service animals, shall be allowed on site or in construction areas.

Nighttime vehicle traffic shall be kept to a minimum on non-maintained roads with a maximum speed of 15 mph.

To minimize disturbance to wildlife, temporary and permanent exterior lighting shall be installed such that:

- lamps and reflectors are not visible from beyond the project site,
- reflective glare will be minimized to the extent feasible;
- illumination of the project and its immediate vicinity is minimized;
- lighting shall incorporate fixture hoods/shielding, with light directed downward or toward the area to be illuminated;
- all lighting shall be of minimum necessary brightness consistent with operational safety and security;
- lights in areas not occupied on a continuous basis (such as maintenance areas) shall have (in addition to hoods) switches, timer switches, or motion detectors so that the lights operate only when the area is occupied, and
- the plan complies with local policies and ordinances.

**SEIR-BIO-1 (Replaces TERR-3 in the 2019 EIS/EIR): Special-Status Amphibians.** Before and after construction:

- The Modified Project proponent shall submit the name and credentials of a California Department of Water Resources (DWR) biologist qualified to act as construction monitor to the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW) for approval at least 15 days before construction work begins. General minimum qualifications are a 4-year degree in biological sciences and experience in surveying, identifying, and handling California tiger salamanders and California red-legged frogs. The qualified biologist shall be present at all times during construction. Consultation with the USFWS through the Section 7 process may be required to determine avoidance, conservation, and mitigation measures.
- The USFWS- and CDFW-approved biologist, under the appropriate federal and state authorities (e.g., permitting and consultation), shall survey the work sites 2 weeks before the onset of construction. If California tiger salamanders or California red-legged frogs (or their tadpoles or eggs) are found, the approved biologist shall contact USFWS and CDFW to determine whether moving any of these life stages is appropriate. If USFWS and CDFW approve moving the animals, the biologist shall be allowed sufficient time to move frogs and/or salamanders from the work sites before work begins. If these species are not identified, construction can proceed

at these sites. The biologist shall use professional judgment to determine whether (and if so, when) the California tiger salamanders and/or California red-legged frogs are to be moved. The biologist shall immediately inform the construction manager that work shall be halted, if necessary, to avert avoidable take of listed species.

- The known location of California red-legged frogs and Willow Spring, the water source for the perennial frog pond near the borrow area, shall be avoided during construction with a buffer of 250 feet to avoid modifying aquatic habitat that supports the frog population; or as otherwise approved by the resource agencies.
- Areas impacted by construction shall be monitored during construction to identify, capture, and relocate special-status amphibians, if present.
- Areas beneath construction equipment and vehicles shall be inspected daily, prior to operation, for presence of special-status amphibians under tracks/tires and within machinery. If special-status amphibians are found, a qualified biologist shall capture and relocate animals from work sites.
- Appropriate state and federal permits for handling of special-status species shall be acquired.
- If necessary, a detailed amphibian relocation plan shall be prepared at least 3 weeks before the start of groundbreaking and submitted to CDFW and USFWS for review. The purpose of the plan is to standardize amphibian relocation methods and relocation sites.
- The USFWS- and CDFW-approved biologist shall be present at the active work sites until special-status amphibians have been removed, and habitat disturbance has been completed. Thereafter, compliance with all minimization measures shall be monitored by an individual who has received training from a CDFW- and USFWS-approved biologist, consistent with USFWS requirements.
- The Modified Project proponent and its contractors shall install frog-exclusion fencing (i.e., silt fences) around all construction areas that are within 100 feet of any identified ponds that provide potential special-status amphibian aquatic breeding habitat. During and after rain events, an approved biologist shall monitor work areas for the presence of special-status amphibians.
- The Bureau of Reclamation shall provide compensation for permanent and temporary impacts on California tiger salamander and California red-legged frog aquatic habitat. Compensatory mitigation shall be provided for the loss of aquatic breeding sites that will be filled or otherwise directly affected by the Modified Project, as well as mitigate for any impacts on associated California red-legged frog upland habitat through compensatory mitigation. If possible, compensatory mitigation areas shall be located within a California red-legged Frog Recovery Area, as identified in the 2002 California Red-legged Frog Recovery Plan (USFWS 2002).
- The total area, size, and number of California red-legged frog or California tiger salamander mitigation ponds to be created will be based on a comparable loss of breeding sites (e.g., a minimum 1:1 replacement ratio) as a result of the Modified Project. These ponds shall concurrently satisfy wetland mitigation requirements identified in Mitigation Measure TERR-16 in the 2019 EIS/EIR. To the degree possible, new mitigation ponds that are created for California red-legged frog and California tiger salamander shall be hydrologically self-sustaining and shall not require a supplemental water supply.

**SEIR-BIO-2 (Replaces TERR-5 in the 2019 EIS/EIR): Special-Status Reptiles.** Before construction activities begin, a qualified biologist shall conduct special-status reptile (i.e., San Joaquin whipsnake and coast horned lizard) surveys 2 weeks prior to construction activities within work sites and within 100 feet of disturbance areas. A qualified biologist shall relocate any special-status reptiles to suitable habitat outside of areas of disturbance. There is possibility of special-status reptiles to move into the work sites after preconstruction surveys have checked the area and some individuals could be subject to mortality. If special-status reptiles are detected in work sites during construction, activities and equipment travel shall cease in the immediate area of detection until the special-status reptile has left work site or has been relocated out of the area by a qualified biologist.

**SEIR-BIO-3 (Replaces TERR-9 in the 2019 EIS/EIRS): Burrowing Owl.** Prior to construction, surveys for burrowing owls shall be conducted in areas supporting potentially suitable habitat.

Breeding season surveys shall be performed to determine the presence of burrowing owls for the purposes of inventory, monitoring, avoidance of take, and determining appropriate mitigation. In California, the breeding season begins as early as February 1 and continues through August 31. Under the survey guidelines in the California Department of Fish and Wildlife's (CDFW's) Staff Report on Burrowing Owl Mitigation (CDFG 2012)', a biologist shall: 1) perform a habitat assessment to identify essential components of burrowing owl habitat, including artificial nest features; 2) perform intensive burrow surveys in areas that are identified to provide suitable burrowing owl habitat, and; 3) perform at least four appropriately-timed breeding season surveys (four survey visits spread evenly [roughly every 3 weeks] during the peak of the breeding season, from April 15 to July 15) to document habitat use.

Preconstruction surveys (referred to as take avoidance surveys in CDFG [2012]) shall be used to assess the owl presence before site modification is scheduled to begin. Generally, initial preconstruction surveys should be conducted within 7 days, but no more than 30 days prior to ground-disturbing activities. Additional surveys may be required when the initial disturbance is followed by periods of inactivity or the development is phased spatially and/or temporally over the Modified Project area. Up to four or more survey visits performed on separate days may be required to assure with a high degree of certainty that site modification and grading will not take owls. The full extent of the preconstruction survey effort shall be described and mapped in detail (e.g., dates, time periods, area[s] covered, and methods employed) in a biological report that shall be provided for review to CDFW.

In addition to the above survey requirements, the following measures shall be implemented to reduce Modified Project impacts to burrowing owls:

- Construction exclusion areas (e.g., orange exclusion fence or signage) shall be established around occupied burrows, where no disturbance shall be allowed. During the nonbreeding season (September 1 through January 31), the exclusion zone shall extend at least 160 feet around occupied burrows. During the breeding season (February 1 through August 31), exclusion areas shall extend 250 feet around occupied burrows (or farther if warranted to avoid nest abandonment).
- If work or exclusion areas conflict with owl burrows, passive relocation of on-site owls could be implemented as an alternative, but only during the nonbreeding season and only with CDFW approval. The approach to owl relocation and burrow closure will vary depending on the number of occupied burrows. Passive relocation shall be accomplished by installing one-way doors on the entrances of burrows within 160 feet of the Modified Project area. The one-way doors shall



be left in place for 48 hours to ensure the owls have left the burrow. The burrows shall then be excavated with a qualified biologist present. Construction shall not proceed until the Modified Project area is deemed free of owls.

- Unoccupied burrows within the immediate construction area shall be excavated using hand tools, and then filled to prevent reoccupation. The qualified biologist shall be present during construction to continue examination of burrows. If any burrowing owls are discovered during the excavation, the excavation shall cease and the owl allowed to escape. Excavation shall be completed once the biological monitor confirms the burrow is empty.
- Artificial nesting burrows shall be provided as a temporary measure when natural burrows are lacking. To compensate for lost nest burrows, artificial burrows shall be provided outside the 160-foot buffer zone. The alternate burrows shall be monitored daily for 7 days to confirm that the owls have moved in and acclimated to the new burrow.

**SEIR-BIO-4 (Replaces TERR-12 in the 2019 EIS/EIR): San Joaquin Kit Fox.** San Joaquin kit fox would be affected by construction activities if animals are harmed or killed by equipment, their movement is blocked, or their dens or other habitat is altered or destroyed. Consultation with the U.S. Fish and Wildlife Service (USFWS) through the Section 7 process may be required to determine avoidance, conservation, and mitigation measures. Prior to construction, a qualified biologist shall conduct surveys to identify potential dens more than 4 inches in diameter. A multispecies burrow assessment in 2020 located numerous potential San Joaquin kit fox dens in suitable habitat throughout the Modified Project site (Dudek 2020b). If dens are located within the proposed work area and cannot be avoided during construction activities, a USFWS- and California Department of Fish and Wildlife (CDFW)-approved biologist shall determine if the dens are occupied. If occupied dens are present within the proposed work area, their disturbance and destruction shall be avoided. Exclusion zones shall be implemented following the latest USFWS procedures (USFWS 2011b). The Modified Project proponent shall implement San Joaquin kit fox protection measures.

The following measures, which are intended to reduce direct and indirect Modified Project impacts on San Joaquin kit foxes, are derived from the San Joaquin Kit Fox Survey Protocol for the Northern Range (USFWS 1999) and the Standardized Recommendations for Protection of the San Joaquin Kit Fox (USFWS 2011b). The following measures shall be implemented for construction areas at San Luis Reservoir:

- Preconstruction surveys shall be conducted within 200 feet of work areas to identify potential San Joaquin kit fox dens or other refugia in and surrounding workstations. A qualified biologist shall conduct the survey for potential kit fox dens 14 to 30 days before construction begins. All identified potential dens shall be monitored for evidence of kit fox use by placing an inert tracking medium at den entrances and monitoring for at least 3 consecutive nights. If no activity is detected at these den sites, they shall be closed following guidance established in the USFWS Standardized Recommendations report (USFWS 2011b).
- If kit fox occupancy is determined at a given site during the preconstruction surveys or during the construction period, the construction manager should be immediately informed that work should be halted within 200 feet of the den and the USFWS contacted. Depending on the den type, reasonable and prudent measures to avoid effects to kit foxes could include seasonal limitations on Modified Project construction at the site (i.e., restricting the construction period to avoid spring–summer pupping season), and/or establishing a construction exclusion zone around the identified site, or resurveying the den 1 week later to determine species presence or absence.

- Off-road vehicle and equipment movement shall be limited to the Modified Project footprint.
- To compensate for permanent impacts to grassland, which provides habitat for San Joaquin kit fox, lands shall be acquired and covered by conservation easements or mitigation credits shall be purchased at a 2:1 mitigation ratio, or other compensation ratios approved by USFWS and CDFW.

**SEIR-BIO-5 (Replaces TERR-16 in the 2019 EIS/EIR): Mitigation Measures for Special-Status Communities, including Native Grassland, and Jurisdictional Wetlands or Waters and Streambeds and Banks Regulated by CDFW, RWQCB, and USACE.**

**SEIR-BIO-5a.** Final project design shall avoid and minimize the fill of wetlands and other waters to the greatest practicable extent. The following actions shall be performed to protect jurisdictional wetlands:

- The distribution of federal and state jurisdictional wetlands and waters; streambeds and banks regulated by the California Department of Fish and Wildlife (CDFW); and sensitive habitat regulated by CDFW, shall be defined and avoided to the greatest possible extent.
- Prior to construction, a qualified biologist shall delineate the extent of jurisdictional areas to be avoided in the field. The Bureau of Reclamation (Reclamation) shall designate areas to be avoided as “Restricted Areas” and protect them using highly visible fencing, rope, or flagging, as appropriate based on site conditions. No construction activities or disturbance shall occur within restricted areas that are designated to protect wetlands.
- The removal of riparian and wetland vegetation shall be minimized. The disturbance of riparian and aquatic habitat north of the access road to the dam shall be avoided.
- The removal or damage to purple needlegrass grassland, gum plant patches and tarweed fields communities within annual grassland, and *Baccharis pilularis*/(*Nassella pulchra*–*Elymus glaucus*–*Bromus carinatus*), and narrowleaf goldenbush communities within scrub/chaparral shall be minimized. Impacts to these communities in the staging area shall be avoided.

**SEIR-BIO-5b.** Where jurisdictional wetlands and other waters cannot be avoided, to offset temporary and permanent impacts that would occur as a result of the Modified Project, restoration and compensatory mitigation shall be provided as described below. A wetland mitigation and monitoring plan shall be developed in coordination with CDFW, the U.S. Army Corps of Engineers (USACE), and/or the Regional Water Quality Control Board (RWQCB) that details mitigation and monitoring obligations for temporary and permanent impacts to wetlands and other waters as a result of construction activities; and other CDFW-jurisdictional areas. The plan shall quantify the total acreage affected; provide for mitigation as described below to wetland or riparian habitat; annual success criteria; mitigation sites; monitoring and reporting requirements; and site-specific plans to compensate for wetland losses resulting from the Modified Project.

Prior to construction, the aquatic structure of wetland and riparian areas to be disturbed shall be photo-documented, and measurements of width, length, and depth shall be recorded. Reclamation shall recontour and revegetate disturbed portions of jurisdictional areas in areas temporarily affected by construction prior to demobilization by the contractor at the end of Modified Project construction. Creek banks shall be recontoured to a more stable condition if necessary.

Revegetation shall include a palette of species native to the watershed area according to a revegetation plan to be developed by Reclamation and submitted to USACE, CDFW, and RWQCB for approval.

Following removal, woody trees habitat acreage shall be replanted at a minimum 1:1 ratio, or as determined and agreed upon by the permitting agencies. Interim vegetation or other measures shall be implemented as necessary to control erosion in disturbed areas prior to final revegetation.

Wetland and other waters impacts in the construction area shall be compensated at a ratio of 2:1 or at a ratio agreed upon by the wetland permitting agencies. Compensatory mitigation shall be conducted by creating or restoring wetland and aquatic habitat at an agency-approved location on nearby lands or through purchasing mitigation credits at a USACE- and/or CDFW-approved mitigation bank (depending on the resource). If mitigation is conducted on or off-site, a 5-year wetland mitigation and monitoring program for on-site and off-site mitigation shall be developed. Appropriate performance standards may include, but are not limited to a 75% survival rate of restoration plantings; absence of invasive plant species; and a viable, self-sustaining creek or wetland system at the end of 5 years.

A weed control plan to limit the Modified Project's potential to spread noxious or invasive weeds shall be developed. This plan would be consistent with current integrated pest management plans that are already in practice on lands surrounding San Luis Reservoir. Noxious or invasive weeds include those rated as "high" in invasiveness by the California Invasive Plant Council. The plan shall include a baseline survey to identify the location and extent of invasive weeds in the Modified Project area prior to ground-disturbing activity, a plan to destroy existing invasive weeds in the construction area prior to initiation of ground-disturbing activity, weed-containment measures while the Modified Project is in progress, and monitoring and control of weeds following completion of construction.

**SEIR-BIO-6 (New mitigation measure): Avoidance of Bridge-Nesting Birds.** Prior to the construction and removal of the temporary haul road under State Route (SR) 152, surface modification treatment (Polytetrafluoroethylene [PTFE] sheeting) shall be applied to the SR-152 bridge to prevent nesting by species such as cliff swallow, black phoebe, and white-throated swift (if weep holes are present). PTFE sheeting shall be installed vertically at the junctures of vertical and overhead surfaces on the sides and underneath the first 75 feet of the SR-152 bridge extending from the southern abutment of the bridge to the north along the bridge. The treatment shall be applied before the nesting season (February 1). In combination with PTFE sheets, broadcast call units playing distress calls from adult cliff swallows may be used to further deter nesting. If used, distress calls should be played for 26 seconds in duration continuously via broadcast call units installed within the nest exclusion area as described in "Methods for Excluding Cliff Swallows from Nesting on Highway Structures" (UC Davis 2009). During the nesting season, the exclusion treatment shall be supplemented with bi-weekly inspections by a qualified biologist to evaluate treatment integrity, inspect the area for active nests, and subsequently remove any partial nests, as feasible. The 75-foot treatment area has been established as a standard disturbance buffer for cliff swallow, black phoebe, and white-throated swift for work activities that involve heavy machinery and personnel (PG&E 2016).

**SEIR-BIO-7 (New mitigation measure): Elk Avoidance and Minimization.** In order to minimize conflicts between construction activities and tule elk within the Modified Project area, a Tule elk site management plan shall be developed to direct control measures. At a minimum, the plan shall specify that Tule elk shall be directed (herded) from the work area(s) such that they are not confined (trapped) between construction activities and landscape features such as fences, buildings, water bodies, and in particular State Route 152. When herding elk, they should always be provided an escape

route to the general south. The California Department of Fish and Wildlife (CDFW) indicates that Tule elk are readily herded by people or vehicles and quickly associate the need to move with specific people or vehicles; the plan should specify that particular vehicles (choose red trucks, for example) or personnel shall be tasked with herding activities. Once elk have been herded away from the construction zone, they will generally stay a comfortable distance from activities. If Tule elk do re-enter the construction zone, then additional herding efforts shall be required. Additionally, during the March and April periods, lone females shall be provided additional monitoring because they may be birthing, though they quickly rejoin the herd within a few days after birthing. Once developed, the plan shall be reviewed by CDFW elk biologists.

### 3.9.6 Level of Significance After Mitigation

The Modified Project would result in a potentially significant impact with respect to having a substantial adverse effect to species identified as an endangered, threatened, candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW, NMFS, or USFWS. Mitigation Measures TERR-1, TERR-6, TERR-7, TERR-10, TERR-11, TERR-13, TERR-15, SEIR-BIO-1, SEIR-BIO-2, SEIR-BIO-3, SEIR-BIO-4, and SEIR-BIO-6, which require avoidance or minimization of direct impacts to special-status species during construction and compensatory mitigation for impacts on grassland habitat, would reduce impacts to a level below significance.

The Modified Project would result in a potentially significant impact with respect to substantial adverse effect on any riparian habitat or other sensitive (or special-status) natural community identified in local or regional plans, policies, regulations, or by the CDFW, NMFS, or USFWS. Mitigation Measures SEIR-BIO-5a, SEIR-BIO-5b, and HAZ-1, which require avoidance and minimization measures for jurisdictional aquatic resources and sensitive riparian and vegetation communities, define compensatory mitigation requirements to offset impacts to jurisdictional aquatic resources, and require preparation of a Spill Prevention and Response Plan, respectively, would reduce impacts to a level below significance.

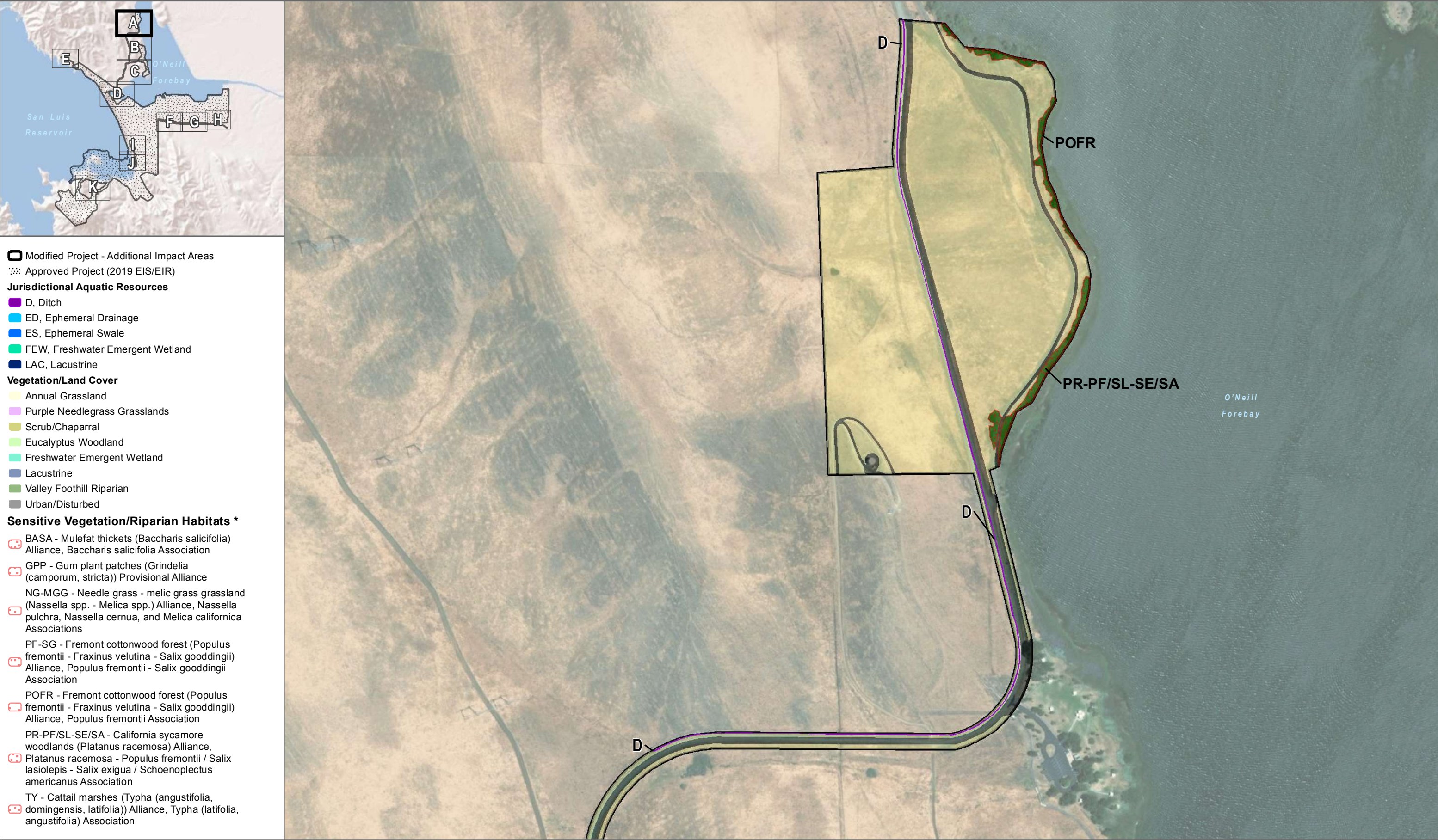
The Modified Project would result in a potentially significant impact with respect to having a substantial adverse effect on federally protected wetlands. Mitigation Measures SEIR-BIO-5a, SEIR-BIO-5b, and HAZ-1, which require avoidance and minimization measures for impacts to jurisdictional aquatic resources, define compensatory mitigation requirements to offset impacts to jurisdictional aquatic resources, and require preparation of a Spill Prevention and Response Plan, respectively, would reduce impacts to a level below significance.

The Modified Project would result in a potentially significant impact with respect to interfering substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors. Mitigation Measure SEIR-BIO-7, which requires the development of a Tule elk site management plan, would reduce impacts to a level below significance.

The Modified Project would result in no impact with respect to conflicting with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. No mitigation is required.

The Modified Project would result in no impact with respect to conflict with the provisions of an adopted Habitat Conservation Plan, Natural Communities Conservation Plan, or other approved local, regional, or state conservation plan. No mitigation is required.





SOURCE: Basemap: ESRI 2020; Project Boundary: Reclamation, 9/2/20

\* Sensitive vegetation communities and riparian habitats are based on vegetation mapping conducted in 2020 in accordance with CDFW (2020)

**FIGURE 3.9-1A**  
Vegetation Communities, Land Cover Types, and Jurisdictional Waters  
B.F. Sisk Dam Safety of Dams Modification Project SEIR



INTENTIONALLY LEFT BLANK

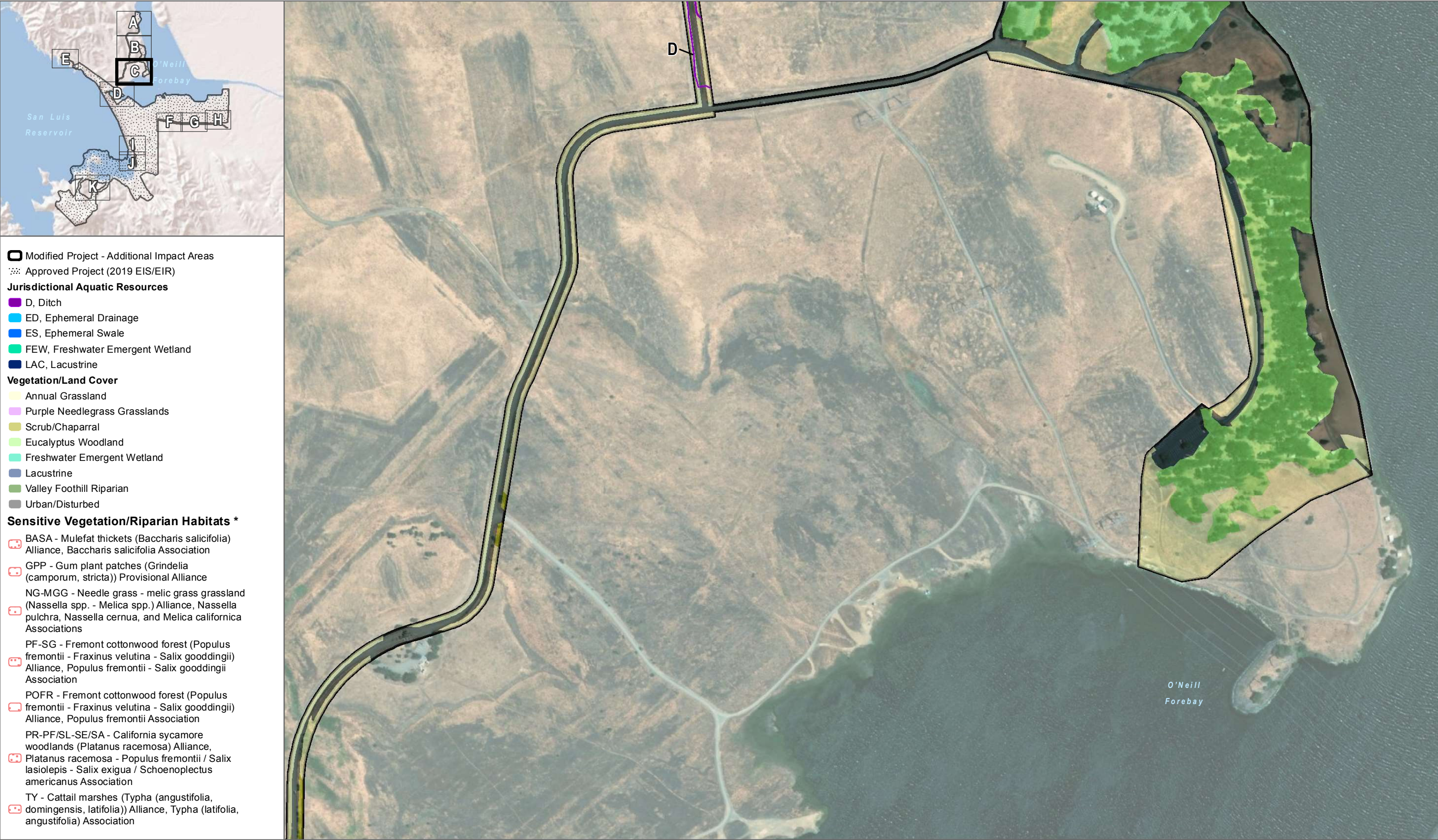






INTENTIONALLY LEFT BLANK





SOURCE: Basemap: ESRI 2020; Project Boundary: Reclamation, 9/2/20

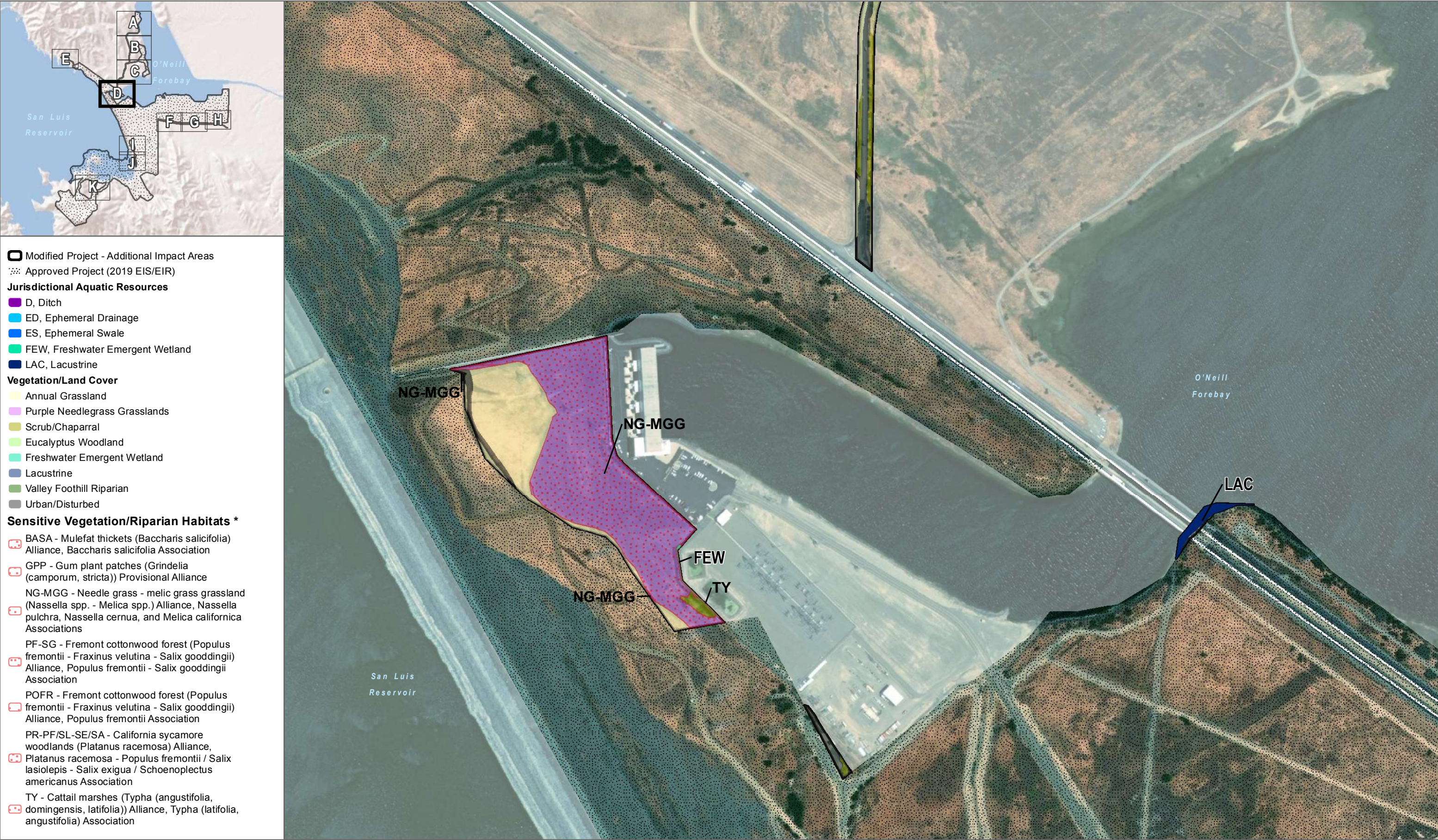
\* Sensitive vegetation communities and riparian habitats are based on vegetation mapping conducted in 2020 in accordance with CDFW (2020)

**FIGURE 3.9-1C**  
**Vegetation Communities, Land Cover Types, and Jurisdictional Waters**  
B.F. Sisk Dam Safety of Dams Modification Project SEIR



INTENTIONALLY LEFT BLANK





SOURCE: Basemap: ESRI 2020; Project Boundary: Reclamation, 9/2/20

\* Sensitive vegetation communities and riparian habitats are based on vegetation mapping conducted in 2020 in accordance with CDFW (2020)

**FIGURE 3.9-1D**  
Vegetation Communities, Land Cover Types, and Jurisdictional Waters  
B.F. Sisk Dam Safety of Dams Modification Project SEIR



INTENTIONALLY LEFT BLANK





SOURCE: Basemap: ESRI 2020; Project Boundary: Reclamation, 9/2/20

\* Sensitive vegetation communities and riparian habitats are based on vegetation mapping conducted in 2020 in accordance with CDFW (2020)

**FIGURE 3.9-1E**  
**Vegetation Communities, Land Cover Types, and Jurisdictional Waters**  
B.F. Sisk Dam Safety of Dams Modification Project SEIR



INTENTIONALLY LEFT BLANK





SOURCE: Basemap: ESRI 2020; Project Boundary: Reclamation, 9/2/20

\* Sensitive vegetation communities and riparian habitats are based on vegetation mapping conducted in 2020 in accordance with CDFW (2020)

**FIGURE 3.9-1F**  
Vegetation Communities, Land Cover Types, and Jurisdictional Waters  
B.F. Sisk Dam Safety of Dams Modification Project SEIR



INTENTIONALLY LEFT BLANK





SOURCE: Basemap: ESRI 2020; Project Boundary: Reclamation, 9/2/20

\* Sensitive vegetation communities and riparian habitats are based on vegetation mapping conducted in 2020 in accordance with CDFW (2020)

**FIGURE 3.9-1G**  
Vegetation Communities, Land Cover Types, and Jurisdictional Waters  
B.F. Sisk Dam Safety of Dams Modification Project SEIR



INTENTIONALLY LEFT BLANK





SOURCE: Basemap: ESRI 2020; Project Boundary: Reclamation, 9/2/20

\* Sensitive vegetation communities and riparian habitats are based on vegetation mapping conducted in 2020 in accordance with CDFW (2020)

**FIGURE 3.9-1H**  
**Vegetation Communities, Land Cover Types, and Jurisdictional Waters**  
B.F. Sisk Dam Safety of Dams Modification Project SEIR



INTENTIONALLY LEFT BLANK





SOURCE: Basemap: ESRI 2020; Project Boundary: Reclamation, 9/2/20

\* Sensitive vegetation communities and riparian habitats are based on vegetation mapping conducted in 2020 in accordance with CDFW (2020)

**FIGURE 3.9-11**

**Vegetation Communities, Land Cover Types, and Jurisdictional Waters**

B.F. Sisk Dam Safety of Dams Modification Project SEIR



INTENTIONALLY LEFT BLANK





SOURCE: Basemap: ESRI 2020; Project Boundary: Reclamation, 9/2/20

\* Sensitive vegetation communities and riparian habitats are based on vegetation mapping conducted in 2020 in accordance with CDFW (2020)

**FIGURE 3.9-1J**  
**Vegetation Communities, Land Cover Types, and Jurisdictional Waters**  
B.F. Sisk Dam Safety of Dams Modification Project SEIR



INTENTIONALLY LEFT BLANK





SOURCE: Basemap: ESRI 2020; Project Boundary: Reclamation, 9/2/20

\* Sensitive vegetation communities and riparian habitats are based on vegetation mapping conducted in 2020 in accordance with CDFW (2020)

**FIGURE 3.9-1K**  
**Vegetation Communities, Land Cover Types, and Jurisdictional Waters**  
 B.F. Sisk Dam Safety of Dams Modification Project SEIR



INTENTIONALLY LEFT BLANK





SOURCE: Basemap: ESRI 2020; Project Boundary: Reclamation, 9/2/20, ESA 2018

**FIGURE 3.9-2A**  
**Special-status Species Observations**  
B.F. Sisk Dam Safety of Dams Modification Project SEIR



INTENTIONALLY LEFT BLANK



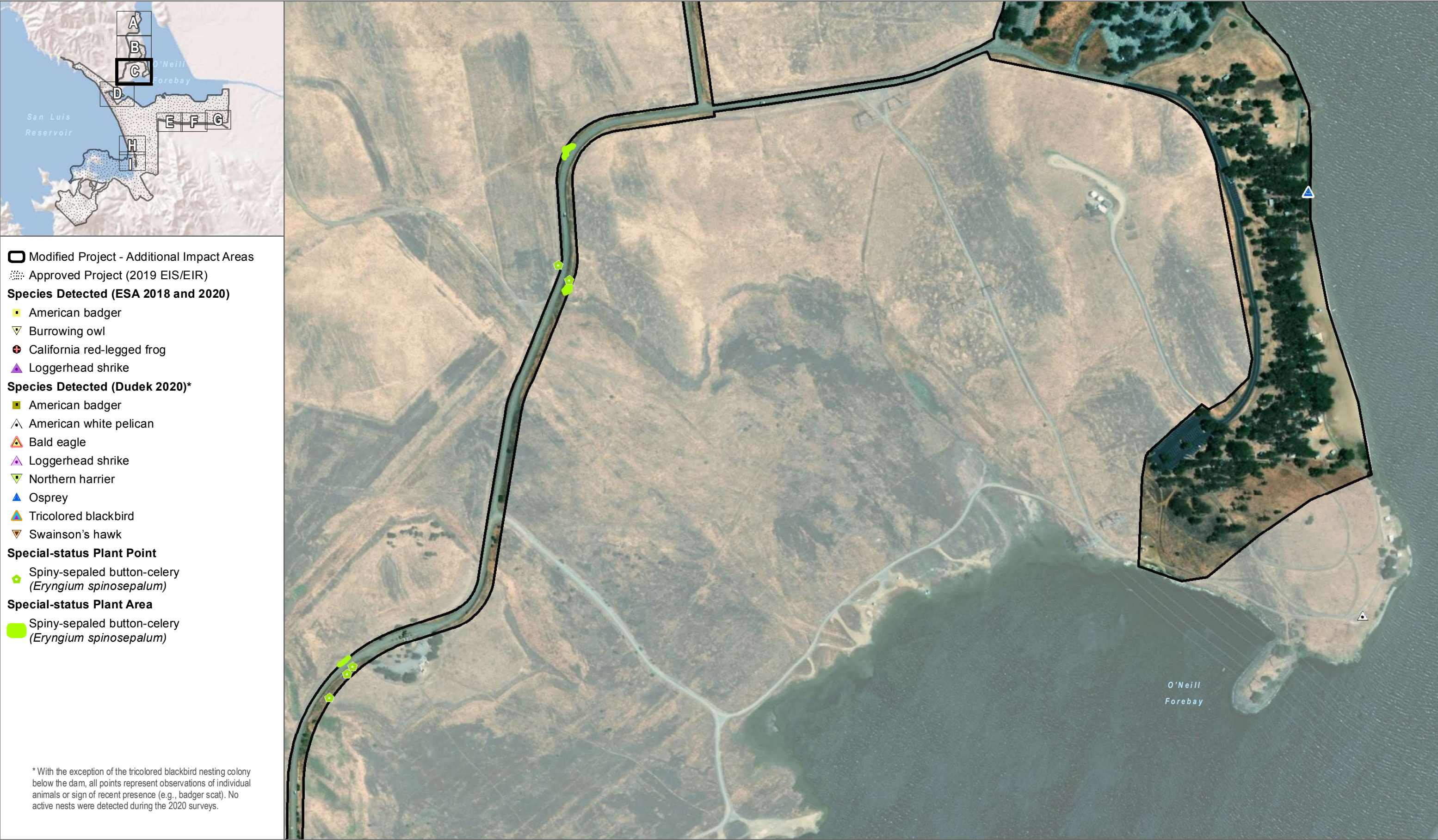


SOURCE: Basemap: ESRI 2020; Project Boundary: Reclamation, 9/2/20, ESA 2018



INTENTIONALLY LEFT BLANK





SOURCE: Basemap: ESRI 2020; Project Boundary: Reclamation, 9/2/20, ESA 2018

**FIGURE 3.9-2C**  
**Special-status Species Observations**  
B.F. Sisk Dam Safety of Dams Modification Project SEIR



INTENTIONALLY LEFT BLANK





SOURCE: Basemap: ESRI 2020; Project Boundary: Reclamation, 9/2/20, ESA 2018



INTENTIONALLY LEFT BLANK





SOURCE: Basemap: ESRI 2020; Project Boundary: Reclamation, 9/2/20, ESA 2018



INTENTIONALLY LEFT BLANK





SOURCE: Basemap: ESRI 2020; Project Boundary: Reclamation, 9/2/20, ESA 2018



INTENTIONALLY LEFT BLANK





SOURCE: Basemap: ESRI 2020; Project Boundary: Reclamation, 9/2/20, ESA 2018



INTENTIONALLY LEFT BLANK





SOURCE: Basemap: ESRI 2020; Project Boundary: Reclamation, 9/2/20, ESA 2018



INTENTIONALLY LEFT BLANK



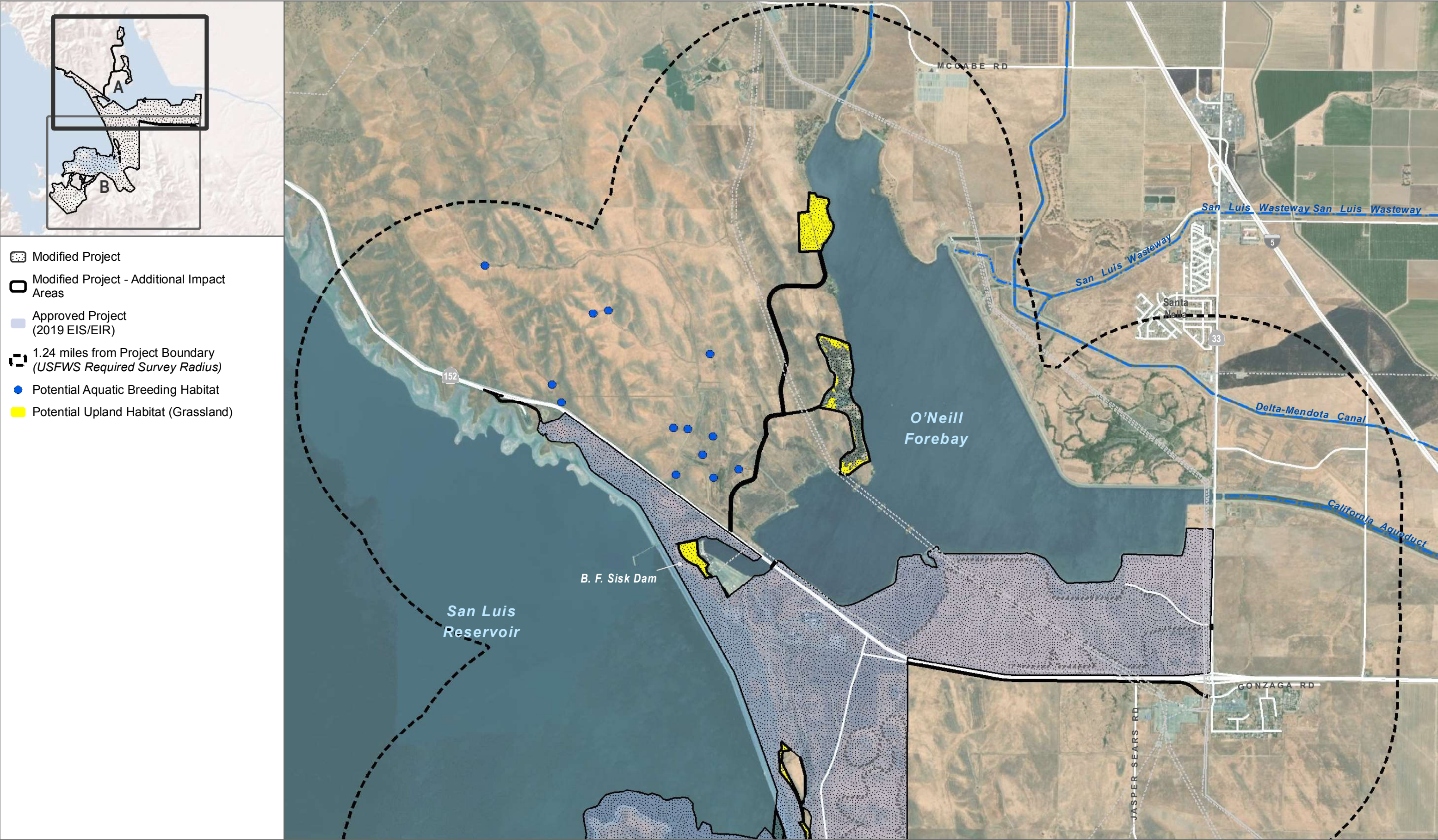


SOURCE: Basemap: ESRI 2020; Project Boundary: Reclamation, 9/2/20, ESA 2018



INTENTIONALLY LEFT BLANK





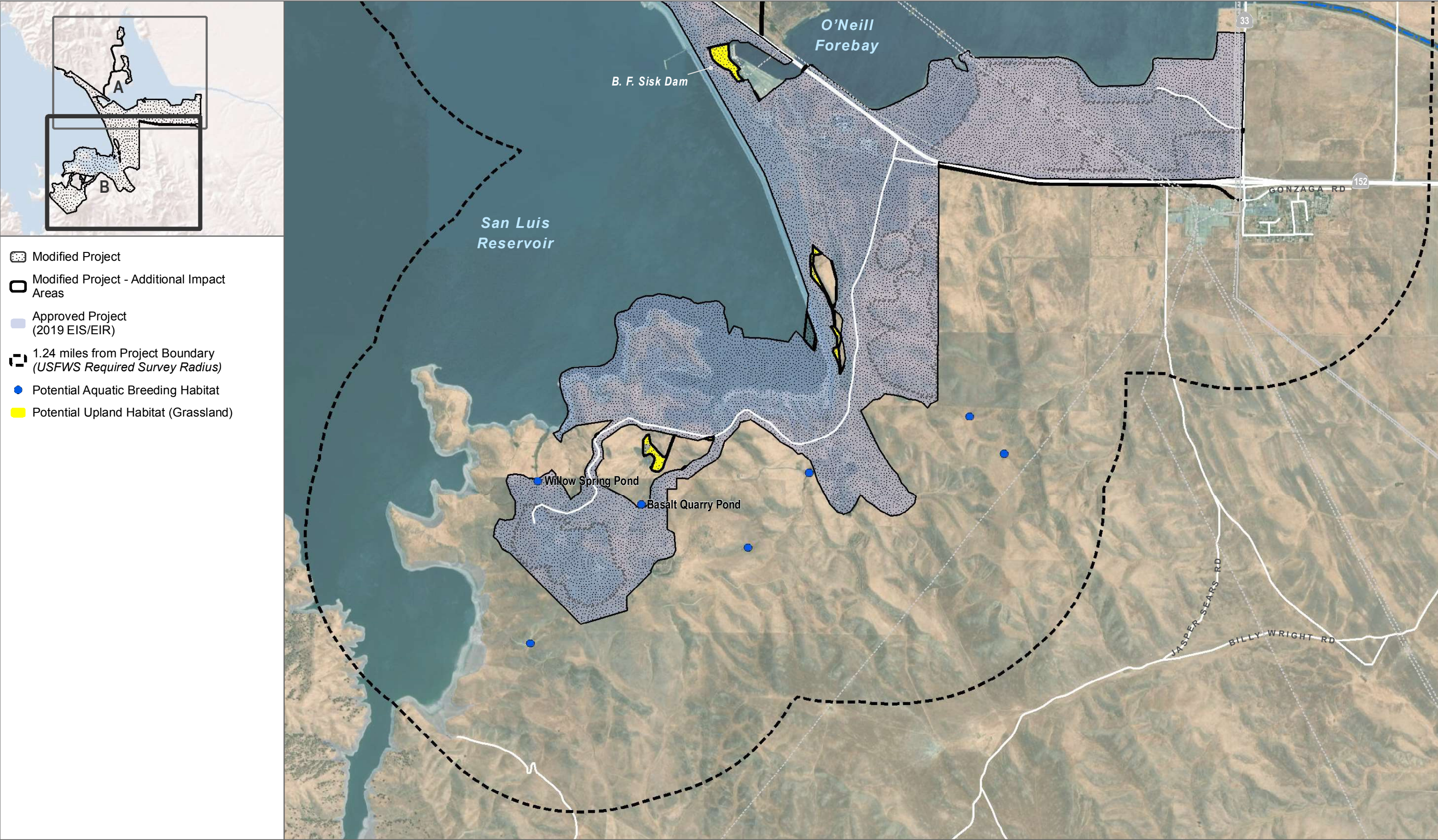
SOURCE: Imagery: ESRI World Imagery 2020; Project Boundary & Features: Reclamation, 9/2/2020  
Species, ESA 2018 & 2020

**FIGURE 3.9-3A**  
California Tiger Salamander Aquatic Habitat  
B.F. Sisk Dam Safety of Dams Modification Project SEIR



INTENTIONALLY LEFT BLANK





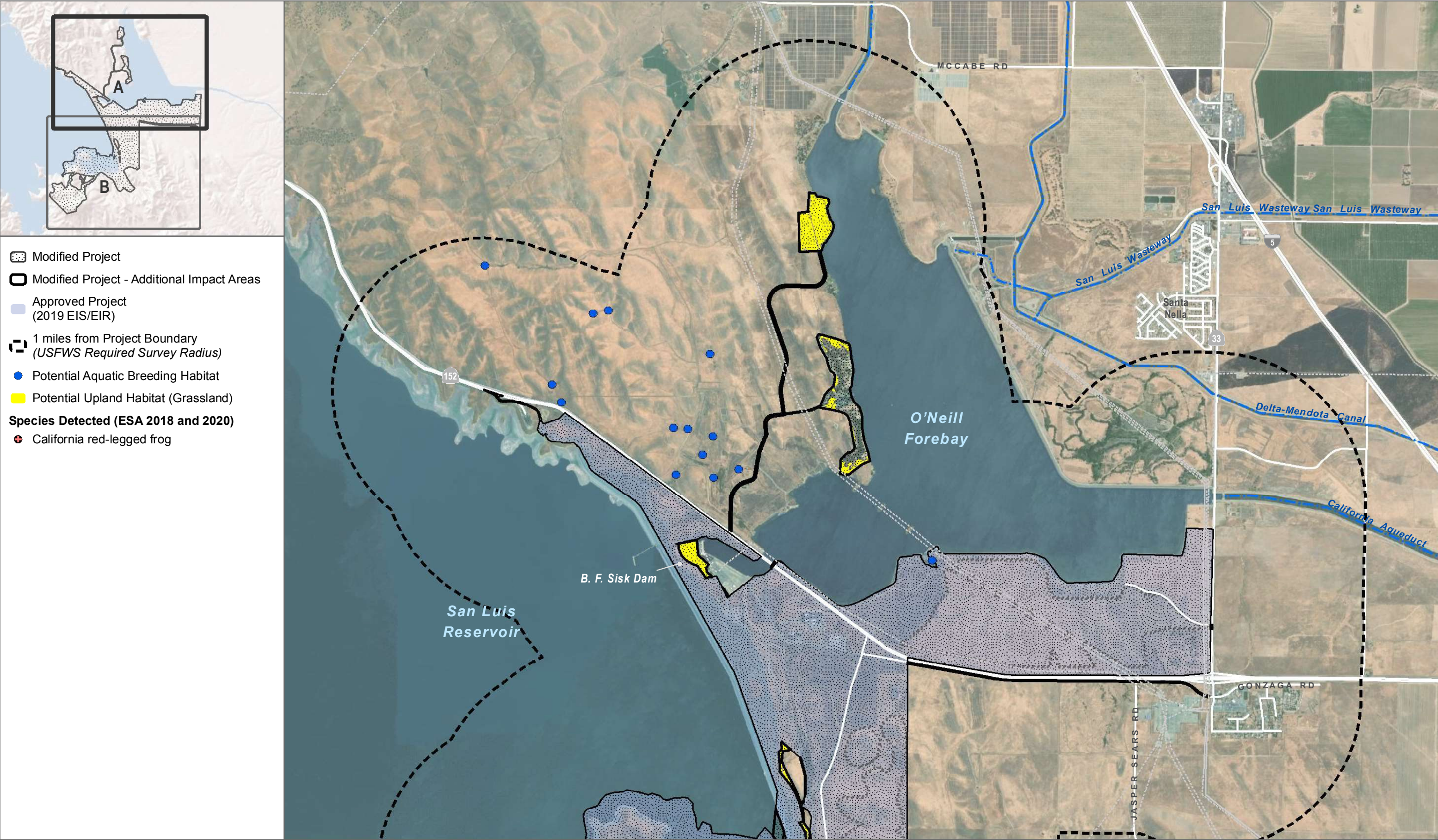
SOURCE: Imagery: ESRI World Imagery 2020; Project Boundary & Features: Reclamation, 9/2/2020  
Species, ESA 2018 & 2020

**FIGURE 3.9-3B**  
**California Tiger Salamander Aquatic Habitat**  
B.F. Sisk Dam Safety of Dams Modification Project SEIR



INTENTIONALLY LEFT BLANK





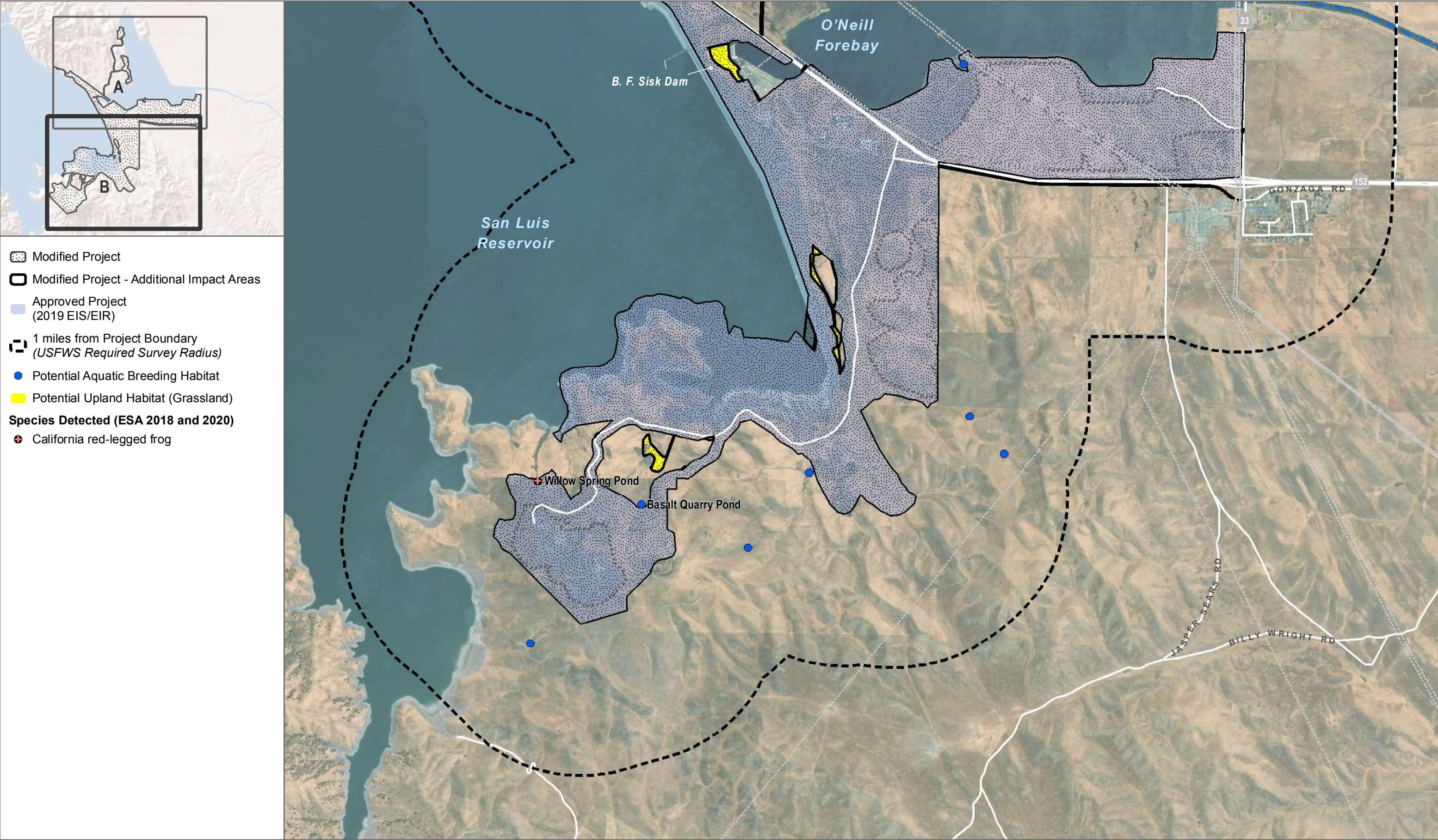
SOURCE: Imagery: ESRI World Imagery 2020; Project Boundary & Features: Reclamation, 9/2/2020  
Species, ESA 2018 & 2020

**FIGURE 3.9-4A**  
California Red-legged Frog Aquatic Habitat  
B.F. Sisk Dam Safety of Dams Modification Project SEIR



INTENTIONALLY LEFT BLANK





SOURCE: Imagery: ESRI World Imagery 2020; Project Boundary & Features: Reclamation, 9/2/2020  
Species, ESA 2018 & 2020

**FIGURE 3.9-4B**  
California Red-legged Frog Aquatic Habitat  
B.F. Sisk Dam Safety of Dams Modification Project SEIR



INTENTIONALLY LEFT BLANK

## 3.10 Land Use

This supplemental environmental impact report (SEIR) addresses proposed modifications to the B.F. Sisk Dam Safety of Dams Modification Project, which was previously evaluated in the B.F. Sisk Dam Safety of Dams Modification Project Environmental Impact Statement/Environmental Impact Report (2019 EIS/EIR). The project addressed in the 2019 EIS/EIR is referred to herein as the Approved Project; the Approved Project with proposed modifications identified since certification of the 2019 EIS/EIR is referred to herein as the Modified Project.

This section describes the existing land use and planning conditions of the Modified Project site and vicinity, identifies associated regulatory requirements, evaluates potential impacts, and identifies any applicable mitigation measures related to implementation of the Modified Project.

### 3.10.1 Existing Conditions

The area of analysis for land use includes areas where construction and operations of the proposed changes to the Approved Project of the 2019 EIS/EIR would take place and could result in effects related to resulting changes in existing land use or inconsistency with adopted plans, policies, and regulations guiding land use in the Modified Project area. These areas include land directly surrounding San Luis Reservoir, including the San Luis Reservoir State Recreation Area (SRA) and O'Neill Forebay, as well as the additional San Luis Creek Day Use Area and proposed campground area along O'Neill Forebay. The unincorporated area surrounding the SRA is mostly undeveloped and primarily owned by the Bureau of Reclamation (Reclamation). However, some of the surrounding land is owned or managed by other agencies. These areas include Pacheco State Park (owned and managed by the California Department of Parks and Recreation [CDPR]) and Upper and Lower Cottonwood Wildlife Areas (owned and managed by the California Department of Fish and Wildlife [CDFW]). As shown in Figure 3.10-1, Land Management and Ownership Status, Reclamation-owned lands within and surrounding the San Luis Reservoir SRA are managed by CDFW, the California Department of Water Resources (DWR), and CDPR (Reclamation and CDPR 2013).

#### 3.10.1.1 Merced County

Although the local land use designations per Merced County (County) do not apply to state or federally owned lands (i.e., the Modified Project site), this information is provided for context and setting, and applies to lands within Merced County adjacent to the Modified Project site. Land in Merced County is divided into zones to regulate land use, allow for planned development, and to implement the Merced Vision 2030 General Plan (Merced County General Plan). These zones include agricultural, residential, commercial, mixed-use, industrial, special planning, and planned development zones. Most of land within the county is zoned as General Agriculture or Exclusive Agriculture. The Exclusive Agriculture zone corresponds to the Merced County General Plan land use designations of Agriculture (0–0.025 dwelling units per acre [du/ac]), Agriculture Residential (0–0.33 du/ac), Urban Reserve, and Foothill Pasture (0–0.0125 du/ac). The General Agriculture (A-1) zone corresponds with the Merced County General Plan land use designations of Agriculture (0–0.05 du/ac), Agriculture Residential (0–0.33 du/ac), and Urban Reserve. The General Agriculture (A-1-40) zone is the same as General Agriculture except the allowable density for Agriculture is 0–0.025 du/ac. Most land in the county is designated in the Merced County General Plan as Agriculture or Foothill Pasture land and lies outside of existing cities, separated from Rural Centers, Urban Communities, and Highway Interchange Centers (Merced County 2013).



While Merced County land use controls do not apply to the federal lands of the San Luis Reservoir SRA and the Modified Project site, the SRA and Modified Project site are zoned Exclusive Agriculture by the County and designated in the Merced County General Plan as Foothill Pasture land, except for the northernmost area of O'Neill Forebay, which is zoned General Agriculture (A-1) and designated as Agriculture in the Merced County General Plan. Per the Merced County General Plan, County land surrounding the reservoir and the San Luis Reservoir SRA is primarily within the Foothill Pasture land use designation (see Figure 3.10-2, General Plan Land Use). Lands to the southeast of the reservoir include privately owned ranchlands, agricultural lands, public utility uses, and other scattered nonresidential uses (Reclamation and CDPR 2013). While Merced County General Plan land use designations are not enforceable within the San Luis Reservoir SRA and Modified Project site, the designations applied by the County to the SRA and surrounding areas reflect the County's intent for future development in the area and are generally considered in making land use decisions within the SRA in accordance with the San Luis Reservoir State Recreation Area Resource Management Plan/General Plan (San Luis Reservoir SRA RMP/GP) (Reclamation and CDPR 2013), which is discussed further in Section 3.10.1.2, below.

As portrayed by the County zoning and Merced County General Plan land use designations, the California Department of Conservation Farmland Mapping and Monitoring Program (FMMP) data also shows that most lands in the county are suitable for agricultural use. The FMMP rates land according to soil quality and irrigation status in order to produce maps and statistical data pertaining to California's agricultural resources. Table 3.10-1 summarizes the land use acreages in the county according to FMMP data.

**Table 3.10-1. Summary of Land Use Acreages in Merced County by Category**

| Agricultural Land | Urban and Built-Up Land | Other Land | Water Area |
|-------------------|-------------------------|------------|------------|
| 1,158,655         | 38,737                  | 51,568     | 16,674     |

Source: DOC 2015.

### 3.10.1.2 San Luis Reservoir State Recreation Area

CDPR, in partnership with Reclamation, has developed and adopted the San Luis Reservoir SRA RMP/GP, in order to direct the future development, operations, and maintenance of the SRA. The plan was officially adopted in 2013 with a planning horizon of 25 years. CDPR and Reclamation continue to collaborate on the San Luis Reservoir SRA RMP/GP to guide future growth and development within the SRA. Compared to the Merced County General Plan, the San Luis Reservoir SRA RMP/GP focuses solely on the San Luis Reservoir SRA. The plan area of the San Luis Reservoir SRA RMP/GP consists of 27,000 acres owned by Reclamation and includes the water surfaces of San Luis Reservoir, O'Neill Forebay, Los Banos Reservoir, and adjacent recreation lands in the vicinity of Los Banos.

The San Luis Reservoir SRA RMP/GP defines distinct geographic divisions, or management zones, based on physical, social, and management characteristics (Reclamation and CDPR 2013). Land uses in each of the management zones include the following:

- **Administration and Operations Zone.** This zone accommodates staff administrative, operations, and maintenance activities, as well as limited staff-supported public uses.
- **Frontcountry Zone.** This zone accommodates most visitor facilities and activities, as well as camping and concessions.
- **Backcountry Zone.** This zone accommodates resource management actions, less-intensive recreation, and limited facilities for camping and mixed-use trails.

Figure 3.10-3, Land Management Zones, shows the management zones around San Luis Reservoir and O'Neill Forebay.

### 3.10.1.3 Project Site

As described previously, the San Luis Reservoir SRA RMP/GP defines land management zones based on physical, social, and management characteristics. This includes the Administration and Operations zone, the Frontcountry zone, and the Backcountry zone. The Modified Project includes components in all three of these land management zones. Figure 3.10-3 shows the land management zones around the reservoir and within the Modified Project boundary, including Modified Project components added subsequent to the 2019 EIS/EIR.

Table 3.10-2 summarizes the location and acreages of the land management zones within and near areas where construction and operation would occur, including both existing components from the Approved Project and new components included under the Modified Project.

**Table 3.10-2. Land Management Zones Around and Within the Modified Project Boundary**

| Management Zone/Reservoir Areas                      | Location  |
|--|---|
| <b>Approved Project Components</b>                   |   |
| <b>Administration/Operations Zone</b>                |   |
| San Luis Reservoir                                   | Northeast side of San Luis Dam  |
| <b>Frontcountry Zone</b>                             |   |
| Basalt Use Area                                      | Southeast side of San Luis Reservoir  |
| Medeiros Use Area                                    | South side of O'Neill Forebay   |
| Off-Highway Vehicle Use Area                         | South of SR-152 and Gonzaga Road, east of Headquarters office                         |
| <b>Backcountry Zone</b>                              |   |
| Medeiros Use Area                                    | South of Medeiros Frontcountry Zone and north of SR-152                               |
| Basalt Hill Borrow Area                              | South side of San Luis Reservoir  |
| Borrow Area 6  | South side of O'Neill Forebay, north of SR-152  |
| <b>Modified Project Components</b>                   |   |
| <b>Administration/Operations Zone</b>                |   |
| Additional Staging and Stockpiling Areas             | West of the Gianelli Pumping-Generating Plant; southeast corner of San Luis Reservoir |
| Additional Temporary Haul Road Area                  | Southeast corner of San Luis Reservoir  |
| Borrow Area 12                                       | Southeast of San Luis Reservoir, south of O'Neill Forebay                             |
| <b>Frontcountry Zone</b>                             |   |
| Additional Staging and Stockpiling Areas (partially) | Southeast side of San Luis Reservoir  |
| Borrow Area 14                                       | East of San Luis Reservoir, east of Basalt Road                                       |
| San Luis Day Creek Use Area Improvements             | West side of O'Neill Forebay  |
| Proposed Campground Areas                            | West side of O'Neill Forebay, north of San Luis Creek Day Use Area                    |
| <b>Backcountry Zone</b>                              |   |
| Additional Staging and Stockpiling Areas (partially) | Southeast side of San Luis Reservoir  |

**Source:** Reclamation and DWR 2019.

**Note:** SR = State Route.

## 3.10.2 Relevant Plans, Policies, and Ordinances

### 3.10.2.1 Federal

There are no federal plans, policies, or ordinances related to land use that are relevant to the Modified Project.

### 3.10.2.2 State

#### **San Luis Reservoir State Recreation Area Resource Management Plan/General Plan**

As described in the 2019 EIS/EIR, the San Luis Reservoir SRA RMP/GP was prepared for the San Luis Reservoir SRA and adjoining Reclamation land (Reclamation and CDPR 2013). These areas are managed by state agencies including CDPR, DWR, and CDFW, in association with Reclamation. Elements of the plan include limiting areas of future development and avoiding environmentally sensitive areas; goals for the protection, management, and restoration of vegetation and wildlife; and goals and guidelines related to recreation, public utilities, services, and power.

As noted in Section 3.10.1.2, San Luis Reservoir State Recreation Area, CDPR developed the San Luis Reservoir SRA RMP/GP in partnership with Reclamation, and adopted the 25-year plan in 2013. CDPR and Reclamation continue to collaborate on the San Luis Reservoir SRA RMP/GP, with CDPR managing most of the plan area in partnership with Reclamation. The CDPR planning process is integrated with Reclamation's resource management planning process.

The San Luis Reservoir SRA RMP/GP consists of 27,000 acres owned by Reclamation and includes the water surfaces of San Luis Reservoir, O'Neill Forebay, Los Banos Reservoir, and adjacent recreation lands in the vicinity of Los Banos. The plan area is part of the water storage and delivery system of reservoirs, aqueducts, power plants, and pumping stations operated under the California State Water Project and CVP. Lands managed by CDPR for recreation are part of the state park system and comprise the SRA. The San Luis Reservoir SRA RMP/GP's primary objective is to identify general areas in which future development may occur for recreation management. The plan includes an overview of existing conditions, including a summary of opportunities and constraints, a plan for future use and management of the plan area, and the associated environmental analysis pursuant to the National Environmental Policy Act and California Environmental Quality Act (Reclamation and CDPR 2013).

Land use goals and guidelines included in the San Luis Reservoir SRA RMP/GP that are applicable to the Modified Project include the following (Reclamation and CDPR 2013):

#### **Interagency Cooperation (REG-C)**

**Goal REG-C1:** Develop cooperative relationships with adjacent landowners, and local, state, and federal agencies (including Reclamation, CSP, DFW and DWR) to share resources and coordinate implementation of Plan Area management actions.

##### **Guidelines:**

- Continue to work with California Department of Forestry and Fire Protection (Cal Fire) for emergency, rescue, fire, or other incidents requiring mutual aid.
- Continue the regular forum of information exchange initiated in the planning process so that appropriate agencies are aware of issues and projects and how they affect Plan Area resources and facilities.

**Regional Plans (REG-P)**

**Goal REG-P1:** Provide information to local governments on regional planning initiatives and surrounding development to assist in making them consistent with the Plan Area purpose and vision.

**Guidelines:**

- As staff time allows, regularly review applications to Merced or Santa Clara County for development in the vicinity of the Plan Area and coordinate planning for common features such as access roads and related infrastructure.
- Review and comment where applicable on Merced or Santa Clara County General Plan updates and regional projects such as the high-speed rail and other future projects.

## 3.10.2.3 Local

**Merced County Zoning Code**

On October 22, 2019, the Merced County Board of Supervisors adopted a new zoning code (Title 18). The Merced County Zoning Code (Zoning Code) is intended to carry out the policies of the Merced County General Plan, to guide the future growth and development of the county, to protect the character of various areas within the county, to prevent danger to public safety, and to prevent overcrowding and congestion on the land (Merced County 2020). The Zoning Code applies to all uses of land, structures, subdivisions, and development in the unincorporated area in the county, regardless of ownership. The county is divided into zones to allow for the orderly, planned development of the county and to implement the Merced County General Plan. Per the Zoning Code, every parcel in unincorporated Merced County shall have a base zone that establishes the primary type and intensity of land use allowed, along with development regulations for that type and intensity of land use. These zones include agricultural, residential, commercial, mixed-use, industrial, special planning, and planned development zones. The Modified Project site is mostly within the Exclusive Agriculture zone, with half of the proposed campground area within the General Agriculture (A-1) zone. The Zoning Code permits public parks and recreational areas (i.e., campgrounds) in all agricultural zones of the county.

**Merced Vision 2030 General Plan**

As required by state law, Merced County has adopted a general plan to guide land use decisions within the county. The general plan provides goals, policies, standards, and implementation programs to guide the physical development of a county. At a minimum, the general plan must address the topics of land use, transportation, housing, conservation, open space, noise, and safety. The Merced Vision 2030 General Plan (Merced County General Plan), adopted in 2013, has established the year 2030 as the plan's time horizon. The Merced County General Plan includes central ideas that represent the County's philosophy about growth and development ("guiding principles") formulated through outreach efforts within the county. The five guiding principles of the County are as follows (Merced County 2013):

1. **Agriculture.** Agriculture is the backbone and essential part of Merced County's economy. It is a way of life that must be supported, and protected to assure the industry's continued vitality.
2. **Economic Development.** Merced County must seek methods to expand and diversify its local economy in order to create and sustain employment and business opportunities that enable existing and future residents to improve their quality of life.

3. **Environmental Quality.** The natural resources of Merced County, including air, water, energy, wildlife, and scenery, must be protected to assure a high quality of life for Merced County residents today and in the future.
4. **Public Facilities and Services.** New growth and development in Merced County must be responsible for, have access to, and fully fund all essential public facilities and services, including water, sewer, storm water drainage, roadways, schools, government centers, and recreation.
5. **Transportation.** The Merced County transportation system, including freeways, highways, streets, bike and pedestrian pathways, mass transit, airports, and rail, must be coordinated, networked, adequately constructed, and maintained to meet the needs of residents and businesses.

Additionally, the Merced County General Plan establishes land use designations with different development standards to guide growth in the county in a way that upholds the above guiding principles.

Specific land use policies included in the Merced County General Plan for these designations include the following (Merced County 2013):

- **Policy LU-2.1: Agricultural Designation:** Apply the Agricultural land use designation as the primary designation in the County to support productive agricultural lands and promote the agricultural industry.
- **Policy LU-2.2: Foothill Pasture Designation:** Apply the Foothill Pasture land use designation on agricultural and open space lands located on the eastern and western edges of the County which are recognized for their value as grazing, cropland, and open space.
- **Policy LU-2.3: Land Use Activity Limitations:** Limit allowed land use within Agricultural and Foothill Pasture areas to agricultural crop production, farm support operations, and grazing and open space uses.
- **Policy LU-2.4: Secondary Uses in Agricultural Areas:** Except as otherwise provided by law, limit ancillary uses in Agricultural and Foothill Pasture areas to include secondary single-family residences, farm worker housing, agricultural tourism related uses, and agricultural support services, provided that such uses do not interfere with historic agricultural practices, result in adverse health risks, or conflict with sensitive habitats or other biological resources.

### 3.10.3 Thresholds of Significance

The following significance criteria from the 2019 EIS/EIR are used for the purposes of analysis in this SEIR. These criteria, which have not changed from the 2019 EIS/EIR, are identified in Chapter 17, Land Use, of the 2019 EIS/EIR. A significant impact related to land use and planning would occur if the Modified Project would:

1. Physically divide an established community.
2. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Modified Project (including, but not limited to, the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environment effect.
3. Conflict with any applicable habitat conservation plan or natural community conservation plan.



### 3.10.4 Impacts Analysis

#### Threshold 1

*Would the Modified Project physically divide an established community?*

| 2019 EIS/EIR Impact Determination | Modified Project Impact Determination | New Significant Increase in Impact Severity? |
|-----------------------------------|---------------------------------------|--|
| Less than Significant             | Less than Significant                 | No   |

#### Campground Construction and Day Use Area Improvements

The Modified Project would construct a new permanent campground on the northwestern shoreline of O'Neill Forebay and make improvements to the existing San Luis Creek Day Use Area along the western shoreline of the forebay and within the existing SRA. The facilities would be managed by CDPR as part of the San Luis Reservoir SRA. Disturbance associated with the Modified Project would be limited to areas receiving the improvements, as subject to additional planning and design by DWR and CDPR. The total area of disturbance associated with these improvements would not exceed 5 acres.

There are no established communities present within the area of the proposed campground and facility improvements. The closest developed community, Santa Nella, is approximately 1.5 miles east of O'Neill Forebay. Campground construction activities would not physically divide the community of Santa Nella, or any other towns in the county. Thus, campground construction and improvement activities would have **no impact** related to physical division of an established community.

#### Changes in Borrow Area Location

The Modified Project has identified two additional borrows, Borrow Area 12 and Borrow Area 14, for potential material extraction for dam construction. Borrow Area 12 and Borrow Area 14 are within the overall construction footprint identified by the 2019 EIS/EIR, but were identified in that document and analyzed as anticipated contractor staging areas. Material would be extracted from these borrow areas and used to reinforce the existing B.F. Sisk Dam. Once sufficient material has been extracted, the borrow areas would be graded and restored back to natural landform.

There are no communities present in the vicinity of Borrow Area 12 or Borrow Area 14. The closest developed community, Santa Nella, is approximately 1.5 miles east of O'Neill Forebay and 3.2 miles northeast of the new borrow area locations. Changes in borrow area locations and associated changes in haul routes included in the Modified Project would not physically divide the community of Santa Nella or result in a physical division of any other established communities. Thus, the changes in borrow area location would have **no impact** related to physical division of an established community.

#### Minor Additions to Contractor Work Area

The Modified Project includes minor temporary and permanent expansions of contractor work areas downstream of the dam that were not part of the original study area addressed in the 2019 EIS/EIR. The additional contractor work areas include areas at the foot of the dam covered by new stability berms, newly identified borrow and staging areas, areas where the roadway would be widened, the proposed new campground, and improvements to the San Luis Creek Day Use Area.

There are no communities present at or near the contractor work areas; the closest developed community is Santa Nella approximately 1.5 miles east of O'Neill Forebay and over 2 miles northeast of the additional contractor work areas. Minor additions to the contractor work area would not physically divide the community of Santa Nella or any other established communities in the vicinity of the Modified Project. Thus, the minor additions to contractor work areas would have **no impact** related to physical division of an established community.

#### **Additional Construction Assumptions**

Additional construction assumptions include changes to the construction schedule, the inclusion of the campground development and improvement, and dewatering specifications for proposed excavations at the base of the dam. These construction assumptions would not involve any changes to land use and thus would not physically divide the community of Santa Nella or any other towns in the county. Thus, there would be **no impact** related to physical division of an established community.

#### **Cumulative Impacts**

The area of analysis for cumulative land use impacts includes San Luis Reservoir, including the SRA, O'Neill Forebay, and Merced County as a whole. As shown, the Modified Project would generate no short-term or long-term impacts related to division of an established community in the area of analysis. The new components proposed under the Modified Project would take place on land owned and/or managed by Reclamation, CDFW, DWR, and CDPR. Development within the Modified Project boundary would not result in any effects to established communities, such as Santa Nella located approximately 1.5 miles east of O'Neill Forebay, more than 2.0 miles east across O'Neill Forebay of the proposed campground site and the San Luis Creek Day Use Area, and approximately 3.2 miles northeast of the new borrow area locations. Cumulative projects, such as the B.F. Sisk Dam Raise and Reservoir Expansion Project (reservoir expansion project) put forth by the San Luis & Delta–Mendota Water Authority and those mentioned in the 2019 EIS/EIR, would not combine with the Modified Project to create a cumulatively significant impact. Additionally, any future growth and development in the area of analysis would undergo environmental review with mitigation for significant land use impacts related to division of established communities, as required. The Modified Project would result in **no considerable contribution to cumulative impacts** related to division of an established community.

#### **Comparison to 2019 EIS/EIR**

The additional project components analyzed above would result in no impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant.

## Threshold 2

*Would the Modified Project conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Modified Project (including, but not limited to, the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environment effect?*

| 2019 EIS/EIR Impact Determination | Modified Project Impact Determination | New Significant Increase in Impact Severity? |
|-----------------------------------|---------------------------------------|--|
| Less than Significant             | Less than Significant                 | No   |

### Campground Construction and Day Use Area Improvements

Lands at the reservoir are owned by a combination of Reclamation and CDFW and are managed by a combination of CDPR, DWR, and CDFW. In compliance with the San Luis Reservoir SRA RMP/GP, the Modified Project would continue the cooperative relationships between local, state, and federal agencies (including Reclamation, CDPR, DWR, and CDFW) to share resources and coordinate implementation of management actions, per Goal REG-C1 in the San Luis Reservoir SRA RMP/GP. Additionally, Goal REG-P1 of the San Luis Reservoir SRA RMP/GP sets a goal for Reclamation and CDPR to provide information to local governments on regional planning initiatives and surrounding development to assist in making them consistent with the San Luis Reservoir SRA RMP/GP purpose and vision. Overlapping planning efforts can cause oversight of important issues relevant to the plan area planning. The Modified Project would not overlap with any planning efforts that would conflict with the purpose and vision of the San Luis Reservoir SRA RMP/GP. This includes the reservoir expansion project put forth by the San Luis & Delta–Mendota Water Authority directly atop a portion of the Modified Project site (refer to the cumulative analysis provided in this section and throughout this SEIR). Reclamation, CDFW, CDPR, and DWR would continue their cooperative relationships and would ensure that projects overlapping with the Modified Project would be consistent with each other and with the goals of the San Luis Reservoir SRA RMP/GP.

The Modified Project would not require any property acquisitions of land outside of the San Luis Reservoir SRA, including adjacent lands under the jurisdiction of the County, and would require no change in land use designations in adjacent areas under County jurisdiction. The campground construction and improvements to the San Luis Creek Day Use Area would not affect existing adjacent land uses under the jurisdiction of the County or preclude the County's ability to implement its General Plan. The campground would not be adjacent to existing agricultural uses on adjacent lands under County jurisdiction and would not interfere with such uses. The campground would not result in adverse health or safety risks and would result in no conflict with sensitive habitats or other biological resources. Therefore, the Modified Project would not conflict with the Merced County General Plan or relevant policies discussed above.

As described above, campground construction and improvement activities would be temporary and would be carried out consistent with the policies set forth in the San Luis Reservoir SRA RMP/GP. Buildings and offices within the San Luis Reservoir SRA RMP/GP Administration and Operations zone would remain intact and operational during and after the proposed construction period. Furthermore, the Modified Project would not interfere with any agriculture practices consistent with Merced County General Plan Policies LU-2.1 and LU-2.4. Additionally, potential impacts resulting from the Modified Project are analyzed throughout Chapter 3, Environmental Analysis, of this SEIR; where potentially significant impacts would occur, mitigation to the extent feasible is incorporated into the Modified Project consistent with applicable plans, policies, or regulations. Therefore, campground construction and improvement activities would not result in impacts related to conflicts with an applicable land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environment effect.

Operation of the Modified Project would generally be consistent with the current operations of the water supply infrastructure at San Luis Reservoir. New components proposed under the Modified Project, such as the proposed campground and other improvements, would not result in any substantial impact to current land use plans. Thus, there would be no substantial change from the existing conditions or any new or more severe impact than identified in the 2019 EIS/EIR. Therefore, operation of the Modified Project would not result in impacts resulting from conflicts with an applicable land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environment effect. Operation of the Modified Project would have a **less-than-significant impact** on land use.

#### **Changes in Borrow Area Location**

The two additional borrow areas, Borrow Area 12 and Borrow Area 14, would not result in any changes to land use that would conflict with any applicable land use plan, policy, or regulation. Borrow Area 12 and Borrow Area 14 are within the overall construction footprint identified by the 2019 EIS/EIR, but were identified in that document and analyzed as anticipated contractor staging areas. The Modified Project site would continue to include open space areas for both recreational uses and wildlife preservation, and the new borrow area sites would not result in a significant conflict with these uses. After materials extraction is complete at Borrow Areas 12 and 14, the sites would be graded to achieve a natural appearance and topography and would be revegetated per a remediation plan. Thus, there would be no operational impacts on land use resulting from the Modified Project-related borrow area use. As stated in the above discussion for the campground construction, the Modified Project would also not conflict with the policies of the San Luis Reservoir SRA RMP/GP. Additionally, potential impacts to environment resulting from the Modified Project are analyzed throughout Chapter 3 of this SEIR; where potentially significant impacts would occur, mitigation to the extent feasible is incorporated into the Modified Project consistent with applicable plans, policies, or regulations. Therefore, changes in borrow area location would not impact land use by conflicting with an applicable land use plan, policy, or regulation for the purpose of avoiding or mitigating an environment effect. The impact would be a **less than significant**.

#### **Minor Additions to Contractor Work Area**

The Modified Project boundary includes minor temporary and permanent expansions of contractor work areas downstream of the dam that were not part of the original study area addressed in the 2019 EIS/EIR. The additional contractor work areas include areas at the foot of the dam covered by new stability berms, newly identified borrow and staging areas, and areas where haul routes would be widened. These minor additions to contractor work areas would result in no change in impacts evaluated in the 2019 EIS/EIR for temporary construction effects on recreational and open space uses of the SRA. As stated in the above discussions, the Modified Project would not conflict with the policies of the San Luis Reservoir SRA RMP/GP. Additionally, potential impacts to environment resulting from the Modified Project are analyzed throughout Chapter 3 of this SEIR; where potentially significant impacts would occur, mitigation to the extent feasible is incorporated into the Modified Project consistent with applicable plans, policies, or regulations. Therefore, minor additions to the contractor work area would result in no impacts associated with any conflict with applicable land use plans, policies, or regulations intended to avoid any environmental impacts. The impact would be **less than significant**.

#### **Additional Construction Assumptions**

Additional construction assumptions include changes to the construction schedule, the inclusion of the campground development and improvement, and dewatering specifications for proposed excavations at the base of the Dam. Additionally, potential impacts to environment resulting from the Modified Project are analyzed

throughout Chapter 3 of this SEIR; where potentially significant impacts would occur, mitigation to the extent feasible is incorporated into the Modified Project consistent with applicable plans, policies, or regulations. These construction assumptions would result in no conflict with any applicable land use plans or regulations not evaluated in the 2019 EIS/EIR; impacts would be **less than significant**.

### Cumulative Impacts

The area of analysis for cumulative land use impacts includes San Luis Reservoir, including the SRA, O'Neill Forebay, and Merced County as a whole. As shown, the Modified Project would generate no short-term or long-term impacts on land use in the area of analysis and would not conflict with any applicable land use plans or policies. The new components proposed under the Modified Project would take place on land owned and/or managed by Reclamation, CDFW, DWR, and CDPR, and these agencies would continue their cooperative relationships in coordinating implementation of the Modified Project, consistent with the San Luis Reservoir SRA RMP/GP goals. The Modified Project would continue to supply open space lands for active and passive recreational activities and for land/wildlife conservation purposes, and would not interfere with historic or current agricultural practices or conflict with existing zoning or land use designations or policies set forth in the Merced County General Plan for adjacent land uses. The Modified Project would not result in impacts associated with inconsistencies with adopted land use plans or policies and would not result in a considerable contribution to cumulative impacts that could result from inconsistencies or conflicts with adopted plans and policies for the purposes of avoiding environmental impacts. Cumulative projects, such as the reservoir expansion project proposed by the San Luis & Delta–Mendota Water Authority and those mentioned in the 2019 EIS/EIR, would not combine with the Modified Project to create a cumulatively significant impact, as consistency with land use plans and policies would be evaluated on a project-by-project basis. Other foreseeable projects in the region would be analyzed for consistency with land use plans in appropriate environmental impact documents and impacts would be mitigated as required to comply with applicable plans, policies, and regulations for the protection of resources and avoidance of environmental impacts. Thus, the Modified Project would not result in cumulatively considerable contribution to impacts resulting from any conflict with land use plans or policies. As such, there would be no contribution to cumulative effects and **no impact** related to conflict with land use plans or policies.

### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant.

### Threshold 3

***Would the Modified Project conflict with any applicable habitat conservation plan or natural community conservation plan?***

| 2019 EIS/EIR Impact Determination | Modified Project Impact Determination | New Significant Increase in Impact Severity? |
|-----------------------------------|---------------------------------------|--|
| No Impact                         | No Impact                             | No   |



### Campground Construction and Day Use Area Improvements

Merced County, including the San Luis Reservoir region, is within the plan area for Pacific Gas and Electric Company's (PG&E's) San Joaquin Valley Operations and Maintenance Habitat Conservation Plan (PG&E 2006), and there is a PG&E easement under the transmission line that crosses the Modified Project site at Borrow Area 6 and the San Luis Creek Use Area. Further discussion of consistency of the Modified Project with PG&E's habitat conservation plan is provided under Threshold 6 in Section 3.9, Biological Resources, which concluded that the Modified Project would not result in impacts from any conflict or inconsistency with the habitat conservation plan. Therefore, the Modified Project would have **no impact** from any conflict with an adopted conservation plan.

### Minor Additions to Contractor Work Area

The additional contractor work areas evaluated under this SEIR do not include any PG&E lands or easements and **no impact** would result from a conflict or inconsistency with an adopted conservation plan.

### Additional Construction Assumptions

As described previously, additional construction assumptions do not affect any areas subject to PG&E's habitat conservation plan. Further discussion of consistency of the Modified Project with the PG&E's habitat conservation plan is provided under Threshold 6 in Section 3.9, which concluded that the Modified Project would not result in impacts from any conflict or inconsistency with the habitat conservation plan. **No impact** would occur from any conflict or inconsistency with an adopted conservation plan.

### Cumulative Impacts

Because there would be no impacts to habitat conservation plans or natural community conservation plans as a result of the Modified Project, there would be **no contribution to cumulative effects**.

### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in no impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would continue to result in no impact.

## 3.10.5 Mitigation Measures

No mitigation measures are required.

## 3.10.6 Level of Significance After Mitigation

The Modified Project would result in a less-than-significant impact with respect to physically dividing a community. No mitigation is required.

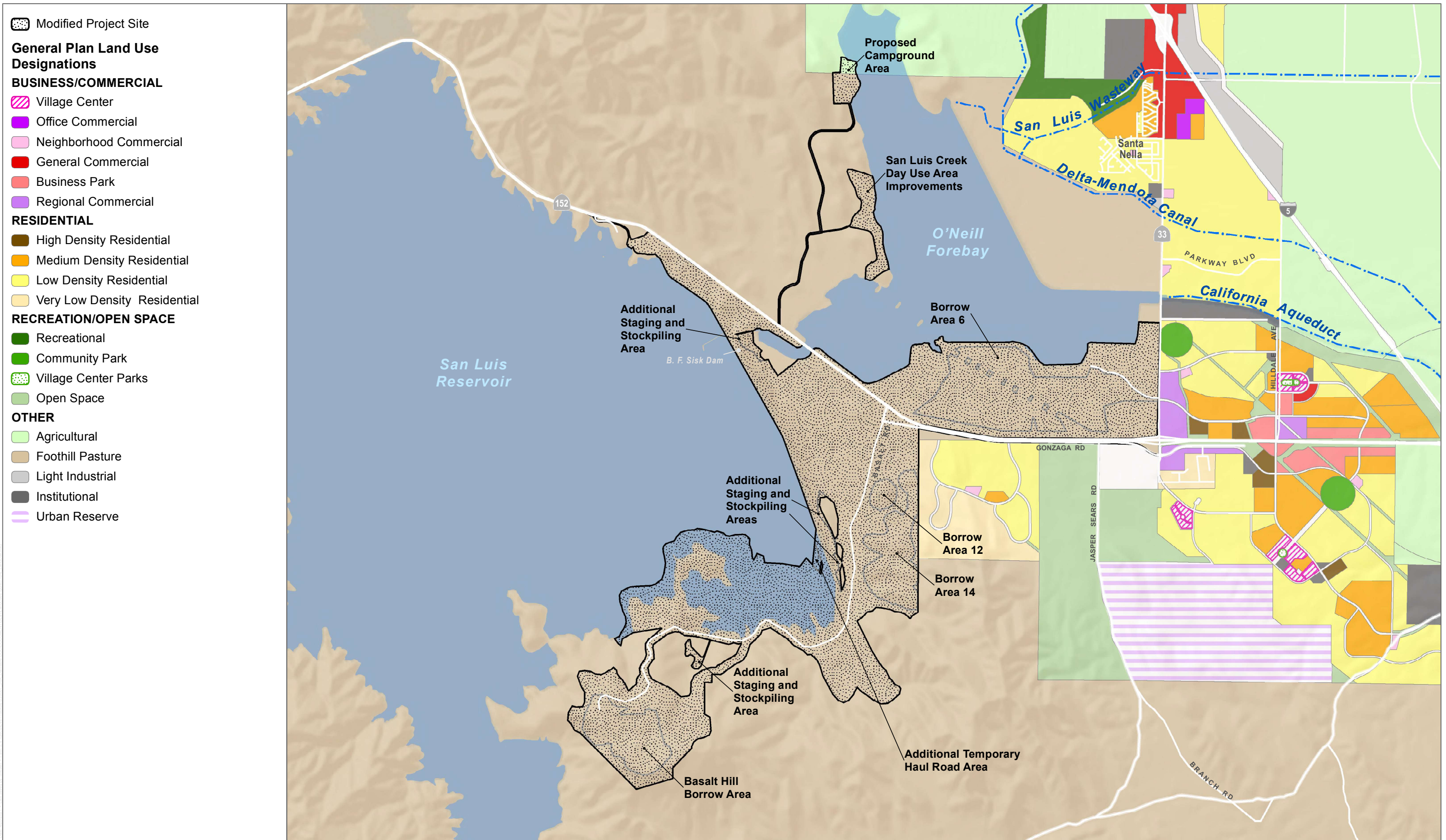
The Modified Project would result in a less-than-significant impact with respect to conflicting with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Modified Project. No mitigation is required.

The Modified Project would result in no impact with respect to conflict with any applicable habitat conservation plan or natural community conservation plan. No mitigation is required.



INTENTIONALLY LEFT BLANK

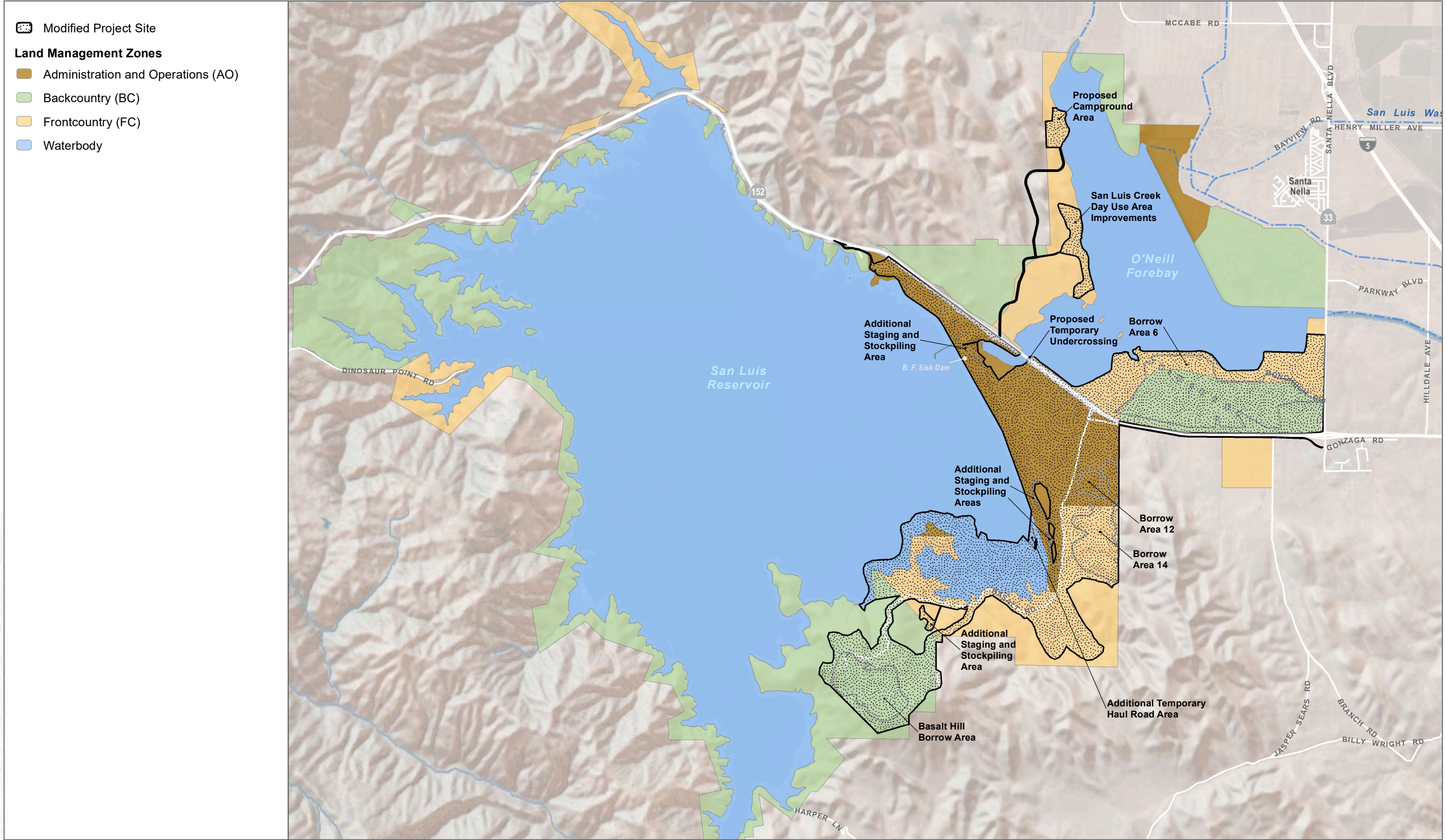




SOURCE: General Plan Land Use: Merced County, 2017

INTENTIONALLY LEFT BLANK





SOURCE: Reclamation and CPDR 2013

INTENTIONALLY LEFT BLANK

## 3.11 Recreation

This supplemental environmental impact report (SEIR) addresses proposed modifications to the B.F. Dam Sisk Safety of Dams Modification Project, which was previously evaluated in the B.F. Sisk Dam Safety of Dams Modification Project Environmental Impact Statement/Environmental Impact Report (2019 EIS/EIR). The project addressed in the 2019 EIS/EIR is referred to herein as the Approved Project; the Approved Project with proposed modifications identified since certification of the 2019 EIS/EIR is referred to herein as the Modified Project.

This section describes the existing recreation conditions of the Modified Project site and vicinity, identifies associated regulatory requirements, evaluates potential impacts, and identifies any applicable mitigation measures related to implementation of the Modified Project.

### Public Scoping and Review Comments Received on 2019 EIS/EIR

The 2019 EIS/EIR underwent public scoping and public review periods and received a variety of comment letters addressing the Approved Project. Comments on the 2019 EIS/EIR pertaining to recreation include the following:

- Public review comment from State Water Contractors: The comment suggested that impacts to recreation under Alternative 2 should be significant.

Alternative 2 from the 2019 EIS/EIR was not adopted and is not evaluated in this SEIR.

### 3.11.1 Existing Conditions

#### 3.11.1.1 San Luis Reservoir and San Luis Reservoir State Recreation Area

Authorized through Public Law 89-72, Federal Water Projects Recreation Act, as amended, a Managing Partner Agreement was signed between the Bureau of Reclamation (Reclamation) and the California Department of Parks and Recreation (CDPR) for management of San Luis Reservoir and related facilities for recreation and fish and wildlife benefits. As shown in Figure 3.11-1, the San Luis Reservoir State Recreation Area (SRA) spans approximately 27,000 acres of federal lands and includes major facilities such as San Luis Reservoir, O'Neill Forebay, and Los Banos Creek Reservoir (Reclamation and CDPR 2013). San Luis Reservoir consists of about 12,700 water surface acres and 65 miles of shoreline, O'Neill Forebay consists of approximately 2,210 water surface acres and 14 miles of shoreline, and Los Banos Creek Reservoir consists of approximately 485 water surface acres and 12 miles of shoreline (Reclamation and CDPR 2013). The San Luis Reservoir SRA Resource Management Plan/General Plan (San Luis Reservoir SRA RMP/GP) defines distinct geographic divisions, or management zones, within the SRA based on physical, social, and management characteristics (Reclamation and CDPR 2013). The management zones include the Administrative and Operations zone (for staff, operations, and maintenance activities), Front Country zone (for most visitor facilities, camping, and concessions), and Backcountry zone (for less-intensive recreation and with limited camping and trails). The San Luis Reservoir SRA is divided into five use areas (i.e., areas designated as major public recreational facilities)—Basalt, Dinosaur Point, Los Banos Creek, Medeiros, and San Luis Creek—and one minor use area for off-highway vehicle (OHV) use (Figure 3.11-2, San Luis Reservoir State Recreation Area Use Areas). Four of the use areas (Basalt, Los Banos Creek, Medeiros, and San Luis Creek) have vehicle access points with entrance stations in the roadway for visitors.



The San Luis Reservoir SRA hosted approximately 210,000 paid visitors in 2018. As indicated in the 2019 EIS/EIR, most visitors come to the area to use recreation resources at the San Luis Creek, Basalt, and Medeiros Use Areas. Primary activities at each use area vary but, collectively, the San Luis Reservoir SRA provides opportunities for boating, swimming, windsurfing, camping, and fishing (Reclamation and CDPR 2013). Boating, fishing, and other water sports, such as jet skiing and windsurfing, are allowed from sunrise to sunset on San Luis Reservoir, O'Neill Forebay, and Los Banos Creek Reservoir (CDPR 2020). The San Luis Wildlife Area and O'Neill Forebay Wildlife Area are two additional areas designated for wildlife; both allow for hunting and backcountry hiking, along with nature study activities. Table 3.11-1 outlines each use area's primary recreation facilities and opportunities.

**Table 3.11-1. San Luis Reservoir SRA Recreational Activities**

| Use Area                      | Primary Activities  |
|-------------------------------|---|
| Basalt Use Area               | Fishing, camping, hiking, boating, day use                                  |
| Dinosaur Point Use Area       | Fishing, boating, day use   |
| Los Banos Creek Use Area      | Fishing, boating, camping, hiking, horseback riding                         |
| San Luis Creek Use Area       | Fishing, windsurfing, swimming, boating, camping, day use, group activities |
| Medeiros Use Area             | Fishing, windsurfing, camping, day use                                      |
| OHV Use Area                  | OHV use   |
| O'Neill Forebay Wildlife Area | Hunting, hiking, nature study   |
| San Luis Wildlife Area        | Hunting, hiking, nature study   |

**Source:** Reclamation and CDPR 2013.

**Notes:** SRA = State Recreation Area; OHV = off-highway vehicle.

### Basalt Use Area

The Basalt Use Area is located at the southeastern shoreline of San Luis Reservoir and includes 511 parking spaces. Basalt Campground contains 79 tent and RV campsites, including 8 that are Americans with Disabilities Act (ADA) accessible. The campground includes restroom facilities, sewer dump station, showers, designated picnic areas, and a fish-cleaning station. The Basalt Use Area also provides restrooms, trail access, a campfire center, and a four-lane boat launch with an 80-foot boarding float onto San Luis Reservoir. A 1.5-mile loop trail known as Basalt Campground Trail begins at the campground entrance and climbs to a hilltop area with an interpretive exhibit, map, and views of San Luis Reservoir, Basalt Hill, and the San Joaquin Valley. West of the Basalt Use Area, the Lone Oak Bay Trail is a 6-mile out-and-back trail to the south side of San Luis Reservoir. The trailhead is just before the end of the park road at the boat launch and parking area, 2 miles west of Basalt Campground.

### Dinosaur Point Use Area

The Dinosaur Point Use Area is located on the western shore of San Luis Reservoir at the end of Dinosaur Point Road. It offers access to San Luis Reservoir from a four-lane boat ramp with an 80-foot boarding float and parking for 123 vehicles, with additional parking on the boat launch ramp. Dinosaur Point also provides chemical toilets and five shade ramadas. Other activities provided in this area include fishing and bicycling. No campground accommodations are offered at the Dinosaur Point Use Area (Reclamation and CDPR 2013).

### Los Banos Creek Use Area

The Los Banos Creek Use Area contains 1,777 acres surrounding Los Banos Creek Reservoir (Reclamation and CDPR 2013). The main use area at Los Banos Creek Reservoir is located at the northeast end of the reservoir. Los

Banos Creek Campground includes 14 campsites with shade ramadas, barbecues, and picnic tables. The Los Banos Creek Use Area also includes a two-lane boat launch ramp with a 60-foot boarding float, an equestrian camp, parking for approximately 40 vehicles with boat trailers, chemical toilets, hiking and equestrian trail access, and a swimming area. The Path of the Padres historic hiking trail is located at Los Banos Creek Reservoir, and guided tours of the trail as well as a boat tour are led by volunteer and CDPR staff. While the Los Banos Creek Use Area is within the San Luis Reservoir SRA, it is located approximately 6 miles southeast of San Luis Reservoir and lands associated with the Los Banos Creek Use Area are not contiguous with SRA lands surrounding San Luis Reservoir and O'Neill Forebay.

### **San Luis Creek Use Area**

The San Luis Creek Use Area is located on the western shore of O'Neill Forebay and is the most popular use area in the San Luis Reservoir SRA. It is divided into the North Beach and South Beach day use areas. The California Department of Water Resources operates the Romero Visitor's Center on the eastern side of San Luis Reservoir, north of B.F. Sisk Dam. The Romero Visitor's Center offers educational resources and restrooms for the public.

The San Luis Creek Day Use Area provides two large beaches, a lifeguard stand, a large irrigated lawn with 148 shade ramadas with barbecues, a three-lane boat launch ramp with two 80-foot boarding floats, a fish-cleaning station, and a picnic area (Reclamation and CDPR 2013). North Beach is the only designated swim area within San Luis Reservoir SRA and contains a restricted boating area. The 5-mile San Luis Creek Accessible Trail is the only ADA accessible trail in the San Luis Reservoir SRA (CDPR 2017, 2020). There are a total of 698 parking spaces, including 181 spaces for vehicles with boat trailers.

San Luis Creek Campground is spread along the northwestern shore of the San Luis Creek Use Area and contains 53 tent and RV campsites, including 6 ADA accessible sites. Campground facilities include electric and water hookups, fire pits, and picnic tables. In addition, San Luis Creek Campground has five group picnic sites for day use and two group campsites. The first group campsite, which can accommodate 60 campers, provides a large cooking/gathering shelter with lights and electricity, eight shade ramadas with fire rings and picnic tables, and restrooms with showers. The second group campsite, which can accommodate 30 campers, provides a smaller cooking shelter with lights and electricity, five shade ramadas with fire rings and picnic tables, and restrooms with showers. The group campsites also share an irrigated lawn area and a parking area with approximately 36 single-vehicle spaces. Overnight fishing is permitted in specific areas within the San Luis Creek Day Use Area, but is restricted within the campgrounds.

### **Medeiros Use Area**

The Medeiros Use Area is located on the southeastern shore of O'Neill Forebay. The area provides 50 campsites with shade ramadas, picnic tables, and barbecues, approximately 300 informal parking spaces, as well as approximately 350 primitive campsites for tents and RVs (Reclamation and CDPR 2013). The day use and camping areas have potable water from four portable water tanks (water is trucked in), and chemical toilets. The Medeiros Use Area allows overnight fishing at its campgrounds (CDPR 2017). The boat launch at the Medeiros Use Area was closed in 2001 and remains closed because shallow water in the area prevents year-round launching. There are no formally designated recreation trails at the Medeiros Use Area.



### OHV Use Area

The OHV Use Area, located south of Gonzaga Road, is a 150-acre open, flat, partially vegetated parcel that is developed with recreational OHV trails. The area also has parking and chemical toilets.

### Wildlife Areas

The San Luis Reservoir Wildlife Area is located at the northwest shore of San Luis Reservoir, south of State Route 152, and is accessed from a parking area off of Dinosaur Point Road. Access to the wildlife area is restricted between sunrise and sunset. The O'Neill Forebay Wildlife Area is at the eastern side of O'Neill Dam and is accessible from a parking area off of State Route 33. Both sites have a self-registration system at the entry points and permit nature study, hiking, and hunting. Hunting for waterfowl, pheasants, quail, doves, rabbits, and crows is allowed at O'Neill Forebay Wildlife Area; hunting for all legal species, including deer, pig, dove, quail, turkey, and small game is allowed at the San Luis Wildlife Area. Portions of the O'Neill Forebay Wildlife Area are cultivated to provide forage and habitat for various game species.

## 3.11.2 Relevant Plans, Policies, and Ordinances

### 3.11.2.1 Federal

#### Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act provides the basic authority for U.S. Fish and Wildlife Service involvement in evaluating impacts on fish and wildlife from proposed water resource development projects. It requires that fish and wildlife resources receive equal consideration to other project features. It also requires federal agencies that construct, license, or permit water resource development projects, to consult with the U.S. Fish and Wildlife Service, National Marine Fisheries Service, and state fish and wildlife agencies regarding the impacts on fish and wildlife resources and measures to mitigate these impacts before a project's implementation.

### 3.11.2.2 State

#### California Department of Parks and Recreation Guidelines

CDPR is a trustee agency, which owns and operates all California State parks. CDPR has the principle mission to provide and manage the operations of various recreation and outdoor facilities, provide for recreation opportunities, and manage and protect natural resources. Park designations dictate the level of resource management need and include natural preserves, California State parks, California State reserves, and California State wilderness designations, among others. CDPR implements statewide recreation through its strategic vision, Trails Handbook, Trails Policy, as well as the California Code of Regulations and Public Resources Code.

#### San Luis Reservoir State Recreation Area Resource Management Plan/General Plan

CDPR, in partnership with Reclamation, manages most of the San Luis Reservoir SRA. CDPR's planning process is integrated with Reclamation's resource management planning process. CDPR developed the San Luis Reservoir SRA RMP/GP in partnership with Reclamation, and adopted the 25-year plan in 2013. CDPR and Reclamation continue to collaborate on the San Luis Reservoir SRA RMP/GP to guide future growth. Lands managed by CDPR for recreation are part of the CDPR system and comprise the SRA. The San Luis Reservoir SRA RMP/GP's primary objective is to identify general areas in which future development may occur for recreation management. The plan

includes an overview of existing conditions, including a summary of opportunities and constraints, a plan for future use and management of the plan area, and the associated environmental analysis pursuant to the National Environmental Policy Act and the California Environmental Quality Act (Reclamation and CDPR 2013).

The San Luis Reservoir SRA RMP/GP identifies a series of policies in the form of goals and guidelines. Goals and guidelines related to recreation include the following (Reclamation and CDPR 2013):

### ***Visitor Use, Opportunities, and Facilities (VIS)***

**Goal VIS-F1:** Maintain and provide new visitor facilities and uses that enhance recreational enjoyment of the site's history and character while avoiding resource degradation.

#### **Guidelines:**

- Plan for recreational opportunities within a regional context and in coordination with other plans (e.g., the Millerton Lake RMP, Pacheco SP, Hollister Hills State Vehicular Recreation Area, and Merced County and Santa Clara County parks) so that facilities are balanced within the region and are compatible with the location and resources.
- Provide for a variety of day-use activities and overnight camping facilities that accommodate visitors of varying abilities.

**Goal VIS-F2:** Provide adequate shoreline and upland support facilities and management at each reservoir and use area to address current and future demand for permitted recreational uses, consistent with management zones and natural and cultural resource goals and guidelines.

#### **Guideline:**

- Ensure that campground and day use additions and improvements respond to and are prioritized based on user demand.

**Goal VIS-F3:** Manage water surfaces and use areas to accommodate a variety of different user groups and minimize resource degradation and conflicts among users.

#### **Guidelines:**

- Resolve water surface use conflicts using a variety of methods, such as but not limited to seasonal and time-of-day restrictions and “no wake” or “reduced speed” zones.
- Optimize and coordinate water and land based recreational uses by development of a boating management plan.

**Goal VIS-T1:** Provide an appropriate amount and variety of trails in a range of locations throughout the Plan Area as well as improved connectivity from existing trails.

#### **Guideline:**

- Maintain a system of multi-use trails to meet visitor demand.

**Goal VIS-T2:** Balance the optimum visitor experience while avoiding habitat fragmentation or other site degradation.

**Guideline:**

- Use BMPs to maintain trails and minimize erosion.

### 3.11.2.3 Local

#### **Merced Vision 2030 General Plan**

As required by state law, Merced County has adopted a general plan to guide land use decisions within the county. The general plan provides goals, policies, standards, and implementation programs to guide the physical development of a county. At a minimum, the general plan must address the topics of land use, transportation, housing, conservation, open space, noise, and safety. The Merced Vision 2030 General Plan (Merced County General Plan), adopted in 2013, has established the year 2030 as the plan’s time horizon. The Recreation and Cultural Resources Element analyzes impacts to recreational opportunities and facilities. The following goal and policies would apply to the Modified Project (Merced County 2013):

#### ***Recreation and Cultural Resources Element***

**Goal RCR-1:** Preserve, enhance, expand, and manage Merced County’s diverse system of regional parks, trails, recreation areas, and natural resources for the enjoyment of present and future residents and park visitors.

- **Policy RCR-1:** Foothill Pasture Designation: Encourage the continuation and expansion of existing public recreation land uses, including, but not limited to, public beaches, parks, recreation areas, wild areas, and trails.
- **Policy RCR-1.11:** Scenic Resource and Public Land Protection: Encourage the use of regional parks and open space areas as a mechanism to preserve the County’s natural scenic beauty and protect land for public resources.
- **Policy RCR-1.12:** Recreation Services: Support recreation services to promote the full use of recreation facilities within their design capacity, and improve connections and access to a wide range of recreation opportunities in order to improve the quality of life for residents and visitors.

#### ***Land Use and Community Character Element***

- **Policy LU-2.3: Land Use Activity Limitations:** Limit allowed land use within Agricultural and Foothill Pasture areas to agricultural crop production, farm support operations, and grazing and open space uses.

### 3.11.3 Thresholds of Significance

The following significance criteria from the 2019 EIS/EIR are used for the purposes of analysis in this SEIR. These criteria, which have not changed from the 2019 EIS/EIR, are identified in Chapter 19, Recreation, of the 2019 EIS/EIR. A significant impact related to recreational resources would occur if one or more of the following would occur as a result of implementing the Modified Project:

1. Recreational use of trails would be substantially reduced as a result of construction.
2. Construction activities would substantially reduce access to or close recreation areas.
3. Displaced recreation from sites affected by construction would substantially contribute to overcrowding or exceed the facility capacity at other recreation sites.
4. Operational changes to water levels in recreational water bodies would be reduced to an extent that recreational uses would be substantially affected.

### 3.11.4 Impacts Analysis

#### Threshold 1

*Would recreational use of trails be substantially reduced as a result of Modified Project construction?*

| 2019 EIS/EIR Impact Determination | Modified Project Impact Determination | New Significant Increase in Impact Severity? |
|-----------------------------------|---------------------------------------|--|
| Less than Significant             | Less than Significant                 | No   |

#### Campground Construction and Day Use Area Improvements

As shown in Figure 3.11-3, Modified Project and San Luis Reservoir State Recreation Area Use Areas, the Modified Project would include construction of a proposed campground area on the northwestern shoreline of O'Neill Forebay and improvements to the existing San Luis Creek Day Use Area on the west shore of the forebay. The site for the proposed campground area is an undeveloped grassland area bisected by an existing paved road that provides access to recreational facilities on the west side of O'Neill Forebay including San Luis Creek Campground north of the proposed campground area. This new campground would be adjacent to the 1.5-mile-long San Luis Creek Trail, which runs from North Beach at the San Luis Creek Day Use Area to the San Luis Creek RV Campsite. Construction of the proposed campground area and improvements within the San Luis Creek Day Use Area are not expected to require closure of San Luis Creek Trail. However, visitors to San Luis Creek Trail could be affected by minor construction impacts related to fugitive dust, noise, and disruption of visitor circulation; this disruption would be temporary. In addition, a variety of other hiking opportunities within the San Luis Reservoir SRA and neighboring state parks would remain available for use during construction of the proposed campground area and improvements to San Luis Creek Day Area. Therefore, the Modified Project would not result in a reduction of recreational trail availability and impacts would be **less than significant**.

### Changes in Borrow Area Location

The Modified Project has identified two additional borrow areas, Borrow Area 12 and Borrow Area 14, in addition to Borrow Area 6 and Basalt Hill Borrow Area, which were identified as part of the Approved Project in the 2019 EIS/EIR. Borrow Area 12 is an approximately 28-acre area that includes a grassland-covered hill east of the dam's south valley section. The top of the hill is flat, having been used in the past as a borrow area for initial construction of B.F. Sisk Dam, with two unpaved roads leading to the top. Borrow Area 14 is an approximately 200-acre area south of Borrow Area 12 situated around four low hills within grassland. One of the hills has a road leading to the top. Neither borrow area contains designated recreational trails. Borrow Area 12 and Borrow Area 14 are within the overall construction footprint identified by the 2019 EIS/EIR, but were identified and analyzed in that document as anticipated contractor staging areas (see Figure 2-4b, Modified Project Detail).

Borrow Areas 12 and 14 are within the Basalt Use Area of the San Luis Reservoir SRA. The Approved Project analyzed the closure of all recreational uses within the Basalt Use Area and Medeiros Use Area beginning in December 2021 through the duration of the construction period. This closure includes Basalt Campground, Medeiros Campground, and two of the three formally designated trails within the San Luis Reservoir SRA, Basalt Campground Trail and the Lone Oak Trail. Therefore, as Borrow Areas 12 and 14 were included in the Basalt Use Area analyzed to be closed in the Approved Project, the change in borrow area locations would not result in additional reductions of recreational trail use. Impacts from the Modified Project on recreational trail use would be **less than significant**.

### Minor Additions to Contractor Work Area

The Modified Project site includes minor temporary and permanent expansions of contractor work areas downstream of the dam that were not part of the original area of impact addressed in the 2019 EIS/EIR for the Approved Project. These Modified Project features are shown in Figures 2-4a and 2-4b, and total approximately 41 acres. The additional contractor work areas include several staging/soil stockpiling areas downstream of B.F. Sisk Dam, which would later be covered by the stability berms and expanded dam embankment, as well as another small area of less than 1 acre immediately west of the dam's right abutment, where a haul road would be widened. The additional temporary haul road area is a portion of the footprint of the alignment of an existing road that crosses San Luis Reservoir and is exposed when the reservoir is at a low water level. The existing road would be used to transport materials from Basalt Hill Borrow Area to the dam construction zone during periods when the reservoir water level is low enough to expose the road. The impact of the proposed new campground and improvements to the San Luis Creek Day Use Area are analyzed above under Campground Construction and Day Use Area Improvements.

Neither the additional staging and stockpiling areas nor the temporary haul road would trigger additional road and/or lane closures that would impede access to recreational trails. These contractor work areas are located within the Basalt Use Area; the Approved Project analyzed the closure of all recreational trails within both the Basalt Use Area and Medeiros Use Area; additional staging areas in the vicinity of the spillway are not open to public recreation. Therefore, these additional contractor work areas would not result in further closures of recreational trails beyond what was previously analyzed. Impacts on recreational trail use would be **less than significant**.

### Additional Construction Assumptions

The Modified Project outlines additional construction assumptions, including changes to the construction schedule, equipment and personnel specifications, the inclusion of the campground development and improvement, and dewatering specifications for proposed excavations at the base of the dam. The impact of the proposed new campground and improvements to the San Luis Creek Day Use Area are analyzed above under Campground



Construction and Day Use Area Improvements. The other construction assumptions would not result in a reduction in the availability of recreational trails beyond what was analyzed under the Approved Project in the 2019 EIS/EIR. Impacts on recreational trail use would be **less than significant**.

### Cumulative Impacts

A list of cumulative projects is presented in Table 3-1 of Chapter 3, Environmental Analysis. All other cumulative projects would result in no change in the use or access to recreational trails in the San Luis Reservoir SRA, with the exception of the B.F. Sisk Dam Raise and Reservoir Expansion Project (reservoir expansion project). The reservoir expansion project has been identified as a cumulative project that could contribute to recreation effects of the Modified Project. All recreational activities at the Basalt Use Area would be suspended during construction of the reservoir expansion project. Basalt Campground Trail and Lone Oak Trail, which are both accessed from the Basalt Use Area, would also be closed to the public during construction of the reservoir expansion project. The Modified Project would occur over a period of up to 20 years, with construction beginning in 2022, while the reservoir expansion project is proposed to occur over a period of approximately 8 years with construction beginning in 2025. Because the construction period of the two projects would overlap and both projects would result in closure of Basalt Campground Trail and Lone Oak Trail, the analysis of impacts associated with a reduced network of existing trails and use of trails during the construction period for the Approved Project, as provided in the 2019 EIS/EIR, would apply to cumulative impacts of the Modified Project and reservoir expansion project. The Modified Project would result in no additional closure of trails that was not analyzed in the 2019 EIS/EIR. As concluded by the analysis of the Approved Project in the 2019 EIS/EIR, a temporary reduction in the trail network within the SRA would occur during project construction, but adequate alternate trails would remain open to meet the demand for public trails during construction. Therefore, the Modified Project, in combination with the reservoir expansion project, would not result in cumulatively considerable impacts with respect to reduced access to recreational trails in the SRA and surrounding areas. Cumulative impacts would be **less than significant**.

### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant.

### Threshold 2

***Would Modified Project construction activities substantially reduce access to or close recreation areas?***

| 2019 EIS/EIR Impact Determination                  | Modified Project Impact Determination              | New Significant Increase in Impact Severity? |
|--|--|--|
| Less than Significant with Mitigation Incorporated | Less than Significant with Mitigation Incorporated | No   |

### Campground Construction and Day Use Area Improvements

The Modified Project includes construction of the proposed campground and associated recreational facility improvements to mitigate impacts to recreational opportunities that would occur with implementation of the project. The campground would be constructed within an area of approximately 40 acres and would include 79 campsites. Two restroom and shower buildings would be constructed along with a campfire center, and shore access would be

provided for fishing. The existing bike path would be realigned along the shoreline. Improvements to the San Luis Creek Day Use Area would be within the existing developed facility and would include provision of an additional boat launch lane and boarding float, a fish-cleaning station, and a restroom facility. Approximately 20,000 square feet of new buildings would be included on site.

The site for the proposed campground area is an undeveloped grassland area bisected by an existing paved road that provides access to recreational facilities along the west side of O'Neill Forebay including the San Luis Creek RV Campsite north of the proposed campground area. Disturbance related to the Modified Project would be limited to areas receiving the improvements, as subject to additional planning and design by Reclamation and CDPR as approved in the San Luis Reservoir SRA RMP/GP for the area.

The construction staging areas for the proposed campground area and improvements to the San Luis Creek Day Use Area would be within existing and underutilized recreation areas within the San Luis Reservoir SRA. These two elements of the Modified Project would promote greater utilization of these areas for recreation purposes and would result in no closure of the existing North Beach and South Beach recreational facilities, and the access road to these existing facilities along O'Neill Forebay would remain open during construction. As analyzed in Section 3.7, Traffic and Transportation, construction of the proposed campground area and improvements to the San Luis Creek Day Use Area would generate a temporary increase of traffic within the San Luis Reservoir SRA, but would generate fewer overall trips than operation of the campground; roadway traffic related to construction would result in no substantial, long-term limitations to accessing existing recreational facilities. The maintenance, expansion, and the addition of campsites, shade ramadas, boat launches, trails, and other recreational facilities could result in minor and temporary construction-related impacts to recreational use such as fugitive dust, noise, and temporary detours or restrictions on use of portions of the existing San Luis Creek Day Use Area to allow for construction of improvements. During the construction period, these activities could affect the quality of the visitor recreation experience near construction areas. However, these construction-related impacts would be temporary in nature. The result of these Modified Project elements would be increased recreational amenities and opportunities within the San Luis Creek Use Area provided by the improvements in the San Luis Creek Day Use Area and new campground. Therefore, impacts resulting from construction of the proposed campground area and improvements would be **less than significant**.

#### **Changes in Borrow Area Location**

As stated above, Borrow Areas 12 and 14 are within the Basalt Use Area of the San Luis Reservoir SRA. The Approved Project analyzed the closure of all recreational uses within the Basalt Use Area and Medeiros Use Area beginning in December 2021 through the duration of the construction period. Therefore, as Borrow Areas 12 and 14 were included in the area of impact identified for closure in the Approved Project, the change in borrow area locations would not result in additional construction impacts on recreation areas. The impacts of construction activities on recreational activities would be **less than significant**.

#### **Minor Additions to Contractor Work Area**

As previously discussed, additional impact areas include some minor expansion of contractor work areas that were not part of the original study area addressed in the Approved Project. These additional contractor work areas would not trigger additional road and/or lane closures around the Modified Project site, thereby impeding access to recreational resources. The additional contractor work areas, including the staging and stockpiling area and temporary haul road area, are located within the Basalt Use Area. The Approved Project analyzed the closure of all recreational uses within the Basalt Use Area and Medeiros Use Area. Therefore, these additional contractor work areas would not result in further closures of recreational use areas beyond what was previously analyzed. Impacts on recreational areas during construction would be **less than significant**.

### Additional Construction Assumptions

The Modified Project outlines additional construction assumptions, including changes to the construction schedule, the inclusion of the campground development and improvement, and dewatering specifications for proposed excavations at the base of the dam. The impact of the proposed new campground and improvements to the San Luis Creek Day Use Area are analyzed above under Campground Construction and Day Use Area Improvements. The other construction assumptions would not result in the closure of additional recreation areas beyond what was previously analyzed under the Approved Project. Impacts on recreational areas during construction would be **less than significant**.

### Cumulative Impacts

The reservoir expansion project has been identified as a cumulative project that could contribute to recreation effects of the Modified Project; no other projects identified in Table 3-1 would affect recreational facilities within the San Luis Reservoir SRA. The Approved Project, as analyzed in the 2019 EIS/EIR, would result in closure of the Basalt Use Area (including the Goosehead Point Boat Launch) for the full duration of construction activities and would result in closure of Medeiros Campground during construction. The reservoir expansion project would also include the closure of the access to Dinosaur Point Boat Launch for approximately 1 year during active construction at the Dinosaur Use Area, which could result in the temporary closure of all boat launch facilities at San Luis Reservoir if closure of the Dinosaur Point Boat Launch occurs concurrently with Basalt Use Area closure; no mitigation is identified for this temporary closure impact in the joint EIR and Supplemental EIS prepared by Reclamation and San Luis & Delta–Mendota Water Authority for the reservoir expansion project. Recreational use for boating would be suspended in areas of active construction, and would be limited to areas of the reservoir away from B.F. Sisk Dam for the duration of construction. Reclamation anticipates that construction of improvements at the Dinosaur Point launch facility included as part of the reservoir expansion project can be scheduled to minimize closure of the existing launch facility and to minimize or eliminate periods when both Dinosaur Point and Basalt Use Area boat launch facilities would be closed concurrently. Construction planning would ensure that disruption of recreational uses would be minimized and new facilities would not be required as each of the existing facilities is considered underutilized in the existing condition and can accommodate redirected recreation use during periods when one boat launch facility is closed during construction. The Modified Project would result in no facility closures not previously evaluated for the Approved Project in the 2019 EIS/EIR and would not contribute to cumulative impacts associated with temporary or permanent closure of recreational facilities. Cumulative impacts of the Modified Project associated with closure or reduced access to recreational facilities would be **less than significant**.

### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Implementation of Mitigation Measure REC-1<sup>1</sup> is analyzed in this SEIR as part of the Modified Project; no new mitigation is required. However, Mitigation Measure REC-1 has been revised and replaced with Mitigation Measure SEIR-REC-1; refer to Section 3.11.5. Impacts of the Modified Project would remain less than significant with mitigation incorporated.

<sup>1</sup> Mitigation Measure REC-1 in the 2019 EIS/EIR included the expansion of the boat launch at Dinosaur Point Use Area. Since that time, CDPR has indicated the previously proposed expansion of this boat launch is no longer required, as the facility's existing capacity would accommodate any increase in use due to the closure of the Basalt Campground boat launch for the duration of Modified Project construction. As such, modifications to the Dinosaur Point Use Area are not addressed in this SEIR.

### Threshold 3

*Would displaced recreation from sites affected by Modified Project construction substantially contribute to overcrowding or exceed the facility capacity at other recreation sites?*

| 2019 EIS/EIR Impact Determination | Modified Project Impact Determination | New Significant Increase in Impact Severity? |
|-----------------------------------|---------------------------------------|--|
| Less than Significant             | Less than Significant                 | No   |

#### Campground Construction and Day Use Area Improvements

The construction of the proposed campground area and improvements to the existing San Luis Creek Day Use Area would not close additional recreation areas or result in additional displacement of visitors over that evaluated by the 2019 EIS/EIR. These elements of the Modified Project are intended to offset lost recreational resources and visitor capacity at Basalt and Medeiros Use Areas, increasing the breadth of the facilities offered at San Luis Creek Day Use Area and adding a new campground with developed facilities. Installation and construction of the improvements at San Luis Creek Day Use Area may temporarily disrupt visitors but would not close the day use facility and would be performed during lower seasonal use periods. As a result, these activities are not expected to result in substantial displacement of visitors to the extent that other regional recreation sites and state parks would be negatively impacted. Therefore, impacts regarding conditions at other local and regional recreation sites would be **less than significant**.

#### Changes in Borrow Area Location

As stated above, Borrow Areas 12 and 14 are within the Basalt Use Area of the San Luis Reservoir SRA. The 2019 EIS/EIR for the Approved Project analyzed the closure of all recreational uses within the Basalt Use Area and Medeiros Use Area, and determined that closure would result in displacement of visitors to other local and regional recreation sites and other areas within the San Luis Reservoir SRA. The proposed changes in the borrow areas location included in the Modified Project would result in no additional closure of recreation areas and would result in **no impacts** associated with displacement of recreation demand to other local and regional recreation sites.

#### Minor Additions to Contractor Work Area

As previously discussed, additional impact areas include some minor expansion of contractor work areas that were not part of the original study area identified for the Approved Project and evaluated in the 2019 EIS/EIR. The additional contractor work areas, including the staging and stockpiling area and temporary haul road area, are located within the Basalt Use Area. These additional features of the Modified Project would not prompt potential visitors to visit other recreational areas, thereby contributing to overcrowding or exceeding facility capacities, because the entirety of the Basalt Use Area was already planned for closure under the Approved Project. Therefore, these additional contractor work areas would not result in further closures of recreational use areas beyond what was previously analyzed and would not displace additional visitors. Impacts on conditions at other local and regional recreation sites would be **less than significant**.

#### Additional Construction Assumptions

As previously discussed, additional construction assumptions include changes to the construction schedule, equipment and personnel specifications, and dewatering specifications for proposed excavations at the base of the dam. The impact of the proposed new campground and improvements to the San Luis Creek Day Use Area are

analyzed above under Campground Construction and Day Use Area Improvements. The other construction assumptions would not result in the closure of additional recreation areas beyond what was previously analyzed under the Approved Project and would not displace additional visitors. Impacts on conditions at other local and regional recreation sites would be **less than significant**.

### Cumulative Impacts

The reservoir expansion project has been identified as a project that could contribute to cumulative impacts on recreation in the vicinity of the Modified Project; other projects identified in Table 3-1 would have no effect on recreational facilities within the San Luis Reservoir SRA. The Approved Project, as analyzed in the 2019 EIS/EIR, would result in closure of the Basalt Use Area (including the Goosehead Point Boat Launch) for the duration of construction activities and would result in temporary and intermittent closure of Medeiros Campground during construction. The proposed reservoir expansion project would require closure of the access to Dinosaur Point Boat Launch for approximately 1 year during active construction at the Dinosaur Use Area. If closure of the Dinosaur Point Boat Launch occurs concurrently with closure of the Basalt Use Area boat launch, boating access to San Luis Reservoir would be temporarily eliminated because no alternate boat launching facilities exist at San Luis Reservoir. Reclamation anticipates that construction of improvements at the Dinosaur Point launch facility included as part of the reservoir expansion project can be scheduled to minimize closure of the existing launch facility and minimize or eliminate periods when Dinosaur Point and Basalt Use Area boat launch facilities would be closed concurrently. Construction planning would ensure that disruption of recreational uses would be minimized and new facilities would not be required as each of the existing San Luis Reservoir launch facilities is considered underutilized in the existing condition and can accommodate redirected recreation use during periods when one launch facility is closed temporarily during construction. Temporary closures of Dinosaur Point Boat Launch and the launch at Basalt Use Area is expected to result in increased use of boat launches on O'Neill Forebay. Construction of the proposed new campground area and improvements to San Luis Creek Day Use Area, which includes a new boat launch lane, would provide recreational opportunities to accommodate displaced use from closures that would result from the Approved Project, as analyzed by the 2019 EIS/EIR. The components of the Modified Project analyzed in this SEIR are not expected to result in impacts from displacement of visitors to other recreational areas and would not result in a cumulatively considerable contribution to impacts from displacement of visitors from temporary closure of facilities required to carry out the reservoir expansion project. The Modified Project's contribution to cumulative impacts associated with displacement of visitors resulting in impacts to other recreational areas would be **less than significant**.

### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant or no impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant.

### Threshold 4

***Would operational changes to water levels due to the Modified Project in recreational water bodies be reduced to an extent that recreational uses would be substantially affected?***

| 2019 EIS/EIR Impact Determination | Modified Project Impact Determination | New Significant Increase in Impact Severity? |
|-----------------------------------|---------------------------------------|--|
| Less than Significant             | Less than Significant                 | No   |



### **Campground Construction and Day Use Area Improvements**

Construction of the proposed campground area and improvements to the existing San Luis Creek Day Use Area would not require any changes to the reservoir operations related to water or lower reservoir water levels. An additional boat launch lane and boarding float would be added to San Luis Creek Day Use Area to increase recreational access to O'Neill Forebay. Impacts to recreational facilities or activities due to operational changes at the reservoir would be **less than significant**.

### **Changes in Borrow Area Location**

As stated above, the Modified Project would include materials extraction for dam construction from two more borrow areas, Borrow Areas 12 and 14. Both borrow areas were within the area of impact for the Approved Project, but were identified in that document as contractor staging areas. The changes in borrow area location and use at these sites would not affect water levels in recreational water bodies as the materials extraction would come from hillsides. Impacts to recreational facilities or activities due to operational changes at the reservoir would be **less than significant**.

### **Minor Additions to Contractor Work Area**

As previously discussed, additional impact areas include some minor expansion of contractor work areas that were not part of the original area of impact addressed in the 2019 EIS/EIR prepared for the Approved Project. Additional staging and stockpiling areas would have no bearing on reservoir water levels, as their purpose is to stockpile extracted materials prior to use at the dam construction zone. The proposed widening of the haul road would facilitate ease of material transport from Basalt Hill Borrow Area to the dam construction zone during periods when the reservoir water level is low enough to expose the road. The haul road would utilize lower water levels in the reservoir, but would not include manipulation of reservoir levels to achieve that elevation. Therefore, impacts to recreational facilities or activities due to operational changes at the reservoir would be **less than significant**.

### **Additional Construction Assumptions**

As previously discussed, additional construction assumptions include changes to the construction schedule, equipment and personnel specifications, and dewatering specifications for proposed excavations at the base of the dam. The impact of the proposed new campground and improvements to the San Luis Creek Day Use Area are analyzed above under Campground Construction and Day Use Area Improvements. As described in Section 2.3, Description of the Approved Project, dewatering would be required in excavations occurring at the base of the dam. Dewatering is anticipated to entail installation of temporary deeper wells along with shallower well points that would be installed around each work area requiring dewatering. Water removed from the excavation during this period would be pumped into temporary settling ponds or portable tanks to allow sediment to drop out and meet permit water quality standards before being discharged into the reservoir or forebay. This work on the dam is anticipated to occur when the elevation of the reservoir is naturally below 480 feet, which typically occurs in June or July and continues through November or December. The Modified Project includes no manipulation of reservoir water levels to achieve the 480-foot surface elevation and includes no changes to descriptions of water levels required for construction activities as described in the 2019 EIS/EIR; no change in impacts to recreation associated with lowering of water surface elevation would occur with the additional construction assumptions identified in the Modified Project. Impacts to recreational uses from operational changes to water levels associated with the Modified Project would be **less than significant**.

### Cumulative Impacts

The reservoir expansion project has been identified as a cumulative project that could contribute to recreation effects of the Modified Project; other projects identified in Table 3-1 would have no effect on recreational facilities within the San Luis Reservoir SRA. Under the reservoir expansion project, reservoir operations would result in the inundation of an additional 445 acres of lands that are not inundated when the reservoir fills to capacity under existing conditions. This increase in water and inundated areas resulting from reservoir expansion project operations would impact four additional existing recreational facilities and could inundate approximately 8,308 feet (1.6 miles) of recreational routes (i.e., trails and roads) in addition to the inundation that would occur under existing conditions. Reservoir expansion project operation could result in the inundation of approximately 2,298 feet of the Lone Oak Trail and potential impacts to Goosehead Point Boat Launch in the Basalt Use Area and Dinosaur Point Boat Launch. The reservoir expansion project would increase overall operational surface elevation and lake surface area. The Modified Project would result in no permanent or temporary operational changes to water levels in the reservoir that were not previously evaluated by the 2019 EIS/EIR prepared for the Approved Project and would not contribute to a cumulative impact to recreation as a result of water level manipulation in San Luis Reservoir when considered with the reservoir expansion project. The Modified Project's contribution to cumulative impacts to recreation with respect to operational changes to water levels would be **less than significant**.

### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant.

### 3.11.5 Mitigation Measures

Implementation of Mitigation Measure REC-1<sup>1</sup> identified in the 2019 EIS/EIR is analyzed throughout this SEIR under the Modified Project. As previously described, expansion of the boat launch at Dinosaur Point use area, included as a component of Mitigation Measure REC-1 in the 2019 EIS/EIR, is no longer required. As such, Mitigation Measure REC-1 is replaced with Mitigation Measure SEIR-REC-1 to reflect this change; no other changes to Mitigation Measure REC-1 are required. No additional mitigation measures are required, as no new significant impacts related to recreation would occur.

**SEIR-REC-1 (Replaces REC-1 in the 2019 EIS/EIR): Campsite and Facilities Replacement.** Campsites closed at San Luis Reservoir during construction of the Modified Project shall be replaced at a 1:1 ratio at the San Luis Creek Use Area and then as necessary at the Los Banos Creek Use Area, including six American with Disabilities Act (ADA)-accessible campsites and RV accommodations. These new replacement campsites shall be developed consistent with the new facilities considered in the San Luis Reservoir State Recreation Area Resource Management Plan/General Plan (San Luis Reservoir SRA RMP/GP) and shall not exceed the quantities of new facilities considered in the San Luis Reservoir SRA RMP/GP at each use area. The new campsites shall be constructed concurrent to the crest construction period during a period of low precipitation in order to reduce the risk of accidental leaks or spills, potential for soil contamination, and to minimize erosion of loose materials in construction areas, as per Goal RES-WQ4 in the San Luis Reservoir SRA RMP/GP (Reclamation and CDPR 2013):

- Design, construct, and maintain buildings, roads, trails, campsites, boat launches and marinas, and associated infrastructure to minimize stormwater runoff, promote groundwater recharge, and prevent soil erosion.

The new campsites shall be constructed within the San Luis Creek Use Area at the SRA on O'Neill Forebay. The Bureau of Reclamation (Reclamation) shall include this mitigation requirement in bid documents and construction contracts.

In addition, Reclamation shall work with the California Department of Parks and Recreation to implement the following measure:

- The boat launch at the San Luis Creek Use Area shall be expanded by adding a launch lane and a boarding float. In addition, a fish cleaning station, public storage lockers, and shower facilities shall be developed at San Luis Creek Use Area.

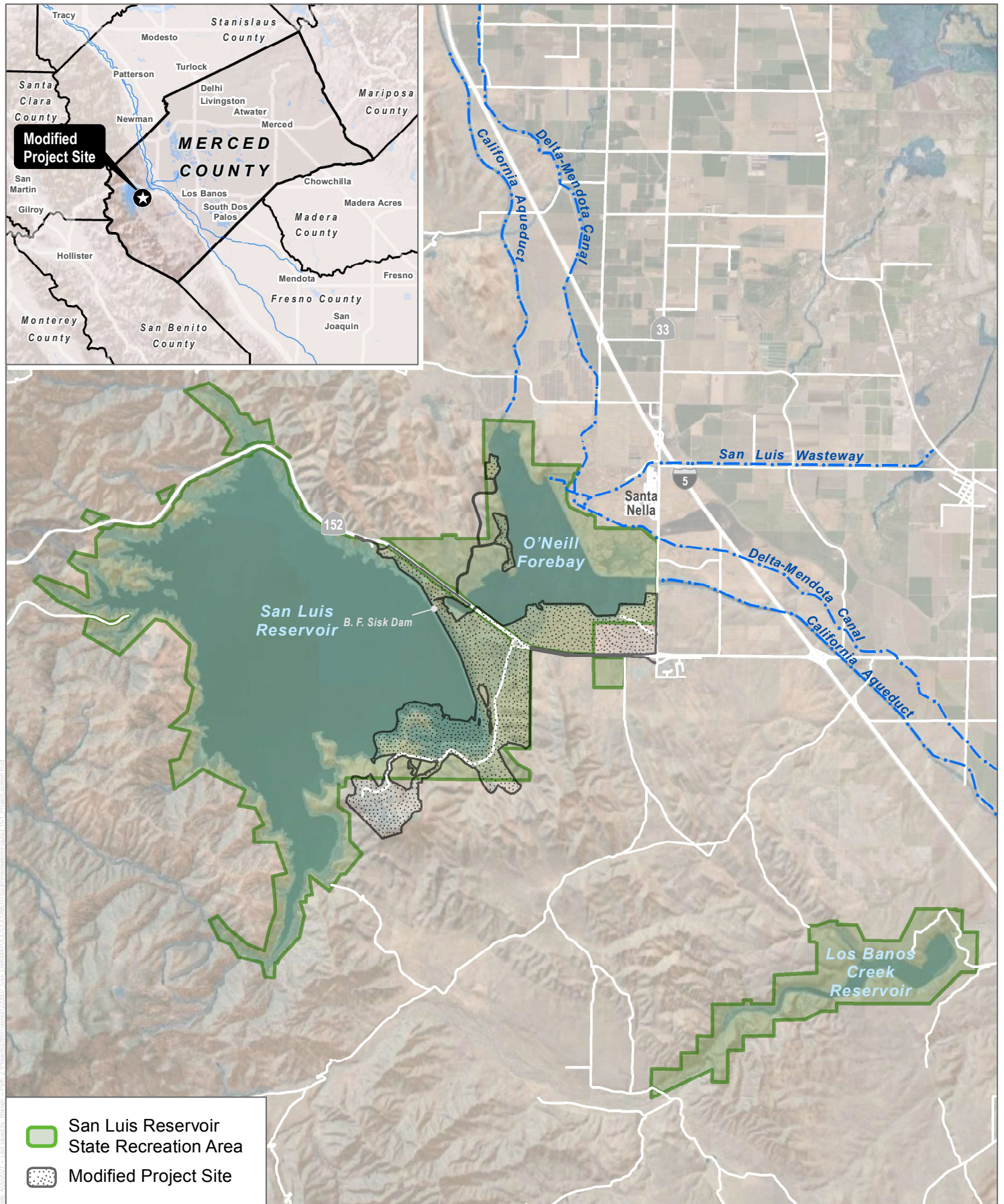
### 3.11.6 Level of Significance After Mitigation

The Modified Project would result in less-than-significant impacts with respect to recreational use trails being substantially reduced as a result of construction. No mitigation is required.

The Modified Project would result in less-than-significant impacts with mitigation incorporated with respect to construction activities substantially reducing access to or closing recreation areas. Implementation of mitigation measure SEIR-REC-1 is incorporated into the Modified Project analyzed throughout this SEIR. No new mitigation is required.

The Modified Project would result in less-than-significant impacts with respect to whether displaced recreation from sites affected by construction would substantially contribute to overcrowding or exceed the facility capacity at other recreation sites. No mitigation is required.

The Modified Project would result in less-than-significant impacts with respect to operational changes to water levels in recreational water bodies being reduced to an extent to which recreational uses would be substantially affected. No mitigation is required.



SOURCE: Basemap: ESRI World Imagery  
 Project Boundary: Reclamation, 9/2/2020  
 Canals: National Hydrologic Dataset 2020

**DUDEK** 0 1 2 Miles

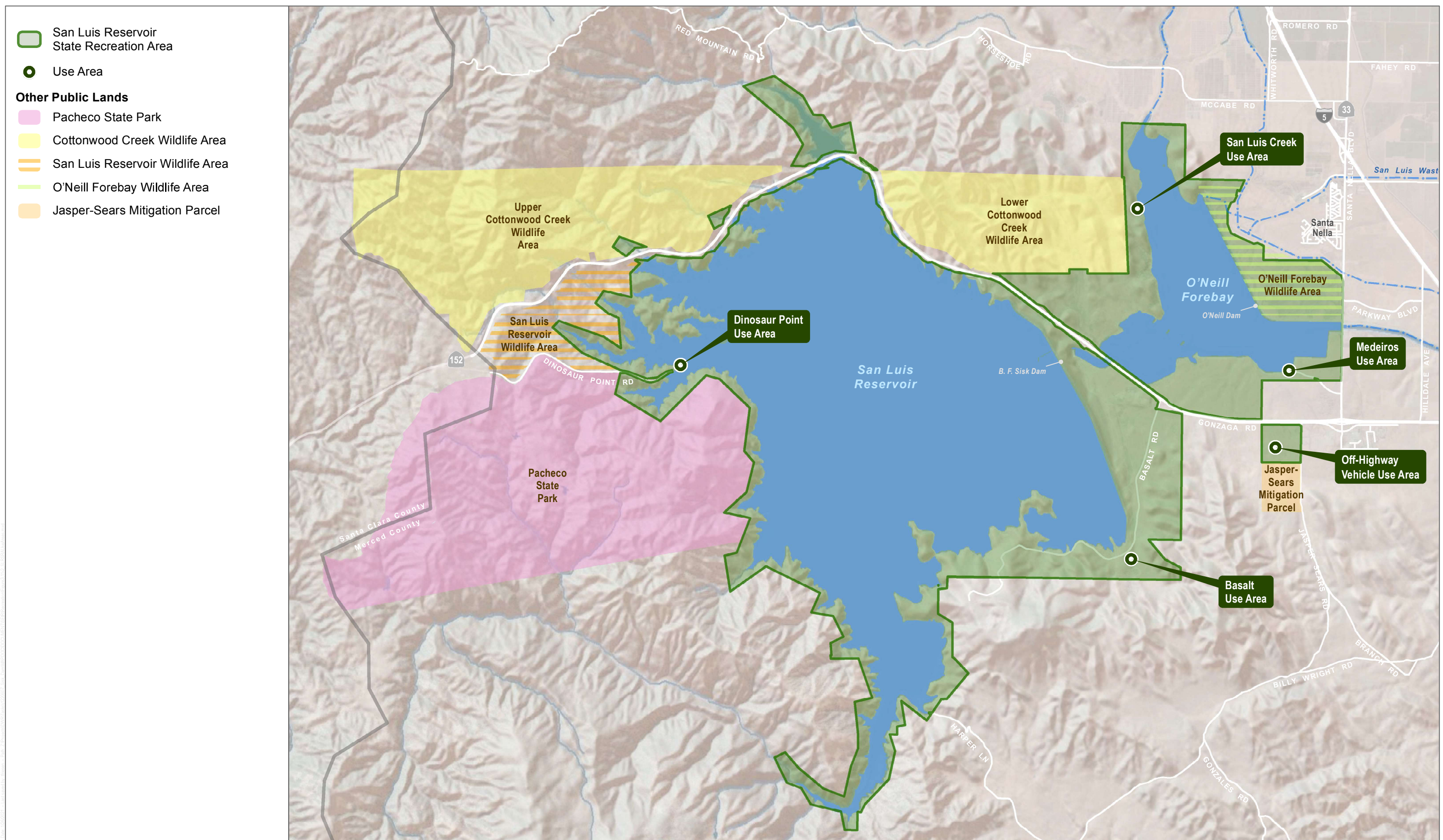
**FIGURE 3.11-1**

**San Luis Reservoir State Recreation Area**

B.F. Sisk Dam Safety of Dams Modification Project SEIR

INTENTIONALLY LEFT BLANK





SOURCE: CPAD 2019

**FIGURE 3.11-2**

San Luis Reservoir State Recreation Area Use Areas

B.F. Sisk Dam Safety of Dams Modification Project SEIR

INTENTIONALLY LEFT BLANK







INTENTIONALLY LEFT BLANK

## 3.12 Cultural Resources

This supplemental environmental impact report (SEIR) addresses proposed modifications to the B.F. Sisk Dam Safety of Dams Modification Project, which was previously evaluated in the B.F. Sisk Dam Safety of Dams Modification Project Environmental Impact Statement/Environmental Impact Report (2019 EIS/EIR). The project addressed in the 2019 EIS/EIR is referred to herein as the Approved Project; the Approved Project with proposed modifications identified since certification of the 2019 EIS/EIR is referred to herein as the Modified Project.

This section describes the existing cultural resources conditions of the Modified Project site and vicinity, identifies associated regulatory requirements, evaluates potential impacts, and identifies any applicable mitigation measures related to implementation of the Modified Project.

Please note that portions of the area covered within the 2019 EIS/EIR were not subject to cultural resources inventory or other cultural resources assessments. Management stipulations, specifically Mitigation Measure CR-1 from the 2019 EIS/EIR, required preparation of a document that would guide future cultural resources technical studies and evaluation efforts to be completed of these unsurveyed areas prior to being cleared for construction. Subsequent to the 2019 EIS/EIR, this document has been prepared and is entitled, Programmatic Agreement Among The Bureau of Reclamation, Interior Region 10 California-Great Basin; and The California State Historic Preservation Officer Regarding Compliance with Section 106 of the National Historic Preservation Act Pertaining to the Implementation of the Safety of Dams B.F. Sisk Dam Project (Programmatic Agreement) (Reclamation and SHPO 2019). As discussed in greater detail in this section, to provide analysis of the Modified Project and provide survey data pertinent to the requirements and implementation of the Programmatic Agreement, Dudek's cultural resources investigation (Giacinto et al. 2020) included survey of not only all additional impact areas that were added to the Approved Project subsequent to finalization of the 2019 EIS/EIR (the subject of this SEIR), but also priority areas that had not yet been subject to cultural resources investigations within the Approved Project area. There are accessible areas of the Modified Project that remain unsurveyed for cultural resources, such as Medeiros Campground and Basalt Campground. These areas will not be impacted by the Modified Project as presently designed. Should future design refinements introduce impacts to these unsurveyed areas, additional technical studies and environmental review would be required by Mitigation Measure CR-1 of the 2019 EIS/EIR. With the intent of fully documenting available cultural resources information, the general background sections below summarize the results of Dudek's investigation of both the previously unsurveyed areas within the Approved Project site and the additional impact areas of the Modified Project addressed by the present SEIR.

### 3.12.1 Existing Conditions

#### 3.12.1.1 Project Site

This analysis has been conducted with the intent of supplementing cultural resources studies completed to date and in support of the Approved Project. The 2019 EIS/EIR identified a footprint, or potential disturbance area, of approximately 3,914 acres for the Approved Project. This area is depicted in Figures 1-3, 2-3, and 2-4 and, for the purposes of the analysis carried out in this section, is referred to as the Approved Project site. Pacific Legacy Inc. conducted a pedestrian survey of portions of the Approved Project site and completed a cultural resources report for this area in May 2019 (Holm and Holson 2019). Evaluation recommendations within this report received State Historic Preservation Officer (SHPO) concurrence on April 29, 2021.



The analysis in this section focuses specifically on previously unsurveyed areas of the Approved Project site, as well as additional impact areas that have been added since certification of the 2019 EIS/EIR (i.e., the Modified Project). The proposed modifications associated with the Modified Project include the development of a new permanent public campground on the northwestern shore of O'Neill Forebay, improvements to the San Luis Creek Day Use Area, and the use of additional access roads and potential staging areas. The Modified Project also added two alternative on-site borrow areas—Borrow Area 12 and Borrow Area 14—within areas previously identified for construction staging in the 2019 EIS/EIR. While these borrow areas are within the Approved Project site, they represent an additional activity and would result in a greater level of disturbance than analyzed in the 2019 EIS/EIR. The Modified Project would introduce an additional 184 acres of impacted area. See Figure 3.12-1, Approved Project and Modified Project Survey Areas.

Intensive-level pedestrian survey included (1) the approximately 184 acres that have been added outside of the Approved Project site as a result of the additional impact areas of the Modified Project and (2) an additional approximately 204 acres within the Approved Project site that were not previously subject to survey by Pacific Legacy Inc. These approximately 388 acres comprise the Survey Area.

### 3.12.1.2 Cultural Context

The history of the Modified Project vicinity has been fully outlined within the Supplemental Cultural Resources Inventory for the B.F. Sisk Dam Safety of Dams Modification Project (Giacinto et al. 2020). Included below is a brief summary of that history.

#### **Prehistoric Context**

The archaeology and prehistory of San Joaquin Valley are not well understood. In addition, much of the archaeological material from the valley area has not been found in context, having been scavenged from the surface and placed in private collections or destroyed through agricultural activities. Early and widespread agricultural use of the valley floor has destroyed much of the bottomland archaeology, and siltation has most likely buried many resources well below the surface sediments. On the valley floor, in the Tulare Lake vicinity, fluted projectile points were found at the Witt Site, suggesting possible Clovis occupation in the region earlier than 11,000 years ago, during the Pleistocene. Other evidence for Early Holocene occupation around valley lakes has been recovered from Buena Vista Lake (Giacinto et al. 2020).

More than 30 years ago, Moratto provided a general chronological framework that encompasses the San Joaquin Valley. Since then, numerous additional studies have provided data to supplement and refine this framework (see below for examples). Building on this previous research, the following chronology contains four general time frames with associated periods, dates, and marker traits: Paleoindian (Paleoindian Period), Early Archaic (Early Period), Middle Archaic (Middle Period), and Late Archaic (Late Period). A description of each of these periods is presented as follows (Giacinto et al. 2020).

#### ***Paleoindian Period (ca. 12,000 to 9000 BP)***

There is ample evidence of human habitation in the southern San Joaquin Valley dating to approximately 12,000 years ago. While few sites of Paleoindian age have been identified in the San Joaquin Valley, occupation is known to date to at least 11,000 years ago. Most of the evidence for a Paleoindian presence in the valley has been limited to surface finds of fluted projectile points (see below), which are typically regarded by North American archaeologists as late Pleistocene or early Holocene time markers. These have been most

notably collected from the southern shoreline of Tulare Lake. Unfortunately, most of these discoveries have been made by amateur collectors, many of whom were collecting illegally, so virtually no provenance has been provided for these artifacts. This has resulted in an enormous and irretrievable loss of data for understanding the Paleoindian Period in this region (Giacinto et al. 2020).

#### ***Early Period (ca. 9000 to 6000 BP)***

Evidence for the Early Period in the San Joaquin Valley and the southern and central western slopes of the Sierra Nevada is meager. During this period, however, it is believed that human subsistence was based largely on the hunting of large game and fishing. Grinding implements, such as mortars, pestles, millingsstones, and handstones, appear infrequently during this time in the archaeological record. Other types of artifacts in these assemblages include hand-molded baked clay net weights, Olivella and Haliotis shell beads and ornaments, charmstones, and stemmed projectile points. Bone artifacts are uncommon. Burials are typically fully extended, oriented to the west, and generally have associated artifacts (e.g., quartz crystals). Cremations are rare for the Early Period (Giacinto et al. 2020).

#### ***Middle Period (ca. 6000 to 3000 BP)***

After about 6,000 years ago, the climate became generally warmer, and there appears to have been fairly substantial use of the area during the Middle Period. This period is characterized by a more generalized subsistence pattern. While hunting, fowling, and fishing continue to be the focus of subsistence activities, an increased emphasis on seed processing (particularly acorns) is evident. Artifacts include Olivella and Haliotis beads and other ornaments, distinctive spindle-shaped charmstones, cobble mortars, chisel-ended pestles, and large projectile points (inferring use of the atlatl). Bone tools, such as awls, fish spear tips, saws, and flakers, may be evidence of generalized subsistence, but preservation bias (i.e., the lack of these perishable tools in earlier components) may have affected the archaeological record. Burials are tightly flexed and have few associated artifacts. At the same time, there is a slight increase in the number of cremations. Evidence of violent death appears in the burial assemblage, as indicated by disarticulated skeletons with embedded weapon points (Giacinto et al. 2020).

#### ***Late Period (ca. 3000 to 150 BP)***

The Late Period has been postulated to represent the occupation of the ethnographic Yokuts, although this presumption is based on assemblage composition and must be conditioned by the recognition that artifacts cannot be equated with culture. This is especially true because it is increasingly understood that the high diversity of identified tribes in California may have been a relatively late phenomenon associated with the development of an individualized currency economy (Giacinto et al. 2020).

During the Late Period in general, subsistence began to focus on the processing of acorns and other labor-intense processed plant foods, with a proportionate decrease in the contribution of hunting, fowling, and fishing. Typical artifacts of this period include Olivella beads, Haliotis ornaments, stone beads and cylinders, clamshell disk beads, tubular smoking pipes of schist and steatite, arrow shaft straighteners, flat-bottomed mortars, cylindrical pestles, and small side-notched projectile points for use with the bow and arrow. Burials are often in flexed positions and cremation is more common than during the Middle Period (Giacinto et al. 2020).

### **Ethnohistoric (post-AD 1750)**

The history of Native American communities prior to the mid-1700s has largely been reconstructed through later mission-period and early ethnographic accounts. The first records of the Native American inhabitants of the region come predominantly from European merchants, missionaries, military personnel, and explorers. These brief, and generally peripheral, accounts were prepared with the intent of furthering respective colonial and economic aims and were combined with observations of the landscape. They were not intended to be unbiased accounts regarding the cultural structures and community practices of the newly encountered cultural groups. The establishment of the missions in the region brought more extensive documentation of Native American communities, though these groups did not become the focus of formal and in-depth ethnographic study until the early twentieth century. The principal intent of these researchers was to record the pre-contact, culturally specific practices, ideologies, and languages that had survived the destabilizing effects of missionization and colonialism. This research, often understood as “salvage ethnography,” was driven by the understanding that traditional knowledge was being lost due to the impacts of modernization and cultural assimilation. Alfred Kroeber applied his “memory culture” approach by recording languages and oral histories within the region (Giacinto et al. 2020).

The Modified Project falls on the boundary between Northern Valley Yokuts and Costanoan (Ohlone) populations documented during the ethnohistoric period. Costanoan and Yokuts are subgroups of the Penutian linguistic group spoken by populations that moved south from Oregon, displacing Hokan-speaking groups (Giacinto et al. 2020).

#### ***Northern Valley Yokuts***

Ethnohistoric inhabitants of the area now representing the Modified Project site would have likely spoken *Noptinte*, a dialect of Northern Valley Yokuts that has been documented by records held at Mission San Juan Bautista to have been used by neophytes from the Los Banos area. The Northern Valley Yokuts group inhabited the lower San Joaquin River watershed and its tributaries extending from the Calaveras River in the north to approximately the large bend of the San Joaquin River eastward near Mendota. The lower San Joaquin River meanders through the territory making bends, sloughs, and marshes full of tule reeds as it meanders. Farther from the rivers and marshes, the valley floor would have been dry and sparsely vegetated (Giacinto et al. 2020).

Northern Valley Yokuts habitation areas were most commonly situated in proximity to rivers and major tributaries, more often on the east side of the river. West-of-the-river populations were much sparser and concentrated in the foothills on minor waterways. Traditional villages were perched on top of low mounds on or near riverbanks. There was a high level of sedentism due to abundant riverine resources, though there were times of seasonal disbandment for harvesting wild plant resources such as acorns and seeds (Giacinto et al. 2020).

The Northern Valley Yokuts saw sharp and devastating decline from disease and relocation to coastal missions nearly immediately after Spanish contact. This only increased with the large influx of cattle ranching and Anglos Americans after the gold rush (Giacinto et al. 2020).

#### ***Costanoan (Ohlone)***

Ethnohistoric inhabitants immediately west of the Modified Project area spoke a variety of Costanoan. As an alternative to the term “Costanoan,” which was popularized through use by Kroeber, other researchers such as Merriam use “Ohlone” because it was the self-identifying term used by inhabitants of the region during interviews. Throughout this section, “Costanoan” is used to reference the language community, while “Ohlone” is used to describe the people (Giacinto et al. 2020).

Due to the effects of missionization, relatively little is known about the Ohlone ethnographically. The material culture of these people has largely been reconstructed from the archaeological record. Ohlone communities were generally organized into autonomous tribelets, with one or more permanent habitation areas near the coast or major drainages and a limited number of more peripheral semi-permanent villages situated near other important resources. As previously noted, these groups spoke different dialects of a broader, mutually intelligible language. The population within each tribelet generally numbered 200 to 400 people and was overseen by a headman and council of elders. Permanent villages were established near the coast and river drainages, while temporary camps were located in prime resource-collecting areas. The most common burial practice at the time of European contact was cremation (Giacinto et al. 2020).

### **The Historic Period**

#### ***Spanish Period (1769–1822)***

Spanish missionization of Alta California was initiated in San Diego in 1769. A total of 21 missions were constructed by the Dominican and Franciscan orders between 1769 and 1823. Missions in the region included San Juan Bautista (1797), Santa Clara de Asís (1776), San José (1797), and Santa Cruz (1791). The first Spaniards arrived in the San Joaquin Valley in 1772, led by don Pedro Fages). In 1805, A Spanish expedition led by Gabriel Moraga traversed Pacheco Pass, northwest of the Modified Project site, which had been a Yokut trail previously. A Spanish expedition from San Francisco named the vicinity of the Modified Project site San Luis Gonzaga after Saint Aloysius Gonzaga, a sixteenth-century Italian aristocrat and Jesuit (Giacinto et al. 2020).

#### ***Mexican Period (1822–1848)***

Mexico's separation from the Spanish Empire in 1821 and the secularization of the California missions in the 1830s caused further disruptions to Native American populations. Following the establishment of the Mexican Republic, the government seized many of the lands belonging to Native Americans, providing them as parts of larger land grants to affluent Mexican citizens and rancheros. The 1833 Secularization Act passed by the Mexican Congress ordered half of all mission lands to be transferred to Native Americans, and the other half to remain in trust and managed by an appointed administrator. These orders were never implemented due to several factors that conspired to prevent Native Americans from regaining their patrimony. A Mexican land grant, Rancho San Luis Gonzaga, was issued in the Modified Project vicinity to Juan Perez Pacheco and José Maria Mejía in 1843. This grant included more than 48,000 acres within present-day Merced and Santa Clara Counties. José Maria Mejía soon gave his portion of the land grant to Pacheco, who became the sole owner. Juan Perez Pacheco saw construction of the area's first adobe building around 1844, and the ownership of the rancho stayed with Pacheco into the American Period (Giacinto et al. 2020).

#### ***American Period (Post 1848)***

California was officially ceded to the United States in 1848, which led to the continued appropriation of Native American territory by ranchers, prospectors, and an increasing number of settlers. Pacheco Pass saw increased traffic into the mid-nineteenth century due to the 1849 Gold Rush and the discovery of gold in the Kern River in 1853. Over the decade, routes through Pacheco Pass became more formalized with the creation of a toll road in 1857, and the Butterfield Stage Lines established a regular route through the pass. Rancho San Luis Gonzaga became a stage station in the Butterfield Overland Mail stagecoach route, which connected Saint Louis, Missouri to San Francisco. The completion of the Transcontinental Railroad in 1869 facilitated the shipping of animal products to markets east (Giacinto et al. 2020).

While Americans slowly populated the San Joaquin Valley into the latter half of the nineteenth century, ranching continued to play an important economic role in the region around Rancho San Luis Gonzaga. The majority of Rancho San Luis Gonzaga was condemned by the State of California in 1962 to create B.F. Sisk Dam and San Luis Reservoir. To provide rock for the upstream face of the dam, Basalt Hill Quarry and the Rock Separation Plant were established nearby. Construction of B.F. Sisk Dam was completed by 1968, and on May 31, 1969, San Luis Reservoir filled for the first time. Later, Paula Fatjo, owner of Rancho San Luis Gonzaga and Juan Perez Pacheco's descendant, leased 5,000 acres of Rancho San Luis Gonzaga in a 25-year lease to support a wind energy conservation facility. Paula Fatjo died on December 30, 1992, and left the remaining acreage of the Rancho San Luis Gonzaga to the California Department of Parks and Recreation parks system (Giacinto et al. 2020).

### 3.12.1.3 Central California Information Center Records Search Results

A records search of the Survey Area and a 1-mile buffer was completed by Central California Information Center staff on May 8, 2020 (Confidential Appendix E of this SEIR). The records search included the Central California Information Center collection of mapped prehistoric, historical, and built-environment resources; California Department of Parks and Recreation (CDPR) site records; technical reports; archival resources; and ethnographic references. Additional consulted sources included the National Register of Historic Places (NRHP); California Inventory of Historical Resources/California Register of Historical Resources (CRHR); and listed Office of Historic Preservation Archaeological Determinations of Eligibility, California Points of Historical Interest, California Department of Transportation Bridge Surveys, historical maps, and California Historical Landmarks.

Central California Information Center records indicate that 57 previous cultural resources technical investigations have been conducted within 1 mile of the Survey Area. Of these studies, 22 cultural resources studies have covered the area subject to supplemental Dudek survey. Records at the Central California Information Center indicate that 9 cultural resources have been previously identified within or near the Survey Area (Table 3.12-1). In addition, 23 cultural resources have been identified within 1 mile of the Modified Project site.

**Table 3.12-1. Previously Recorded Cultural Resources Recorded as Intersecting or Near the Survey Area**

| Primary Number | Trinomial      | Name                           | Type                    | Period      | Attributes   |
|----------------|----------------|--------------------------------|-------------------------|-------------|--|
| P-24-000219    | CA-MER-000119  | 12-7-65 #1                     | Site                    | Prehistoric | Roads/trails; lithic scatter; bedrock milling feature; habitation debris   |
| P-24-001876    | CA-MER-000451H | 80131-01; Domengin Sheep Ranch | Structure, object, site | Historic    | Wells/cisterns; water conveyance system; single family property; ancillary building; engineering structure; trees/vegetation; farm/ranch |
| P-24-001986    | CA-MER-000492H | PL-SLLP-A-011                  | Structure, site         | Historic    | Foundations/structure pads; roads/trails; mines/quarries/tailings; standing structures; mine structure/building                          |
| P-24-001988    | CA-MER-000494H | PL-SLLP-A-015                  | Structure, other        | Historic    | Roads/trails   |



**Table 3.12-1. Previously Recorded Cultural Resources Recorded as Intersecting or Near the Survey Area**

| Primary Number | Trinomial      | Name  | Type                | Period   | Attributes   |
|----------------|----------------|---|---------------------|----------|--|
| P-24-002008    | None           | O'Neill Dam, O'Neill Forebay, and O'Neill Pumping-Generating Plant          | Building, structure | Historic | Ancillary building; public utility building; engineering structure; canal/aqueduct; dam; reservoir |
| P-24-002154    | CA-MER-000509H | PL-SLLPIP-16-01 Basalt Hill Quarry Rock Separation Plant                    | Site                | Historic | Foundations/structure pads; trash scatters; mines/quarries/tailings                                |
| P-24-002165    | CA-MER-000520H | PL-SLLPIP-16-14; 34 Survey Markers  | Site                | Historic | Survey markers   |
| P-24-002184    | None           | B.F. Sisk Dam, San Luis Reservoir Historic District                         | District            | Historic | Public utility building; engineering structure; canal/aqueduct; dam; reservoir                     |
| P-24-002185    | None           | B.F. Sisk Dam, San Luis Reservoir, and W. Gianelli Pumping-Generating Plant | Structure           | Historic | Public utility building; engineering structure; canal/aqueduct; dam; reservoir                     |

#### 3.12.1.4 Supplemental Pedestrian Survey

As noted, Pacific Legacy Inc. completed a cultural resources inventory report for portions of the Approved Project site in May 2019 (Holm and Holson 2019). Evaluation recommendations provided within this report received SHPO concurrence on April 29, 2021. Dudek archaeologists Ross Owen and Aristides Aguilera Figueroa completed an intensive-level pedestrian survey from May 11 to May 15, 2020. The Survey Area covered a total of 388 acres—approximately 204 acres within the Approved Project site that were not previously subject to survey and approximately 184 acres of additional impact areas associated with the Modified Project.

All fieldwork was performed using standard archaeological procedures and techniques that meet the Secretary of the Interior's standards and guidelines for cultural resources inventory and evaluation (48 FR 44720–44726). The areas added by the Modified Project were subject to a 100% survey with transects spaced no more than 15 meters apart. Survey crew was equipped with a GPS receiver with sub-meter accuracy. Field recording and photo documentation of cultural resources and the Modified Project setting was completed during the survey. A series of overview photographs was taken to document the current conditions. Location-specific photographs were taken using an Apple iPhone equipped with 12-megapixel resolution and georeferenced PDF maps of the Survey Area. Evidence for buried cultural deposits was opportunistically sought through inspection of natural or artificial erosion exposures and the spoils from rodent burrows. The Modified Project was observed to be heavily grassed, allowing for approximately one-fifth of the ground to be directly observed in most areas. Areas considered to have a higher potential to support archaeological resources, such as near drainages and exposed bedrock, were given more intensive attention by surveying more slowly and reducing transect spacing.

### Pedestrian Survey Results

Ground surface conditions were observed to be disturbed in sections of the Survey Area, which include the San Luis Creek Day Use Area, the vicinity of Basalt Hill Quarry, the vicinity of the Gianelli Pumping-Generating Plant, and existing roads. The Survey Area appeared fairly undisturbed in the area of the proposed new campground and some areas surrounding existing roads. Ground surface visibility was restricted due to tall grass, with approximately 20% directly observable during survey.

Seven of the eight previously recorded cultural resources within the Survey Area were relocated and found to be in the same general condition as previously recorded (Table 3.12-2). One cultural resource, P-24-000219, while mapped as adjacent or potentially intersecting areas introduced by the Modified Project, was not observed in the Survey Area and thus not reidentified. No previously unrecorded cultural resources were identified during the survey. In order to meet minimum standards for recordation outlined by the California Office of Historic Preservation, Dudek prepared California Department of Parks and Recreation DPR 523 series site forms for the relocated resources.

**Table 3.12-2. Cultural Resources Identified and/or Updated During Survey**

| Resource ID | Trinomial   | Resource Age | Resource Type   | Proximity to Additional Modified Project Areas               | UTM (NAD 1983)  | Description  |
|-------------|-------------|--------------|---|--|---|--|
| P-24-000219 | None        | Prehistoric  | Roads/trails; lithic scatter; bedrock milling feature; habitation debris                                      | Lies entirely out of APE (adjacent to existing day use area) | Confidential  | Village site   |
| P-24-001986 | CA-MER-492H | Historic-era | Quarry; industrial structure  | Intersects APE   | 670297mE<br>4,100,246mN   | Quarry processing area   |
| P-24-001988 | CA-MER-494H | Historic-era | Roads/trails  | Intersects APE for approx. 0.8 miles                         | 671006mE<br>4100496mN,<br>670565mE<br>4099785mN,<br>670552mE<br>4099777mN,<br>669294mE<br>4099313mN | Earthwork road   |
| P-24-002008 | None        | Historic-era | Ancillary building; public utility building; engineering structure; canal/aqueduct; dam; lake/river/reservoir | Intersects APE   | 673429mE<br>4107580mN   | O'Neill Dam, O'Neill Forebay, O'Neill Pumping-Generating Plant             |
| P-24-002154 | CA-MER-509H | Historic-era | Foundations/structure pads; trash scatter; mines/quarries/tailings  | Intersects approx. 0.9 acres of the APE                      | 669430mE<br>4098850mN (Datum)   | Quarry used during construction of San Luis Reservoir, started use in 1963 |

Table 3.12-2. Cultural Resources Identified and/or Updated During Survey

| Resource ID | Trinomial   | Resource Age | Resource Type  | Proximity to Additional Modified Project Areas | UTM (NAD 1983)                                      | Description  |
|-------------|-------------|--------------|--|--|---|--|
| P-24-002165 | CA-MER-520H | Historic-era | Markers  | Three (3) markers are within the APE           | Multiple (See Confidential Appendix E of this SEIR) | 38 historic survey markers, elevation markers, control points, and observation wells, in various locations |
| P-24-002184 | None        | Historic-era | Historic District: Public utility building; engineering structure; canal/aqueduct; dam; lake/river/reservoir | Majority of the APE lies within the district   | Multiple  | B.F. Sisk Dam/San Luis Reservoir Historic District   |
| P-24-002185 | None        | Historic-era | Public utility building; engineering structure; canal/aqueduct; dam; lake/river/reservoir                    | Intersect portions of the APE                  | 670970mE<br>4103384mN                               | B.F Sisk Dam   |

**Note:** APE = area of potential effect.

## 3.12.2 Relevant Plans, Policies, and Ordinances

### 3.12.2.1 Federal

#### National Register of Historic Places

The NRHP is the United States' official list of districts, sites, buildings, structures, and objects worthy of preservation. Overseen by the National Park Service, under the U.S. Department of the Interior, the NRHP was authorized under the National Historic Preservation Act, as amended. Its listings encompass all National Historic Landmarks, as well as historic areas administered by the National Park Service.

NRHP guidelines for the evaluation of historic significance were developed to be flexible and to recognize the accomplishments of all who have made significant contributions to the nation's history and heritage. Its criteria are designed to guide state and local governments, federal agencies, and others in evaluating potential entries in the NRHP. For a property to be listed in or determined eligible for listing, it must be demonstrated to possess integrity and to meet at least one of the following criteria:

The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

- A. That are associated with events that have made a significant contribution to the broad patterns of our history; or
- B. That are associated with the lives of persons significant in our past; or
- C. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- D. That have yielded, or may be likely to yield, information important in prehistory or history.

Integrity is defined in NRHP guidance, *How to Apply the National Register Criteria*, as “the ability of a property to convey its significance. To be listed in the NRHP, a property must not only be shown to be significant under the NRHP criteria, but it also must have integrity” (NPS 2009). NRHP guidance further asserts that properties be completed at least 50 years ago to be considered for eligibility. Properties completed fewer than 50 years before evaluation must be proven to be “exceptionally important” (criteria consideration G) to be considered for listing.

A historic property is defined as “any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the NRHP maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the NRHP criteria” (36 CFR Sections 800.16[i][1]).

Effects on historic properties under Section 106 of the National Historic Preservation Act are defined in the assessment of adverse effects in Title 36, Sections 800.5(a)(1) of the Code of Federal Regulations:

An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.

Adverse effects on historic properties are clearly defined and include, but are not limited to the following:

- (i) Physical destruction of or damage to all or part of the property;
- (ii) Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation and provision of handicapped access, that is not consistent

with the Secretary's Standards for the Treatment of Historic Properties (36 CFR Part 68) and applicable guidelines;

- (iii) Removal of the property from its historic location;
- (iv) Change of the character of the property's use or of physical features within the property's setting that contributes to its historic significance;
- (v) Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features;
- (vi) Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and
- (vii) Transfer, lease, or sale of property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance (36 CFR Section 800.5 [2]).

To comply with Section 106, the criteria of adverse effect are applied to historic properties, if any exist in a project's area of potential effect (APE), pursuant to Title 36, Section 800.5(a)(1) of the Code of Federal Regulations. If no historic properties are identified in a project's APE, a finding of "no historic properties affected" will be made for the project. If there are historic properties in the APE, application of the criteria of adverse effect will result in project-related findings of either "no adverse effect" or of "adverse effect," as described above. A finding of no adverse effect may be appropriate when a project's effects do not meet the thresholds in criteria of adverse effect outlined in Title 36, Section 800.5(a)(1) of the Code of Federal Regulations, in certain cases when the undertaking is modified to avoid or lessen effects, or if conditions were imposed to ensure review of rehabilitation plans for conformance with the Secretary of the Interior's Standards for the Treatment of Historic Properties (codified in 36 CFR Part 68).

If adverse effects findings were expected to result from a proposed project, mitigation would be required, as feasible, and resolution of those adverse effects by consultation may occur to avoid, minimize, or mitigate adverse effects on historic properties pursuant to Title 36, Part 800.6(a) of the Code of Federal Regulations.

#### **Native American Human Remains on Federal Land**

Under the Native American Graves Protection and Repatriation Act (25 USC 3001) and implementing regulations Title 43, Part 10 of the Code of Federal Regulations, the Bureau of Reclamation (Reclamation) is responsible for the protection of Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony that are discovered on Reclamation lands. All human remains and potential human remains must be treated with respect and dignity at all times. In the event that suspected human remains are discovered during Modified Project activity on Reclamation land, all activities in the immediate area will cease, and appropriate precautions will be taken to protect the remains and any associated cultural items from further disturbance. Reclamation will follow the procedures outlined in Title 43, Part 10.4 of the Code of Federal Regulations (Inadvertent Discoveries). Reclamation's protocol is also outlined in Appendix E of the Programmatic Agreement (Reclamation and SHPO 2019). The Reclamation Region 10 Regional Environmental Officer will be immediately notified by telephone and will take responsibility for the discovery by contacting the appropriate law enforcement and Reclamation officials. Within 3 working days of confirmation of the discovery (see 43 CFR Part 10.4[d][1][iii]), the Regional Cultural Resource Officer will ensure that Indian tribes likely to be affiliated with the discovered human remains (e.g., lineal descendant, culturally affiliated Indian tribe, Indian tribe with other cultural relationship, and Indian tribe that aboriginally occupied area) are notified by telephone or in person, with written confirmation. Treatment and handling of the remains will be determined through consultation between Reclamation and consulting tribes.



## 3.12.2.2 State

**California Register of Historical Resources**

In California, the term “historical resource” includes “any object, building, structure, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California” (California Public Resources Code, Section 5020.1[j]). In 1992, the California legislature established the CRHR “to be used by state and local agencies, private groups, and citizens to identify the state’s historical resources and to indicate what properties are to be protected, to the extent prudent and feasible, from substantial adverse change” (California Public Resources Code, Section 5024.1[a]). The criteria for listing resources on the CRHR, enumerated in the following text, were developed to be in accordance with previously established criteria developed for listing in the NRHP. According to California Public Resources Code, Section 5024.1(c)(1–4), a resource is considered historically significant if it (i) retains “substantial integrity,” and (ii) meets at least one of the following criteria:

1. Is associated with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage
2. Is associated with the lives of persons important in our past
3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values
4. Has yielded, or may be likely to yield, information important in prehistory or history

To understand the historic importance of a resource, sufficient time must have passed to obtain a scholarly perspective on the events or individuals associated with the resource. A resource less than 50 years old may be considered for listing in the CRHR if it can be demonstrated that sufficient time has passed to understand its historical importance (14 CCR 4852[d][2]).

The CRHR protects cultural resources by requiring evaluations of the significance of prehistoric and historic resources. The criteria for the CRHR are nearly identical to those for the NRHP, and properties listed or formally designated as eligible for listing in the NRHP are automatically listed in the CRHR, as are state landmarks and points of interest. The CRHR also includes properties designated under local ordinances or identified through local historical resource surveys.

**California Environmental Quality Act**

As described in the following text, the following California Environmental Quality Act (CEQA) statutes and State of California CEQA Guidelines (CEQA Guidelines) are of relevance to the analysis of archaeological, historic, and tribal cultural resources:

- California Public Resources Code, Section 21083.2(g), defines “unique archaeological resource.”
- California Public Resources Code, Section 21084.1, and CEQA Guidelines, Section 15064.5(a), define “historical resources.” In addition, CEQA Guidelines, Section 15064.5(b), defines the phrase “substantial adverse change in the significance of an historical resource.” It also defines the circumstances when a project would materially impair the significance of a historical resource.

- California Public Resources Code, Section 21074(a), defines “tribal cultural resources.”
- California Public Resources Code, Section 5097.98, and CEQA Guidelines, Section 15064.5(e), set forth standards and steps to be employed following the accidental discovery of human remains in any location other than a dedicated ceremony. The Native American Heritage Commission (NAHC) is to resolve disputes regarding the disposition of such remains. In addition, the Native American Historic Resource Protection Act makes it a misdemeanor, punishable by up to 1 year in jail, to deface or destroy a Native American historic or cultural site that is listed or may be eligible for listing in the CRHR.

### **California Health and Safety Code, Section 7050.5**

California law protects Native American burials, skeletal remains, and associated grave goods, regardless of their antiquity, and provides for the sensitive treatment and disposition of those remains. California Health and Safety Code, Section 7050.5, requires that if human remains are discovered in any place other than a dedicated cemetery, no further disturbance or excavation of the site or nearby area reasonably suspected to contain human remains can occur until the county coroner has examined the remains (California Health and Safety Code, Section 7050.5b). California Public Resources Code, Section 5097.98, also outlines the process to be followed in the event that remains are discovered. If the county coroner determines or has reason to believe the remains are those of a Native American, the county coroner must contact the California NAHC within 24 hours (California Health and Safety Code, Section 7050.5c). The NAHC will notify the most likely descendant. With the permission of the landowner, the most likely descendant may inspect the site of discovery. The inspection must be completed within 48 hours of notification of the most likely descendant by the NAHC. The most likely descendant may recommend means of treating or disposing of, with appropriate dignity, the human remains and items associated with Native Americans. California Public Resources Code, Sections 21083.2(b–c), and CEQA Guidelines, Section 15126.4, provide information regarding the mitigation framework for archaeological and historic resources, including examples of preservation-in-place mitigation measures. Preservation-in-place is the preferred manner of mitigating impacts to significant archaeological sites because it maintains the relationship between artifacts and the archaeological context and may also help avoid conflict with religious or cultural values of groups associated with the archaeological sites.

Under CEQA, a project may have a significant effect on the environment if it may cause “a substantial adverse change in the significance of an historical resource” (California Public Resources Code, Section 21084.1; 14 CCR 15064.5[b]). If a site is either listed or eligible for listing in the CRHR, included in a local register of historic resources, or identified as significant in a historical resources survey (meeting the requirements of California Public Resources Code, Section 5024.1[q]), it is a “historical resource” and is presumed to be historically or culturally significant for purposes of CEQA (California Public Resources Code, Section 21084.1; 14 CCR 15064.5[a]). The lead agency is not precluded from determining that a resource is a historical resource, even if it does not fall within this presumption (California Public Resources Code, Section 21084.1; 14 CCR 15064.5[a]).

A “substantial adverse change in the significance of an historical resource” reflecting a significant effect under CEQA means “physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired” (14 CCR 15064.5[b][1]; California Public Resources Code, Section 5020.1[q]). In turn, the significance of a historical resource is materially impaired when a project does any of the following:

1. Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the California Register; or

2. Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to Section 5020.1(k) of the California Public Resources Code or its identification in an historical resources survey meeting the requirements of Section 5024.1(g) of the California Public Resources Code, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or
3. Demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for inclusion in the California Register as determined by a lead agency for purposes of CEQA. (14 CCR 15064.5[b][2])

Pursuant to these sections, the CEQA inquiry begins with evaluating whether a project site contains any “historical resources,” then whether that project will cause a substantial adverse change in the significance of a historical resource such that the resource’s historical significance is materially impaired.

If it can be demonstrated that a project will cause damage to a unique archaeological resource, the lead agency may require reasonable efforts be made to permit any or all of these resources to be preserved in place or left in an undisturbed state. To the extent that they cannot be left undisturbed, mitigation measures are required (California Public Resources Code, Section 21083.2[a–c]).

California Public Resources Code, Section 21083.2(g), defines a unique archaeological resource as an archaeological artifact, object, or site about which it can be clearly demonstrated that without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

1. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information
2. Has a special and particular quality such as being the oldest of its type or the best available example of its type
3. Is directly associated with a scientifically recognized important prehistoric or historic event or person

Impacts to nonunique archaeological resources are generally not considered a significant environmental impact (California Public Resources Code, Section 21083.2[a]; 14 CCR 15064.5[c][4]). However, if a nonunique archaeological resource qualifies as a tribal cultural resource (California Public Resources Code, Sections 21074[c], 21083.2[h]), further consideration of significant impacts is required.

CEQA Guidelines, Section 15064.5, assigns special importance to human remains and specifies procedures to be used when Native American remains are discovered (14 CCR 15064.5). These procedures are detailed in California Public Resources Code, Section 5097.98.

### **California State Assembly Bill 52**

Assembly Bill (AB) 52 of 2014 amended California Public Resources Code, Section 5097.94, and added California Public Resources Code, Sections 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2, and 21084.3. AB 52 established that tribal cultural resources must be considered under CEQA, and also provided for additional Native American consultation requirements for the lead agency. California Public Resources Code, Section 21074, defines tribal cultural resources as follows:

- (a) “Tribal cultural resources” are either of the following:
  - (1) Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:

- (A) Included or determined to be eligible for inclusion in the California Register of Historical Resources.
- (B) Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.
- (2) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.
- (b) A cultural landscape that meets the criteria of subdivision (a) is a tribal cultural resource to the extent that the landscape is geographically defined in terms of the size and scope of the landscape.
- (c) A historical resource described in Section 21084.1, a unique archaeological resource as defined in subdivision (g) of Section 21083.2, or a “nonunique archaeological resource” as defined in subdivision (h) of Section 21083.2 may also be a tribal cultural resource if it conforms with the criteria of subdivision (a).

AB 52 formalizes the lead agency–tribal consultation process, requiring the lead agency to initiate consultation with California Native American tribes located on the contact list maintained by the NAHC. This includes California Native American groups that are traditionally and culturally affiliated with a project area, including tribes that may not be federally recognized. Lead agencies are required to begin consultation prior to the release of a negative declaration, mitigated negative declaration, or EIR.

Section 9 of AB 52 establishes that “a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment.” Section 6 of AB 52 added Section 21080.3.2 to the California Public Resources Code, which states that parties may propose mitigation measures “capable of avoiding or substantially lessening potential significant impacts to a tribal cultural resource or alternatives that would avoid significant impacts to a tribal cultural resource.” Further, if a California Native American tribe requests consultation regarding project alternatives, mitigation measures, or significant effects to tribal cultural resources, the consultation shall include those topics (California Public Resources Code Section 21080.3.2[a]). The environmental document and the mitigation monitoring and reporting program (where applicable) shall include any mitigation measures that are adopted (California Public Resources Code, Section 21082.3[a]).

### **Native American Human Remains**

California Public Resources Code, Section 5097 et seq., addresses the disposition of Native American remains on lands subject to state jurisdiction or related state-level regulatory review and protects such remains from disturbance, vandalism, or inadvertent destruction; establishes procedures to be implemented if Native American skeletal remains are discovered during construction of a project; and established the NAHC.

In the event that Native American human remains or related cultural material are encountered on lands under jurisdiction of, the state, or any city, county, district, authority, or public corporation, or any agency thereof, Section 15064.5(e) of the CEQA Guidelines (as incorporated from California Public Resources Code, Section 5097.98) and California Health and Safety Code, Section 7050.5, define the subsequent protocol. In the event of the accidental discovery or recognition of any human remains, excavation or other disturbances shall be suspended on the site or

any nearby area reasonably suspected to overlie adjacent human remains or related material. Protocol requires that the county coroner or county-approved coroner be contacted in order to determine if the remains are of Native American origin. Should the coroner determine the remains to be Native American, the coroner must contact the NAHC within 24 hours. The most likely descendant may make recommendations to the landowner or the person responsible for the excavation work for means of treating, with appropriate dignity, the human remains and any associated grave goods as provided in California Public Resources Code, Section 5097.98 (14 CCR 15064.5[e]).

### **San Luis Reservoir State Recreation Area Resource Management Plan/General Plan**

CDPR, in partnership with Reclamation, manages most of the San Luis Reservoir State Recreation Area (SRA). The CDPR planning process is integrated with Reclamation's resource management planning process. CDPR developed the San Luis Reservoir SRA Resource Management Plan/General Plan (San Luis Reservoir SRA RMP/GP) in partnership with Reclamation, and adopted the 25-year plan in 2013. The San Luis Reservoir SRA RMP/GP directs the future development, operations, and maintenance of the SRA, and CDPR and Reclamation continue to collaborate on the plan to guide future growth. Lands managed by CDPR for recreation are part of the state park system and comprise the SRA. The San Luis Reservoir SRA RMP/GP's primary objective is to identify general areas in which future development may occur for recreation management. The plan includes an overview of existing conditions, including a summary of opportunities and constraints, a plan for future use and management of the plan area, and the associated environmental analysis pursuant to the National Environmental Policy Act (NEPA) and CEQA (Reclamation and CDPR 2013).

The San Luis Reservoir SRA RMP/GP identifies a series of policies in the form of goals and guidelines. Goals and guidelines related to cultural resources include the following (Reclamation and CDPR 2013):

#### **Resource Management (RES)**

**Goal RES-H1:** Protect and preserve significant prehistoric and historic resources, and collections within the Plan Area, including those that may be undocumented.

#### **Guidelines**

- Maintain the existing inventory, mapping system, and database for cultural resources within the Plan Area.
- Provide for storage of collections and documentation and display of select cultural resources.
- Submit and complete site records to the State Historic Preservation Officer as necessary to determine eligibility for inclusion in the National Register of Historic Places, the California Register of Historical Resources, or for listing and recognition under CSP's [California Department of Parks and Recreation's] Cultural Resources Division, including under cultural landscapes.
- The District Superintendent may solicit the evaluation of potential cultural landscapes within the Plan Area using National Park Service (NPS) guidance on cultural landscapes as outlined in Protecting Cultural Landscapes. Prepare Cultural Landscape Reports when deemed appropriate and necessary.
- Consult with CSP's cultural resource specialists when planning the construction of new facilities and uses.
- When new development or improvements to existing facilities are proposed and may impact cultural resources, ensure compliance with NEPA and CEQA requirements.



## 3.12.2.3 Local

**Merced Vision 2030 General Plan**

As required by state law, Merced County has developed its own general plan. At a minimum, general plan documents must address the topics of land use, transportation, housing, conservation, open space, noise, and safety. These documents serve as statements of county goals, policies, standards, and implementation programs for the physical development of a county. The Merced Vision 2030 General Plan (Merced County General Plan), adopted in 2013, has established the year 2030 as the plan's time horizon. The Merced County General Plan recognizes the rich archaeological and historic past of Merced County and understands that certain measures must be stated to ensure protection of these resources. The Merced County General Plan Recreation and Cultural Resources Element applies California Public Resources Code, Section 21083.2, and CEQA Guidelines Section 15123.4(b) for resource significance and cultural resources management in the county. The following goal and policies would apply to the Modified Project (Merced County 2013):

***Recreation and Cultural Resources Element***

**Goal RCR-2:** Protect and preserve the cultural, archaeological, and historic resources of the County in order to maintain its unique character.

- **Policy RCR-2.1. Archaeological Site and Artifact Protection:** Require development projects that affect archaeological sites and artifacts to avoid disturbance or damage to these sites.
- **Policy RCR-2.2. Historical Area Preservation:** Support the preservation of historical structures and areas, particularly those listed on the National Registrar of Historic Places and California Registrar of Historic Places.
- **Policy RCR-2.3. Architectural Character Preservation:** Require that the original architectural character of significant State- and Federally-listed historic structures be maintained in compliance with preservation standards and regulations.
- **Policy RCR-2.4. Parks and Open Space Historic Resource Preservation:** Require the preservation of historic resources located in parks and publicly-owned open space areas.
- **Policy RCR-2.5. Human Remains Discovery:** Require that, in the event of the discovery of human remains on any project construction site, all work in the vicinity of the find will cease and the County Coroner and Native American Heritage Commission will be notified.
- **Policy RCR-2.6. Historic Buildings and Areas:** Identify buildings and areas with special and recognized historic, architectural, or aesthetic value to be preserved and rehabilitated during the Community Plan update process. New development should respect architecturally and historically significant buildings and areas, and conform to the current Secretary of the Interior's Standards for the Treatment of Historic Properties and Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings, and incorporate adaptive reuse practices, where feasible, to preserve the County's historical heritage and rural character.
- **Policy RCR-2.7. Historic Preservation:** Support the efforts of local preservation groups and community property owners to preserve or improve building facades and exteriors consistent with the historic and visual character of the specific building or area.
- **Policy RCR-2.8. Historical Preservation Area/Site Designations:** Allow sites of historical and archaeological significance to be designated as historical preservation areas or sites during the Community Planning process or on individual sites in rural areas.

- **Policy RCR-2.9. Historical and Cultural Resources Investigation, Assessment, and Mitigation Guidelines:** Establish and adopt mandatory guidelines for use during the environmental review processes for private and public projects to identify and protect historical, cultural, archaeological, and paleontological resources, and unique geological features.
- **Policy RCR-2.10. Tribal Consultation:** Consult with Native American tribes regarding proposed development projects and land use policy changes consistent with Planning and Zoning Law at Government Code Section 65351, and the OPR Tribal Consultation Guidelines (2005).

### 3.12.3 Thresholds of Significance

The following significance criteria from the 2019 EIS/EIR are used for the purposes of analysis in this SEIR. These criteria, which have not changed from the 2019 EIS/EIR, are identified in Chapter 23, Cultural Resources, of the 2019 EIS/EIR. A significant impact related to cultural resources would occur if the Modified Project would:

1. Result in adverse effects to a cultural resource included in or eligible for inclusion in the NRHP and/or the CRHR.

### 3.12.4 Impacts Analysis

#### Threshold 1

***Would the Modified Project result in adverse effects to a cultural resource included in or eligible for inclusion in the NRHP and/or the CRHR?***

| 2019 EIS/EIR Impact Determination                  | Modified Project Impact Determination              | New Significant Increase in Impact Severity? |
|--|--|--|
| Less than Significant with Mitigation Incorporated | Less than Significant with Mitigation Incorporated | No   |

#### Campground Construction and Day Use Area Improvements

The Modified Project would construct a new permanent campground on the northwestern shore of O'Neill Forebay and make improvements to the existing San Luis Creek Day Use Area. The proposed new campground would be built on 40 acres of undeveloped grassland bisected by an existing paved road on the west side of O'Neill Forebay. Both additional impact areas were subject to 100% pedestrian survey. The Survey Area appeared largely undisturbed in the area of the proposed new campground and some areas surrounding existing roads. Ground surface visibility was restricted due to tall grass, with approximately 20% directly observable during survey.

No new cultural resources were discovered and no previously recorded cultural resources were relocated in the campground construction and day use area improvement areas. The Modified Project could result in adverse effects to known or previously unknown, inadvertently discovered archaeological resources and human remains during earth disturbing activities. Through implementation of **Mitigation Measures SEIR-CR-1** and **SEIR-CR-2 (new mitigation measures)** (refer to Section 3.12.5, Mitigation Measures), which require investigation and assessment by a qualified archaeologist in the event that an unknown resource is encountered and that pertinent regulatory requirements are implemented in the event of human remains are encountered, respectively, impacts to archaeological resources resulting from the Modified Project would be reduced to **less than significant**.

Most ground-disturbing activities would occur in areas that have been substantially modified by existing dam infrastructure or recreational facilities, although it is possible that remnant areas of relatively less-disturbed soils remain. Based on review of information by Reclamation staff, areas with an elevated potential to support the presence of buried cultural deposits may be located within the Modified Project. Reclamation has developed a geoarchaeological sensitivity map and supporting summary that identifies areas of elevated potential for encountering buried resources within the Modified Project site; archaeological monitoring would be required in the areas identified by this map. Consulting Native American tribes would also be provided the opportunity to monitor in sensitive areas. With monitoring incorporated as outlined in **Mitigation Measure SEIR-CR-3 (new mitigation measure)**, this element of the Modified Project would result in **less-than-significant impacts** to a cultural resource included in or eligible for inclusion in the NRHP and/or CRHR.

### Changes in Borrow Area Location

The Modified Project added two alternative on-site borrow areas within areas previously identified for construction staging in the 2019 EIS/EIR. While these borrow areas are within the Approved Project site, they represent an additional activity and would result in a greater level of disturbance than contemplated by the 2019 EIS/EIR. These areas were subject to 100% pedestrian survey in a previous study (Holm and Holson 2019).

Three previously identified cultural resources were documented within the borrow area location. P-24-001988, P-24-002154, and P-24-002165 are located in the vicinity of the Basalt Hill Borrow Area. P-24-001988 had been evaluated as part of the previous study (Holm and Holson 2019) and recommended not eligible for CRHR/NRHP listing. These recommendations received SHPO concurrence on April 29, 2021. P-24-002154 and P-24-002165 have been determined not eligible for the NRHP (Reclamation 2017; OHP 2018).

As all portions of the two alternative on-site borrow areas were previously surveyed, no additional survey by Dudek was required and previously recorded resources are either determined not eligible or recommended not eligible for CRHR/NRHP listing in the borrow areas. For archaeological resources, construction and excavation may result in adverse effects to known or previously unknown, inadvertently discovered archaeological resources and human remains. Through implementation of **Mitigation Measures SEIR-CR-1** and **SEIR-CR-2**, which would require investigation and handling by a qualified archaeologist in the event that an unknown resource is encountered and proper procedures for encountering human remains, respectively, the Modified Project-level impact to archeological resources would be reduced to below a level of significance. Therefore, this element of the Modified Project would result in **less-than-significant impacts** to a cultural resource included in or eligible for inclusion in the NRHP and/or CRHR.

### Minor Additions to Contractor Work Area

The Modified Project includes minor temporary and permanent expansions of contractor work areas downstream of B.F. Sisk Dam that were not part of the Approved Project site addressed in the 2019 EIS/EIR. These additional elements are shown in Figures 2-4a and 2-4b, Modified Project Detail, and total approximately 41 acres. The additional contractor work areas include several staging/soil stockpiling areas downstream of the dam, as well as another small area of less than 1 acre immediately west of the dam's right abutment, where a haul road would be widened. The additional temporary haul road area is a portion of the footprint of the alignment of an existing road that crosses San Luis Reservoir and is exposed when the reservoir is at a low water level. These areas were subject to 100% pedestrian survey.

Three previously identified cultural resources was recorded potentially within the Survey Area (P-24-001986, P-24-002185, and P-24-002165; see Table 3.12-2, Cultural Resources Identified and/or Updated During Survey). P-24-

001986 has been evaluated as part of a previous study (Holm and Holson 2019) and recommended not eligible for CRHR/NRHP listing, with SHPO concurrence being received on April 29, 2021. P-24-002185 was subject to recent evaluation and recommended as eligible for listing in the CRHR/NRHP under Criterion A/1 (Webb and McMorris 2019). This resource has been subject to regular maintenance and upgrades since construction in the 1960s. Modified Project activities would be part of this series of maintenance and would not represent an adverse effect, though State Historic Preservation Officer review of this study and recommendation is pending. P-24-002165 has been determined not eligible for the NRHP (Reclamation 2017; OHP 2018).

No new cultural resources were discovered and previously recorded resources are either determined not eligible or would not be adversely affected by the Modified Project. For archaeological resources, construction and excavation may result in adverse effects to known or previously unknown, inadvertently discovered archaeological resources and human remains. Through implementation of **Mitigation Measures SEIR-CR-1** and **SEIR-CR-2**, which would require investigation and handling by a qualified archaeologist in the event that an unknown resource is encountered and proper procedures for encountering human remains, the Modified Project-level impact to archeological resources would be reduced to below a level of significance. Therefore, this element of the Modified Project would result in **less-than-significant** impacts to a cultural resource included in or eligible for inclusion in the NRHP and/or CRHR.

### Additional Construction Assumptions

The Modified Project outlines additional construction assumptions, including changes to the construction schedule, equipment and personnel specifications, the inclusion of the campground development and improvement, and dewatering specifications for proposed excavations at the base of the dam. The impact of the proposed new campground and improvements to the San Luis Creek Day Use Area are analyzed above under Campground Construction and Day Use Area Improvements. These Modified Project elements would have no relevance to cultural resources. Therefore, this element of the Modified Project would result in **less-than-significant impacts** to a cultural resource included in or eligible for inclusion in the NRHP and/or CRHR.

### Cumulative Impacts

Cumulative impacts on cultural resources consider whether impacts of the Modified Project, when taken together with other related projects identified within the vicinity of the Modified Project, substantially diminish the number of historic or archeological resources within the same or similar context or property type. Impacts to cultural resources, if any exist, tend to be site-specific.

Seven previously identified historic built-environment resources and no newly identified cultural resources were recorded within or adjacent to the Modified Project site. Three of these resources (P-24-02008, P-24-002184, and P-24-002185) were subject to recent evaluation and recommended as eligible for listing in the CRHR/NRHP under Criterion A/1 (Webb and McMorris 2019); State Historic Preservation Officer review of this study and related recommendation is pending. These resources have been subject to regular maintenance and upgrades since their construction in the 1960s. Modified Project activities would be part of this series of maintenance and would not represent an adverse effect.

Two other resources, P-24-001986 and P-24-001988, had been evaluated as part of a previous study (Holm and Holson 2019) and recommended not eligible for CRHR/NRHP listing; these findings received SHPO concurrence on April 29, 2021. P-24-002154 and P-24-002165 have been determined not eligible for the NRHP (Reclamation 2017; OHP 2018). The Modified Project was determined to have less-than-significant direct and indirect impacts on historic resources. Therefore, the Modified Project would not result in any cumulatively considerable impacts to historic resources.

For archaeological resources, cumulative projects may require extensive excavation in culturally sensitive areas, and thus, may result in adverse effects to known or previously unknown, inadvertently discovered archaeological resources. There is the potential for accidental discovery of other archaeological resources by the Modified Project, as well as by cumulative projects. Because all significant cultural resources are unique and non-renewable, all adverse effects or negative impacts contribute to a dwindling resource base. Through implementation of **Mitigation Measures SEIR-CR-1 through SEIR-CR-3**, which would require investigation and handling by a qualified archaeologist in the event that an unknown resource is encountered, proper procedures for encountering human remains, and construction monitoring requirements, respectively, the Modified Project-level impact to archeological resources would be reduced to **less than significant**.

Other individual projects occurring in the vicinity of the Modified Project would also be subject to the same requirements of CEQA as the Modified Project and any impacts to archaeological resources would be mitigated, as applicable. These determinations would be made on a case-by-case basis, and the effects of cumulative development on historical and archaeological resources would be mitigated to the extent feasible in accordance with CEQA and other applicable legal requirements. Therefore, impacts on archaeological resources would not be cumulatively considerable with mitigation incorporated (Mitigation Measures SEIR-CR-1 through SEIR-CR-3).

The Modified Project was determined to have less-than-significant direct impacts on human remains. Existing regulations are adequate to address the potential for impacts due to the inadvertent discovery of human remains on the Modified Project site. Other individual projects occurring in the vicinity of the Modified Project would also be subject to the same state requirements to contact appropriate agencies and coordinate with the county coroner. Therefore, the Modified Project would not result in any cumulatively considerable impacts related to human remains.

#### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant impacts with mitigation incorporated and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant with mitigation incorporated (see Section 3.12.5).

### 3.12.5 Mitigation Measures

The following mitigation measures are required to reduce cultural resources impacts. Notably, Mitigation Measures SEIR-CR-1 through SEIR-CR-3 have been added as new mitigation. Mitigation Measure CR-1 identified in the 2019 EIS/EIR is not required to reduce cultural resources impacts specifically resulting from components of the Modified Project as discussed above. However, Mitigation Measure CR-1 identified in the 2019 EIS/EIR remains applicable to the Modified Project as determined by the 2019 EIS/EIR.

**SEIR-CR-1 (New mitigation measure): Unanticipated Discovery of Archaeological Resources.** Prior to construction, a qualified cultural resources specialist, meeting the Secretary of the Interior's Professional Qualification Standards for Archaeology, shall review the final Modified Project design to confirm impacts to all known cultural resources and/or resources identified to be of importance to consulting Native American tribes, have been considered and addressed. As stipulated by Mitigation Measure CR-1 of the B.F. Sisk Dam Safety of Dams Modification Project Environmental Impact Statement/Environmental Impact Report (2019 EIS/EIR), the Programmatic Agreement Among The Bureau of Reclamation, Interior Region 10 California-Great Basin; and The California State Historic Preservation Officer Regarding Compliance with Section 106 of the National Historic



Preservation Act Pertaining to the Implementation of the Safety of Dams B.F. Sisk Dam Project (Programmatic Agreement) was prepared. This document, specifically the section pertaining to Treatment of Post Review Discoveries, provides that in the event of a post-review discovery during construction or other Modified Project-related activities, the Bureau of Reclamation (Reclamation) in conjunction with California Department of Water Resources (DWR) shall determine if ongoing construction activities will affect a previously unidentified cultural resource that may be eligible for the National Register of Historic Places and California Register of Historical Resources or affect a known cultural resource in an unanticipated manner, and address the discovery or unanticipated effect in accordance with Title 36, Part 800.13(b) of the Code of Federal Regulations (CFR) (Reclamation and SHPO 2019). There remain areas within the Modified Project that have not been subject to cultural resources survey because no activities are presently planned in these areas with potential to impact cultural resources. As stipulated by Mitigation Measure CR-1 of the 2019 EIS/EIR, should project plans change such that use of these areas could introduce impacts to cultural resources, additional cultural resources survey and evaluation efforts will be performed as stipulated in the Programmatic Agreement.

All construction crews shall be alerted to the potential to encounter sensitive cultural and tribal cultural material. This may occur through inclusion of a cultural resources component within a Worker Environmental Awareness Program or other preconstruction training. Prior to construction, a communication matrix with primary and secondary cultural resources points of contact from Reclamation, DWR, consulting parties, and other pertinent project personnel shall be developed and circulated. A simple overview guide with roles and responsibilities, cultural resource management protocols, and a list of guiding documents shall be prepared as a companion to this communication matrix prior to construction. In the event that archaeological resources (e.g., sites, features, or artifacts) are exposed during construction activities for the Modified Project, all construction work occurring in the vicinity shall immediately stop until a qualified archaeologist can evaluate its significance and determine whether additional study is warranted. A minimum work exclusion buffer should be assumed to be no less than 100 feet, or as otherwise specified by the approved Programmatic Agreement (Reclamation and SHPO 2019) and its future amendments. This buffer may be adjusted by the qualified archaeologist in consultation with the lead agency. Prehistoric archaeological deposits may be indicated by the presence of discolored or dark soil, fire-affected material, the presence of imported shell, burned or complete bone, non-local lithic materials, or other characteristics observed to be atypical of the surrounding area. Common prehistoric artifacts may include modified or battered lithic materials; lithic or bone tools that appeared to have been used for chopping, drilling, or grinding; projectile points; fired-clay ceramics or non-functional items; and other items. Historic-age deposits are often indicated by the presence of glass bottles and shards, ceramic material, building or domestic refuse, ferrous metal, or old features such as concrete foundations or privies. Depending on the nature and the significance of the find under the California Environmental Quality Act (14 CCR 15064.5[f]; California Public Resources Code, Section 21082) and/or Section 106 of the National Historic Preservation Act, it may be appropriate for the qualified archaeologist to simply record the find and allow work to continue. Avoidance should be considered the preferred option for treatment of unanticipated cultural resources. Prior to any ground-disturbing investigative techniques, the feasibility of resource avoidance should be considered. If the discovery proves significant, as determined by the qualified archaeologist in consultation with the lead agency(s) and other consulting parties, additional work, such as testing, data recovery, or other alternatives, may be warranted. The qualified archaeologist shall prepare a report to document compliance with

approved mitigation requirements and to DWR/Reclamation standards. This report shall be reviewed by lead agency staff and, once finalized, submitted to a California Historical Resources Information System information center.

Reclamation will ensure that any non-Native American Graves Protection and Repatriation Act-related cultural materials and associated records falling under Reclamation's Scope of Collections Statement (Programmatic Agreement, Appendix F) that result from the identification, evaluation, and treatment of historic properties on Reclamation land conducted under the Programmatic Agreement shall be properly maintained in accordance with 36 CFR 79. If there is an adverse effect determined that requires the development of a Historic Properties Treatment Plan (HPTP) under the Programmatic Agreement, Reclamation shall ensure that documentation of the curation of these materials is prepared and provided to parties named in the HPTP specific to the resolution of effects for that historic property as stipulated within the HPTP. Reclamation's responsibilities under the Programmatic Agreement shall continue and shall include follow-up with consulting parties should any changes to the Modified Project occur.

**SEIR-CR-2 (New mitigation measure): Unanticipated Discovery of Human Remains.** In the event that Native American human remains, funerary objects, sacred objects, and/or objects of cultural patrimony are inadvertently discovered under or on the surface of Bureau of Reclamation (Reclamation) lands, Reclamation shall follow the procedures outlined in the Native American Graves Protection and Repatriation Act (NAGPRA), as specified in the implementing regulations at Title 43, Section 10.2(d)(1–2) of the Code of Federal Regulations (CFR) and Stipulation X and Appendix E of the Programmatic Agreement Among The Bureau of Reclamation, Interior Region 10 California-Great Basin; and The California State Historic Preservation Officer Regarding Compliance with Section 106 of the National Historic Preservation Act Pertaining to the Implementation of the Safety of Dams B.F. Sisk Dam Project. Reclamation shall ensure that all such NAGPRA cultural items encountered during any undertaking on Reclamation lands are treated in accordance with the requirements at Section 3(c–d) of NAGPRA and the implementing regulations at 43 CFR 10.

On State-owned or private lands, in accordance with Section 7050.5 of the California Health and Safety Code, if suspected human remains are found, the county coroner shall be immediately notified of the discovery. No further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains shall occur on either federal or State-owned lands until agency approval is provided. On State-owned or private lands, the county coroner shall determine within 2 working days of notification of the discovery whether the remains are human in origin. If the county coroner determines that the remains are, or are believed to be, Native American, the county coroner shall notify the Native American Heritage Commission (NAHC) in Sacramento within 24 hours. In accordance with California Public Resources Code, Section 5097.98, the NAHC must immediately notify those persons it believes to be the most likely descendant from the deceased Native American. The descendants or authorized representative may, with the permission of the owner of the land, inspect the site of the discovery of the Native American human remains and may recommend to the owner or the person responsible for the excavation work means for treatment or disposition, with appropriate dignity, of the human remains and any associated grave goods. The most likely descendant shall complete inspection of the remains within 48 hours of being granted access to the site.

**SEIR-CR-3 (New mitigation measure) Archaeological and Native American Monitors and Worker Environmental Awareness Program.** The Bureau of Reclamation (Reclamation) has developed a geoarchaeological sensitivity map and supporting summary that identifies areas of elevated potential for encountering buried resources within the area of potential effect; archaeological monitoring shall be required in the higher sensitivity areas identified by this map. Archaeological monitors shall be provided a copy of Reclamation’s geoarchaeological sensitivity map and supporting documentation at least 30 days prior to the initiation of ground-disturbing activities. Consulting Native American tribes shall be given the opportunity to monitor in higher sensitivity areas identified as having elevated potential for encountering buried resources. A copy of the geoarchaeological sensitivity map and supporting documentation shall be provided to Native American Monitors at least 30 days prior to the initiation of ground-disturbing activities within areas subject to monitoring. Prior to and during construction, all construction crews shall be alerted to these monitoring requirements and the potential to encounter sensitive cultural and tribal cultural material. This may occur through inclusion of a cultural resources component within a Worker Environmental Awareness Program or other preconstruction training.

### 3.12.6 Level of Significance After Mitigation

With incorporation of Mitigation Measure CR-1 from the 2019 EIS/EIR, as well as Mitigation Measures SEIR-CR-1, SEIR-CR-2, and SEIR-CR-3, the Modified Project would result in less-than-significant impacts with respect to resulting in adverse effects to cultural resources included in or eligible for inclusion in the NRHP and/or the CRHR. The 2019 EIS/EIR Mitigation Measure CR-1 would ensure ongoing compliance with federal regulatory requirements as well as agreements between DWR and Reclamation that have been outlined in the PA. Mitigation Measure SEIR-CR-1 requires a qualified archaeologist to be consulted in the event of an unanticipated cultural resource discoveries, Mitigation Measure SEIR-CR-2 outlines the procedure of notification in the event of human remains being uncovered, and Mitigation Measure SEIR-CR-3 requires archaeological monitoring in areas of high sensitivity.



SOURCE: Basemap: ESRI World Imagery  
 Project Boundary: Reclamation, 9/2/20  
 Previous Boundary: DWR, 4/2019

**DUDEK** 0 0.5 1 Miles

**FIGURE 3.12-1**

**Approved Project and Modified Project Survey Areas**

B.F. Sisk Dam Safety of Dams Modification Project SEIR

INTENTIONALLY LEFT BLANK



## 3.13 Geology, Seismicity, and Soils

This supplemental environmental impact report (SEIR) addresses proposed modifications to the B.F. Sisk Dam Safety of Dams Modification Project, which was previously evaluated in the B.F. Sisk Dam Safety of Dams Modification Project Environmental Impact Statement/Environmental Impact Report (2019 EIS/EIR). The project addressed in the 2019 EIS/EIR is referred to herein as the Approved Project; the Approved Project with proposed modifications identified since certification of the 2019 EIS/EIR is referred to herein as the Modified Project.

This section describes the existing geology and soil conditions associated with the Modified Project site and vicinity, identifies associated regulatory requirements, evaluates potential impacts, and identifies any applicable mitigation measures related to the implementation of the Modified Project.

### 3.13.1 Existing Conditions

#### 3.13.1.1 Regional Geology

The Modified Project site is located along the boundary of the Great Valley and Coast Ranges Geomorphic Provinces, two of the dominant structural features in California. The Coast Ranges Province is a mountainous, northwest-trending region that extends approximately 500 miles in a north-south direction, ranging from the Transverse Ranges Province (in the south) to the Oregon border. In the vicinity of the Modified Project site, the Coast Ranges are expressed as the easternmost extension of the Diablo Range foothills. Conversely, the Great Valley Province is an alluvial plain about 50 miles wide and 400 miles long in Central California. The Great Valley is geologically monotonous and forms a trough in which sediments have been deposited almost continuously since the Jurassic period (about 160 million years ago) (CGS 2002a). The Great Valley represents the alluvial, flood, and delta plains of its two major waterways, the Sacramento and San Joaquin Rivers (CGS and CDPR 2015).

The boundary between the Coast Ranges and Great Valley Provinces near the Modified Project area is roughly delineated by the Ortigalita Fault and O'Neill Fault Zones, which pass underneath and to the south of San Luis Reservoir and O'Neill Forebay (Figure 3.13-1, Regional Faulting). The Ortigalita Fault separates the Upper Cretaceous marine bedrock units and Plio-Pleistocene non-marine alluvial fan and basin deposits of the Great Valley Sequence (located to the east of the fault) from the Upper Jurassic/Lower Cretaceous Franciscan Assemblage bedrock units of the Diablo Range foothills (located to the west of the fault) (CGS 2020a).

#### 3.13.1.2 Site Topography

The additional impact areas of the Modified Project are located (1) immediately downstream of the central and southern base of the dam (i.e., the additional staging and stockpiling areas); (2) within approximately 0.5 miles downstream of the southern portion of the dam (i.e., Borrow Areas 12 and 14); and (3) on the west shore of O'Neill Forebay (i.e., the proposed campground and existing San Luis Creek Day Use Area) (Figure 3.13-2, Geologic Map).

The embankment of the dam is steeply to moderately sloping, undulating, and sparsely vegetated. A concrete-lined spillway conduit of the dam is located within the northern portion of the embankment, immediately east of the Gianelli Pumping-Generating Plant (Figure 2-4A, Modified Project Detail). The northwestern and western shoreline of O'Neill Forebay, in the vicinity of the proposed campground and existing San Luis Creek Day Use Area, consists of relatively flat-lying areas adjacent to the shoreline, with gentle to moderately sloping hillsides along the western portions of these additional impact areas.

Southeast of the dam embankment, Borrow Area 12 consists of an approximately 28-acre grassland hillside that is about 100 feet higher than the surrounding lower-lying area (Figure 3.13-2). The top of Borrow Area 12 is relatively flat, having been used in the past as a borrow area for the initial construction of the dam. The adjoining (to the south) 200-acre Borrow Area 14 encompasses four grassland hills, which are up to 200 feet higher than the downstream base of the dam. The topography of Borrow Area 14 primarily includes gentle to moderate slopes, with localized areas of moderately steep slopes.

Near the southern shoreline of San Luis Reservoir, south of Basalt Road, the Modified Project area consists of moderately to steeply sloping, undulating, sparsely vegetated hillsides. North of Basalt Road, near the southeastern shoreline of the Reservoir, the Modified Project area consists of low-lying flat topography (Figure 2-4B, Figure 3.13-2).

### 3.13.1.3 Geologic Units

The following summarizes the geologic units that underlie the Modified Project area.

#### **Artificial Fill**

As illustrated on Figure 3.13-2, the B.F. Sisk Dam embankment consists of artificial fill deposits, which were derived in part from the Modified Project area, including Borrow Area 12 and the Basalt Hill Borrow Area.

#### **Landslide Deposits**

Numerous large Quaternary-age (past 1.6 million years) landslide deposits radially emanate from Basalt Hill, in the southern portion of the Modified Project area, upslope of a proposed staging and stockpiling area (Figure 3.13-2). Although the headscarps of these landslides primarily occur within Tertiary basalt deposits, most of the landslides occur in shale deposits of the Cretaceous-age Panoche Formation, as described below (Dibblee 2007).

#### **Alluvium**

Holocene (past 11,700 years) alluvium, consisting of relatively unconsolidated gravel, sand, and clay, is present in flat-lying areas of the Modified Project area, including portions of the proposed campground, portions of the existing San Luis Creek Day Use Area, canyon bottoms within Borrow Area 14, and portions of an additional staging and soil stockpiling area near Basalt Hill (Figure 3.13-2) (Dibblee 2007).

#### **Panoche Formation**

Cretaceous-age (65 to 145 million years ago) bedrock of the Panoche Formation underlies most of the eastern shoreline of San Luis Reservoir and portions of the dam embankment (Figure 3.13-2). This formation consists primarily of sandstone, shale, and lenses of coarse-grained conglomerates, consisting of boulders, cobbles, and pebbles of porphyritic<sup>1</sup> and granitic rock (Dibblee 2007; Scheirer and Magoon 2007). In the Modified Project area, the dam embankment and additional staging and stockpiling areas on the downstream side of the dam are primarily underlain by conglomerate (presumably including beneath the alluvium, based on the bedding orientation). Shale, with lesser amounts of conglomerate, underlie portions of the proposed campground and existing San Luis Creek Day Use Area. Shale and sandstone primarily underlie Borrow Areas 12 and 14; and shale deposits underlie a portion of the additional staging and stockpiling area near Basalt Hill (Dibblee 2007).

---

<sup>1</sup> A rock that has a distinct difference in the size of the crystals, with at least one group of crystals obviously larger than another group.

### 3.13.1.4 Soils

The following summarizes the soil units that underlie the Modified Project area.

#### **Oneil Silt Loam**

Oneil silt loam is present in areas of Panoche Formation shale and sandstone, as described above, including much of the existing San Luis Creek Day Use Area, and Borrow Areas 12 and 14 (Figure 3.13-2). This soil unit is present on hillsides, ranging from 8% to 50% slopes, and is derived from weathered sandstone and shale. These soils are well-drained, with medium to high runoff capacity (USDA 2020).

#### **Oquin Fine Sandy Loam**

Oquin fine sandy loam is present in areas of alluvium in the vicinity of the proposed campground, adjacent to O'Neill Forebay (Figure 3.13-2). This soil unit is present on gently sloping areas, with gradients of 2% to 8%, and is derived from calcareous sandstone. These soils are well-drained, with low runoff capacity (USDA 2020).

#### **Wisflat-Rock Outcrop-Arburua Complex**

Wisflat-Rock outcrop-Arburua complex is present in the western portion of the proposed campground area, overlying Panoche Formation sandstone and shale (Figure 3.13-2). This soil type is present on hillsides with 30% to 50% gradients and is derived from sandstone and shale. These soils are well-drained, with a medium runoff capacity (USDA 2020).

#### **Xerofluvents, Extremely Gravelly**

The proposed additional staging and stockpiling area located adjacent to the Gianelli Pumping-Generating Plant is underlain by Xerofluvents (Figure 2-4A, Modified Project Detail). This soil type typically consists of gravelly alluvium at the base of slopes, is poorly drained, with low runoff capacity (USDA 2020).

#### **Ballvar Loam**

The proposed additional staging and stockpiling areas at the southern end of the dam (Figure 3.13-2) are underlain by Ballvar loam. These soils are generally located on alluvial fans, on 2% to 8% slopes, are well-drained, with a high runoff capacity (USDA 2020).

### 3.13.1.5 Seismicity and Faulting

The Modified Project area is in a seismically active region. Several large and well-known faults are located near the Modified Project area, and movement along those faults, most notably the San Andreas Fault Zone, has greatly influenced the erosional and depositional history of the area (Figure 3.13-1). The faults closest to the Modified Project area are the Ortigalita and O'Neill Fault Zones. Other significant faults in the region include the Calaveras Fault Zone, San Joaquin Fault, and Quien Sabe Fault.

The California Geological Survey (CGS) (2018a) classifies faults as follows:

- **Holocene-active faults:** faults that have demonstrated surface displacement during the past approximately 11,700 years (i.e., Holocene time). These faults exhibit signs of geologically recent movement, are most likely to experience movement in the near future, and are capable of surface rupture. These faults are also considered “active faults.” In addition, Holocene-active faults that have demonstrated surface displacement in the last 200 years can be further classified as “historic faults.”
- **Pre-Holocene faults:** faults that have not demonstrated surface displacement in the past 11,700 years (Holocene) but have moved during the past 130,000 years (late Quaternary) or 1.6 million years (Quaternary undifferentiated). These faults are also considered “potentially active faults” and may be capable of surface rupture but are less likely than Holocene-active faults to cause surface rupture. These faults are also capable of generating future earthquakes.
- **Age-undetermined faults:** faults where the recency of fault movement has not been determined. These faults are also considered “inactive faults.”

Holocene-active faults have been responsible for large historical earthquakes in Central and Northern California, including the 1868 Hayward earthquake (estimated moment magnitude [Mw] 6.9); the 1906 San Francisco earthquake (estimated Mw 7.9); and the 1989 Loma Prieta earthquake (Mw 6.9).

Most of the Holocene-active faults in California are manifested as fault zones. Fault zones are defined as a region, varying in width from yards to miles, that is bounded by major faults within which subordinate faults may be arranged variably or systematically. For example, the San Andreas Fault Zone is a region of crushed and broken rock, varying in width from a few hundred feet to a mile wide. Many smaller faults branch from and join the San Andreas Fault Zone (USGS 2016). Faults in proximity to the Modified Project site are listed in Table 3.13-1. Distances from the additional impact areas of the Modified Project site to individual faults represent the distance to the nearest fault segment within the respective fault zones.

**Table 3-13-1. Regional Faulting**

| Regional Faulting      | Approximate Closest Distance to the Modified Project Site (miles) | Fault Age       | Probable Magnitude (Mw) <sup>2</sup> |
|------------------------|---|-----------------|--------------------------------------|
| Ortogonal Fault Zone   | 0.5   | Holocene-active | 6.9                                  |
| O’Neill Fault Zone     | 1.0   | Late-Quaternary | Undetermined                         |
| San Joaquin Fault      | 5.0   | Holocene-active | Undetermined                         |
| Quien Sabe Fault       | 17.0  | Holocene-active | 6.4                                  |
| Calaveras Fault Zone   | 21.0  | Holocene-active | 6.8                                  |
| San Andreas Fault Zone | 28.0  | Holocene-active | 7.2–7.4                              |

**Source:** USGS 2020a; CGS 2020; Caltrans 2001; Johnson 2013.

### San Andreas Fault Zone

The Holocene-active San Andreas Fault extends for about 680 miles along the western margin of California. This fault is located near the coast in Northern California but traverses inland portions of the state to the south

<sup>2</sup> Moment magnitude (Mw) is a measure of earthquake magnitude (size or strength) based on seismic energy. Magnitudes are based on a logarithmic scale (base 10), indicating that for every whole number increase on the magnitude scale, recorded ground motion increases 10 times in strength. Probable magnitude is the estimated magnitude of a given fault if it were to activate.

of San Francisco (Figure 3.13-1), extending to the Salton Sea in Imperial County. The San Andreas Fault is the defining element of a network of right-lateral faults that constitute the San Andreas Fault System, which collectively accommodates most of the relative north–south motion between the Pacific and North American plates (USGS 2020a).

Many large and historical earthquakes have occurred on active faults associated with the regional stress field of the San Andreas Fault System. In addition, the San Andreas Fault has generated significant damaging earthquakes in 1838 and 1865, as well as the Great San Francisco Earthquake of 1906 (USGS 2020a). Expected seismic magnitudes vary between each segment of the San Andreas Fault. The closest fault segment of the San Andreas Fault to the additional impact areas of the Modified Project area is the Creeping section, which is located approximately 28 miles to the southwest and has the potential to generate between a Mw 7.2 to 7.4 earthquake (Johnson 2013; CGS 2020). According to a 2008 Earthquake Rupture Forecast Study by the Working Group on California Earthquake Probabilities (WGCEP), the San Andreas Fault has a 59% chance of generating a Mw 5.0 or more within the next 30 years (WGCEP 2008).

#### **Ortigalita Fault Zone**

The Holocene-active Ortigalita Fault Zone is a major north–northwest-striking, right-lateral strike-slip fault, which is an eastern extension of the San Andreas Fault System. Near the Modified Project area, the Ortigalita Fault Zone delineates the boundary between the Franciscan Assemblage of the Diablo Range from the geologic formations in the Great Valley Sequence (Figure 3.13-1) (USGS 2020a). Two distinct geometric sections of the fault are located near the Modified Project site, including the Los Banos Valley and Cottonwood Arm sections (Figure 3.13-3, Local Faulting). A 3.1-mile-wide right-step separates the segments across San Luis Reservoir (Caltrans 2001). The Los Banos Valley section of the fault is approximately 0.7 miles west of the Basalt Hill Borrow Area of the Approved Project, while the Cottonwood Arm section transects Basalt Campground (Figure 2-4B), approximately 0.5 miles east and west of a proposed staging/stockpiling area and additional temporary haul road, respectively (Figure 3.13-3) (CGS 2020). The maximum considered seismic event for the Ortigalita Fault is an Mw 6.9 earthquake, with an effective recurrence interval of 1,100 years (Caltrans 2001).

#### **O’Neill Fault Zone**

The Late-Quaternary O’Neill Fault Zone consists of three northwest–southeast-trending faults that strike toward O’Neill Forebay. The westernmost extension of the fault extends into O’Neill Forebay, transecting Borrow Area 6 of the Approved Project (Figure 3.13-3). At its closest point, the fault is approximately 1.0 mile to the east of the San Luis Creek Day Use Area, near the western shoreline of O’Neill Forebay (CGS 2020).

#### **Calaveras Fault Zone**

The right-lateral, Holocene-active Calaveras Fault is a major branch of the San Andreas Fault System. The Calaveras Fault extends from the eastern San Francisco Bay region into the western Diablo Range before eventually joining the San Andreas Fault. This fault is located approximately 21 miles to the southwest of the Modified Project area and is capable of producing a Mw 6.8 earthquake (Figure 3.13-1) (CGS 2020; USGS 2020a). According to a 2008 Earthquake Rupture Forecast Study by WGCEP, the Calaveras Fault has a 7% chance of generating a Mw 5.0 or more earthquake within the next 30 years (WGCEP 2008).



### **San Joaquin Fault**

The Holocene-active San Joaquin Fault Zone is an east-dipping reverse fault located to the southeast of O'Neill Forebay (Herd 1979). At its closest point, the fault is approximately 5.0 miles to the northeast of the Modified Project site (Figure 3.13-1) (CGS 2020).

### **Quien Sabe Fault**

The Holocene-active, right-lateral Quien Sabe Fault is approximately 14 miles long and bounds the southwestern portion of the Diablo Range (USGS 2020a). The fault is approximately 17 miles to the southwest of the Modified Project site and is capable of producing an Mw 6.4 earthquake (Figure 3.13-1) (CGS 2020; Caltrans 2001).

#### **3.13.1.6 Ground Shaking**

Ground shaking is the movement of the Earth surface as a result of an earthquake. Ground motion produced by seismic waves emanates from slow or sudden slip on a fault. The degree of ground shaking felt at a given site depends on the distance from the earthquake source, the magnitude of the earthquake, the type of subsurface material on which the site is situated, and topography. Generally, ground shaking is less severe on rock than on alluvium or fill, but other local phenomena may override this generalization. Ground shaking can produce significant ground horizontal and vertical movement that can result in severe damage to structures that are generally not equipped to withstand such ground movement.

While there have been no recorded instances of major earthquakes originating in Merced County, there has been documented shaking from earthquake centers outside the county in 1872, 1906, 1952, 1966, 1984, and 1989. Only the 1906 quake caused major damage in the county. In addition, minor seismic structural damage has occurred throughout Merced County on other occasions (Merced County 2012). The Earthquake Rupture Forecast Study by WGCEP (2008) indicates a 93% probability of a Mw 6.7 or greater earthquake, and a 16% probability of a Mw 7.5 or greater earthquake occurring within the next 30 years in Northern California. A separate WGCEP (2003) report indicates a 62% probability for a Mw 6.7 or greater earthquake within the next 30 years in the San Francisco Bay Area Region. Individual faults with the highest earthquake probabilities cited in the 2008 report are the Hayward/Rodgers Creek, San Andreas, and Calaveras Faults (Merced County 2012).

#### **3.13.1.7 Surface Rupture**

Surface rupture involves the displacement and cracking of the ground surface along a fault trace. Surface ruptures are visible instances of horizontal or vertical displacement, or a combination of the two, typically confined to a narrow zone along the fault. Surface rupture is more likely to occur in conjunction with active fault segments where earthquakes are large, or where the location of the movement (earthquake hypocenter) is shallow.

The Alquist-Priolo Earthquake Fault Zoning Act of 1972 (Alquist-Priolo) regulates development near Holocene-active faults to mitigate the hazard of surface fault rupture. This act requires the State Geologist to establish regulatory zones (known as Alquist-Priolo Special Study Fault Zones) around the surface traces of Holocene-active faults and to issue appropriate maps. Local agencies must regulate most development projects within the zones. Before a project can be permitted, cities and counties must require a geologic investigation to demonstrate that proposed buildings would not be constructed across active faults. A licensed geologist must prepare an evaluation and written report of a specific site. If a Holocene-active fault is found, a structure for human occupancy cannot be placed over the trace of the fault and must be set back from the fault.

The Modified Project site is located with the CGS 7.5-minute San Luis Dam Quadrangle. According to the State of California Special Studies Zones, the Modified Project is not located with an Alquist-Priolo Fault Zone. The closest such zones are associated with the Los Banos Valley and Cottonwood Arm sections of the Ortigalita Fault (Figure 3.13-3). At the closest point, the Alquist-Priolo Fault Zone associated with the Cottonwood Arm section of the Ortigalita Fault is located approximately 1.3 miles west of the Modified Project site (CDMG 1986; CGS 2016).

### 3.13.1.8 Liquefaction

Liquefaction is a process in which loose, saturated granular soil loses strength as a result of cyclic loading.<sup>3</sup> The strength loss is a result of a decrease in granular sand volume and a positive increase in pore pressures. Generally, liquefaction can occur if all of the following conditions apply: liquefaction-susceptible soil, groundwater within a depth of 40 feet or less, and strong seismic ground shaking. Soils that are most susceptible to liquefaction are clay-free deposits of sands and silts, and unconsolidated alluvium. In addition, lateral spreading—a hazard associated with liquefaction—is the finite, lateral movement of gently to steeply sloping, saturated soil deposits caused by earthquake-induced liquefaction.

The CGS has mapped areas of potential liquefaction for select U.S. Geological Survey quadrangles, but not for the San Luis Dam quadrangle. The Merced Vision 2030 General Plan Revised Background Report indicates that no liquefaction hazard areas have been identified within the county. However, the potential for liquefaction still exists throughout the San Joaquin Valley due to unconsolidated sediments and high water tables (Merced County 2013a). In addition, groundwater levels are typically high near-surface water bodies, such as San Luis Reservoir and O'Neill Forebay. As such, given the potential high water table, areas of unconsolidated Holocene alluvium, and proximity to Holocene-active faults (e.g., Ortigalita Fault, San Joaquin Fault), there is a potential for on-site seismic ground failure due to liquefaction, including lateral spreading, in the Modified Project site, including the proposed campground, existing San Luis Creek Day Use Area, and the additional staging/stockpiling area near the Basalt Hill Borrow Area (Figure 3.13-2).

### 3.13.1.9 Slope Instability

A landslide is the downhill movement of masses of earth material under the force of gravity. The stability of a slope, or the potential for slope movement to occur, is dependent on many factors, including the height of the slope, the shear strength of rock and/or soil that comprises the slope, the orientation of bedding planes in underlying geologic formations, and the amount of water contained in the slope material. These and many other factors influence the stability of a slope, but in general, sandy or granular soils and rock units are stronger and less likely to be associated with large-scale landsliding than are soil and rock units composed of fine-grained silt or clay.

The down-slope movement of earth material is part of the continuous and natural process of erosion; however, the stability of a slope can be adversely affected by a wide variety of factors, such as adding water to a slope. Other factors that can decrease the stability of a slope include erosion of the toe of the slope, which removes support from the overlying material; placing additional weight on the slope; changes to the slope configuration by grading; earthquake-related ground-shaking; and the removal of vegetation from the surface of the slope.

Slope instability is greatest in the western part of Merced County, where the significantly higher topographic areas of the Coast Range are more susceptible to failure. As mapped by Merced County, the Modified Project areas is in a low landslide potential zone (Merced County 2012). However, as indicated on Figure 3.13-2, the topography in

---

<sup>3</sup> Cyclic loading is the application of repeated or fluctuating stresses, strains, or stress intensities on structural components.

the southern Modified Project area is locally steep and numerous large Quaternary landslides radially emanate from Basalt Hill, including upslope from a proposed staging and stockpiling area (Dibblee 2007). Moderately steep hillsides are also present in Borrow Area 14; however, no landslides have been mapped in these areas.

In September 1981, a 1,100-foot section of the upstream B.F. Sisk Dam embankment, near the crest of the dam, slid about 60 feet. The landslide, which consisted of 400,000 cubic yards of soil, was a deep-seated failure that extended through the fill material and into the native soil under the dam. The main mass of the dam remained stable and the reservoir was not threatened. Remedial measures consisted of construction of a buttressing berm at the upstream toe of the dam and reconstruction of the upstream face (Schuster 2006; California Water Research 2017).

#### 3.13.1.10 Soil Erosion

Soil erosion occurs when wind, water, or ground disturbances cause soil particles to move and be deposited elsewhere. Numerous conditions influence the susceptibility of soil to the efforts of erosion, although the characteristics of the soil, vegetative cover, and topography are important factors. Soils with high clay content are generally less susceptible to erosion than soils with high sand or silt content. Soils with high organic material content are often less susceptible to erosion because the organic matter helps to bind the soil particles and absorbs water, which reduces runoff. Soils that are compacted promote higher runoff rates, which can increase off-site erosion. Soils covered with vegetation are less susceptible to erosion because the plants add organic material to the soil, shelter the soil from wind, and the plant roots bind the soil together. The removal of vegetation by construction activities can result in a substantial increase in erosion rates. Areas with steep topography are more susceptible to erosion because sloping areas generally have higher runoff water velocities, which increase the ability of water to dislodge and carry soil particles.

Increases in soil erosion rates caused by disturbances of the ground surface or other causes can result in increased sediment loads in receiving waters such as ponds, reservoirs, streams, and the ocean. Increased sediment loads can have a variety of adverse effects on water quality. In addition to impacts such as decreased water clarity, reduced light penetration, and diminished photosynthesis on aquatic plants, sediment particles can carry pollutants such as nutrients, bacteria, pesticides, metals, and hydrocarbons. These pollutants can impair water quality by promoting algae growth and associated decreases in dissolved oxygen levels and may also be toxic to aquatic organisms.

The U.S. Department of Agriculture, National Resource Conservation Service and the CGS have surveyed and classified the erosion hazard for soils through the United States. The ratings indicate the hazard of soil loss in off-road and off-trail areas after disturbance activities that expose the soil surface. The ratings are based on slope and soil erosion factor “K.” Potential soil loss would be caused by sheet or rill erosion in off-road or off-trail areas where 50% to 75% of the surface has been exposed by logging, grazing, mining, or other types of disturbance (Reclamation and CDPR 2013).

The ratings are both verbal and numerical, and erosion hazard is described verbally as either “slight,” “moderate,” “severe,” or “very severe.” A rating of “slight” indicates that erosion is unlikely under ordinary climatic conditions; “moderate” indicates that some erosion is likely and that erosion control measures may be needed; “severe” indicates that erosion is very likely and that erosion control measures, including revegetation of bare areas, are advised; and “very severe” indicates that substantial erosion is expected, loss of soil productivity and off-site damage are likely, and erosion control measures are costly and generally impractical (Reclamation and CDPR 2013).

According to Map 4, Erosion Hazard, of the San Luis Reservoir State Recreation Area Final Resource Management Plan/General Plan and Final Environmental Impact Statement/Environmental Impact Report, the erosion hazard of soils in the Modified Project area vary from slight to severe. The erosion hazard of soils near O'Neill Forebay, including the proposed campground and existing San Luis Creek Day Use Area, is slight to moderate. The erosion hazard of soils immediately downstream of the dam (i.e., proposed additional soil stockpiling and staging areas) is slight. The erosion hazard of soils in Borrow Areas 12 and 14 is moderate and moderate to severe, respectively. And the erosion hazard of soils along the hilly southeast shore of San Luis Reservoir is moderate to severe (Reclamation and CDPR 2013).

### 3.13.1.11 Expansive Soils

Expansive soils are mainly composed of clays, which increase in volume when saturated and shrink when dried. Expansive soils can cause building foundations to rise during the rainy season and fall during the dry season. If this expansive movement varies underneath different parts of a structure, foundations may crack, and structural portions of the structure may be distorted. The potential for soil to undergo shrink and swell is greatly enhanced by the presence of a fluctuating, shallow groundwater table. Changes in the volume of expansive soils can result in the consolidation of soft clays after the lowering of the water table or the placement of fill. As discussed in Section 3.13.1.3, Geologic Units, and illustrated in Figure 3.13-2, most of the Modified Project area is underlain by either alluvium or Panoche Formation, both which include clay deposits. As a result, on-site soils may be subject to soil expansion.

### 3.13.1.12 Subsidence

Subsidence is a gradual settling or sudden sinking of the ground surface due to removal or displacement of subsurface earth materials, usually due to the withdrawal of groundwater, oil, or natural gas, or as a result of decomposition of natural organic materials. Soils that are particularly subject to subsidence include those with high silt or clay content and/or high organic content. According to the 2030 Merced County General Plan Background Report, the Modified Project site is not located within a subsidence area (Merced County 2013a). Moreover, according to the U.S. Geological Survey Areas of Land Subsidence in California map, no recorded instances of subsidence have occurred within the Modified Project area because of groundwater pumping, peat loss, or oil extraction (USGS 2020b). As such, there is a low potential for subsidence to occur within the Modified Project site.

### 3.13.1.13 Soil Collapse

Collapsible soils typically occur in recently deposited Holocene soils that were deposited in an arid or semi-arid environment. Soils prone to collapse are commonly associated with artificial fill, wind-laid sands, silts, alluvial fan sediments, and mudflow sediments deposited during flash floods. These soils typically contain minute pores and voids. The soil particles may be partially supported by clay or silt, or chemically cemented with carbonates. When saturated, collapsible soils undergo grain rearrangement and water removes the cohesive (or cementing) material, resulting in a rapid, substantial settlement. An increase in surface water infiltration—such as from irrigation or a rise in the groundwater table—combined with the weight of a building or structure, can initiate settlement and cause foundations and walls to crack.

Soil consolidation testing has not been evaluated for on-site geologic units. As such, on-site units may be susceptible to settlement associated with collapsible soils.

## 3.13.1.14 Mineral Resources

As part of the Surface Mining and Reclamation Act of 1975, the CGS produces mineral land classification maps and reports. Part of the mineral land classification involves the mapping of aggregate availability throughout the State. Aggregate is defined as construction aggregate, which is composed of alluvial sand and gravel or crushed stone that meets standard specifications for use in Portland cement concrete or asphalt concrete (CGS 2012). The statewide map of aggregate availability shows the location of aggregate mines in Merced County; however, none are in the vicinity of San Luis Reservoir or O'Neill Forebay. In general, the mines are located southwest of Los Banos on the east side of Interstate 5 (CGS 2018b).

The CGS also maps the location of historic and active gold mines throughout California. There are no active gold mines in Merced County. Historically, active gold mines were in the eastern region of Merced County (CDMG 1998; CGS 2002b).

The California Geologic Energy Management Division (CalGEM) (formerly the Division of Oil, Gas, and Geothermal Resources) oversees the drilling, operation, maintenance, and plugging and abandonment of oil, natural gas, and geothermal energy wells. According to the CalGEM "Well Finder" Map, there is one dry hole well near the eastern edge of O'Neill Forebay, near the connection to the California Aqueduct. This well was abandoned in 1937 (CalGEM 2020).

The California Department of Conservation, Office of Mine Reclamation, maps inactive and active mines throughout the State, including the Modified Project area. These maps include the active Basalt Hill Borrow Area (Figure 3.13-2), which is operated by the California Department of Water Resources (DWR) and is included as a borrow area for the Approved Project. This quarry and four other quarries in the Modified Project area are listed in Table 3.13-2 (DMR 2016).

**Table 3-13-2. Nearby Mine Sites in Merced County**

| Mine ID    | Latitude/ Longitude       | Location                     | Mine Name                           | Status    | Commodity       |
|------------|---------------------------|------------------------------|-------------------------------------|-----------|-----------------|
| 91-24-0030 | 37.022222/-<br>121.097222 | South of San Luis Reservoir  | Basalt Quarry – DWR Resources       | Active    | Rock            |
| 91-24-0024 | 37.000000/-<br>120.960556 | Southeast of O'Neill Forebay | San Luis Water District – Reclaimed | Reclaimed | Sand and Gravel |
| 91-24-0035 | 36.991667/-<br>120.916667 | Southeast of O'Neill Forebay | Pfizer Pit – Reclaimed              | Reclaimed | Rock            |
| 91-24-0012 | 37.006111/-<br>120.916111 | Southeast of O'Neill Forebay | Canyon Rock Pit                     | Active    | Sand and Gravel |
| 91-24-0021 | 36.999167/-<br>120.916667 | Southeast of O'Neill Forebay | Valley Sand and Gravel              | Idle      | Not Reported    |

**Source:** DMR 2016.

**Note:** DWR = California Department of Water Resources.

Chrysotile asbestos and tremolite-actinolite asbestos occur in ultramafic rock, which is a type of metamorphic rock. The U.S. Geological Survey, CGS, and California Department of Conservation have mapped historic mines and natural occurrences of asbestos throughout California (DOC 2000; USGS and CGS 2011). While there have been no reported asbestos occurrences, former asbestos mines, or former asbestos prospects mapped in Merced County, there are known occurrences of ultramafic rock outcrops in the western part of the county. Ultramafic rock is known to occur (1) in Merced County near the border of Stanislaus County, north of San Luis Reservoir, and (2) near the border of Fresno County, to the south of the reservoir (DOC 2000; USGS and CGS 2011). However, neither of these sites are within the Modified Project site.



### 3.13.2 Relevant Plans, Policies, and Ordinances

#### 3.13.2.1 Federal

##### **Earthquake Hazards Reduction Act**

In October 1977, the U.S. Congress passed the Earthquake Hazards Reduction Act to reduce the risks to life and property from future earthquakes in the United States, through the establishment and maintenance of an effective earthquake hazards reduction program. This goal was accomplished by establishing the National Earthquake Hazards Reduction Program. This program was substantially amended in November 1990 by the National Earthquake Hazards Reduction Program Act (NEHRPA), which refined the description of agency responsibilities, program goals, and objectives.

The mission of National Earthquake Hazards Reduction Program includes improved understanding, characterization, and prediction of hazards and vulnerabilities; improved building codes and land-use practices; risk reduction through post-earthquake investigations and education; development and improvement of design and construction techniques; improved mitigation capacity; and accelerated application of research results. The NEHRPA designates the Federal Emergency Management Agency as the lead agency of the program and assigns several planning, coordinating, and reporting responsibilities. Other NEHRPA agencies include the National Institute of Standards and Technology, National Science Foundation, and the U.S. Geological Survey.

##### **Federal Guidelines for Dam Safety**

In April 2004, Federal Emergency Management Agency published guidelines that represent the culmination of efforts, initiated by President Carter in April 1977, to review procedures and criteria used by federal agencies involved in the design, construction, operation, and regulation of dams and to prepare guidelines for management procedures to ensure dam safety. The guidelines are intended to outline federal agency management procedures that will continually stimulate technical methods in dam planning, design, construction, and operation for minimizing risk of failure. The objective of dam safety would be achieved as management and technical decisions during all project stages would give proper recognition to safety considerations. The strategy of these guidelines toward that end is to describe definite management practices to reinforce decision-maker awareness of safety needs. These guidelines apply to federal practices for dams with a direct federal interest and are not intended to supplant or otherwise conflict with State or local government responsibilities for safety of dams under their jurisdiction.

#### 3.13.2.2 State

##### **Alquist-Priolo Earthquake Fault Zoning Act**

The Alquist-Priolo Act (California Public Resources Code, Sections 2621–2630) was passed in 1972 to mitigate the hazard of surface faulting to structures designed for human occupancy. The main purpose of the law is to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The law addresses only the hazard of surface fault rupture and is not directed toward other earthquake hazards. The Alquist-Priolo Act requires the State Geologist to establish regulatory zones, known as Alquist-Priolo Earthquake Fault Zones, around the surface traces of active faults and to issue appropriate maps. The maps are distributed to all affected cities, counties, and state agencies for their use in planning efforts. Before a project can be permitted in a designated Alquist-Priolo Earthquake Fault Zone, cities and counties must require a geologic investigation to demonstrate that proposed buildings would not be constructed across active faults.

#### **Seismic Hazards Mapping Act**

The Seismic Hazards Mapping Act of 1990 (California Public Resources Code, Sections 2690–2699.6) addresses earthquake hazards from non-surface fault rupture, including liquefaction and seismically induced landslides. The act established a mapping program for areas that have the potential for liquefaction, landslide, strong ground shaking, or other earthquake and geologic hazards. The act also specifies that the lead agency for a project may withhold development permits until geologic or soils investigations are conducted for specific sites and mitigation measures are incorporated into plans to reduce hazards associated with seismicity and unstable soils.

#### **National Pollutant Discharge Elimination System Permit**

In California, the State Water Resources Control Board administers regulations promulgated by the U.S. Environmental Protection Agency (55 CFR Chapter 47990), requiring the permitting of stormwater-generated pollution under the National Pollutant Discharge Elimination System (NPDES). In turn, the State Water Resources Control Board's jurisdiction is administered through nine Regional Water Quality Control Boards. Under these federal regulations, an operator must obtain a General Construction Permit through the NPDES Stormwater Program for all construction activities with ground disturbance of 1 acre or more. The General Construction Permit requires the implementation of best management practices (BMPs) to reduce sedimentation into surface waters and to control erosion. One element of compliance with the NPDES permit is the preparation of a Stormwater Pollution Prevention Plan (SWPPP) that addresses control of water pollution, including sediment, in runoff during construction.

#### **California Building Standards Code**

The state regulations protecting structures from geo-seismic hazards are contained in the California Building Code (CBC) (24 CCR Part 2), which is updated on a triennial basis. These regulations apply to public and private buildings in the State. Until January 1, 2008, the CBC was based on the current Uniform Building Code and contained additions, amendments, and repeals specific to building conditions and structural requirements of the State of California. The 2019 CBC, effective January 1, 2020, is based on the current International Building Code and enhances the sections dealing with existing structures. Seismic-resistant construction design is required to meet more stringent technical standards than those set by previous versions of the CBC. The Merced County Department of Public Works, Division of Building and Safety, oversees and enforces federal, state, and county building codes through the issuance of permits; however, most of the Modified Project would be constructed on lands owned by the federal government where local codes would not apply.

Chapters 16 and 16A of the 2019 CBC include structural design requirements governing seismically resistant construction, including (but not limited to) factors and coefficients used to establish seismic site class and seismic occupancy category for the soil/rock at the building location and the proposed building design. Chapters 18 and 18A include (but are not limited to) the requirements for foundation and soil investigations (Sections 1803 and 1803A); excavation, grading, and fill (Sections 1804 and 1804A); damp-proofing and water-proofing (Sections 1805 and 1805A); allowable load-bearing values of soils (Sections 1806 and 1806A); the design of foundation walls, retaining walls, embedded posts and poles (Sections 1807 and 1807A), and foundations (Sections 1808 and 1808A); and design of shallow foundations (Sections 1809 and 1809A) and deep foundations (Sections 1810 and 1810A). Chapter 33 of the 2019 CBC includes (but is not limited to) requirements for safeguards at worksites to ensure stable excavations and cut or fill slopes (Section 3304).

Construction activities are subject to occupational safety standards for excavation and trenching, as specified in the California Safety and Health Administration regulations (Title 8 of the California Code of Regulations) and in Chapter 33 of the CBC. These regulations specify the measures to be used for excavation and trench work where workers could be exposed to unstable soil conditions.

#### **California Department of Water Resources, Division of Safety and Dams**

DWR's Division of Safety of Dams (DSOD) enforces dam safety requirements, assists with the evaluation of risks posed by existing and proposed dams, and implements inspection programs to ensure that dams are properly maintained and operated. DSOD engineers and engineering geologists review and approve plans and specifications for the design of dams and oversee construction to ensure compliance with the approved plans and specifications. Reviews include site geology, seismic setting, site investigations, construction material evaluation, dam stability, hydrology, hydraulics, and structural review of appurtenant structures. In addition, DSOD engineers inspect over 1,200 dams on a yearly schedule to ensure those dams are performing and being maintained in a safe manner.

#### **California Health and Safety Code**

Sections 17922 and 17951–17958.7 of the California Health and Safety Code require cities and counties to adopt and enforce the current edition of the CBC, including a grading section. Sections of Volume II of the CBC specifically apply to select geologic hazards.

#### **Surface Mining and Reclamation Act**

The Surface Mining and Reclamation Act of 1975 (Public Resources Code, Sections 2710-2796) provides a comprehensive surface mining and reclamation policy for the regulation of surface mining operations to assure that adverse environmental impacts are minimized and mined lands are reclaimed to a usable condition when mining operations are completed. The Surface Mining and Reclamation Act also encourages the production, conservation, and protection of California mineral resources. Public Resources Code 2207 provides annual reporting requirements for all mines in the state, under which the State Mining and Geology Board is also granted authority and obligations. The Surface Mining and Reclamation Act, Chapter 9, Division 2 of the Public Resources Code, requires the State Mining and Geology Board to adopt State policy for the reclamation of mined lands and the conservation of mineral resources. These policies are prepared in accordance with the Administrative Procedures Act (Government Code) and are in California Code of Regulations, Title 14, Division 2, Chapter 8, Subchapter 1.

#### **Government Code Section 65302**

This code mandates that general plan land use elements address the distribution of mineral resources and provisions for continued availability of those resources. The Governor's Office of Planning and Research has established guidelines to ensure that general plan contents meet the requirements of Government Code Section 65302.

#### **San Luis Reservoir State Recreation Area Resource Management Plan/General Plan**

The San Luis Reservoir State Recreation Area Resource Management Plan/General Plan (San Luis Reservoir SRA RMP/GP) was prepared to set forth goals and guidelines for management of the San Luis Reservoir State Recreation Area and adjacent lands (known as the Plan Area) for the next 25 years and was prepared in accordance with the Bureau of Reclamation's (Reclamation's) Resource Management Plan Guidebook, Planning for the Future (Reclamation 2003) and the California Department of Parks and Recreation's (CDPR's) California State Parks Planning

Handbook (CDPR 2010). The 27,000-acre Plan Area includes the water surfaces of San Luis Reservoir, O'Neill Forebay, and Los Banos Creek Reservoir, as well as adjacent recreation lands. CDPR, DWR, and the California Department of Fish and Wildlife manage the Plan Area lands, which are owned by Reclamation. The San Luis Reservoir SRA RMP/GP was developed through an agreement between Reclamation and CDPR to provide coordinated direction for recreation and resource management of the Plan Area lands, while continuing to serve the primary purpose of water storage, water distribution, and power generation. The San Luis Reservoir SRA RMP/GP sets forth Plan Area-wide management goals and guidelines that will be used to implement Plan Area use and future actions and to measure its success (Reclamation and CDPR 2013). The San Luis Reservoir SRA RMP/GP takes into account local and regional planning guidance including local general plans, water resources plans, and transportation plans, and directs that this local and regional guidance be considered in project decisions for the Plan Area.

### 3.13.2.3 Local

#### **Merced County Multi-Jurisdictional Local Hazard Mitigation Plan**

The Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act) legally requires state, local, tribal, and territorial governments to develop and adopt Federal Emergency Management Agency–approved hazard mitigation plans as a condition of receiving certain types of non-emergency disaster assistance. The regulations, under Title 44, Chapter 1, Part 201 of the Code of Federal Regulations contain requirements and procedures to implement the hazard mitigation planning provisions of the Stafford Act. The purpose of the Merced County Multi-Jurisdictional Local Hazard Mitigation Plan is to identify hazards within Merced County, review and assess past disaster occurrences, estimate the probability of future occurrences, and set goals to mitigate potential risks to reduce or eliminate long-term risk to people and property from natural and human-made disasters.

#### **Merced Vision 2030 General Plan**

As required by state law, Merced County has adopted a general plan to guide land use decisions within the county. The general plan provides goals, policies, standards, and implementation programs to guide the physical development of a county. At a minimum, the general plan must address the topics of land use, transportation, housing, conservation, open space, noise, and safety. The Merced Vision 2030 General Plan (Merced County General Plan), adopted in 2013, has established the year 2030 as the plan's time horizon. The Health and Safety Element of the Merced County General Plan, in part, summarizes mitigation goals and specific policies related to seismic hazards, slope instability, and soil instability. Moreover, the Natural Resources Element contains goals and policies related to soil and mineral resources. The following goal and policies would apply to the Modified Project (Merced County 2013b):

#### ***Health and Safety Element***

**Goal HS-1:** Minimize the loss of life, injury, and property damage of County residents due to seismic and geologic hazards.

- **Policy HS-1.1: Structure Location and Compliance.** Require that all new habitable structures be located and designed in compliance with the Alquist-Priolo Special Studies Zone Act and related State earthquake legislation.
- **Policy HS-1.2: Financial Assistance for Seismic Upgrades.** Support efforts to obtain financial assistance from Federal and State agencies in order to implement corrective seismic safety measures required for existing County buildings and structures.

- **Policy HS-1.3: Dam Inundation Areas.** Require all new structures located within dam inundation areas to conform to standards of dam safety as required by the State Division of Safety of Dams.
- **Policy HS-1.4: Ensure Earthquake Resistant Design.** Require earthquake-resistant design for proposed critical structures such as hospitals, fire stations, emergency communication centers, private schools, high occupancy buildings, bridges and freeway overpasses, and dams that are subject to County permitting requirements.
- **Policy HS-1.5: Public Education.** Encourage educational programs to inform the public of earthquake dangers in Merced County.
- **Policy HS-1.6: Landslide Areas.** Prohibit habitable structures on areas of unconsolidated landslide debris or in areas vulnerable to landslides.
- **Policy HS-1.7: Hillside Development.** Discourage construction and grading on slopes in excess of 30%.
- **Policy HS-1.8: Grading Standards.** Require that the provisions of the International Building Code be used to regulate projects subject to hazards from slope instability.
- **Policy HS-1.9: Unstable Soils.** Require and enforce all standards contained in the International Building Code related to construction on unstable soils.

#### *Natural Resources Element*

**Goal NR-3:** Facilitate orderly development and extraction of mineral resources while preserving open space, natural resources, and soil resources and avoiding or mitigating significant adverse impacts.

- **Policy NR-3.1: Soil Protection.** Protect soil resources from erosion, contamination, and other effects that substantially reduce their value or lead to the creation of hazards.
- **Policy NR-3.2: Soil Erosion and Contamination.** Require minimal disturbance of vegetation during construction to improve soil stability, reduce erosion, and improve stormwater quality.
- **Policy NR-3.4: New Development Compatibility.** Ensure that new development is compatible with existing and potential surface mining areas and operations as identified on the Mineral Resource Zone Maps prepared by the State Division of Mines and Geology and other mineral resource areas identified by the County. The County shall:
  - a. Require development applicants near identified mineral resources to prepare a statement that specifies why the County should permit the proposed land use and describe how the benefits of the proposed use would clearly outweigh the impacts that may limit the potential to extract mineral resources in that area.
  - b. Require new incompatible land uses adjacent to existing mining operations to provide a buffer between the development and adjacent mining operations adequate to mitigate significant impacts to mineral land uses. The buffer distance shall be based on an evaluation of noise, aesthetics, drainage, operating conditions, biological resources, topography, lighting, traffic, operating hours, and air quality.
  - c. Require written notification to be sent to mining operators and subject landowners of land use entitlement applications for potentially incompatible land uses in areas where mining operations are currently taking place.
- **Policy NR-3.5: Mineral Resource Protection.** Require areas identified with mineral deposits on either the State Mine Land Classification Maps provided by the State Mining and Geology Board's Classification Report, or site-specific information, remain protected for possible future mineral extraction. Impose conditions upon new incompatible land uses in areas surrounding identified mineral deposits for the purpose of mitigating significant land-use conflicts prior to approving a use that would otherwise be incompatible with mineral extraction. The identified mineral deposit may be determined by the classification maps, Classification Report, separate County maps, or on a site-specific basis.



- **Policy NR-3.6: Buffers between Mining Operations and Adjacent Uses.** Require operators of new mines to provide buffers or physical barriers between the mining operation and any existing nearby incompatible land uses when a significant impact is identified during the development review process.
- **Policy NR-3.8: Habitat Restoration and Buffer Incentives.** Support and encourage property owners and surface mining operators to pursue one or more of the following incentives:
  - a. State and Federal habitat restoration funding for restoring wildlife habitat;
  - b. Conservation easements following reclamation for restoring wildlife habitat; and
  - c. Other local, State, and Federal incentives.
- **Policy NR-3.9: Riparian and Critical Habitat Protection.** Protect or mitigate, in compliance with local, State, and Federal requirements, areas of riparian vegetation along rivers, streams, and other habitats that support threatened, endangered, or otherwise sensitive species. This shall include:
  - a. Requiring mining operators that propose mining operations that will have a significant adverse impact on these resources to mitigate to the fullest extent that the California Environmental Quality Act (CEQA) requires for such impacts and obtain the necessary State and Federal permits prior to operation.
  - b. Encouraging mining operators that impact natural resources to propose an end-use that will result in minimal loss of resources.
  - c. Referring all surface mining applications to the appropriate local, State, and Federal agencies to coordinate project design, mitigation, and reclamation efforts.
- **Policy NR-3.11: Concurrent Reclamation.** Require reclamation of mining sites concurrent with extraction activities rather than after extraction has been completed.
- **Policy NR-3.12: Sand and Gravel Extraction Control.** Ensure that strict control is maintained on sand and gravel extractions in streambed channels and within areas designated as having sensitive habitat and open space resources.

#### 3.13.3 Thresholds of Significance

The following significance criteria from the 2019 EIS/EIR are used for the purposes of analysis in this SEIR. These criteria, which have not changed from the 2019 EIS/EIR, are identified in Chapter 25, Geology, Seismicity, and Soils, of the 2019 EIS/EIR. A significant impact related to geology and soils would occur if the Modified Project would:

1. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
  - a. Rupture of a known earthquake fault, based on substantial evidence of a known fault.
  - b. Strong seismic ground shaking.
  - c. Seismic-related ground failure, including liquefaction.
  - d. Landslides.
2. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Modified Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse.
3. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property.

4. Result in substantial soil erosion or the loss of topsoil.
5. Result in the loss of availability of a known mineral resource that would be of value to the region and residents of the State.
6. Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.

### 3.13.4 Impacts Analysis

#### Threshold 1

*Would the Modified Project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:*

*a. Rupture of a known earthquake fault, based on substantial evidence of a known fault?*

| 2019 EIS/EIR Impact Determination | Modified Project Impact Determination | New Significant Increase in Impact Severity? |
|-----------------------------------|---------------------------------------|--|
| Less than Significant             | Less than Significant                 | No   |

#### Campground Construction and Day Use Area Improvements

The Modified Project would result in the construction of a new permanent campground on the northwestern shoreline of O'Neill Forebay and include improvements to the existing San Luis Creek Day Use Area along the western shoreline (Figure 2-4A). None of the additional impact areas, including the proposed campground and San Luis Creek Day Use Area, is located within an Alquist-Priolo Earthquake Fault Zone, or is underlain by a known earthquake fault. The closest Alquist-Priolo Fault Zone is associated with the Cottonwood Arm section of the Ortigalita Fault Zone, which is located approximately 2.8 miles southwest of the proposed campground and 2.3 miles southwest of the existing day use area (Figure 3.13-3). Furthermore, the construction, improvement, and operation of the new campground and day use area would not directly cause or exacerbate existing fault rupture risks. As a result, this element of the Modified Project would not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, based on substantial evidence of a known fault. Therefore, **no impacts** would occur.

#### Changes in Borrow Area Location

The Modified Project has identified two additional borrow areas, Borrow Area 12 and Borrow Area 14, in addition to Borrow Area 6 and the Basalt Hill Borrow Area that were identified as part of the Approved Project in the 2019 EIS/EIR. Borrow Areas 12 and 14 are within the overall construction footprint identified by the 2019 EIS/EIR, but were identified in that document and analyzed as anticipated contractor staging areas. Near the Basalt Hill Borrow Area, the Modified Project also includes addition of a new work area proposed for stockpiling extracted materials prior to transporting the materials to the dam construction zone. The Basalt Hill Borrow Area, shown on Figure 3.13-2, was used to extract materials for the original dam construction. An existing access road from Basalt Road would be widened and improved for hauling uses as part of the Modified Project. As discussed in Section 3.13.1, no additional impact areas are located within an Alquist-Priolo Fault Zone or underlain by a known fault. The closest Alquist-Priolo Fault Zone to these additional impact areas is associated with the Cottonwood Arm section of the Ortigalita Fault Zone, which is located approximately 2.5 miles northwest of Borrow Areas 12 and 14, at the closest

point (Figure 3.13-3).<sup>4</sup> Furthermore, borrow area extraction, grading, and restoration would not directly cause or exacerbate existing fault rupture risks. As a result, this element of the Modified Project would not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, based on substantial evidence of a known fault. Therefore, **no impacts** would occur.

#### Minor Additions to Contractor Work Area

The additional impact areas include some minor expansion of contractor work areas that were not part of the original study area addressed in the 2019 EIS/EIR. These areas include several staging/soil stockpiling areas downstream of B.F. Sisk Dam, which would later be covered by the stability berms and expanded dam embankment, as well as another small area of less than one acre immediately west of the dam's right abutment, where a haul road would be widened (Figure 2-4A, Figure 2-4B, and Figure 3.13-2). However, as discussed above, the additional impact areas would not be located within an Alquist-Priolo Fault Zone and are not underlain by a known fault. The closest Alquist-Priolo Fault Zone to the additional impact areas is associated with the Cottonwood Arm section of the Ortigalita Fault Zone, which is located approximately 1.3 miles west of these contractor work areas, at the closest point (Figure 3.13-3). Furthermore, additions to the contractor work areas would not directly cause or exacerbate existing fault rupture risks. As a result, this element of the Modified Project would not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, based on substantial evidence of a known fault. Therefore, **no impacts** would occur.

#### Additional Construction Assumptions

Additional construction assumptions include changes to the construction schedule, equipment and personnel specifications, and dewatering specifications for proposed excavations at the base of the dam. These Modified Project components would have no relevance to regional faulting. As a result, this element of the Modified Project would not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, based on substantial evidence of a known fault. Therefore, **no impacts** would occur.

#### Cumulative Impacts

Potential impacts related to rupture of a known earthquake fault at cumulative project sites would be reduced on a site-by-site basis by modern construction methods and compliance with CBC regulatory requirements that ensure building safety. Cumulative projects would be required to prepare and submit a site-specific geotechnical report for review and approval prior to the issuance of grading or building permits. Additionally, as needed, projects would incorporate individual mitigation or geotechnical requirements for site-specific geologic hazards, including fault rupture, on each individual cumulative project site. Although the B.F. Sisk Dam Raise and Reservoir Expansion Project (reservoir expansion project) would generally be located in the same location as the Modified Project, the structural component of this cumulative project, the dam embankment, is not underlain by a Holocene-active or pre-Holocene fault. The closest Alquist-Priolo Fault Zone to the dam embankment is associated with the Cottonwood Arm section of the Ortigalita Fault Zone, which is located approximately 1.0 mile southwest of the dam, at the closest point (Figure 3.13-3). Additional stabilization measures and raising the crest of the dam, as proposed for this cumulative project, would result in beneficial impacts by reinforcing the dam to better withstand effects of seismicity. Therefore, impacts associated with rupture of a known earthquake fault are not cumulatively considerable and **no impacts** would occur.

---

<sup>4</sup> The Alquist-Priolo Fault Zone associated with this fault only encompasses the portion of the fault located north of San Luis Reservoir.

### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in no impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant.

#### *b. Strong seismic ground shaking?*

| 2019 EIS/EIR Impact Determination | Modified Project Impact Determination | New Significant Increase in Impact Severity? |
|-----------------------------------|---------------------------------------|--|
| Less than Significant             | Less than Significant                 | No   |

### Campground Construction and Day Use Area Improvements

The Modified Project site, including the proposed campground and day use area improvements, is in a seismically active region of California. Movement along major faults in proximity of the Modified Project site (e.g., the San Andreas, Ortigalita, O'Neill, and Calaveras Faults) can produce moderate to large earthquakes that could affect the proposed campground and improvements. However, proposed structures at the campground and day use area would be constructed in accordance with the CBC, which provides procedures for earthquake-resistant structural design. The CBC considers on-site soil conditions, occupancy, and the configuration of the structure, including the structural system and height. The CBC would require completion of a site-specific geotechnical investigation at the campground and day use area to ensure that recreational and structures (e.g., restrooms, shower buildings, campfire center) would be designed and constructed to withstand maximum anticipated ground accelerations associated with a large earthquake. Although substantial damage to structures may be unavoidable during large earthquakes, the proposed structures would be designed to resist structural failure and thereby provide reasonable protection from serious injury, catastrophic property damage, and loss of life.

As discussed in Section 3.13.2, Relevant Plans, Policies, and Ordinances, Chapters 18 and 18A of the CBC include (but are not limited to) the requirements for foundation and soil investigations (Sections 1803 and 1803A); excavation, grading, and fill (Sections 1804 and 1804A); damp-proofing and water-proofing (Sections 1805 and 1805A); allowable load-bearing values of soils (Sections 1806 and 1806A); the design of foundation walls, retaining walls, embedded posts and poles (Sections 1807 and 1807A), and foundations (Sections 1808 and 1808A); and design of shallow foundations (Sections 1809 and 1809A) and deep foundations (Sections 1810 and 1810A).

In addition to being constructed in accordance with state building codes, construction of the campground and day use area would not directly or indirectly cause substantial adverse effects involving strong seismic ground shaking. As such, this element of the Modified Project would not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking. Therefore, impacts would be **less than significant**.

With respect to campground and day use area operations, the Modified Project would be designed to reduce the risks associated with potential seismically induced dam failure and associated flooding of these additional impact areas. As described in Section 2.2, Existing B.F. Sisk Dam Features and Stability Concerns, of this SEIR, studies of the seismic safety of dam completed by Reclamation and DWR determined that less-dense soils under the dam and in the dam abutments could undergo liquefaction during a seismic event and result in significant deformation (crest settlement) of the dam in the sections built on the alluvium and clayey slopewash. The probabilistic risk

analysis determined that failure of the dam is very unlikely, but that consequences of a dam failure would be severe and therefore do not meet Reclamation's Public Protection Guidelines and warrant corrective action. Corrective action studies were carried out by Reclamation with participation by DWR.

These corrective action studies indicated that deformation potential would be addressed by removing the alluvium and clayey slopewash, constructing downstream stability berms keyed into the underlying bedrock, and raising the dam crest 12 feet to increase the reservoir's freeboard, or the distance between the water surface and the dam crest. Raising the dam would be accomplished by placing additional material on the downstream face of the embankment, which would also serve to strengthen the embankment. These measures to alleviate risk associated with a seismic event would be implemented as part of the Approved Project evaluated in the 2019 EIS/EIR, thus reducing the potential for seismically induced dam failure and flooding of the proposed campground and day use area.

#### Changes in Borrow Area Location

As discussed for Threshold 1a, the Modified Project may include soil and bedrock extraction from Borrow Areas 12 and 14, as well as use of a new soil stockpiling area near the Basalt Hill Borrow Area. Materials extraction at Borrow Areas 12 and 14 is intended to preserve the existing topographic contours of the borrow areas to the greatest extent practicable, with the elevation of the existing hills and ridges being lowered up to 25 feet from their current elevation. If Borrow Area 14 is used, excavation would be minimized at the lower elevations and defined drainage areas between the hills. Up to 7 million cubic yards of material would potentially be removed from these borrow areas. As part of the Modified Project, a remediation plan would be prepared and implemented for these borrow areas, including measures to revegetate and perform final grading to achieve a naturalized appearance and topography consistent with goals and guidelines of the San Luis Reservoir RMP/GP. Grading would be completed in accordance with the CBC and site-specific geotechnical report recommendations, ensuring that on-site slopes would be stabilized and not over-steepened, thus reducing the potential for seismically induced slope failure. As such, this element of the Modified Project would not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking. Therefore, impacts would be **less than significant**.

#### Minor Additions to Contractor Work Area

As discussed under Threshold 1a, additional impact areas include some minor expansion of contractor work areas that were not part of the original study area addressed in the 2019 EIS/EIR. No structures would be built in these additional impact areas and no slopes would be constructed that might be subject to seismically induced ground failure. Moreover, no portion of the Modified Project would increase or exacerbate the risk of seismically induced ground-shaking. As such, this element of the Modified Project would not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death, including strong seismic ground shaking. Therefore, impacts would be **less than significant**.

#### Additional Construction Assumptions

As discussed in Threshold 1a, additional construction assumptions include changes to the construction schedule, equipment and personnel specifications, and dewatering specifications for proposed excavations at the base of the dam. These Modified Project components would have no relevance to regional seismicity. As a result, this element of the Modified Project would not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking. Therefore, **no impacts** would occur.



### Cumulative Impacts

Potential impacts related to seismically induced ground shaking at cumulative project sites would be reduced on a site-by-site basis by modern construction methods and compliance with CBC regulatory requirements that ensure building safety. Cumulative projects would be required to prepare and submit a site-specific geotechnical report for review and approval prior to the issuance of grading or building permits. Additionally, as needed, projects would incorporate individual mitigation or geotechnical requirements for site-specific geologic hazards, including seismically induced ground shaking, on each individual cumulative project site. Although the reservoir expansion project would generally be located in the same location as the Modified Project, additional stabilization measures and raising the crest of the dam, as proposed for this cumulative project, would result in beneficial impacts with respect to seismicity. Therefore, impacts associated with strong seismically induced ground shaking are not cumulatively considerable and impacts would be **less than significant**.

### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant.

#### *c. Seismic-related ground failure, including liquefaction?*

| 2019 EIS/EIR Impact Determination | Modified Project Impact Determination | New Significant Increase in Impact Severity? |
|-----------------------------------|---------------------------------------|--|
| Less than Significant             | Less than Significant                 | No   |

### Campground Construction and Day Use Area Improvements

Hazards associated with soil liquefaction and seismic-related ground failure include temporary loss of soil bearing capacity, lateral spreading, differential compaction, and slope instability. As discussed in Section 3.13.1, groundwater levels are typically high near-surface water bodies, such as San Luis Reservoir and O'Neill Forebay. As such, given the potential high water table, areas of unconsolidated Holocene alluvium, and proximity to Holocene-active faults (e.g., Ortigalita, O'Neill, and San Joaquin Faults), the additional impact areas, including portions of the proposed campground and day use area improvements underlain by alluvium (Figure 3.13-2), may be susceptible to liquefaction and seismic ground failure.

However, CBC standards would require the completion of a site-specific geotechnical investigation report for any proposed structures at the new campground and San Luis Creek Day Use Area. The geotechnical investigations would include site-specific design and construction recommendations to ensure that new structures are not adversely affected by seismically induced loss of soil bearing capacity, lateral spreading, differential compaction, and seismically induced slope instability. Design and construction would be completed in accordance with the CBC. Incorporation of CBC requirements, and standard geotechnical recommendations would minimize the potential for seismically related ground failure, including liquefaction, to occur.

Construction of the campground and improvements of the day use area would not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction. Therefore, impacts would be **less than significant**.

With respect to campground and day use area operations, the Modified Project would be designed to reduce the risks associated with potential seismically induced dam failure, including failure associated with liquefaction, and associated flooding of the proposed campground and existing day use area. Impacts would be similar to those described above for Threshold b regarding strong seismic ground shaking.

#### Changes in Borrow Area Location

Loose unconsolidated Holocene alluvium within the canyon bottoms of Borrow Area 14 and the additional staging and stockpiling area near the Basalt Hill Borrow Area may be susceptible to liquefaction (Figure 3.13-2). However, no structures would be built within these areas. Moreover, neither extraction, grading, and restoration of the borrow areas nor the use of the new staging area would increase or exacerbate the risk of seismically induced ground failure. As such, this element of the Modified Project would not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction. Therefore, impacts would be **less than significant**.

#### Minor Additions to Contractor Work Area

The additional staging and stockpiling areas immediately downstream of the dam embankment are underlain by Panoche Formation bedrock and are therefore not susceptible to liquefaction (Figure 3.13-2). Moreover, no portion of the Modified Project would increase or exacerbate the risk of seismic-related ground failure, including liquefaction. As such, this element of the Modified Project would not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction. Therefore, impacts would be **less than significant**.

#### Additional Construction Assumptions

As discussed for Threshold 1a, additional construction assumptions include changes to the construction schedule, equipment and personnel specifications, and dewatering specifications for proposed excavations at the base of the dam. These Modified Project components would have no relevance to regional seismicity. As a result, this element of the Modified Project would not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking. Therefore, **no impacts** would occur.

#### Cumulative Impacts

Potential impacts related to seismically related ground failure, including liquefaction, at cumulative project sites would be reduced on a site-by-site basis by modern construction methods and compliance with CBC regulatory requirements that ensure building safety. Cumulative projects would be required to prepare and submit a site-specific geotechnical report for review and approval prior to the issuance of grading or building permits. Additionally, as needed, projects would incorporate individual mitigation or geotechnical requirements for site-specific geologic hazards, including seismically related ground failure, including liquefaction, on each individual cumulative project site. Although the reservoir expansion project would generally be located in the same location as the Modified Project, additional stabilization measures and raising the crest of the dam, as proposed for this cumulative project, would result in beneficial impacts with respect to seismicity. Therefore, impacts associated with seismically related ground failure, including liquefaction, are not cumulatively considerable and impacts would be **less than significant**.

### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant.

#### d. Landslides?

| 2019 EIS/EIR Impact Determination | Modified Project Impact Determination | New Significant Increase in Impact Severity? |
|-----------------------------------|---------------------------------------|--|
| Less than Significant             | Less than Significant                 | No   |

### Campground Construction and Day Use Area Improvements

Hillside areas of the proposed campground and existing day use areas are generally gentle to moderately sloped, with localized areas of steep slopes. No landslides have been mapped in these areas (Figure 3.13-2). Slope instability during construction typically occurs because of the over-steepening of temporary slopes or excavations into the toe of unstable slopes. Excavation of temporary slopes would be completed in accordance with the California Division of Occupational Safety and Health standards, and construction of permanent slopes would be completed in accordance with CBC standards, thus minimizing the potential for construction-induced landslides to occur. As a result, this element of the Modified Project would not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death resulting from landslides. Therefore, impacts would be **less than significant**.

With respect to campground and day use area operations, the Modified Project would be designed to reduce the risks associated with potential seismically induced dam failure, including seismically induced landslides, and associated flooding of the proposed campground and existing day use area. Impacts would be similar to those described above for Threshold b regarding strong seismic ground shaking.

### Changes in Borrow Area Location

Materials extraction at Borrow Areas 12 and 14 is intended to preserve the existing topographic contours of the borrow areas to the greatest extent practicable, with the elevation of the existing hills and ridges being lowered up to 25 feet from their current elevation. If Borrow Area 14 is used, excavation would be minimized at the lower elevations and defined drainage areas between the hills. Up to 7 million cubic yards of material would be removed from these borrow areas if the materials testing determines that they contain suitable material for construction.

The slope gradients of Borrow Areas 12 and 14 are generally gentle to moderate, with localized areas of moderately steep hillsides. No landslides have been mapped in these areas (Figure 3.13-2). Improper material extraction techniques during removal of up to 25 vertical feet of these hills could result in oversteepened slopes, unstable soil conditions, and landsliding. However, excavations of temporary slopes would be completed in accordance with California Division of Occupational Safety and Health standards, and construction of permanent slopes would be completed in accordance with CBC standards, thus minimizing the potential for excavation-induced landslides to occur. Excavations would also be conducted in accordance with site-specific geotechnical recommendations. Moreover, once material extraction has ceased, the borrow areas would be graded and restored back to natural landform, stabilizing on-site soils, and reducing the potential for slope instability. As such, this element of the Modified Project would not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death resulting from landslides. Therefore, impacts would be **less than significant**.

### Minor Additions to Contractor Work Area

The topography of the additional staging and stockpiling areas immediately downstream of the dam embankment is gently sloping and no landslides have been mapped in these areas (Figure 3.13-2). Minimal grading, if any, would be required for creation of the staging and stockpiling areas. As a result, slope instability would not occur. As such, this element of the Modified Project would not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving landslides. Therefore, impacts would be **less than significant**.

### Additional Construction Assumptions

As discussed for Threshold 1a, additional construction assumptions include changes to the construction schedule, equipment and personnel specifications, and dewatering specifications for proposed excavations at the base of the dam. These Modified Project components would have no relevance to landslides. As a result, this element of the Modified Project would not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving landslides. Therefore, **no impacts** would occur.

### Cumulative Impacts

Potential impacts related to landslides at cumulative project sites would be reduced on a site-by-site basis by modern construction methods and compliance with CBC regulatory requirements that ensure building safety. Cumulative projects would be required to prepare and submit a site-specific geotechnical report for review and approval prior to the issuance of grading or building permits. Additionally, as needed, projects would incorporate individual mitigation or geotechnical requirements for site-specific geologic hazards, including landslides, on each individual cumulative project site. Although the reservoir expansion project would generally be located in the same location as the Modified Project, additional stabilization measures, as proposed for this cumulative project, would result in beneficial impacts with respect to landslides, including seismically induced landslides. Therefore, impacts associated with landslides are not cumulatively considerable and impacts would be **less than significant**.

### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant.

## Threshold 2

*Would the Modified Project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Modified Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?*

| 2019 EIS/EIR Impact Determination | Modified Project Impact Determination | New Significant Increase in Impact Severity? |
|-----------------------------------|---------------------------------------|--|
| Less than Significant             | Less than Significant                 | No   |

### Campground Construction and Day Use Area Improvements

As discussed for Threshold 1c, although alluvial areas of the proposed campground and existing day use area may be prone to liquefaction and associated lateral spreading, any new structures would be built in accordance with the CBC, such that adverse impacts would not occur. With implementation of the Modified Project, campground and day use area operations would be less susceptible to flooding as a result of seismically induced dam failure, resulting in beneficial impacts. Hillside portions of the proposed campground and existing day use area are underlain by Panoche Formation bedrock, which would not be prone to soil collapse. However, sandy alluvial soils may be prone to soil collapse. Construction on potentially collapsible soils in these alluvial areas would similarly be mitigated through compliance with the CBC, including allowable load-bearing values of soils (Sections 1806 and 1806A); and the design of embedded posts/poles (Sections 1807 and 1807A) and foundations (Sections 1808 and 1808A). These measures are designed to assure safe construction requirements appropriate to site conditions. Excavation of cut slopes in hillside areas would be constructed in accordance with the CBC, such that on- or off-site landslides would not occur. As discussed in Section 3.13.1, the Modified Project site is not located within a known subsidence area. Therefore, this element of the Modified Project would not result in additional impact areas becoming unstable and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse. Impacts would be **less than significant**.

### Changes in Borrow Area Locations

Borrow Areas 12 and 14 are underlain by Panoche Formation bedrock and alluvium (Figure 3.13-2). Bedrock areas would not be prone to liquefaction or soil collapse. Although alluvial canyon areas may be prone to liquefaction, lateral spreading, and soil collapse, no structures would be built in these additional impact areas; therefore, no impacts would occur. As discussed for Threshold 1d, improper material extraction techniques could result in oversteepened slopes, unstable soil conditions, and landsliding. However, excavations of temporary slopes would be completed in accordance with California Division of Occupational Safety and Health and CBC standards, thus minimizing the potential for excavation-induced landslides to occur. Moreover, once material extraction has ceased, the borrow areas would be graded and restored back to natural landform, stabilizing on-site soils and reducing the potential for slope instability. The Modified Project area is not in an area of known subsidence and borrow area excavations would not induce subsidence. Therefore, this element of the Modified Project would not result in additional impact areas becoming unstable and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse. Impacts would be **less than significant**.

### Minor Additions to Contractor Work Area

The topography of the additional staging and stockpiling areas immediately downstream of the dam embankment is gently sloping and no landslides have been mapped in these areas (Figure 3.13-2). Minimal grading, if any, would be required for creation of the staging and stockpiling areas. As a result, slope instability would not occur. These additional impact areas are primarily underlain by Panoche Formation bedrock, which would not be prone to liquefaction or soil collapse. The Modified Project area is not in an area of known subsidence and creation of additional contractor work areas would not induce subsidence. Therefore, this element of the Modified Project would not result in additional impact areas becoming unstable and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse. Impacts would be **less than significant**.



### Additional Construction Assumptions

As discussed for Threshold 1a, additional construction assumptions include changes to the construction schedule, equipment and personnel specifications, and dewatering specifications for proposed excavations at the base of the dam. These Modified Project components would have no relevance to landslides, liquefaction, lateral spreading, or collapse. As discussed, dewatering of stability berm excavations would not induce subsidence. Therefore, this element of the Modified Project would not result in additional impact areas becoming unstable and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse. **No impacts** would occur.

### Cumulative Impacts

As described for Threshold 1, potential impacts related to seismically induced ground failure, landslides, and collapse at cumulative project sites would be reduced on a site-by-site basis by modern construction methods and compliance with CBC regulatory requirements that ensure building safety. Therefore, impacts associated with these geologic hazards are not cumulatively considerable and impacts would be **less than significant**.

### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant.

### Threshold 3

*Would the Modified Project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?*

| 2019 EIS/EIR Impact Determination | Modified Project Impact Determination | New Significant Increase in Impact Severity? |
|-----------------------------------|---------------------------------------|--|
| Less than Significant             | Less than Significant                 | No   |

### Campground Construction and Day Use Area Improvements

Expansive soils are clay-rich soils that shrink when dry and swell when wet. This change in volume can exert substantial pressure on foundations, resulting in structural distress and/or damage. As discussed in Section 3.13.1, some soils underlying the proposed campground and San Luis Creek Day Use area contain clay, and thus may be susceptible to soil expansion. Grading and construction in expansive soils would be mitigated through compliance with the CBC. Typical mitigation measures described in Chapter 18 of the CBC to alleviate expansive soils include the following:

- Excavation of the upper few feet of expansive soils and replacement with sandy, nonexpansive soil;
- Installation of foundations designed to resist forces exerted by expansive soils; and
- Stabilization of the soils by chemical, dewatering, pre-saturation, or equivalent techniques.

In addition, construction and operation of the campground and day use area would not directly or indirectly cause substantial adverse effects related to expansive soils. As such, this element of the Modified Project would not create substantial direct or indirect risks to life and property related to expansive soils and impacts would be **less than significant**.

#### **Changes in Borrow Area Location**

Expansive soils may be present within Borrow Areas 12 and 14 and may underlie portions of the newly proposed staging area near the Basalt Hill Borrow Area. However, no structures that might be affected by expansive soils are proposed to be developed within these additional impact areas. As such, this element of the Modified Project would not create substantial direct or indirect risks to life and property related to expansive soils and impacts would be **less than significant**.

#### **Minor Additions to Contractor Work Area**

As discussed for the proposed campground and day use area improvements, the additional soil and stockpiling areas are underlain by soils containing clay that may be susceptible to expansion. However, no structures that might be affected by expansive soils are proposed to be developed within these additional impact areas. As such, this element of the Modified Project would not create substantial direct or indirect risks to life and property related to expansive soils and impacts would be **less than significant**.

#### **Additional Construction Assumptions**

As discussed for Threshold 1a, additional construction assumptions include changes to the construction schedule, equipment and personnel specifications, and dewatering specifications for proposed excavations at the base of the dam. These Modified Project components would have no relevance to expansive soils. Therefore, this element of the Modified Project would not create substantial direct or indirect risks to life and property related to expansive soils. **No impacts** would occur.

#### **Cumulative Impacts**

Potential impacts related to expansive soils at cumulative project sites would be reduced on a site-by-site basis by modern construction methods and compliance with CBC regulatory requirements that ensure building safety. Cumulative projects would be required to prepare and submit a site-specific geotechnical report for review and approval prior to the issuance of grading or building permits. Additionally, as needed, projects would incorporate individual mitigation or geotechnical requirements for site-specific geologic hazards, including expansive soils, on each individual cumulative project site. Therefore, impacts associated with expansive soils are not cumulatively considerable and impacts would be **less than significant**.

#### **Comparison to 2019 EIS/EIR**

The additional project components analyzed above would result in less-than-significant impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant.

## Threshold 4

*Would the Modified Project result in substantial soil erosion or the loss of topsoil?*

| 2019 EIS/EIR Impact Determination | Modified Project Impact Determination | New Significant Increase in Impact Severity? |
|-----------------------------------|---------------------------------------|--|
| Less than Significant             | Less than Significant                 | No   |

#### Campground Construction and Day Use Area Improvements

Construction activities associated with the development of the proposed campground and redevelopment of the day use area, including grading and open trenching for utility installation, would produce exposed soils that could be susceptible to erosion as a result of rain, windy conditions, and/or construction vehicles traveling over the exposed soils. However, state and federal NPDES requirements include the preparation and implementation of a SWPPP for projects with cumulative ground disturbance more than 1 acre. In compliance with Construction General Permit requirements, the SWPPP would establish erosion and sediment control BMPs for construction activities. Typical examples of erosion-related construction BMPs include the following:

- Silt fences and/or fiber rolls installed around the perimeter of work areas and/or the project construction site
- Stockpile containment and exposed soil stabilization structures (e.g., Visqueen plastic sheeting, fiber rolls, gravel bags and/or hydroseed)
- Runoff control devices (e.g., fiber rolls, gravel bag barriers) used during construction phases conducted during the rainy season
- Wind erosion (dust) controls, primarily consisting of spraying water on exposed dry soils with a water truck
- Tracking controls at the site entrance, including regular street sweeping and tire washes for equipment

These measures would control and reduce erosion and loss of topsoil to the maximum extent practical. Once construction is complete, exposed soils would be paved over and/or revegetated, thus minimizing long-term erosional impacts. Therefore, this element of the Modified Project would not result in substantial soil erosion or loss of topsoil and impacts would be **less than significant**.

#### Changes in Borrow Area Location

Implementation of the Modified Project would involve the extraction and stockpile of soils from Borrow Area 12 and 14 that could be susceptible to erosion due to rain, windy conditions, and/or construction vehicles traveling over the exposed soils. However, DWR or their construction contractor would be required to prepare and implement a SWPPP, establishing erosion and sediment control BMPs near the borrow areas and staging site. BMPs would, in part, include covering exposed soil stockpiles during rain events, lining the perimeter of construction areas with sediment barriers, and installation of runoff control devices. Moreover, once extraction activities have ceased, Borrow Areas 12 and 14 would be graded and restored to natural landform, stabilizing on-site soils, and reducing the potential for soil erosion to occur. As such, this element of the Modified Project would not result in substantial soil erosion or loss of topsoil and impacts would be **less than significant**.

### Minor Additions to Contractor Work Area

Clearing and grubbing for proposed staging/stockpiling areas, as well as temporary stockpiling of soils in these additional impact areas, could expose previously stabilized soils to erosion due to rain, windy conditions, and/or construction vehicles traveling over the exposed soils. However, DWR or their construction contractor would prepare and implement a SWPPP that would include erosion control measures, such as covering exposed soil stockpiles during rain events, lining the perimeter of construction areas with sediment barriers, and installation of runoff control devices. These measures would control and reduce erosion and loss of topsoil to the maximum extent practical. Once construction is complete, exposed soils would be revegetated, thus minimizing long-term erosion. Therefore, this element of the Modified Project would not result in substantial soil erosion or loss of topsoil and impacts would be **less than significant**.

### Additional Construction Assumptions

As discussed for Threshold 1a, additional construction assumptions include changes to the construction schedule, equipment and personnel specifications, and dewatering specifications for proposed excavations at the base of the dam. These Modified Project components would have no relevance to soil erosion. Therefore, this element of the Modified Project would not result in substantial soil erosion or loss of topsoil and **no impacts** would occur.

### Cumulative Impacts

Potential soil erosion from each cumulative project site could combine to cause potentially significant cumulative water quality impacts due to sedimentation of downstream water bodies. The geographic context for the analysis of cumulative erosion related impacts would be the San Joaquin River watershed. Cumulative development and redevelopment within the watershed would potentially result in short-term erosion related impacts during construction and long-term erosion related to denuded soil, improper drainage, and lack of erosion control features at each cumulative project site. However, short-term and long-term erosion control BMPs would be employed at each site consistent with NPDES stormwater quality regulations, including the Construction General Permit and local Municipal Separate Storm Sewer System permits, such that impacts would not be cumulatively considerable. (See Section 3.1, Water Quality and Groundwater, for additional analysis.) As a result, cumulative impacts related to soil erosion and loss of topsoil would be **less than significant**.

### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant.

### Threshold 5

***Would the Modified Project result in the loss of availability of a known mineral resource that would be of value to the region and residents of the State?***

| 2019 EIS/EIR Impact Determination | Modified Project Impact Determination | New Significant Increase in Impact Severity? |
|-----------------------------------|---------------------------------------|--|
| Less than Significant             | Less than Significant                 | No   |

#### Impacts for all Project Components

According to mapping efforts by the CGS, CalGEM, and California Department of Conservation, Office of Mine Reclamation, no active or historic mines or oil wells are present within the Modified Project site. The closest oil well is an abandoned dry hole located along the eastern edge of O'Neill Forebay. Moreover, two active, two reclaimed, and one idle mine are present to the south and southeast of the Modified Project site (Table 3.13-2, Nearby Mine Sites in Merced County). On-site activities associated with the additional impact areas includes the extraction of materials from Borrow Areas 12 and 14 for construction activities at B.F. Sisk Dam. However, there is no known demand for these materials besides the Modified Project. As a result, this element of the Modified Project would not result in the loss of availability of known mineral resources that would be of value to the region and the residents of the State. Therefore, impacts would be **less than significant**.

#### Cumulative Impacts

The geographic context for the analysis of cumulative mineral resources related impacts would include the counties of Alameda, San Joaquin, Stanislaus, Merced, and portions of Fresno, including both valley and foothill areas. Although the majority of oil and gas production in the San Joaquin Valley occurs in the southern portion of the valley, near Bakersfield, oil and gas exploration has occurred in the northern San Joaquin Valley, as evidenced by an abandoned well immediately east of O'Neill Forebay. Future oil and gas exploration would not be precluded in the vicinity of cumulative project sites and/or corridors as modern directional drilling techniques would allow access to oil reserves from remote locations.

Gravel quarries are located throughout the valley areas of the northern San Joaquin Valley, primarily in river alluvial areas, and rock and gravel mines and quarries are located throughout the foothills of the northern San Joaquin Valley. In addition, known occurrences of ultramafic rock outcrops are present in the western part of Merced County. Ultramafic rocks can contain commercially viable quantities of chrysotile asbestos and tremolite-actinolite asbestos. The San Luis Transmission Project would not preclude mineral resource development, as transmission lines typically have little impact to mining operations due to the spacing between transmission structures, which is large enough to accommodate access to mineral resource deposits. Should open pit mining be planned in the vicinity of transmission lines, structures can remain on islands, or the mining interest can have the transmission line locally re-routed. The San Luis Solar Project could impede quarrying for a period of 30 years; however, the land would be available to mining following the 30-year lease period. The San Luis Reservoir Low Point Improvement Project began in 2019 and includes designated quarry locations that have been subject to CEQA review. The reservoir expansion project would use quarried material from the Basalt Hill Borrow Area, which is located on federally owned land. Other than the Approved Project and Modified Project, there is no known demand for these quarries. Similarly, extraction of borrow material from the Basalt Hill Borrow Area, Borrow Area 12, and Borrow Area 14 for the Modified Project would result in extraction of material from borrow areas with no known additional demand. As a result, the Modified Project, in combination with the cumulative projects, would not result in the permanent loss of availability of a known mineral resource that would be of future value to the region and the residents of the state and use of the materials extracted from the quarry/borrow areas would be used for the purposes of dam improvement and reinforcement for the public benefit purposes of water storage and supply domestic and agricultural purposes. Furthermore, access to the quarries would remain following construction of these projects and remaining materials could be extracted for future projects requiring similar materials. The contribution of the Modified Project is less than cumulatively considerable and the cumulative impact is **less than significant**.



### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant.

### Threshold 6

*Would the Modified Project result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?*

| 2019 EIS/EIR Impact Determination | Modified Project Impact Determination | New Significant Increase in Impact Severity? |
|-----------------------------------|---------------------------------------|--|
| Less than Significant             | Less than Significant                 | No   |

### Impacts for all Project Components

As discussed in Section 3.13.1, no aggregate mines, gold mines, or oil/gas wells are in the vicinity of San Luis Reservoir or O'Neill Forebay. As a result, the Modified Project would not interfere with nearby mines or wells. The Modified Project would entail using materials from Borrow Areas 12 and 14 for the construction activities at B.F. Sisk Dam. However, there is no known demand for these materials outside of the Modified Project area. Moreover, no general plan, specific plan, or land use plan has identified the borrow areas as a locally important mineral resource. As a result, implementation of the Modified Project would not result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plans. Therefore, impacts would be **less than significant**.

### Cumulative Impacts

The primary mineral resources of Merced County are sand and gravel mining operations, with significant aggregate deposits concentrated along the San Joaquin River and its tributaries, including the Merced River, the Modesto Formation, and the Los Banos, San Luis Ranch, Patterson, and Dos Palos Alluviums. Approximately 38 square miles, or 24,320 acres of aggregate resource areas have been identified by the California Division of Mines and Geology in 10 aggregate resource areas within Merced County. These 10 resource areas contain an estimate 1.18 billion tons of concrete resources overall. The Division of Mines and Geology estimates that 144 million tons of aggregate would be necessary to satisfy projected demand for construction aggregate in the county through 2049, which is well beyond the 2030 horizon contemplated by the Merced County General Plan (Merced County 2013b). As a result, the available supply of aggregate in Merced County would substantially exceed cumulative project demand. The Modified Project, in combination with the cumulative projects, would not result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plans. The contribution of the Modified Project is less than cumulatively considerable and the cumulative impact would be **less than significant**.

### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant.

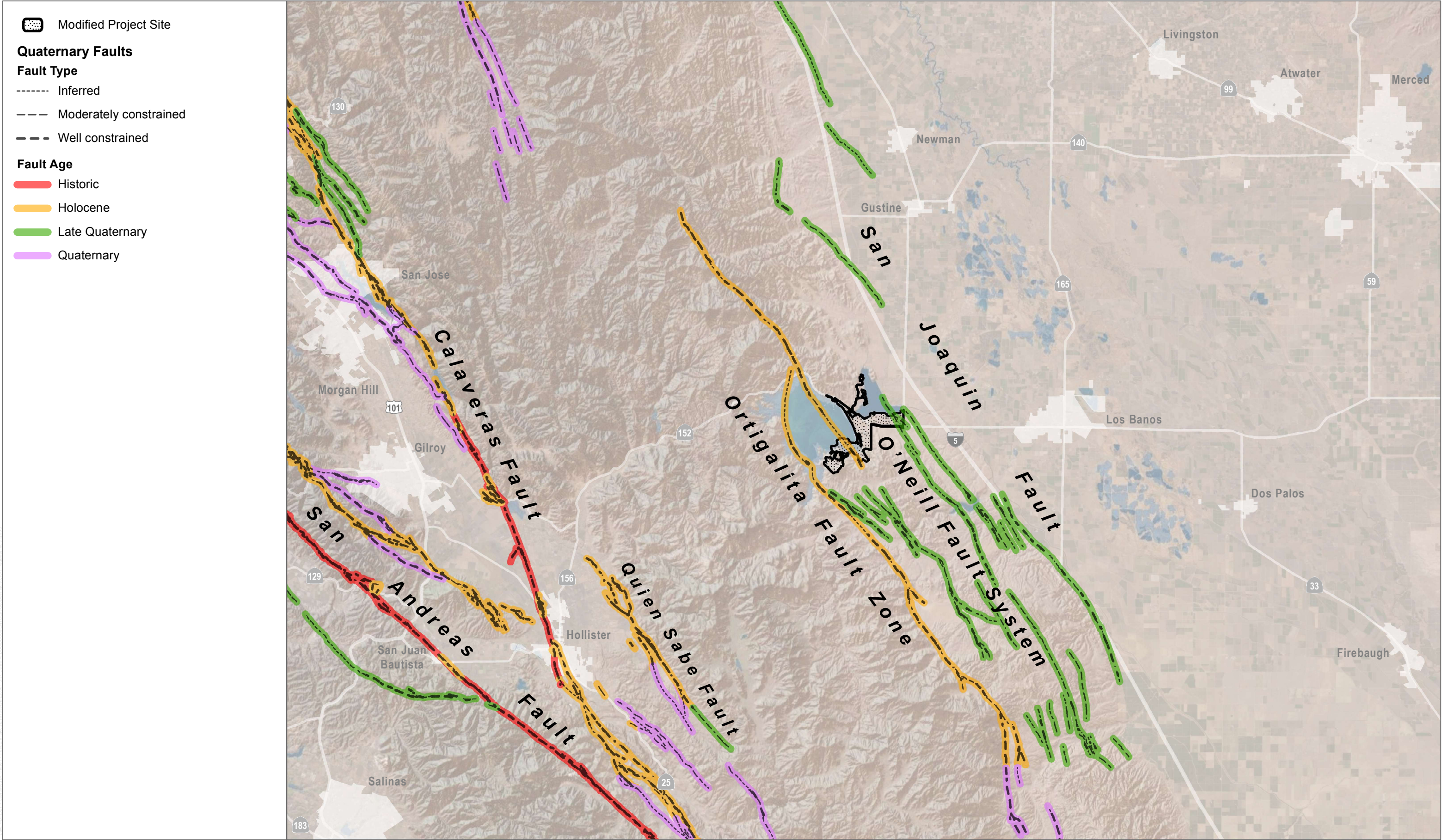
### 3.13.5 Mitigation Measures

No significant impact would occur because of faulting, seismically induced ground shaking, seismically induced ground failure, subsidence, erosion, soil expansion, or soil collapse. In addition, no loss to mineral resources would occur because of Modified Project implementation. Therefore, mitigation measures are not required.

### 3.13.6 Level of Significance After Mitigation

Impacts regarding geology, seismicity, and potentially unstable soils from the Modified Project were determined to be less than significant without mitigation. Therefore, no mitigation measures were required, and the impact level remains less than significant.



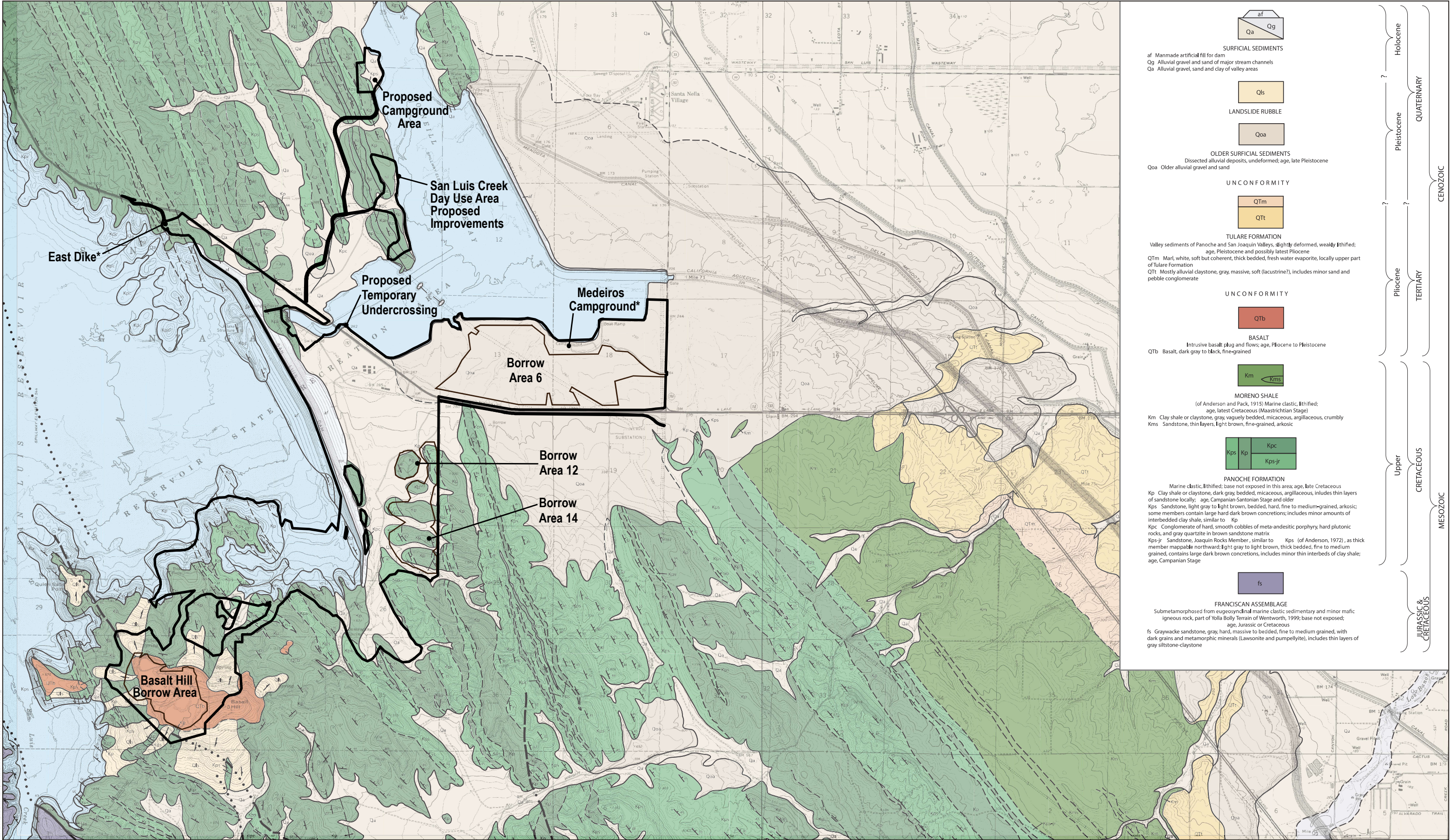


SOURCE: California Geological Society



INTENTIONALLY LEFT BLANK



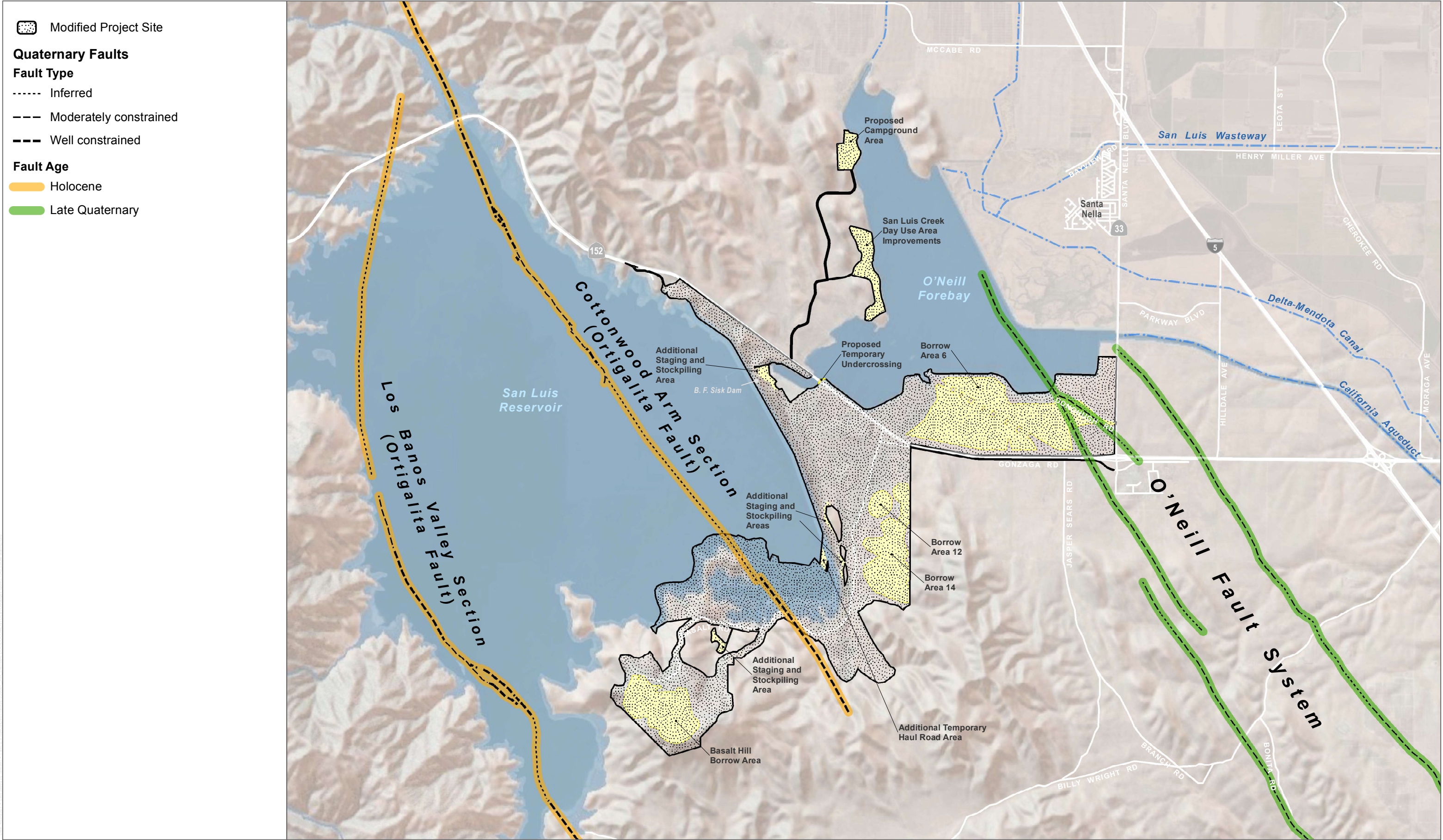


SOURCE: Dibblee 2007 \*The 2019 EIS/EIR analyzed impacts of the project within the East Dike and Medeiros Campground area but did not include these areas as in mapping of the project footprint. These areas have been added to the Approved Project footprint to correct this mapping omission.

**FIGURE 3.13-2**  
**Geologic Map**



INTENTIONALLY LEFT BLANK



SOURCE: California Geological Society

**FIGURE 3.13-3**  
**Local Faulting**

INTENTIONALLY LEFT BLANK

## 3.14 Tribal Cultural Resources

This supplemental environmental impact report (SEIR) addresses proposed modifications to the B.F. Sisk Dam Safety of Dams Modification Project, which was previously evaluated in the B.F. Sisk Dam Safety of Dams Modification Project Environmental Impact Statement/Environmental Impact Report (2019 EIS/EIR). The project addressed in the 2019 EIS/EIR is referred to herein as the Approved Project; the Approved Project with proposed modifications identified since certification of the 2019 EIS/EIR is referred to herein as the Modified Project.

This section describes the existing tribal cultural resources conditions of the Modified Project site and vicinity, identifies associated regulatory requirements, evaluates potential impacts, and identifies any applicable mitigation measures related to implementation of the Modified Project.

### 3.14.1 Existing Conditions

#### 3.14.1.1 Area of Potential Effect

The analysis provided in the 2019 EIS/EIR for the Approved Project included the area of potential effect (APE), which totaled 3,914 acres and represented the limits of the area with potential to be directly impacted as a result of the Approved Project (referred to herein as the Approved Project APE). Pacific Legacy Inc. conducted a pedestrian survey of portions of the Approved Project APE and completed a cultural resources report in May 2019 (Holm and Holson 2019).

The analysis in this section has been conducted with the intent of supplementing cultural resources studies completed to date and in support of the SEIR. The analysis focuses specifically on previously unsurveyed areas of the Approved Project, as well as additional impact areas that have been added since certification of the 2019 EIS/EIR (i.e., Modified Project). The proposed modifications associated with the Modified Project include the development of a new permanent public campground on the northwestern shore of O'Neill Forebay, improvements to the San Luis Creek Day Use Area, and the use of additional access roads and potential staging areas. The Modified Project also added two alternative on-site borrow areas—Borrow Area 12 and Borrow Area 14—within areas previously identified for construction staging in the 2019 EIS/EIR. While these borrow areas are within the Approved Project footprint, they represent an additional activity and would result in a greater level of disturbance than analyzed in the 2019 EIS/EIR. The additional impact areas associated would increase the overall APE by approximately 184 acres. The term Modified Project APE is used in this section to refer to both the Approved Project APE and the additional impact areas analyzed as part of the SEIR. See Figure 3.12-1, Approved Project and Modified Project Survey Areas, in Section 3.12, Cultural Resources.

#### 3.14.1.2 Cultural Context

Please refer to Section 3.12.1, Existing Conditions, in Section 3.12, for a detailed cultural context of the Modified Project.

#### 3.14.1.3 Native American Heritage Commission and Tribal Engagement

On June 5, 2020, Dudek requested a Native American Heritage Commission (NAHC) search of their Sacred Lands File for the Modified Project area. The NAHC responded on June 8, 2020, indicating the search did not identify any sacred sites in the vicinity of the Modified Project. The NAHC additionally provided a list of Native American tribes culturally affiliated with the Modified Project site. All NAHC correspondence materials are included in Confidential Appendix E of this SEIR.



The Modified Project is subject to compliance with Assembly Bill (AB) 52, which requires consideration of impacts to “tribal cultural resources” (California Public Resources Code, Section 21074) as part of the California Environmental Quality Act (CEQA) process and requires the CEQA lead agency to notify any groups (who have requested notification) of a proposed project who are traditionally or culturally affiliated with the geographic area of the proposed project. For the Modified Project, because AB 52 is a government-to-government process, all records of correspondence related to AB 52 notification and any subsequent consultation are on file with California Department of Water Resources (DWR). DWR has an established Tribal Engagement Policy and will contact NAHC-listed tribes independently of AB 52 outreach. The Bureau of Reclamation (Reclamation) has been consulting with federally recognized Native American tribes and Native American organizations as part of the Section 106 process since late 2017, including geotechnical work related to the Approved Project as well as for the development of the document titled, Programmatic Agreement Among The Bureau of Reclamation, Interior Region 10 California-Great Basin; and The California State Historic Preservation Officer Regarding Compliance with Section 106 of the National Historic Preservation Act Pertaining to the Implementation of the Safety of Dams B.F. Sisk Dam Project (Programmatic Agreement) (Reclamation and SHPO 2019).

### 3.14.2 Relevant Plans, Policies, and Ordinances

Please refer to Section 3.12.2, Relevant Plans, Policies, and Ordinances, for full regulatory context of the Modified Project.

#### 3.14.2.1 Federal

Please refer to Section 3.12.2.1 for a discussion of the federal plans, policies, and ordinances related to cultural resources that are relevant to the Modified Project.

#### 3.14.2.2 State

##### **Assembly Bill 52**

AB 52 of 2014 amended California Public Resources Code Section 5097.94, and added California Public Resources Code, Sections 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2, and 21084.3. AB 52 established that tribal cultural resources must be considered under CEQA, and also provided for additional Native American consultation requirements for the lead agency. California Public Resources Code, Section 21074, defines tribal cultural resources as follows:

- (a) “Tribal cultural resources” are either of the following:
  - (1) Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:
    - (A) Included or determined to be eligible for inclusion in the California Register of Historical Resources.
    - (B) Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.



- (2) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.
- (b) A cultural landscape that meets the criteria of subdivision (a) is a tribal cultural resource to the extent that the landscape is geographically defined in terms of the size and scope of the landscape.
- (c) A historical resource described in Section 21084.1, a unique archaeological resource as defined in subdivision (g) of Section 21083.2, or a “nonunique archaeological resource” as defined in subdivision (h) of Section 21083.2 may also be a tribal cultural resource if it conforms with the criteria of subdivision (a).

AB 52 formalizes the lead agency–tribal consultation process, requiring the lead agency to initiate consultation with California Native American tribes that have requested notification under AB 52. This includes tribes that may not be federally recognized. Lead agencies are required to begin consultation prior to the release of a negative declaration, mitigated negative declaration, or EIR.

California Public Resources Code, Section 21084.2 establishes that “a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment.” California Public Resources Code, Section 21080.3.2 states that parties may propose mitigation measures “capable of avoiding or substantially lessening potential significant impacts to a tribal cultural resource or alternatives that would avoid significant impacts to a tribal cultural resource.” Further, if a California Native American tribe requests consultation regarding project alternatives, mitigation measures, or significant effects to tribal cultural resources, the consultation shall include those topics (California Public Resources Code Section 21080.3.2[a]). The environmental document and the mitigation monitoring and reporting program (where applicable) shall include any mitigation measures that are adopted (California Public Resources Code, Section 21082.3[a]).

#### **Native American Human Remains**

California Public Resources Code, Section 5097 et seq., addresses the disposition of Native American burials in archaeological sites and protects such remains from disturbance, vandalism, or inadvertent destruction; establishes procedures to be implemented if Native American skeletal remains are discovered during construction of a project; and established the NAHC.

In the event that Native American human remains or related cultural material are encountered, Section 15064.5(e) of the State of California CEQA Guidelines (CEQA Guidelines) (as incorporated from California Public Resources Code, Section 5097.98) and California Health and Safety Code, Section 7050.5, define the subsequent protocol. In the event of the accidental discovery or recognition of any human remains, excavation or other disturbances shall be suspended on the site or any nearby area reasonably suspected to overlie adjacent human remains or related material. Protocol requires that the county coroner or county-approved coroner be contacted in order to determine if the remains are of Native American origin. Should the coroner determine the remains to be Native American, the coroner must contact the NAHC within 24 hours. The most likely descendant may make recommendations to the landowner or the person responsible for the excavation work for means of treating, with appropriate dignity, the human remains and any associated grave goods as provided in California Public Resources Code, Section 5097.98 (14 CCR 15064.5[e]).

### San Luis Reservoir State Recreation Area Resource Management Plan/General Plan

The California Department of Parks and Recreation (CDPR), in partnership with Reclamation, manages most of the San Luis Reservoir State Recreation Area (SRA). The CDPR planning process is integrated with Reclamation's resource management planning process. CDPR developed the San Luis Reservoir SRA Resource Management Plan/General Plan (San Luis Reservoir SRA RMP/GP) in partnership with Reclamation, and adopted the 25-year plan in 2013. The San Luis Reservoir SRA RMP/GP directs the future development, operations, and maintenance of the SRA, and CDPR and Reclamation continue to collaborate on the plan to guide future growth. Lands managed by CDPR for recreation are part of the state park system and comprise the SRA. The San Luis Reservoir SRA RMP/GP's primary objective is to identify general areas in which future development may occur for recreation management. The plan includes an overview of existing conditions, including a summary of opportunities and constraints, a plan for future use and management of the plan area, and the associated environmental analysis pursuant to the National Environmental Policy Act (NEPA) and CEQA (Reclamation and CDPR 2013).

The San Luis Reservoir SRA RMP/GP identifies a series of policies in the form of goals and guidelines. Goals and guidelines related to tribal cultural resources include the following (Reclamation and CDPR 2013):

#### **Resource Management (RES)**

**Goal RES-H1:** Protect and preserve significant prehistoric and historic resources, and collections within the Plan Area, including those that may be undocumented.

#### ***Guidelines:***

- Maintain the existing inventory, mapping system, and database for cultural resources within the Plan Area.
- Provide for storage of collections and documentation and display of select cultural resources.
- Submit and complete site records to the State Historic Preservation Officer as necessary to determine eligibility for inclusion in the National Register of Historic Places, the California Register of Historical Resources, or for listing and recognition under CSP's [California Department of Parks and Recreation's] Cultural Resources Division, including under cultural landscapes.
- The District Superintendent may solicit the evaluation of potential cultural landscapes within the Plan Area using National Park Service (NPS) guidance on cultural landscapes as outlined in Protecting Cultural Landscapes. Prepare Cultural Landscape Reports when deemed appropriate and necessary.
- Consult with CSP's cultural resource specialists when planning the construction of new facilities and uses.
- When new development or improvements to existing facilities are proposed and may impact cultural resources, ensure compliance with NEPA and CEQA requirements.

### 3.14.2.3 Local

#### **Merced Vision 2030 General Plan**

As required by state law, Merced County has adopted a general plan to guide land use decisions within the county. The general plan provides goals, policies, standards, and implementation programs to guide the physical development of a county. At a minimum, the general plan must address the topics of land use, transportation, housing, conservation, open space, noise, and safety. The Merced Vision 2030 General Plan (Merced County General Plan), adopted in 2013, has established the year 2030 as the plan's time horizon. The Merced County

General Plan recognizes the rich archaeological and historic past of Merced County and understands that certain measures must be stated to ensure protection of these resources. The Merced County General Plan Recreation and Cultural Resources Element applies California Public Resources Code, Section 21083.2, and CEQA Guidelines Section 15064.5 for resource significance and cultural resources management in the county. The following goal and policies would apply to the Modified Project (Merced County 2013):

#### ***Recreation and Cultural Resources Element***

**Goal RCR-2:** Protect and preserve the cultural, archaeological, and historic resources of the County in order to maintain its unique character.

- **Policy RCR-2.1 Archaeological Site and Artifact Protection:** Require development Projects that affect archaeological sites and artifacts to avoid disturbance or damage to these sites.
- **Policy RCR-2.5 Human Remains Discovery:** Require that, in the event of the discovery of human remains on any project construction site, all work in the vicinity of the find will cease and the County Coroner and Native American Heritage Commission will be notified.
- **Policy RCR-2.8 Historical Preservation Area/Site Designations:** Allow sites of historical and archaeological significance to be designated as historical preservation areas or sites during the Community Planning process or on individual sites in rural areas.
- **Policy RCR-2.9 Historical and Cultural Resources Investigation, Assessment, and Mitigation Guidelines:** Establish and adopt mandatory guidelines for use during the environmental review processes for private and public projects to identify and protect historical, cultural, archaeological, and paleontological resources, and unique geological features.
- **Policy RCR-2.10 Tribal Consultation:** Consult with Native American tribes regarding proposed development projects and land use policy changes consistent with Planning and Zoning Law at Government Code Section 65351, and the OPR Tribal Consultation Guidelines (2005).

### 3.14.3 Thresholds of Significance

The significance criteria used to evaluate the Modified Project impacts to tribal cultural resources are based on Appendix G of the CEQA Guidelines. According to Appendix G of the CEQA Guidelines, a significant impact related to tribal cultural resources would occur if the Modified Project would:

1. Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as a site, feature, place, or cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American Tribe, and that is:
  - a. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k), or
  - b. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

### 3.14.4 Impacts Analysis

#### Threshold 1

***Would the Modified Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:***

- i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k)?***
- ii. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?***

| 2019 EIS/EIR Impact Determination | Modified Project Impact Determination              | New Significant Increase in Impact Severity? |
|-----------------------------------|--|--|
| N/A                               | Less than Significant with Mitigation Incorporated | No   |

Supplemental inventory efforts, including a Central California Information Center records search, intensive-level pedestrian survey, and NAHC Sacred Lands File search, did not result in the identification of any new cultural resources within the Modified Project APE. Central California Information Center records do indicate that prehistoric resources have been reported to be present in the immediate vicinity. It should be noted that human remains of Native American origin have been identified in fill soils located nearby; however, the origin of these fill soils is undocumented and, as such, the source of the human remains has not been determined.

While most areas within the Modified Project APE have been subject to substantial earth modification associated with B.F. Sisk Dam, geomorphic information suggests that undisturbed soils in some areas have a moderate potential to support the presence of buried cultural resources.

In September 2019, Reclamation executed a Programmatic Agreement (Reclamation and SHPO 2019), of which DWR is an invited signatory. The Modified Project would not impact any known historical resources of Native American origin. Existing procedures outlined in Title 43, Part 10.4 of the Code of Federal Regulations and Appendix E of the Programmatic Agreement would address the inadvertent discovery of unanticipated resources. Mitigation included as part of this SEIR pertaining to cultural resources are intended to supplement and work within the overall framework of stipulations provided within the approved Programmatic Agreement and future amendments that may be incorporated prior to, or during, Modified Project construction.

As previously noted, an NAHC Sacred Lands File search did not identify Native American resources within the Modified Project APE. The NAHC recommended contacting the following four Native American individuals and/or tribal organizations who may have direct knowledge of cultural resources in or near the Modified Project site:

- Valentin Lopez, Chairperson with the Amah Mutsun Tribal Band
- Katherine Perez, Chairperson with the North Valley Yokuts Tribe
- Timothy Perez, MLD Contact for the North Valley Yokuts Tribe
- William Leonard, Chairperson with the Southern Sierra Miwuk Nation

In compliance with DWR Tribal Engagement Policy, DWR staff sent letters to these NAHC-listed contacts on September 23, 2020. Letters contained a Modified Project description, summary of cultural resources findings, a summary of available cultural resources technical studies that could be provided upon request, and an offer to further discuss the Modified Project. No response was received to these outreach letters.

In addition, DWR maintains a list of traditionally geographically affiliated tribes for the purposes of AB 52. These contacts have specifically requested project notification pursuant to AB 52 requirements. The only tribe listed for the Modified Project area is the Santa Rosa Rancheria Tachi Yokut Tribe. On October 29, 2020, DWR staff sent a formal AB 52 notification letter to Shana Powers, the cultural resources representative for this tribe; DWR received an email response on the same day requesting to consult on the Modified Project. On December 4, 2020, a conference meeting was held between DWR and Ms. Powers, as representative for the Santa Rosa Rancheria Tachi Yokut Tribe. While no specific tribal cultural resources were identified during that meeting, Ms. Powers noted that human remains had been recently collected from the vicinity for repatriation by the tribe at another location of their choosing. Mitigation for cultural resources, including archaeological and Native American monitoring in designated areas, was discussed. DWR and Ms. Powers elected to have a future meeting, during which Reclamation cultural staff would also be present, so that the overall cultural resources management process for the Modified Project addressed by the Programmatic Agreement might be discussed in greater detail. Subsequent meetings were held with the tribe on February 1, 2021, and on April 9, 2021. Reclamation staff was included on these calls and directly addressed information pertaining to Section 106, federal regulations, and Reclamation cultural resource practices. Through this process of consultation, DWR provided the following for Santa Rosa Rancheria Tachi Yokut Tribe's review: a summary of the supplemental cultural resources report; a draft communication matrix with key contacts, roles and responsibilities, and communication scenarios; and draft copies of the Cultural Resources and Tribal Cultural Resources sections of this SEIR. No outstanding comments or questions pertaining to these documents remain unaddressed.

No known tribal cultural resources were identified by the Santa Rosa Rancheria Tachi Yokut Tribe that have potential to be impacted by Modified Project activities. As documented in detail within Section 3.12 of this SEIR, no known archaeological sites of Native American origin would be affected by the Modified Project. An appropriate approach to potential impacts to tribal cultural resources is developed in response to the identified presence of a tribal cultural resource by California Native American Tribes through the process of consultation. Government-to-government consultation initiated by DWR, acting in good faith and after a reasonable effort, has not resulted in the identification of a tribal cultural resource within the Modified Project site. Given that no tribal cultural resource has been identified to date, no resource-specific mitigation measures pertaining to known tribal cultural resources are necessary. However, as consultation remains ongoing, DWR's determination with regard to impacts to tribal cultural resources remains pending.



Cultural resources mitigation appropriately addresses comments by the Santa Rosa Rancheria Tachi-Yokut Tribe pertaining to potential inadvertent impacts to cultural resources of Native American origin. As described in Section 3.12, **Mitigation Measure SEIR-CR-1 (new mitigation measure)** requires implementation of the Programmatic Agreement and clarifies the processes to be implemented in the event that an inadvertent cultural resources discovery is made. In addition, Mitigation Measure SEIR-CR-1 requires that prior to construction, a communication matrix with primary and secondary cultural resources points of contact from Reclamation, DWR, consulting parties, and other pertinent personnel must be developed and circulated. A simple overview guide with roles and responsibilities, cultural resource management protocols, and a list of guiding documents must be prepared as a companion to this communication matrix prior to construction. Additionally, **Mitigation Measure SEIR-CR-2 (new mitigation measure)**, summarizes the required processes to be implemented should human remains and/or associated cultural items be encountered, ensuring compliance with federal and state regulatory requirements. Lastly, **Mitigation Measure SEIR-CR-3 (new mitigation measure)** requires archaeological monitoring and provides the opportunity for Native American monitoring within areas identified as potentially sensitive for buried cultural resources.

Impacts on archaeological resources would not be significant with incorporation of Mitigation Measures SEIR-CR-1, SEIR-CR-2, and SEIR-CR-3 (see Section 3.12.5 for full text of mitigation measures); impacts would be **less than significant with mitigation incorporated**.

#### **Cumulative Impacts**

Cumulative impacts on tribal cultural resources consider whether impacts of the Modified Project together with other related projects identified within the vicinity of the Modified Project APE, when taken as a whole, substantially diminish the number and/or integrity of such resources within the same or similar context or property type.

As discussed above, there are no known tribal cultural resources identified within the Modified Project APE. No archaeological resources of Native American origin or association have been documented by the Central California Information Center within the Modified Project APE, although prehistoric resources have been reported to be present in the immediate vicinity. Human remains of Native American origin have been identified in fill soils located nearby; however, the origin of these fill soils is undocumented and, as such, the source of the human remains has not been determined. While most areas within the Modified Project APE have been subject to substantial earth modification associated with the dam, geomorphic information suggests that undisturbed soils in some areas do have a moderate potential to support the presence of buried cultural resources.

Having considered these factors, other individual projects occurring in the vicinity of the Modified Project site would also be subject to the same requirements of CEQA as the Modified Project, and any impacts to tribal cultural resources resulting from those cumulative projects would be mitigated, as applicable. These determinations would be made on a case-by-case basis, and the effects of cumulative disturbances to these resources would be mitigated to the extent feasible in accordance with CEQA and other applicable legal requirements. Therefore, impacts on tribal cultural resources would not be cumulatively considerable with mitigation incorporated as Mitigation Measures SEIR-CR-1, SEIR-CR-2, and SEIR-CR-3; cumulative impacts would be **less than significant with mitigation incorporated**.

### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant impacts with mitigation incorporated. The 2019 EIS/EIR did not address tribal cultural resources; however, impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would be less than significant with mitigation incorporated (see Section 3.14.5, Mitigation Measures).

### 3.14.5 Mitigation Measures

Refer to the mitigation measures listed in Section 3.12 of this SEIR.

### 3.14.6 Level of Significance After Mitigation

With incorporation of Mitigation Measures SEIR-CR-1, SEIR-CR-2, and SEIR-CR-3, the Modified Project would result in less-than-significant impacts with respect to resulting in adverse effects to tribal cultural resources included in or eligible for inclusion in the National Register of Historic Places and/or the California Register of Historical Resources. Mitigation Measure SEIR-CR-1 requires a qualified archaeologist to be consulted in the event of an unanticipated cultural resource discoveries, Mitigation Measure SEIR-CR-2 outlines the procedure of notification in the event of human remains being uncovered, and Mitigation Measure SEIR-CR-3 requires archaeological monitoring in areas of high sensitivity.

INTENTIONALLY LEFT BLANK

# 4 Other CEQA Considerations

---

This supplemental environmental impact report (SEIR) addresses proposed modifications to the B.F. Sisk Dam Safety of Dams Modification Project, which was previously evaluated in the B.F. Sisk Dam Safety of Dams Modification Project Environmental Impact Statement/Environmental Impact Report (2019 EIS/EIR). The project addressed in the 2019 EIS/EIR is referred to herein as the Approved Project; the Approved Project with revisions identified since certification of the 2019 EIS/EIR is referred to herein as the Modified Project.

## 4.1 Effects Found Not to Be Significant

Section 15128 of the State of California CEQA Guidelines (CEQA Guidelines) requires that an EIR briefly describe potential environmental effects that were determined not to be significant and therefore were not discussed in detail in the EIR. The environmental issues discussed in the following sections are not significant, and the reasons for the conclusion of non-significance are discussed below.

### 4.1.1 Surface Water Supply

The 2019 EIS/EIR underwent public scoping and public review periods and received a variety of comment letters addressing the Approved Project. Comments received on the 2019 EIS/EIR relative to water supply include the following:

- Public review comment from the Metropolitan Water District: The comment requested additional detail on water supply use during construction, including schedule and opportunities to expedite to minimize water supply impacts. The commenter also requested the clarification of the term “safe levels” as it is used in the 2019 EIS/EIR.
- Public review comments from State Water Contractors:
  - The commenter suggested that impacts to water supply under Alternative 2 should be significant.
  - The commenter requested a more thorough analysis of the potential impacts/risk to California State Water Project operations and supply deliveries.

In response to these comments, the 2019 EIS/EIR was revised to include additional detail of construction methodology. Additionally, Alternative 2 from the 2019 EIS/EIR was not adopted and therefore is no longer relevant to this SEIR.

Per the 2019 EIS/EIR, impacts on water supply would be potentially significant if the Approved Project would reduce the annual supply of water available to the Central Valley Project, California State Water Project, or other water uses. The Approved Project was determined to have a significant and unavoidable temporary impact to surface water supply resulting from temporary reduction in water supply deliveries due to construction of the foundation shear keys. The components of the Modified Project would have no effect on the annual supply of water deliveries. The proposed campground construction, improvements to the existing San Luis Creek Day Use Area, changes in borrow area locations, minor addition to contract work area, and additional construction assumptions would not require surface limits on the maximum surface elevation in San Luis Reservoir or O’Neill Forebay. As stated in Section 2.4, Proposed Project Modifications and Clarifications, of this SEIR, the dam stability features of the Approved Project, including the foundation shear keys, would remain largely unchanged under the Modified Project. Although the approved shear key at the south valley section of the dam has been eliminated

and the depth of other shear keys would be reduced, the overall construction schedule and assumptions of the Approved Project would remain unchanged by the Modified Project. With the elimination of one shear key, the anticipated duration of temporary limits of water supply deliveries would be reduced compared to the Approved Project. Therefore, the significant and unavoidable temporary impact to water supply would remain as identified in the 2019 EIS/EIR for the Approved Project, and the Modified Project would not result in any new or more severe impacts to surface water supply.

## 4.1.2 Fisheries Resources

Per the 2019 EIS/EIR, impacts on fisheries and aquatic ecosystems would be significant if Approved Project implementation would result in any of the following:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations or by CDFW, USFWS, or NMFS
- Interfere substantially with the movement of any native resident or migratory fish or aquatic-dependent species or with established native resident or migratory corridors, or impede the use of native nursery sites
- Conflict with any local policies or ordinances protecting fisheries resources
- Conflict with the provisions of an adopted habitat conservation plan (HCP), Natural Community Conservation Plan (NCCP), or other approved local, regional, or State HCP

As analyzed in the 2019 EIS/EIR, the Approved Project would have no impact on fisheries or aquatic ecosystems because special-status fish species are not present in the reservoir and San Luis Reservoir is an artificial environment that does not support a naturally evolved aquatic community. Additionally, there are no HCPs or local policies that cover the San Luis Reservoir region.

The proposed campground construction, improvements to the existing San Luis Creek Day Use Area, changes in borrow area location, minor addition to contract work area, and additional construction assumptions would not require any new or additional changes to the aquatic environment beyond what was discussed for the Approved Project. Although the proposed new campground constructed on the northwestern shore of O'Neill Forebay would provide for shore access, construction within the aquatic environment is not anticipated. Additionally, the improvements to the San Luis Creek Day Use Area would be limited to the existing facility. Similar to San Luis Reservoir, O'Neill Forebay is an artificial environment and does not support special-status fish species (Reclamation and CDPR 2013). Therefore, the Modified Project would result in no impact to fisheries resources.

## 4.1.3 Agricultural Resources

Per the 2019 EIS/EIR, impacts to agricultural resources would be significant if Approved Project implementation would result in any of the following:

- Conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Important Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program (FMMP) of the California Resources Agency, to nonagricultural use
- Conflict with existing zoning for agricultural use, or a Williamson Act contract
- Other changes in the existing environment which, due to their location or nature, could result in conversion of Important Farmland, to nonagricultural use



The Approved Project was found to have less-than-significant impacts or no impact to agricultural resources. The majority of the Modified Project would have the same impact area as the Approved Project, with the exception of approximately 338 acres added to the impact area. Land within the Modified Project impact area is identified as Grazing Land or Urban and Built-Up Land, and is therefore not considered Important Farmland (DOC 2020). This land is not subject to a Williamson Act Contract (Merced County 2009). The actual land use of the Modified Project area is for water conveyance and storage facilities, with ancillary activities that include dispersed recreation. There are no current agricultural uses of the land. Improvements to the existing San Luis Creek Day Use Area would be limited to improvements to existing recreational facilities and the new campground and San Luis Creek Day Use Area improvements would be constructed within an area identified for recreational uses by the San Luis Reservoir State Recreation Area Resource Management Plan/General Plan (San Luis Reservoir SRA RMP/GP). All additional Modified Project elements would be consistent with the San Luis Reservoir SRA RMP/GP and would not result in conversion of farmland or conflict with existing zoning or land use designations.

As discussed in Section 4.1.1, Surface Water Supply, the Modified Project would not result in any changes to water supply deliveries compared to the Approved Project. Therefore, the Modified Project would not result in changes to the existing environment that could result in the downstream conversion of Important Farmland to nonagricultural use. Therefore, the Modified Project would have less-than-significant impacts to agricultural resources.

#### 4.1.4 Public Utilities, Services, and Power

Per the 2019 EIS/EIR, impacts to public utilities, services, and power would be significant if Approved Project implementation would result in any of the following:

- Substantial adverse physical or environmental impacts associated with the provision of new or physically altered governmental services or facilities including fire protection, police protection, and schools
- The construction of new water, wastewater, or stormwater treatment/drainage facilities, the construction of which could cause significant environmental effects
- Exceedance of the capacity of a landfill designated to accommodate the project's solid waste disposal needs
- The need for additional capacity of local or regional energy supplies
- Adverse effects related to the depletion of local or regional energy supplies
- Wasteful, inefficient, or unnecessary consumption of energy

As discussed in the 2019 EIS/EIR, the Approved Project would result in less-than-significant impacts to public utilities, services, and power during both construction and operation.

##### **Public Utilities and Services**

Despite minor changes to the contractor work area and additional construction assumptions, the Modified Project retains the same overall construction assumptions of equipment, personnel, workday schedules, and overall construction schedule as the Approved Project. Construction of the Modified Project would still implement emergency response or remediation and containment plans. The construction workforce is still anticipated to be drawn from the local area, with a small portion of non-local works expected to establish permanent residence due to the prolonged construction schedule. The Modified Project would also be subject to preparation of a Stormwater Pollution Prevention Plan to control for polluted stormwater runoff. As such, construction would not result in a substantial increase in demand for public services such that new or additional facilities would be required. Given the same overall construction assumptions, the amount of solid waste generated by the Modified

Project would be substantially similar to that anticipated from the Approved Project. Construction of the Modified Project would therefore result in the same temporary less-than-significant impacts to public utilities and services as the Approved Project.

The Modified Project would not alter any operational characteristics of the Approved Project beyond the inclusion of the proposed campground and the San Luis Creek Day Use Area improvements. The new campground would include 79 campsites, two restroom and shower buildings, a campfire center, installed utilities (sewer, water, and electrical), and realignment of the existing bike path along the shore. Improvements to the San Luis Creek Day Use Area would include a boat launch lane, fish-cleaning station, and six restroom stalls. As such, operation of the Modified Project includes construction of utility infrastructure and would result in an incremental increase in demand for public services and utilities.

The proposed campground is within the service areas of the Merced County Sheriff's Department and Fire Department. Demand for these services would vary because the campground would not house any permanent residents. Although demand would incrementally increase over existing conditions, the proposed campground is located within proximity of existing campgrounds and designated recreational areas that are currently provided these public services. Additionally, the new campground would not generate any new students that would affect schools in the area. As such, it is not anticipated that new or altered facilities for fire, police, or schools would be necessary.

The proposed campground and improvements to the San Luis Creek Day Use Area would result in an increase in demand for water and generation of wastewater and solid waste, which would vary at any given time depending on use of these facilities. Such demand and generation would be similar to that of existing campgrounds in the area. The environmental effects of construction of the campground utility infrastructure extensions have been analyzed throughout this SEIR. Water treatment would be provided by the existing O'Neill Forebay Water Treatment Plant, which treats 72,000 gallons of water per day. Wastewater would be treated in one of two existing methods: routed through sewer grinders and lift stations to exiting evaporation/percolation ponds or through chemical/vault toilets that would be pumped on a regular basis. Solid waste generated by the proposed campground would be disposed of at the Billy Wright Landfill, which has an estimated remaining capacity of 11,370,000 cubic yards (CalRecycle 2020). Therefore, the Modified Project would not require the construction of new or altered water or wastewater facilities and would be served by a landfill with adequate capacity.

Overall, impacts to public utilities and services during operation of the Modified Project would be less than significant.

### **Power and Energy**

Despite minor changes to the contractor work area and additional construction assumptions, the Modified Project retains the same overall construction assumptions of equipment, personnel, workday schedules, and overall construction schedule as the Approved Project. As such, construction of the Modified Project is not expected to require a substantially different or additional amount of power and energy compared to the Approved Project. Construction of the Modified Project would therefore result in the same temporary less-than-significant impacts to power and energy as the Approved Project.

As stated above, the Modified Project would not alter any operational characteristics of the Approved Project beyond the inclusion of the proposed campground and the San Luis Creek Day Use Area improvements. The improvements to the San Luis Creek Day Use Area would not result in an increase in energy use. The proposed campground would include installation of new electrical infrastructure to serve the proposed facilities. The campground would require minimal use of electricity at the two restroom/shower buildings and six hookup sites that are to be compliant with

the Americans with Disabilities Act. The buildings would be constructed to current electrical efficiency standards that would minimize wasteful use of energy. Additionally, a campground by nature is not considered a large energy demand project such as a large-scale development project. Therefore, operation of the Modified Project would not result in the need for additional capacity, a substantial depletion of energy, or wasteful use of energy.

### 4.1.5 Population and Housing

Per the 2019 EIS/EIR, impacts to population and housing would be significant if Approved Project implementation would result in any of the following:

- Inducing substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)
- Displacing substantial numbers of people or existing housing, necessitating the construction of replacement housing elsewhere

The Approved Project was found to have no impact or less-than-significant impacts to population and housing. The Modified Project would not require or result in the displacement of any number of people or existing housing. Similar to the Approved Project, construction of the Modified Project would result in the temporary inducement of population growth from construction workers. Although there are additional Modified Project components and work areas, the construction schedule and assumptions remain largely unchanged from the Approved Project, including the overall number of construction workers. Therefore, construction of the Modified Project would still result in a less-than-significant impact to population growth.

Operation of the Modified Project would not change the long-term operation and maintenance requirements of San Luis Reservoir that were assumed under the Approved Project. The Modified Project does include a new proposed campground, which may require additional staffing needs from the California Department of Parks and Recreation to manage and maintain the new campground. However, such additional staffing would not be considered a substantial growth in population and would fall under the existing operational umbrella of the San Luis Reservoir State Recreation Area. The new campground would include infrastructure improvements, including installation of utilities such as sewer, water, and electrical, and surfacing existing roadways. However, these improvements would be sized only to accommodate the proposed campground and would not extend into an area that could induce additional growth. Therefore, operation of the Modified Project would result in less-than-significant impacts to population and housing.

## 4.2 Growth Inducement

Section 15126.2(d) of the CEQA Guidelines mandates that the growth-inducing nature of a project be discussed. This CEQA Guideline states that the growth-inducing analysis is intended to address the potential for the proposed project to “foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment.” This section contains a discussion of the growth-inducing factors related to the Modified Project as defined under CEQA Guidelines Section 15126.2(d). A project is defined as growth inducing when it directly or indirectly does any of the following:

- Fosters population growth
- Includes the construction of additional housing in the surrounding environment
- Removes obstacles to population growth

- Taxes existing community service facilities, requiring construction of new facilities that could cause significant environmental effects
- Encourages or facilitates other activities that could significantly affect the environments, either individually or cumulatively

As discussed in the 2019 EIS/EIR, the Approved Project would not be considered growth inducing. Refer to Section 4.1.4, Public Utilities, Services, and Power, and Section 4.1.5, Population and Housing, regarding the Modified Project's potential effects regarding the first four items listed above. The Modified Project, similar to the Approved Project, would not result in an increase in water supply that could indirectly induce growth. The dam raise associated with the Modified Project is solely intended for safety in the event of seismic-induced dam deformation, and no increase in water supply is proposed. With respect to the last item above, the B.F. Sisk Dam Raise and Reservoir Expansion Project (reservoir expansion project) proposed by the San Luis & Delta–Mendota Water Authority would, if approved, increase the storage capacity of San Luis Reservoir through a 10-foot raise of the B.F. Sisk Dam embankment across the entire dam crest (refer to Chapter 3, Environmental Analysis, of this SEIR). Although the reservoir expansion project assumes implementation of the Approved Project, approval of the Modified Project does not guarantee development of the reservoir expansion project. The reservoir expansion project has been addressed cumulatively throughout this SEIR. As such, the Modified Project would not be growth inducing.

## 4.3 Significant Irreversible Environmental Changes

CEQA Guidelines Section 15126.2(c) requires that an EIR identify any significant irreversible environmental changes associated with a project. Such changes include, for example, the intensification of land use or irreversible damage from environmental accidents associated with a project. Implementation of the Modified Project would result in irreversible environmental changes. Overall, the Modified Project would result in similar irreversible changes to the environment that were discussed and identified in the 2019 EIS/EIR. However, the Modified Project would permanently commit vacant, undeveloped land to a new campground on the northwestern shore of O'Neill Forebay. Construction of the new campground and San Luis Creek Day Use Area would require the commitment of resources that include soil, gravel, concrete, asphalt, lumber and other related forest products, petrochemical construction materials, steel, copper, other metals, water, fuels, and energy. Excavating and exporting materials would result in a permanent change in the landform and topography of Borrow Areas 12 and 14. The significance of these irreversible environmental changes are discussed throughout this SEIR.

## 5 List of Preparers

---

### 5.1 California Department of Water Resources

Jerry Snow, Environmental Assessment Branch, Chief, Division of Operations and Maintenance  
Sara Paiva-Lowry, Environmental Program Manager, Division of Operations and Maintenance

### 5.2 Bureau of Reclamation

Scott Springer, Chief, Land Resources and Regional Realty Officer  
Katherine Strozinski, Program Manager, Dam Safety and Infrastructure  
Kaitlin Flahive, Natural Resources Specialist, Environmental Compliance and Conservation Branch  
BranDee Bruce, Architectural Historian

### 5.3 Dudek

Markus Lang, Project Manager  
Andrew Talbert, Environmental Planner  
Sean O'Brien, Project Scientist  
Matt Morales, Air Quality Specialist  
Perry Russell, Geologist  
Josh Saunders, Environmental Analyst  
Mike Carr, Acoustician  
Mladen Popovic, Transportation Planner  
Matt Ricketts, Senior Biologist  
Angelica Chiu, Planning Analyst  
Kara Laurenson-Wright, Environmental Analyst  
Adam Giacinto, Senior Archaeologist  
Nicole Sanchez-Sullivan, Technical Editor  
Chelsea Ringenback, Publications Specialist  
Daniela Yurovsky, Publications Specialist  
Darlene Alilain-Horn, Publications Specialist  
Rachel Dobrolenski, Publications Specialist



INTENTIONALLY LEFT BLANK

## 6 References

---

### Executive Summary<sup>1</sup>

14 CCR 15000–15387 and Appendices A–N. Guidelines for Implementation of the California Environmental Quality Act, as amended.

CDFG (California Department of Fish and Game). 2012. *Staff Report on Burrowing Owl Mitigation*. State of California Natural Resources Agency, CDFG. March 7, 2012. <http://www.dfg.ca.gov/wildlife/nongame/docs/BUOWStaffReport.pdf>.

California Public Resources Code, Sections 21000–21189. California Environmental Quality Act (CEQA), as amended.

Dudek. 2020b. *Biological Resources Existing Conditions Report for the B.F. Sisk Safety of Dams Modification Project, Merced County, California*. Prepared for California Department of Water Resources. October 2020.

PG&E (Pacific Gas and Electric Company). 2016. *Nesting Bird Management Plan: Biologist Guidelines for PG&E Utility Operations, Maintenance, and Projects*. February 2016.

Reclamation (Bureau of Reclamation). 2011. *Dam Safety Public Protection Guidelines. A Risk Framework to Support Dam Safety Decision-Making*. Interim. Denver, Colorado: U.S. Department of the Interior, Bureau of Reclamation. August 2011.

Reclamation. 2013. *San Luis Reservoir Expansion Draft Appraisal Report*. Draft. U.S. Department of the Interior, Bureau of Reclamation. December 2013.

Reclamation. 2019. Fact Sheet – B.F. Sisk Dam. Safety of Dams Modification Project. U.S. Department of the Interior, Bureau of Reclamation. March 2019. <https://www.usbr.gov/mp/sod/projects/sisk/docs/bf-sisk-fact-sheet-2019-4-1.pdf>.

Reclamation and CDPR (California Department of Parks and Recreation). 2013. *San Luis Reservoir State Recreation Area Final Resource Management Plan/General Plan and Final Environmental Impact Statement/Environmental Impact Report*. U.S. Department of the Interior, Bureau of Reclamation and California Department of Parks and Recreation. June 2013.

Reclamation and DWR (California Department of Water Resources). 2019. *B.F. Sisk Dam Safety of Dams Modification Project Final Environmental Impact Statement/Environmental Impact Report*. Final. SCH No. 2009091004. U.S. Department of the Interior, Bureau of Reclamation and California Department of Water Resources. August 2019.

---

<sup>1</sup> References for the Executive Summary may not appear in sequential order.

- Reclamation and SHPO (State Historic Preservation Officer). 2019. Programmatic Agreement Among The Bureau of Reclamation, Interior Region 10 California-Great Basin; and The California State Historic Preservation Officer Regarding Compliance with Section 106 of the National Historic Preservation Act Pertaining to the Implementation of the Safety of Dams B.F. Sisk Dam Project.
- UC Davis (University of California, Davis). 2009. Methods for Excluding Cliff Swallows from Nesting on Highway Structures. Final. Report No. CA05-0926. Prepared for the State of California Department of Transportation, Division of Research and Innovation Office of Materials and Infrastructure Research. Davis, California: UC Davis. August 24, 2009. <https://dot.ca.gov/-/media/dot-media/programsresearch-innovation-system-information/documents/f0016601-swallow-nesting.pdf>.
- USFWS (U.S. Fish and Wildlife Service). 1999. San Joaquin Kit Fox Survey Protocol for the Northern Range. Sacramento, California: USFWS. June 1999. [https://www.fws.gov/ventura/docs/species/protocols/sjkg/sfwo\\_kit-fox\\_protocol.pdf](https://www.fws.gov/ventura/docs/species/protocols/sjkg/sfwo_kit-fox_protocol.pdf)
- USFWS. 2002. *Recovery Plan for the California Red-legged Frog (Rana draytonii)*. Portland, Oregon: USFWS, Region 1. May 28, 2002.
- USFWS. 2011b. Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance. Sacramento, California: USFWS. January 2011. [https://www.fws.gov/sacramento/es/Survey-Protocols-Guidelines/Documents/kitfox\\_standard\\_rec\\_2011.pdf](https://www.fws.gov/sacramento/es/Survey-Protocols-Guidelines/Documents/kitfox_standard_rec_2011.pdf).

## Chapter 1: Introduction

- 14 CCR 15000–15387 and Appendices A–N. Guidelines for Implementation of the California Environmental Quality Act, as amended.
- California Public Resources Code, Sections 21000–21189. California Environmental Quality Act (CEQA), as amended.
- Reclamation (Bureau of Reclamation). 2009. *B.F. Sisk Dam Corrective Action Project Scoping Report*. U.S. Department of the Interior, Bureau of Reclamation. December 2009.
- Reclamation. 2011. *Dam Safety Public Protection Guidelines. A Risk Framework to Support Dam Safety Decision-Making*. Interim. Denver, Colorado: U.S. Department of the Interior, Bureau of Reclamation. August 2011.
- Reclamation. 2013. *San Luis Reservoir Expansion Draft Appraisal Report*. Draft. U.S. Department of the Interior, Bureau of Reclamation. December 2013.
- Reclamation. 2016. *B.F. Sisk Corrective Actions Study, Final Value Planning Report*. U.S. Department of the Interior, Bureau of Reclamation. October 2016.
- Reclamation and DWR (California Department of Water Resources). 2019. *B.F. Sisk Dam Safety of Dams Modification Project Final Environmental Impact Statement/Environmental Impact Report*. Final. SCH No. 2009091004. U.S. Department of the Interior, Bureau of Reclamation and California Department of Water Resources. August 2019.

## Chapter 2: Project Description

- CDPR (California Department of Parks and Recreation). 2020. Safety of Dams ROD Mitigation - San Luis Reservoir. Email from D. Gerhart (CDPR) outlining why CDPR would like mitigation to include additional day use improvements instead of funding an additional launch lane at Dinosaur Point. March 6, 2020.
- Reclamation (Bureau of Reclamation). 2011. *Dam Safety Public Protection Guidelines. A Risk Framework to Support Dam Safety Decision-Making*. Interim. Denver, Colorado: U.S. Department of the Interior, Bureau of Reclamation. August 2011.
- Reclamation. 2013. *San Luis Reservoir Expansion Draft Appraisal Report*. Draft. U.S. Department of the Interior, Bureau of Reclamation. December 2013.
- Reclamation. 2019. Fact Sheet – B.F. Sisk Dam. Safety of Dams Modification Project. U.S. Department of the Interior, Bureau of Reclamation. March 2019. <https://www.usbr.gov/mp/sod/projects/sisk/docs/bf-sisk-fact-sheet-2019-4-1.pdf>.
- USFWS (U.S. Fish and Wildlife Service). 2002. *Recovery Plan for the California Red-legged Frog (Rana draytonii)*. Portland, Oregon: Region 1, U.S. Fish and Wildlife Service. May 28, 2002.

## Chapter 3: Environmental Analysis

n/a

### Section 3.1: Water Quality and Groundwater

- CDPR (California Department of Parks and Recreation). 2015. California Department of Parks and Recreation Resource Services Standard Project Requirements. July 3, 2015.
- CVRWQCB (Central Valley Regional Water Quality Control Board). 2006. "Groundwater Quality: San Joaquin Valley Groundwater Basin." In *Irrigated Lands Program Existing Conditions Report*, 4-297 through 4-381. Draft. Prepared by Jones & Stokes. Sacramento, California: Jones & Stokes. February 2006. [https://www.waterboards.ca.gov/centralvalley/water\\_issues/irrigated\\_land/archives/exist\\_cond\\_rpt/draft\\_existing\\_conditions\\_rpt/ch04\\_pt3.pdf](https://www.waterboards.ca.gov/centralvalley/water_issues/irrigated_land/archives/exist_cond_rpt/draft_existing_conditions_rpt/ch04_pt3.pdf).
- CVRWQCB. 2018. *The Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board, Central Valley Region – The Sacramento River Basin and the San Joaquin River Basin*. 5th ed. Modified May 2018. [https://www.waterboards.ca.gov/centralvalley/water\\_issues/basin\\_plans/sacsjr\\_201805.pdf](https://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/sacsjr_201805.pdf).
- Delta–Mendota SGMA (Sustainable Groundwater Management Act). 2020. "Delta–Mendota Subbasin." Accessed October 19, 2020. <http://deltamendota.org/learn-more/#overview>.

- DWR (California Department of Water Resources). 2006. *California's Ground Bulletin 118, San Joaquin Valley Groundwater Basin, Delta-Mendota Subbasin*. January 20, 2006. [https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/2003-Basin-Descriptions/5\\_022\\_07\\_Delta-MendotaSubbasin.pdf](https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/2003-Basin-Descriptions/5_022_07_Delta-MendotaSubbasin.pdf).
- DWR. 2020a. "California's Groundwater (Bulletin 118)." Accessed on October 19, 2020. <https://water.ca.gov/Programs/Groundwater-Management/Bulletin-118>.
- DWR. 2020b. "Groundwater Basin Boundary Assessment Tool." Last updated February 11, 2019. Accessed October 20, 2020. <https://gis.water.ca.gov/app/bbat/>.
- EPA (U.S. Environmental Protection Agency). 2020. "About the Watershed." San Francisco Bay Delta. Accessed September 23, 2020. <https://www.epa.gov/sfbay-delta/about-watershed>.
- Heberling, G. 2020. Sisk Dam Project - Campground and Day Use Area Questions. Email from G. Heberling (California Department of Parks and Recreation) to M. Lang (Dudek). October 30, 2020.
- Merced County. 2012. *2030 Merced County General Plan Update, Draft Program Environmental Impact Report*. SCH No. 2011041067. November 2012. [http://web2.co.merced.ca.us/pdfs/planning/generalplan/DraftGP/DEIR/merced\\_county\\_deir\\_2012\\_11\\_30.pdf](http://web2.co.merced.ca.us/pdfs/planning/generalplan/DraftGP/DEIR/merced_county_deir_2012_11_30.pdf).
- Merced County. 2013a. *2030 Merced County General Plan Background Report*. Prepared by Mintier Harnish, Environmental Planning Partners Inc., KD Anderson, EPS, and NOLTE. December 2013. <https://www.co.merced.ca.us/DocumentCenter/View/6768/GP-Background-Report?bidId=>.
- Merced County. 2013b. *2030 Merced County General Plan*. Prepared by Merced County, in consultation with Mintier Harnish, Environmental Planning Partners Inc., KD Anderson, Economic & Planning Systems, NV5, and Bollard Acoustical Consultants. Adopted December 10, 2013; Amended July 12, 2016. <https://www.co.merced.ca.us/DocumentCenter/View/6766/2030-General-Plan?bidId=>.
- Merced County. 2014. Ordinance No. 1923. An Ordinance Revising the Regulation of Stormwater. Adopted August 12, 2014. Accessed September 24, 2020. <https://www.countyofmerced.com/DocumentCenter/View/5347/Merced-County-Stormwater-Ordinance-Chap-9-53-Rev-?bidId=>.
- Reclamation (Bureau of Reclamation). 2013. *Recreation Facility Design Guidelines*. Denver, Colorado: U.S. Department of the Interior, Bureau of Reclamation. April 2013. <https://www.usbr.gov/recreation/publications/RecreationFacilitiesDesignGuidelines.pdf>.
- Reclamation and CDPR. 2013. *San Luis Reservoir State Recreation Area Final Resource Management Plan/General Plan and Final Environmental Impact Statement/Environmental Impact Report*. U.S. Department of the Interior, Bureau of Reclamation and California Department of Parks and Recreation. June 2013.
- SLDMWA (San Luis & Delta-Mendota Water Authority). 2019. *Groundwater Sustainability Plan for the Northern and Central Delta-Mendota Regions*. Final. Prepared by Woodard & Curran and Provost & Pritchard Inc. November 30, 2019. <http://deltamendota.org/summary-of-gsp-documents/>.



- SWRCB (State Water Resource Control Board). 2017. "Category 5 – 2014 and 2016 California 303(d) List of Water Quality Limited Segments." In *Final 2014 and 2016 Integrated Report (CWA Section 303(d) List/ 305(b) Report)*. October 3, 2017. Accessed September 23, 2020. [https://www.waterboards.ca.gov/water\\_issues/programs/tmdl/2014\\_16state\\_ir\\_reports/category5\\_report.shtml](https://www.waterboards.ca.gov/water_issues/programs/tmdl/2014_16state_ir_reports/category5_report.shtml).
- USGS (U.S. Geological Survey). 2020. Areas of Land Subsidence in California. Accessed October 2020. [https://ca.water.usgs.gov/land\\_subsidence/california-subsidence-areas.html](https://ca.water.usgs.gov/land_subsidence/california-subsidence-areas.html).
- ## Section 3.2: Air Quality
- CAPCOA (California Air Pollution Control Officers Association). 2017. *California Emissions Estimator Model (CalEEMod) User's Guide Version 2016.3.2*. Prepared by BREEZE Software, A Division of Trinity Consultants in collaboration with South Coast Air Quality Management District and the California Air Districts. Accessed May 2019. [http://www.aqmd.gov/docs/default-source/caleemod/01\\_user-39-s-guide2016-3-2\\_15november2017.pdf?sfvrsn=4](http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4).
- CARB (California Air Resources Board). 2000. *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*. October 2000. <http://www.arb.ca.gov/diesel/documents/rrpfinal.pdf>.
- CARB. 2005. *Air Quality and Land Use Handbook: A Community Health Perspective*. April 2005. <https://ww3.arb.ca.gov/ch/handbook.pdf>.
- CARB. 2009. "ARB Fact Sheet: Air Pollution Sources, Effects and Control." Page last reviewed December 2, 2009. Accessed May 2019. <https://www.arb.ca.gov/research/health/fs/fs2/fs2.htm>.
- CARB. 2016. "Ambient Air Quality Standards." May 4, 2016. <http://www.arb.ca.gov/research/aaqs/aaqs2.pdf>.
- CARB. 2017. "Inhalable Particulate Matter and Health (PM<sub>2.5</sub> and PM<sub>10</sub>)." Page last reviewed August 10, 2017. Accessed May 2019. <https://www.arb.ca.gov/research/aaqs/common-pollutants/pm/pm.htm>.
- CARB. 2019a. "Glossary." Accessed January 2019. <https://ww2.arb.ca.gov/about/glossary>.
- CARB. 2019b. "Ozone & Health." Accessed May 2019. <https://ww2.arb.ca.gov/resources/ozone-and-health>.
- CARB. 2019c. "Nitrogen Dioxide & Health." Accessed May 2019. <https://ww2.arb.ca.gov/resources/nitrogen-dioxide-and-health>.
- CARB. 2019d. "Carbon Monoxide & Health." Accessed May 2019. <https://ww2.arb.ca.gov/resources/carbon-monoxide-and-health>.
- CARB. 2019e. "Sulfur Dioxide & Health." Accessed May 2019. <https://ww2.arb.ca.gov/resources/sulfur-dioxide-and-health>.
- CARB. 2019f. "Overview: Diesel Exhaust and Health." Accessed May 2019. <https://www.arb.ca.gov/research/diesel/diesel-health.htm>.
- CARB. 2019g. "Area Designation Maps/State and National." Last reviewed October 24, 2019. Accessed October 2019. <http://www.arb.ca.gov/desig/adm/adm.htm>.

- CARB. 2020. “Ambient Air Quality Data.” [digital CARB data]. iADAM: Air Quality Data Statistics. Accessed October 2020. <http://www.arb.ca.gov/adam/topfour/topfour1.php>.
- CDPH (California Department of Public Health). 2018. Epidemiologic Summary of Coccidioidomycosis in California, 2018. California Department of Public Health, Center for Infectious Diseases –Division of Communicable Disease Control. <https://www.cdph.ca.gov/Programs/CID/DCDC/CDPH%20Document%20Library/CocciEpiSummary2018.pdf>.
- CSUDH (California State University Dominguez Hills). 2019. “Appendix B: Air Quality.” In *California State University Dominguez Hills Campus Master Plan Environmental Impact Report*. Final. SCH No. 2017081035. Prepared by WSP USA. Los Angeles, California: WSP USA. September 2019. <https://www.csudh.edu/Assets/csudh-sites/fpcm/docs/campus-master-plan/2019-09-11-FEIR-appendices.pdf>.
- City of Inglewood. 2019. “Appendix D: Air Quality.” In *Inglewood Basketball and Entertainment Center Project Environmental Impact Report*. SCH No. 2018021056. December 2019. [http://ibecproject.com/D\\_AirQuality.pdf](http://ibecproject.com/D_AirQuality.pdf).
- EPA (U.S. Environmental Protection Agency). 2008a. “Liquefied Petroleum Gas Combustion.” Chapter 1.5 in *Compilation of Air Pollutant Emission Factors*. Vol. 1, *Stationary Point and Area Sources*. Update to 5th ed. AP-42. Research Triangle Park, North Carolina: EPA, Office of Air and Radiation, Office of Air Quality Planning and Standards. July 2008. [https://www.epa.gov/sites/production/files/2020-09/documents/1.5\\_liquefied\\_petroleum\\_gas\\_combustion.pdf](https://www.epa.gov/sites/production/files/2020-09/documents/1.5_liquefied_petroleum_gas_combustion.pdf).
- EPA. 2008b. *Final Ozone NAAQS Regulatory Impact Analysis*. Research Triangle Park, North Carolina: EPA, Office of Air Quality Planning and Standards. March 2008. [https://www3.epa.gov/ttnecas1/regdata/RIAs/452\\_R\\_08\\_003.pdf](https://www3.epa.gov/ttnecas1/regdata/RIAs/452_R_08_003.pdf).
- EPA. 2013. *Integrated Science Assessment for Ozone and Related Photochemical Oxidants*. Research Triangle Park, North Carolina: EPA, Office of Research and Development. EPA/600/R-10/076F. February 2013.
- EPA. 2017. “Photochemical Air Quality Modeling.” Support Center for Regulatory Atmospheric Modeling (SCRAM). Last updated June 27, 2017. <https://www.epa.gov/scram/photochemical-air-quality-modeling>.
- EPA. 2018a. “Criteria Air Pollutants.” March 8, 2018. Accessed May 7, 2019. <https://www.epa.gov/criteria-air-pollutants>.
- EPA. 2018b. “Ground-level Ozone Basics.” Last updated October 31, 2018. <https://www.epa.gov/ground-level-ozone-pollution/ground-level-ozone-basics>.
- EPA. 2018c. “CMAQ Models.” <https://www.epa.gov/cmaq/cmaq-models-0>.
- EPA. 2020a. “Region 9: Air Quality Analysis, Air Quality Maps.” Last updated September 23, 2020. Accessed October 14, 2020. <http://www.epa.gov/region9/air/maps/>.
- EPA. 2020b. “Monitor values report for CO for Stanislaus County, California, years 2017 through 2019.” AirData: Access to Air Pollution Data. Accessed October 14, 2020. <https://www.epa.gov/outdoor-air-quality-data/monitor-values-report>.

- FERA (Fire and Environmental Research Applications Team), Pacific Wildland Fire Sciences Laboratory, U.S. Forestry Service. 2014. "Piled Fuels Biomass and Emissions Calculator." Last updated March 26, 2014. Accessed November 17, 2020. <https://depts.washington.edu/nwfire/piles/index.php?entryMode=1>.
- Haneke, B. n.d. A National Methodology and Emission Inventory for Residential Fuel Combustion. <https://www3.epa.gov/ttn/chief/conference/ei12/area/haneke.pdf>.
- Heberling, G. 2020. Sisk Dam Project - Campground and Day Use Area Questions. Email from G. Heberling (California Department of Parks and Recreation) to M. Lang (Dudek). October 30, 2020.
- MCAG (Merced County Association of Governments). 2018. *2018 Regional Transportation Plan/Sustainable Communities Strategy*. Adopted August 16, 2018. <https://www.mcagov.org/307/2018-RTP>.
- March JPA (March Joint Powers Association). 2019. *K4 Warehouse and Cactus Channel Improvements Project Environmental Impact Report*. SCH No. 2018111036.
- Merced County. 2013. "Air Quality Element." In *2030 Merced County General Plan*. Prepared by Merced County, in consultation with Mintier Harnish, Environmental Planning Partners Inc., KD Anderson, Economic & Planning Systems, NV5, and Bollard Acoustical Consultants. Adopted December 10, 2013; Amended July 12, 2016. <https://www.co.merced.ca.us/DocumentCenter/View/6766/2030-General-Plan?bidId=>.
- NRC (National Research Council). 2005. *Interim Report of the Committee on Changes in New Source Review Programs for Stationary Sources of Air Pollutants*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/11208>.
- Ramboll (Ramboll U.S. Corporation). 2019a. Mineta San Jose Airport Supplemental Air Quality Impacts Analysis. Prepared for Mineta San Jose Airport. October 2019.
- Ramboll. 2019b. *San Diego State University Mission Valley Campus Master Plan EIR Additional Information Regarding Potential Health Effects of Air Quality Impacts*. Prepared for San Diego State University. San Diego, California: Ramboll. December 2019.
- SCAQMD (South Coast Air Quality Management District). 2015. Brief of Amicus Curiae in Support of Neither Party, *Sierra Club v. County of Fresno*, Case No. S219783 (filed Apr. 13, 2015). <https://www.courts.ca.gov/documents/9-s219783-ac-south-coast-air-quality-mgt-dist-041315.pdf>.
- SJVAPCD (San Joaquin Valley Air Pollution Control District). 2004. *2004 Extreme Ozone Attainment Demonstration Plan*. October 8, 2004. [http://www.valleyair.org/Air\\_Quality\\_Plans/AQ\\_Final\\_Adopted\\_Ozone2004.htm](http://www.valleyair.org/Air_Quality_Plans/AQ_Final_Adopted_Ozone2004.htm)
- SJVAPCD. 2007. 2007 PM10 Maintenance Plan and Request for Redesignation. September 20, 2007. [http://www.valleyair.org/Air\\_Quality\\_Plans/docs/Maintenance%20Plan10-25-07.pdf](http://www.valleyair.org/Air_Quality_Plans/docs/Maintenance%20Plan10-25-07.pdf).
- SJVAPCD. 2012. 2012 PM2.5 Plan. Adopted December 20, 2012. [http://www.valleyair.org/Air\\_Quality\\_Plans/PM25Plan2012/CompletedPlanbookmarked.pdf](http://www.valleyair.org/Air_Quality_Plans/PM25Plan2012/CompletedPlanbookmarked.pdf).
- SJVAPCD. 2013. *2013 Plan for the Revoked 1-Hour Ozone Standard*. September 19, 2013. [http://www.valleyair.org/Air\\_Quality\\_Plans/OzoneOneHourPlan2013/AdoptedPlan.pdf](http://www.valleyair.org/Air_Quality_Plans/OzoneOneHourPlan2013/AdoptedPlan.pdf).

- SJVAPCD. 2014a. *2014 Reasonably Available Control Technology (RACT) Demonstration for the 8-Hour Ozone State Implementation Plan (SIP)*. June 19, 2014. [http://www.valleyair.org/Air\\_Quality\\_Plans/docs/2014-RACT-SIP.PDF](http://www.valleyair.org/Air_Quality_Plans/docs/2014-RACT-SIP.PDF).
- SJVAPCD. 2014b. *APR 1925 (Policy for District Rule 2201 AAQA Modeling)*. April 2014.
- SJVAPCD. 2015a. *Guidance for Assessing and Mitigating Air Quality Impacts*. March 19, 2015. [http://www.valleyair.org/transportation/GAMAQI\\_3-19-15.pdf](http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf).
- SJVAPCD. 2015b. *2015 Plan for the 1997 PM<sub>2.5</sub> Standard*. April 16, 2015. [http://www.valleyair.org/Air\\_Quality\\_Plans/docs/PM25-2015/2015-PM2.5-Plan\\_Bookmarked.pdf](http://www.valleyair.org/Air_Quality_Plans/docs/PM25-2015/2015-PM2.5-Plan_Bookmarked.pdf).
- SJVAPCD. 2015c. *Brief of Amicus Curiae in Support of Defendant and Respondent, County of Fresno, and Real Party in Interest and Respondent, Friant Ranch, L.P., Sierra Club v. County of Fresno, Case No. S219783 (filed Apr. 13, 2015)*. <https://www.courts.ca.gov/documents/7-s219783-ac-san-joaquin-valley-unified-air-pollution-control-dist-041315.pdf>.
- SJVAPCD. 2016a. *2016 Ozone Plan for 2008 8-Hour Ozone Standard*. Adopted June 16, 2016. [http://www.valleyair.org/Air\\_Quality\\_Plans/Ozone-Plan-2016/Adopted-Plan.pdf](http://www.valleyair.org/Air_Quality_Plans/Ozone-Plan-2016/Adopted-Plan.pdf).
- SJVAPCD. 2016b. *2016 Moderate Area Plan for the 2012 PM<sub>2.5</sub> Standard*. September 15, 2016. [http://www.valleyair.org/Air\\_Quality\\_Plans/docs/PM25-2016/2016-Plan.pdf](http://www.valleyair.org/Air_Quality_Plans/docs/PM25-2016/2016-Plan.pdf).
- SJVAPCD. 2018. *2018 Plan for the 1997, 2006, and 2012 PM<sub>2.5</sub> Standard*. Adopted November 15, 2018. Portions approved by EPA June 30, 2020. <http://valleyair.org/pmplans/>.
- SJVAPCD. 2020. *2020 Reasonably Available Control Technology (RACT) Demonstration for the 2015 8-hour Ozone Standard*. June 18, 2020. [http://valleyair.org/Air\\_Quality\\_Plans/docs/2020-RACT-Demonstration.pdf](http://valleyair.org/Air_Quality_Plans/docs/2020-RACT-Demonstration.pdf).
- SJVAPCD. n.d. “Ambient Air Quality Standards & Valley Attainment Status.” Accessed October 14, 2020. <http://www.valleyair.org/aqinfo/attainment.htm>.
- SLDMWA (San Luis & Delta–Mendota Canal Authority) and Reclamation (Bureau of Reclamation). 2020. *B.F. Sisk Dam Raise and Reservoir Expansion Project Draft Environmental Impact Report/Supplemental Environmental Impact Statement*. Final Draft. San Luis & Delta–Mendota Canal Authority and U.S. Department of the Interior, Bureau of Reclamation. December 2020. [https://www.usbr.gov/mp/nepa/nepa\\_project\\_details.php?Project\\_ID=44425](https://www.usbr.gov/mp/nepa/nepa_project_details.php?Project_ID=44425).

### Section 3.3: Greenhouse Gas Emissions

- CAPCOA (California Air Pollution Control Officers Association). 2008. *CEQA & Climate Change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act*. January 2008.
- CARB (California Air Resources Board). 2008. *Climate Change Scoping Plan: A Framework for Change*. December 2008.
- CARB. 2012. “California Air Resources Board Approves Advanced Clean Car Rules.” January 27, 2012. Accessed May 7, 2019. <https://ww2.arb.ca.gov/news/california-air-resources-board-approves-advanced-clean-car-rules>.

- CARB. 2014. *First Update to the Climate Change Scoping Plan: Building on the Framework*. May 2014. [http://www.arb.ca.gov/cc/scopingplan/2013\\_update/first\\_update\\_climate\\_change\\_scoping\\_plan.pdf](http://www.arb.ca.gov/cc/scopingplan/2013_update/first_update_climate_change_scoping_plan.pdf).
- CARB. 2017a. *The 2017 Climate Change Scoping Plan Update: The Proposed Strategy for Achieving California's 2030 Greenhouse Gas Target*. January 20, 2017. [https://www.arb.ca.gov/cc/scopingplan/2030sp\\_pp\\_final.pdf](https://www.arb.ca.gov/cc/scopingplan/2030sp_pp_final.pdf).
- CARB. 2017b. *Short-Lived Climate Pollutant Reduction Strategy*. March 2017. [https://www.arb.ca.gov/cc/shortlived/meetings/03142017/final\\_slcp\\_report.pdf](https://www.arb.ca.gov/cc/shortlived/meetings/03142017/final_slcp_report.pdf).
- CARB. 2020a. "Glossary of Terms Used in Greenhouse Gas Inventories." Accessed June 18, 2020. [http://www.arb.ca.gov/cc/inventory/aq/ghg\\_inventory\\_glossary.htm](http://www.arb.ca.gov/cc/inventory/aq/ghg_inventory_glossary.htm).
- CARB. 2020b. "California 2000–2018 Greenhouse Gas Emission Inventory—2020 Edition." Accessed October 2020. [https://ww2.arb.ca.gov/ghg-inventory-data?utm\\_medium=email&utm\\_source=govdelivery](https://ww2.arb.ca.gov/ghg-inventory-data?utm_medium=email&utm_source=govdelivery).
- CNRA (California Natural Resources Agency). 2009a. *Final Statement of Reasons for Regulatory Action: Amendments to the State CEQA Guidelines Addressing Analysis and Mitigation of Greenhouse Gas Emissions Pursuant to SB 97*. December 2009. [https://resources.ca.gov/CNRALegacyFiles/ceqa/docs/Final\\_Statement\\_of\\_Reasons.pdf](https://resources.ca.gov/CNRALegacyFiles/ceqa/docs/Final_Statement_of_Reasons.pdf).
- CNRA. 2009b. *2009 California Climate Adaptation Strategy: A Report to the Governor of the State of California in Response to Executive Order S-13-2008*. [http://resources.ca.gov/docs/climate/Statewide\\_Adaptation\\_Strategy.pdf](http://resources.ca.gov/docs/climate/Statewide_Adaptation_Strategy.pdf).
- CNRA. 2014. *Safeguarding California: Reducing Climate Risk – An Update to the 2009 California Climate Adaptation Strategy*. July 2014. [http://resources.ca.gov/docs/climate/Final\\_Safeguarding\\_CA\\_Plan\\_July\\_31\\_2014.pdf](http://resources.ca.gov/docs/climate/Final_Safeguarding_CA_Plan_July_31_2014.pdf).
- CNRA. 2016. *Safeguarding California: Implementation Action Plans*. March 2016. <http://resources.ca.gov/docs/climate/safeguarding/Safeguarding%20California-Implementation%20Action%20Plans.pdf>.
- CNRA. 2018a. California's Fourth Climate Change Assessment – Preview: San Joaquin Valley Region Report. August 2018. [https://www.energy.ca.gov/sites/default/files/2019-11/Reg\\_Report-SUM-CCCA4-2018-003\\_SanJoaquinValley\\_Preview\\_ADA.pdf](https://www.energy.ca.gov/sites/default/files/2019-11/Reg_Report-SUM-CCCA4-2018-003_SanJoaquinValley_Preview_ADA.pdf).
- CNRA. 2018b. *Safeguarding California Plan: 2018 Update: California's Climate Adaptation Strategy*. January 2018. <http://resources.ca.gov/docs/climate/safeguarding/update2018/safeguarding-california-plan-2018-update.pdf>.
- DWR (California Department of Water Resources). 2020. *Climate Action Plan Phase 1: Greenhouse Gas Emissions Reduction Plan – Update 2020*. July 2020. <https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/All-Programs/Climate-Change-Program/Climate-Action-Plan/Files/CAP-I-GGERP-Update-2020.pdf?la=en&hash=0BA702D428A58FCA286EBA4A6C0BF1D2CA532F52>.



- EPA (U.S. Environmental Protection Agency). 2008. "Liquefied Petroleum Gas Combustion." Chapter 1.5 in *Compilation of Air Pollutant Emission Factors*. Vol. 1, *Stationary Point and Area Sources*. Update to 5th ed. AP-42. Research Triangle Park, North Carolina: EPA, Office of Air and Radiation, Office of Air Quality Planning and Standards. July 2008. [https://www.epa.gov/sites/production/files/2020-09/documents/1.5\\_liquefied\\_petroleum\\_gas\\_combustion.pdf](https://www.epa.gov/sites/production/files/2020-09/documents/1.5_liquefied_petroleum_gas_combustion.pdf).
- EPA. 2016. "Glossary of Climate Change Terms." Last updated September 29, 2016. Accessed June 18, 2020. [https://19january2017snapshot.epa.gov/climatechange/glossary-climate-change-terms\\_.html](https://19january2017snapshot.epa.gov/climatechange/glossary-climate-change-terms_.html).
- EPA. 2017. "Climate Change." Last updated January 19, 2017. Accessed May 7, 2019. [https://19january2017snapshot.epa.gov/climatechange\\_.html](https://19january2017snapshot.epa.gov/climatechange_.html).
- EPA. 2020. *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2018*. EPA 430-R-20-002. April 13, 2020. <https://www.epa.gov/sites/production/files/2020-04/documents/us-ghg-inventory-2020-main-text.pdf>.
- EPA and NHTSA (National Highway Traffic Safety Administration). 2016. Regulatory Announcement: EPA and NHTSA Adopt Standards to Reduce Greenhouse Gas Emissions and Improve Fuel Efficiency of Medium- and Heavy-Duty Vehicles for Model Year 2018 and Beyond. August 2016. <https://nepis.epa.gov/Exe/ZyPDF.cgi/P100P7NL.PDF?Dockey=P100P7NL.PDF>.
- FERA (Fire and Environmental Research Applications Team), Pacific Wildland Fire Sciences Laboratory, U.S. Forestry Service. 2014. "Piled Fuels Biomass and Emissions Calculator." Last updated March 26, 2014. Accessed November 17, 2020. <https://depts.washington.edu/nwfire/piles/index.php?entryMode=1>.
- Haneke, B. n.d. A National Methodology and Emission Inventory for Residential Fuel Combustion. <https://www3.epa.gov/ttn/chief/conference/ei12/area/haneke.pdf>.
- Heberling, G. 2020. Sisk Dam Project - Campground and Day Use Area Questions. Email from G. Heberling (California Department of Parks and Recreation) to M. Lang (Dudek). October 30, 2020.
- IPCC (Intergovernmental Panel on Climate Change). 2007. *Climate Change 2007: The Physical Science Basis – Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, edited by Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller. Cambridge, United Kingdom, and New York, New York: Cambridge University Press. [http://archive.ipcc.ch/pdf/assessment-report/ar4/wg1/ar4\\_wg1\\_full\\_report.pdf](http://archive.ipcc.ch/pdf/assessment-report/ar4/wg1/ar4_wg1_full_report.pdf).
- IPCC. 2013. *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, edited by Stocker, T.F., D. Qin, G.K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex, and P.M. Midgley. Cambridge, United Kingdom, and New York, New York: Cambridge University Press. <http://www.ipcc.ch/report/ar5/wg1>.
- IPCC. 2014. *Climate Change 2014 Synthesis Report: A Report of the Intergovernmental Panel on Climate Change – Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, edited by R.K. Pachauri and L.A. Meyer. Geneva, Switzerland: IPCC. <http://www.ipcc.ch/report/ar5/syr/>.

- IPCC. 2018. “Summary for Policymakers.” In *Global Warming of 1.5 °C. An IPCC Special Report on the Impacts of Global Warming of 1.5 °C above Pre-Industrial Levels and Related Global Greenhouse Gas Emission Pathways, in the Context of Strengthening the Global Response to the Threat of Climate Change, Sustainable Development, and Efforts to Eradicate Poverty*, edited by V. Masson-Delmotte, P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield. [https://www.ipcc.ch/site/assets/uploads/sites/2/2019/05/SR15\\_SPM\\_version\\_report\\_LR.pdf](https://www.ipcc.ch/site/assets/uploads/sites/2/2019/05/SR15_SPM_version_report_LR.pdf).
- MCAG (Merced County Association of Governments). 2018. *2018 Regional Transportation Plan/Sustainable Communities Strategy*. Adopted August 16, 2018. <https://www.mcagov.org/307/2018-RTP>.
- Merced County. 2013. “Air Quality Element.” In *2030 Merced County General Plan*. Prepared by Merced County, in consultation with Mintier Harnish, Environmental Planning Partners Inc., KD Anderson, Economic & Planning Systems, NV5, and Bollard Acoustical Consultants. Adopted December 10, 2013; Amended July 12, 2016. <https://www.co.merced.ca.us/DocumentCenter/View/6766/2030-General-Plan?bidId=>.
- OEHHA (Office of Environmental Health Hazard Assessment). 2018. *Indicators of Climate Change in California*. California Environmental Protection Agency, Office of Environmental Health Hazard Assessment. May 9, 2018. <https://oehha.ca.gov/media/downloads/climate-change/report/2018caindicatorsreportmay2018.pdf>.
- OPR (California Governor’s Office of Planning and Research). 2008. *CEQA and Climate Change: Addressing Climate Change through California Environmental Quality Act (CEQA) Review*. Technical Advisory. Sacramento, California: OPR. June 19, 2008. <http://opr.ca.gov/docs/june08-ceqa.pdf>.
- PBL (PBL Netherlands Environmental Assessment Agency). 2019. *Trends in Global CO<sub>2</sub> and Total Greenhouse Gas Emissions, 2019 Report*. Revised May 26, 2020. <https://www.pbl.nl/en/publications/trends-in-global-co2-and-totaal-greenhouse-gas-emissions-summary-of-the-2019-report>.
- PG&E (Pacific Gas and Electric Company). 2019. *Corporate Responsibility and Sustainability Report 2019*. [http://www.pgecorp.com/corp\\_responsibility/reports/2019/assets/PGE\\_CRCSR\\_2019.pdf](http://www.pgecorp.com/corp_responsibility/reports/2019/assets/PGE_CRCSR_2019.pdf).
- SJVAPCD (San Joaquin Valley Air Pollution Control District). 2009a. Guidance for Valley Land-Use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA. December 17, 2009. <http://www.valleyair.org/Programs/CCAP/12-17-09/3%20CCAP%20-%20FINAL%20LU%20Guidance%20-%20Dec%2017%202009.pdf>.
- SJVAPCD. 2009b. District Policy – Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA when Serving as Lead Agency. December 17, 2009. <http://www.valleyair.org/Programs/CCAP/12-17-09/2%20CCAP%20-%20FINAL%20District%20Policy%20CEQA%20GHG%20-%20Dec%2017%202009.pdf>.
- SJVAPCD. 2009c. *Final Staff Report – Addressing Greenhouse Gas Emissions Impacts under the California Environmental Quality Act*. December 17, 2009. <http://www.valleyair.org/Programs/CCAP/12-17-09/1%20CCAP%20-%20FINAL%20CEQA%20GHG%20Staff%20Report%20-%20Dec%2017%202009.pdf>.
- UNFCCC (United Nations Framework Convention on Climate Change). 2020. “History of the Convention.” Accessed March 6, 2020. <https://unfccc.int/process/the-convention/history-of-the-convention>.

## Section 3.4: Flood Protection

- CDPR (California Department of Parks and Recreation). 2015. California Department of Parks and Recreation Resource Services Standard Project Requirements. July 3, 2015.
- DWR (California Department of Water Resources). 2012. *Central Valley Flood Protection Plan*. June 2012.
- DWR. 2017. *Central Valley Flood Protection Plan 2017 Update*. August 2017. [https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Flood-Management/Flood-Planning-and-Studies/Central-Valley-Flood-Protection-Plan/Files/2017-CVFPP-Update-FINAL\\_a\\_y19.pdf?la=en&hash=BCCCF94FABFBEF7AC0B7B9A9195F0148EBBAD20C](https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Flood-Management/Flood-Planning-and-Studies/Central-Valley-Flood-Protection-Plan/Files/2017-CVFPP-Update-FINAL_a_y19.pdf?la=en&hash=BCCCF94FABFBEF7AC0B7B9A9195F0148EBBAD20C).
- DWR. 2020. “Best Available Maps.” Accessed October 23, 2020. <https://gis.bam.water.ca.gov/bam/>.
- EPA (U.S. Environmental Protection Agency). 2020. “San Francisco Bay-Delta.” Last updated July 31, 2020. Accessed October 29, 2020. <https://www.epa.gov/sfbay-delta/about-watershed>.
- FEMA (Federal Emergency Management Area). 2011. Unmapped Areas on Flood Hazard Maps – Understanding Zone D. August 2011. [https://www.fema.gov/media-library-data/20130726-1806-25045-7880/zone\\_d\\_fact\\_sheet.pdf](https://www.fema.gov/media-library-data/20130726-1806-25045-7880/zone_d_fact_sheet.pdf).
- FEMA. 2020. “FEMA Flood Map Service Center Search By Address: Unincorporated Areas in Merced County” [map]. Scale not given. FEMA Flood Map No. 06047C0800G. Data refreshed October 2020. Accessed October 30, 2020. <https://msc.fema.gov/portal/search#searchresultsanchor>.
- Merced County. 2012. *2030 Merced County General Plan Update, Draft Program Environmental Impact Report*. SCH No. 2011041067. November 2012. [http://web2.co.merced.ca.us/pdfs/planning/generalplan/DraftGP/DEIR/merced\\_county\\_deir\\_2012\\_11\\_30.pdf](http://web2.co.merced.ca.us/pdfs/planning/generalplan/DraftGP/DEIR/merced_county_deir_2012_11_30.pdf).
- Merced County. 2013a. *2030 Merced County General Plan Background Report*. Prepared by Mintier Harnish, Environmental Planning Partners Inc., KD Anderson, EPS, and NOLTE. December 2013. <https://www.co.merced.ca.us/DocumentCenter/View/6768/GP-Background-Report?bidId=>.
- Merced County. 2013b. *2030 Merced County General Plan*. Prepared by Merced County, in consultation with Mintier Harnish, Environmental Planning Partners Inc., KD Anderson, Economic & Planning Systems, NV5, and Bollard Acoustical Consultants. Adopted December 10, 2013; Amended July 12, 2016. <https://www.co.merced.ca.us/DocumentCenter/View/6766/2030-General-Plan?bidId=>.
- Merced County. 2014a. *Multi-Jurisdictional Local Hazard Mitigation Plan*. Final. August 2014. [http://web2.co.merced.ca.us/boardagenda/2015/20150818Board/AS204563/AS204570/AI204692/DO204368/all\\_pages.pdf](http://web2.co.merced.ca.us/boardagenda/2015/20150818Board/AS204563/AS204570/AI204692/DO204368/all_pages.pdf).
- Merced County. 2014b. Ordinance No. 1923. An Ordinance Revising the Regulation of Stormwater. Adopted August 12, 2014. Accessed September 24, 2020. <https://www.countyofmerced.com/DocumentCenter/View/5347/Merced-County-Stormwater-Ordinance-Chap-9-53-Rev-?bidId=>.

Reclamation (Bureau of Reclamation) and CDPR. 2013. *San Luis Reservoir State Recreation Area Final Resource Management Plan/General Plan and Final Environmental Impact Statement/Environmental Impact Report*. U.S. Department of the Interior, Bureau of Reclamation and California Department of Parks and Recreation. June 2013.

## Section 3.5: Visual Resources

CGS (California Geological Survey). 2002. California Geomorphic Provinces. Note 36. California Department of Conservation, California Geological Survey. Revised December 2002.

California High Speed Rail Authority. n.d. San Jose to Merced Project Range of Alternatives. Accessed November 24, 2020. [https://hsr.ca.gov/high\\_speed\\_rail/project\\_sections/san\\_jose\\_merced.aspx](https://hsr.ca.gov/high_speed_rail/project_sections/san_jose_merced.aspx).

Caltrans (California Department of Transportation). 2019. “List of Eligible and Officially Designated State Scenic Highways” [XLSX spreadsheet]. Last updated July 2019. Accessed November 2020. <https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways>.

Merced County. 2013. *2030 Merced County General Plan*. Prepared by Merced County, in consultation with Mintier Harnish, Environmental Planning Partners Inc., KD Anderson, Economic & Planning Systems, NV5, and Bollard Acoustical Consultants. Adopted December 10, 2013; Amended July 12, 2016. <https://www.co.merced.ca.us/DocumentCenter/View/6766/2030-General-Plan?bidId=>.

Reclamation (Bureau of Reclamation) and CDPR (California Department of Parks and Recreation). 2013. *San Luis Reservoir State Recreation Area Final Resource Management Plan/General Plan and Final Environmental Impact Statement/Environmental Impact Report*. U.S. Department of the Interior, Bureau of Reclamation and California Department of Parks and Recreation. June 2013.

SLDMWA (San Luis & Delta–Mendota Canal Authority) and Reclamation. 2020. *B.F. Sisk Dam Raise and Reservoir Expansion Project Draft Environmental Impact Report/Supplemental Environmental Impact Statement*. Final Draft. San Luis & Delta–Mendota Canal Authority and U.S. Department of the Interior, Bureau of Reclamation. December 2020. [https://www.usbr.gov/mp/nepa/nepa\\_project\\_details.php?Project\\_ID=44425](https://www.usbr.gov/mp/nepa/nepa_project_details.php?Project_ID=44425).

## Section 3.6: Noise and Vibration

Caltrans (California Department of Transportation). 2019. “2018 Truck Traffic: Annual Average Daily Truck Traffic” [Excel spreadsheet]. Compiled by Caltrans, Division of Traffic Operations, Office of System Performance. <https://dot.ca.gov/-/media/dot-media/programs/traffic-operations/documents/census/aadt/2018-truck-aadt-a11y.xlsx>.

Caltrans. 2020. Transportation and Construction Vibration Guidance Manual. Prepared by J. Andrews, D. Buehler, H. Gill, and W.L. Bender. Sacramento, California: Caltrans, Division of Environmental Analysis. April 2020. <https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tcvgm-apr2020-a11y.pdf>.

- FHWA (Federal Highway Administration). 1998. FHWA Traffic Noise Model (FHWA TNM®) Technical Manual. Final Report. Report No. FHWA-PD-96-010. Prepared by U.S. Department of Transportation, Research and Special Programs Administration. Cambridge, Massachusetts: U.S. Department of Transportation, Research and Special Programs Administration. February 1998.
- FHWA. 2006. FHWA Roadway Construction Noise Model: User's Guide. Final Report. FHWA-HEP-06-015. DOT-VNTSC-FHWA-06-02. Cambridge, Massachusetts: U.S. Department of Transportation, FHWA, Research and Innovative Technology Administration. August 2006.
- FHWA. 2008. Roadway Construction Noise Model, Software Version 1.1. Prepared by U.S. Department of Transportation, Research and Innovative Technology Administration. Cambridge, Massachusetts: U.S. Department of Transportation, Research and Innovative Technology Administration, John A. Volpe National Transportation Systems Center, Environmental Measurement and Modeling Division. December 8, 2008.
- FTA (Federal Transit Administration). 2018. *Transit Noise and Vibration Impact Assessment Manual*. FTA Report No. 0123. Prepared by U.S. Department of Transportation, Research and Innovative Technology Administration. Cambridge, Massachusetts: U.S. Department of Transportation, Research and Innovative Technology Administration, John A. Volpe National Transportation Systems Center. September 2018.
- Merced County. 2012. *Merced County Airport Land Use Compatibility Plan*. Adopted June 21, 2012. Prepared for Merced County, Airport Land Use Commission. Prepared by Mead & Hunt Inc. Santa Rosa, California: Mead & Hunt Inc.
- Merced County. 2013. *2030 Merced County General Plan*. Prepared by Merced County, in consultation with Mintier Harnish, Environmental Planning Partners Inc., KD Anderson, Economic & Planning Systems, NV5, and Bollard Acoustical Consultants. Adopted December 10, 2013; Amended July 12, 2016. <https://www.co.merced.ca.us/DocumentCenter/View/6766/2030-General-Plan?bidId=>.
- Merced County. 2020. Merced County Code. Updated June 2020. Accessed December 2020. <http://www.qcode.us/codes/mercedcounty/>.
- Wu, W. and K.J. Keller. 2007. "Noise Mitigation Measures at Large-Scale Construction Sites." In *INTER-NOISE and NOISE-CON Congress and Conference Proceedings*, 20–27. Reno, Nevada. Presented October 2007.

## Section 3.7: Traffic and Transportation

- CDPR (California Department of Parks and Recreation). 2010. San Luis Reservoir State Recreation Area Map Brochure. Sacramento, California: CDPR. Revised 2010. <https://www.parks.ca.gov/pages/558/files/SanLuisMap022310.pdf>.
- CDPR. 2017. San Luis Reservoir State Recreation Area Brochure. Sacramento, California: CDPR. Revised 2017. <https://www.parks.ca.gov/pages/558/files/SanLuisReservoirFinalWebLayout2017.pdf>.
- Caltrans (California Department of Transportation). 2016a. *2016 Traffic Volumes on California State Highways*. Prepared by U.S. Department of Transportation, Federal Highway Administration. <https://dot.ca.gov/-/media/dot-media/programs/traffic-operations/documents/census/aadt/tc-2016-aadt-volumes-a11y.pdf>.
- Caltrans. 2016b. *Transportation Concept Report State Route 152, District 06*. Caltrans. July 2016.



- Caltrans. 2020. *Vehicle Miles Traveled-Focused Transportation Impact Study Guide*. May 20, 2020. <https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/sb-743/2020-05-20-approved-vmt-focused-tisg-a11y.pdf>.
- ITE (Institute of Transportation Engineers). 2017. *Trip Generation Handbook*. 10th Edition.
- Merced County. 2013. *2030 Merced County General Plan*. Prepared by Merced County, in consultation with Mintier Harnish, Environmental Planning Partners Inc., KD Anderson, Economic & Planning Systems, NV5, and Bollard Acoustical Consultants. Adopted December 10, 2013; Amended July 12, 2016. <https://www.co.merced.ca.us/DocumentCenter/View/6766/2030-General-Plan?bidId=>.
- OPR (Governor's Office of Planning and Research). 2018. *Technical Advisory on Evaluating Transportation Impacts in CEQA*. December 2018. [http://opr.ca.gov/docs/20190122-743\\_Technical\\_Advisory.pdf](http://opr.ca.gov/docs/20190122-743_Technical_Advisory.pdf).
- OPR. 2020. "743 Office Hours – Other Land Uses." Livestreamed June 3, 2020. Accessed November 18, 2020. <https://www.youtube.com/watch?v=4I0Kx0IKLRw&list=PL0Mk6UeoMDOPgpRPmgOyu8NOY5IXtpMpl&index=2>.
- Reclamation (Bureau of Reclamation). 2015. *Central Valley Project Municipal and Industrial Water Shortage Policy Environmental Impact Statement*. Final Draft. U.S. Department of the Interior, Bureau of Reclamation. Sacramento, California: Reclamation, Mid-Pacific Regional Office. August 2015.
- Reclamation and CDPR. 2013. *San Luis Reservoir State Recreation Area Final Resource Management Plan/General Plan and Final Environmental Impact Statement/Environmental Impact Report*. U.S. Department of the Interior, Bureau of Reclamation and California Department of Parks and Recreation. June 2013.
- SANDAG (San Diego Association of Governments). 2002. (Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region. San Diego, California: SANDAG. April 2002. [https://www.sandag.org/uploads/publicationid/publicationid\\_1140\\_5044.pdf](https://www.sandag.org/uploads/publicationid/publicationid_1140_5044.pdf).
- The Bus (The Bus, Merced Regional Transit System). 2019. "System Map" [map]. Scale not given. Merced, California: The Bus. Effective March 2019. [https://mercedthebus.com/DocumentCenter/View/1187/MercedTheBus\\_SystemMap-for-website](https://mercedthebus.com/DocumentCenter/View/1187/MercedTheBus_SystemMap-for-website).
- TRB (Transportation Research Board). 2016. *Highway Capacity Manual: A Guide for Multimodal Mobility Analysis*. 6th Edition.

## Section 3.8: Hazards and Hazardous Materials

- CAL FIRE (California Department of Forestry and Fire Protection). 2007. "FHSZ Maps" [digital GIS data]. <https://osfm.fire.ca.gov/media/5864/fhszs24sn.zip>.
- CAL FIRE. 2019. 2019 Strategic Fire Plan for California. January 2019. <http://cdfdata.fire.ca.gov/pub/fireplan/fpupload/fpppdf1614.pdf>.
- CAL FIRE. 2020a. "Fire Threat Version 14\_2" [digital GIS data]. Accessed October 2020. [https://frap.fire.ca.gov/media/9792/fthrt14\\_2.zip](https://frap.fire.ca.gov/media/9792/fthrt14_2.zip).

- CAL FIRE. 2020b. “Fire and Resource Assessment Program” [digital GIS data]. Fire Perimeters Version 19\_1. [https://frap.fire.ca.gov/media/10969/fire19\\_1.zip](https://frap.fire.ca.gov/media/10969/fire19_1.zip).
- CalGEM (California Geologic Energy Management Division). 2020. “Well Finder online oil and gas well mapping system.” Accessed October 13, 2020. <https://maps.conservation.ca.gov/doggr/wellfinder/#openModal>.
- CalRecycle (California Department of Resources Recycling and Recovery). 2020. “SWIS Facility/Site Activity Search – Billy Wright Disposal Site.” Accessed October 13, 2020. <https://www2.calrecycle.ca.gov/SolidWaste/Activity>.
- DTSC (California Department of Toxic Substances Control). 2020. “EnviroStor Search Results – Romero Ranch”. Accessed October 13, 2020. [https://www.envirostor.dtsc.ca.gov/public/profile\\_report?global\\_id=24020001](https://www.envirostor.dtsc.ca.gov/public/profile_report?global_id=24020001).
- Heberling, G. 2020. Sisk Dam Project – Campground and Day Use Area Questions. Email from G. Heberling (California Department of Parks and Recreation) to M. Lang (Dudek). October 30, 2020.
- Merced County. 2013. *2030 Merced County General Plan*. Prepared by Merced County, in consultation with Mintier Harnish, Environmental Planning Partners Inc., KD Anderson, Economic & Planning Systems, NV5, and Bollard Acoustical Consultants. Adopted December 10, 2013; Amended July 12, 2016. <https://www.co.merced.ca.us/DocumentCenter/View/6766/2030-General-Plan?bidId=>.
- NETR (Nationwide Environmental Title Research). 2020. “Historic Aerials – Gonzaga Road, Merced County, California.” Accessed October 13, 2020. <https://www.historicaerials.com/viewer>.
- NPMS (National Pipeline Mapping System). 2020. “NPS Public Viewer – 37.113805, -120.978911” [map]. Scale 1:108,336. Accessed October 13, 2020. <https://pvnpm.phmsa.dot.gov/PublicViewer/>.
- SWRCB (State Water Resources Control Board). 2020a. “GeoTracker Sites and Facilities – San Luis Reservoir State Recreation Area” [map]. Scale not given. Accessed September 21, 2020. <https://geotracker.waterboards.ca.gov/>.
- SWRCB. 2020b. “GeoTracker, San Luis Reservoir S.R.A. (T0604700256).” Accessed September 21, 2020. [https://geotracker.waterboards.ca.gov/profile\\_report.asp?global\\_id=T0604700256](https://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0604700256).
- SWRCB. 2020c. “GeoTracker, San Luis Reservoir Maintenance Facility (T10000004714).” Accessed September 21, 2020. [https://geotracker.waterboards.ca.gov/profile\\_report.asp?global\\_id=T10000004714](https://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T10000004714).
- SWRCB. 2020d. “GeoTracker, Forebay Chevron (T10000005867)” [map]. Scale not given. Accessed October 14, 2020. [https://geotracker.waterboards.ca.gov/map/?global\\_id=T10000005867](https://geotracker.waterboards.ca.gov/map/?global_id=T10000005867).
- Smalley, J. 2008. “Wildfires and Climate Change: An American Perspective on a Global Issue.” Fire Interdisciplinary Research on Ecosystem Services (Seminar). June 24, 2008. [http://www.fires-seminars.org.uk/downloads/seminar2/smalley\\_public\\_keynote.pdf](http://www.fires-seminars.org.uk/downloads/seminar2/smalley_public_keynote.pdf).
- Syphard A.D., and J.E. Keeley. 2016. “Historical Reconstructions of California Wildfires Vary by Data Source.” *International Journal of Wildland Fire* 25(12):1221–1227. <https://doi.org/10.1071/WF16050>.

## Section 3.9: Biological Resources

- AOS (American Ornithological Society). 2020. "Checklist of North and Middle American Birds." AOS, North American Classification Committee. Accessed September 16, 2020. <http://checklist.americanornithology.org/taxa/>.
- Beier P., and S. Loe. 1992. "A Checklist for Evaluating Impacts to Wildlife Movement Corridors." *Wildlife Society Bulletin* 20(4):434–440.
- BRC (BioResource Consultants Inc.). 2020. "Gonzaga Golden Eagle Helicopter Survey." Letter report from C. Thelander (BRC) to B. Ortega (Dudek). June 7, 2020.
- Brown, L., and D. Amadon. 1968. *Eagles, Hawks, and Falcons of the World*. London, United Kingdom: Country Life Books.
- Buehler, D.A. 2020. "Bald Eagle (*Haliaeetus leucocephalus*), version 1.0." In *Birds of the World*, edited by A.F. Poole and F.B. Gill. Ithaca, New York: Cornell Lab of Ornithology. Accessed September 10, 2020. <https://doi.org/10.2173/bow.baleag.01>.
- CDFG (California Department of Fish and Game). 2012. *Staff Report on Burrowing Owl Mitigation*. State of California Natural Resources Agency, CDFG. March 7, 2012. <http://www.dfg.ca.gov/wildlife/nongame/docs/BUOWStaffReport.pdf>.
- CDFW (California Department of Fish and Wildlife). 2018. Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities. State of California Natural Resources Agency, CDFW. March 20, 2018. <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=18959&inline>.
- CDFW. 2019. "Special Animals List." California Natural Diversity Database (CNDDDB). State of California Natural Resources Agency, CDFW, Biogeographic Data Branch. August 2019. Accessed July 30, 2020. <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109406&inline=1>.
- CDFW. 2020a. RareFind, Version 5.0 (commercial subscription). California Natural Diversity Database (CNDDDB). Sacramento, California: State of California Natural Resources Agency, CDFW, Biogeographic Branch. Accessed June 2020. <http://www.dfg.ca.gov/biogeodata/cnddb/rarefind.asp>.
- CDFW. 2020b. "Special Vascular Plants, Bryophytes, and Lichens List." California Natural Diversity Database (CNDDDB). State of California Natural Resources Agency, CDFW, Biogeographic Branch. September 2020. Accessed October 2, 2020. <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109383&inline=1>.
- CDFW. 2020c. "California Natural Community List." September 9, 2020. Accessed November 2020. <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=153398&inline>.
- CDPR (California Department of Parks and Recreation). 2006. *Pacheco State Park General Plan and Environmental Impact Report*. SCH No. 2003121089. Sacramento, California: CDPR. May 12, 2006. [https://www.parks.ca.gov/pages/21299/files/Pacheco%20Final%20GP\\_12-16-15.pdf](https://www.parks.ca.gov/pages/21299/files/Pacheco%20Final%20GP_12-16-15.pdf).
- CNPS (California Native Plant Society). 2020a. "Inventory of Rare and Endangered Plants." Online ed. Version 8-03 0.39. Sacramento, California: CNPS. Accessed February 2020. [www.rareplants.cnps.org](http://www.rareplants.cnps.org).

- CNPS. 2020b. A Manual of California Vegetation, Online Edition. Sacramento, California: CNPS. Accessed June 2020. <http://www.cnps.org/cnps/vegetation>.
- Calflora. 2020. Information on California Plants for Education, Research and Conservation. [web application]. Berkeley, California: The Calflora Database [a non-profit organization]. Accessed September 2020. <http://www.calflora.org/>.
- Constable, J.L., B.L. Cypher, S.E. Phillips, and P.A. Kelly. 2009. *Conservation of San Joaquin Kit Foxes in Western Merced County, California*. Prepared for U.S. Bureau of Reclamation. Fresno, California: Endangered Species Recovery Program, California State University, Stanislaus. May 13, 2009.
- Crother, B.I. 2017. *Scientific and Standard English Names of Amphibians and Reptiles of North America North of Mexico, with Comments Regarding Confidence in our Understanding*. 8th ed. Herpetological Circular No. 43. Ed. J.J. Moriarty. Shoreview, Minnesota: Society for the Study of Amphibians and Reptiles.
- Davis, J.N., and C.A. Niemela. 2008. "Northern Harrier (*Circus cyaneus*).” In *California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Populations of Birds of Immediate Conservation Concern in California*, edited by D.W. Shuford and T. Gardali, 149–155. Studies of Western Birds, No. 1. Camarillo, California: Western Field Ornithologists and Sacramento, California: CDFG.
- de Becker, S. 1988. "Coastal Scrub." California Wildlife Habitat Relationships (CWHR) System Habitat Description. CDFG, California Interagency Wildlife Task Group. Accessed September 22, 2020. <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=67374&inline>.
- Dudek. 2019. *Avian and Bat Studies Technical Report: Gonzaga Ridge Wind Project, Merced County, California*. Prepared for Scout Clean Energy LLC. Sacramento, California: Dudek.
- Dudek. 2020a. *Delineation of CDFW-Jurisdictional Waters for the B.F. Sisk Safety of Dams Modification Project, Merced County, California*. Final. Prepared for California Department of Water Resources. October 2020.
- Dudek. 2020b. *Biological Resources Existing Conditions Report for the B.F. Sisk Safety of Dams Modification Project, Merced County, California*. Prepared for California Department of Water Resources. October 2020.
- ESA (Environmental Science Associates). 2018. *B.F. Sisk Safety of Dams Modification Project Biological Survey Report*. Prepared for Bureau of Reclamation and California Department of Water Resources. Petaluma, California: ESA. October 2018.
- ESA. 2020. *B.F. Sisk Dam Raise Project Biological Survey Report, Merced County, California*. Draft. Prepared for CDM Smith Incorporated and San Luis and Delta-Mendota Water Authority. Sacramento, California: ESA. May 2020.
- eBird. 2020. *eBird: An online database of bird distribution and abundance* [web application]. Ithaca, New York: Cornell Lab of Ornithology. Accessed July 24, 2020. <http://www.ebird.org>.
- Emslie, S.D. 1987. "Age and Diet of Fossil California Condors in Grand Canyon, Arizona." *Science* 237:768–770.
- Ewins, P.J., and R.A. Andress. 1995. "The Diet of Bald Eagles, *Haliaeetus leucocephalus*, Wintering in the Lower Great Lakes Basin, 1987–1995." *Canadian Field-Naturalist* 109:418–424.

- Ford, L.D., P.A. Van Hoorn, D.R. Rao, N.J. Scott, P.C. Trenham, and J.W. Bartolome. 2013. *Managing Rangelands to Benefit California Red-legged Frogs & California Tiger Salamanders*. Prepared for the Alameda County Resource Conservation District. Livermore, California: Alameda County Resource Conservation District.
- Gervais, J.A., D.K. Rosenberg, and L.A. Comrack. 2008. "Burrowing Owl (*Athene cunicularia*).” In *California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California*, edited by W.D. Shuford and T. Gardali, 218–226. Studies of Western Birds, no. 1. California: Western Field Ornithologists (Camarillo), and CDFG (Sacramento). February 4, 2008. Accessed December 11, 2012. <http://www.dfg.ca.gov/wildlife/nongame/ssc/birds.html>.
- Grinnell, J., and A.H. Miller. 1944. *The Distribution of the Birds of California*. Pacific Coast Avifauna, No. 27. Berkeley, California: Cooper Ornithological Club. December 30, 1944.
- Hatfield, R., S. Jepsen, R. Thorp, L. Richardson, and S. Colla. 2015. "Bombus crotchii." The IUCN Red List of Threatened Species. Accessed October 5, 2020. <http://dx.doi.org/10.2305/IUCN.UK.2015-2.RLTS.T44937582A46440211.en>.
- Heath, S. 2008. "Yellow warbler (*Dendroica petechia*).” In *California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California*, edited by W.D. Shuford and T. Gardali, 332–339. Studies of Western Birds 1. Camarillo and Sacramento, California: Western Field Ornithologists and CDFG.
- Humple, D. 2008. "Loggerhead Shrike (*Lanius ludovicianus*).” In *California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California*, edited by W.D. Shuford and T. Gardali, 271–277. Studies of Western Birds No. 1. Camarillo, California: Western Field Ornithologists, and Sacramento, California: CDFG.
- iNaturalist. 2020. Query for Crotch bumble bee observations in Merced County, California. Accessed July 28, 2020. [https://www.inaturalist.org/observations?place\\_id=1920&taxon\\_id=271451](https://www.inaturalist.org/observations?place_id=1920&taxon_id=271451).
- Jennings, M.R., and M.P. Hayes. 1994. *Amphibian and Reptile Species of Special Concern in California*. Final report. Commissioned by CDFG, Inland Fisheries Division Endangered Species Project. November 1, 1994.
- Johnsgard, P.A. 1990. "Golden Eagle.” In *Hawks, Eagles, and Falcons of North America: Biology and Natural History*, 260–268. Washington, DC: Smithsonian Institution Press.
- Johnson, M., J. Kern, and S.M. Haig. 2010. "Analysis of California Condor (*Gymnogyps californianus*) Use of Six Management Units Using Location Data from Global Positioning System Transmitters, Southern California, 2004-09—Initial Report.” Open-File Report 2010-1287. Reston, Virginia: U.S. Department of Interior, U.S. Geological Survey.

- Katzner, T.E., M.N. Kochert, K. Steenhof, C.L. McIntyre, E.H. Craig, and T.A. Miller. 2020. "Golden Eagle (*Aquila chrysaetos*)." In *The Birds of the World*, edited by P.G. Rodewalk. Ithaca, New York: Cornell Lab of Ornithology. Published September 17, 2020. <https://birdsoftheworld.org/bow/species/goleag/cur/introduction>.
- Kie, J.G. 1988. "Annual Grassland." California Wildlife Habitat Relationships (CWHR) System Habitat Description. Updated by CWHR Staff, April 2005. Accessed September 22, 2020. <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=67384&inline>.
- Klute, D. S., L. W. Ayers, M. T. Green, W. H. Howe, S. L. Jones, J. A. Shaffer, S. R. Sheffield, and T. S. Zimmerman. 2003. *Status Assessment and Conservation Plan for the Western Burrowing Owl in the United States*. Biological Technical Publication No. BTP-R6001-2003. Washington, DC: U.S. Fish and Wildlife Service.
- Koford, C.B. 1953. *The California Condor*. Washington DC: National Audubon Society. Research Report 4:1–154.
- Lenihan, C.M. 2007. "The Ecological Role of the California Ground Squirrel (*Spermophilus beecheyi*)." Ph.D. Dissertation; University of California, Davis, California.
- Meese, R.J. 2014. "Results of the 2014 Tricolored Blackbird Statewide Survey." Davis, California: University of California Davis, Department of Environmental Science and Policy.
- Merced County. 2013. *2030 Merced County General Plan*. Prepared by Merced County, in consultation with Mintier Harnish, Environmental Planning Partners Inc., KD Anderson, Economic & Planning Systems, NV5, and Bollard Acoustical Consultants. Adopted December 10, 2013; Amended July 12, 2016. <https://www.co.merced.ca.us/DocumentCenter/View/6766/2030-General-Plan?bidId=>.
- Meretsky, V.J., and N.F.R. Snyder. 1992. "Range Use and Movements of California Condors." *Condor* 94:313–335.
- NRC (National Research Council). 2002. *Riparian Areas: Functions and Strategies for Management*. National Research Council, Committee on Riparian Zone Functioning and Strategies of Management, and Water Science and Technology Board. Washington, DC: National Academy Press. September 10, 2002.
- NatureServe. 2020. "Conservation Status Assessment – Identifying Threatened Species and Ecosystems." Accessed September 2020. <https://www.natureserve.org/conservation-tools/conservation-status-assessment>.
- Peeters, H., and P. Peeters. 2005. *Raptors of California*. Berkeley, California: University of California Press.
- PG&E (Pacific Gas and Electric Company). 2006. *Pacific Gas & Electric Company San Joaquin Valley Operations and Maintenance Habitat Conservation Plan*. Final. Updated December 2007. Prepared by Jones & Stokes. Sacramento, California: Jones & Stokes. December 2006.
- PG&E. 2016. *Nesting Bird Management Plan: Biologist Guidelines for PG&E Utility Operations, Maintenance, and Projects*. February 2016.
- Reclamation (Bureau of Reclamation). 2019. *Biological Assessment: B.F. Sisk Safety of Dams Modification Project, Merced County, California*. Sacramento, California: U.S. Department of the Interior, Bureau of Reclamation, Mid Pacific Region. February 2019.



- Reclamation and CDPR (California Department of Parks and Recreation). 2013. *San Luis Reservoir State Recreation Area Final Resource Management Plan/General Plan and Final Environmental Impact Statement/Environmental Impact Report*. U.S. Department of the Interior, Bureau of Reclamation and California Department of Parks and Recreation. June 2013.
- Reclamation and DWR (California Department of Water Resources). 2018. *Waters of the U.S. Delineation: B.F. Sisk Dam Safety of Dams Modification Project. Merced County, California*.
- Ricketts, M. 2013. Loggerhead shrike nest with five eggs in coil of barbed wire west of Scally Lane, approx. 750 feet south of State Route 12, Solano County (38.226383, -121.970659). Personal observation by M. Ricketts (Dudek). May 23, 2013.
- SHTAC (Swainson's Hawk Technical Advisory Committee). 2000. Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley. May 31, 2000.
- SLDMWA (San Luis & Delta–Mendota Canal Authority) and Reclamation. 2020. *B.F. Sisk Dam Raise and Reservoir Expansion Project Draft Environmental Impact Report/Supplemental Environmental Impact Statement*. Final Draft. San Luis & Delta–Mendota Canal Authority and U.S. Department of the Interior, Bureau of Reclamation. December 2020. [https://www.usbr.gov/mp/nepa/nepa\\_project\\_details.php?Project\\_ID=44425](https://www.usbr.gov/mp/nepa/nepa_project_details.php?Project_ID=44425).
- Scott, T.A. 1985. "Human Impacts on the Golden Eagle Population of San Diego County from 1928 to 1981." Master's thesis; San Diego State University.
- Shaffer, H.B., R.N. Fisher, and S.E. Stanley. 1993. *Status Report: The California Tiger Salamander (Ambystoma californiense)*. Final. Prepared for CDFG.
- Smith, K.G., S.R. Wittenberg, R.B. MacWhirter, and K.L. Bildstein. 2020. "Northern Harrier (*Circus cyaneus*).” In *The Birds of the World*, edited by P.G. Rodewald. Ithaca, New York: Cornell Lab of Ornithology. Published March 4, 2020. Accessed May 2020. <https://doi.org/10.2173/bow.norhar2.01>.
- Stalmaster, M.V. 1987. *The Bald Eagle*. New York, New York: Universe Books.
- Stebbins, R.C. 1972. "Amphibians and Reptiles of California." In *California Natural History Guides*, 69. California Natural History Guides 31. Berkeley, California: University of California Press.
- Stebbins, R.C. 2003. *Western Reptiles and Amphibians*. 3rd ed. Peterson Field Guide. New York, New York: Houghton Mifflin Company.
- Terres, J.K. 1980. "Hawk Family." In *The Audubon Society Encyclopedia of North American Birds*, 477–478. New York, New York: Alfred A. Knopf.
- Todd, C.S., L.S. Young, R.B. Owen, and F.J. Gramlich. 1982. "Food Habits of Bald Eagles in Maine." *Journal of Wildlife Management* 46:636–645.
- UC Davis (University of California, Davis). 2009. *Methods for Excluding Cliff Swallows from Nesting on Highway Structures*. Final. Report No. CA05-0926. Prepared for the State of California Department of Transportation, Division of Research and Innovation Office of Materials and Infrastructure Research. Davis, California: UC Davis. August 24, 2009. <https://dot.ca.gov/-/media/dot-media/programs/research-innovation-system-information/documents/f0016601-swallow-nesting.pdf>.

- UC Davis. 2020. "About Tricolored Blackbirds." Tricolored Blackbird Portal. Last updated January 20, 2020. Accessed September 28, 2020. <https://tricolor.ice.ucdavis.edu/about-tricolored-blackbirds>.
- USDA (U.S. Department of Agriculture). 2019. Soil Survey Geographic (SSURGO) Database for California. USDA Natural Resources Conservation Service, Soil Survey Staff. Accessed April 10, 2019.
- USDA. 2020. Web Soil Survey. USDA Natural Resources Conservation Service, Soil Survey Staff. Accessed June 2020. <http://websoilsurvey.nrcs.usda.gov/>.
- USFWS (U.S. Fish and Wildlife Service). 1996. *Recovery Plan for the California Condor*. 3rd revision. Portland, Oregon: California Condor Recovery Team, USFWS. April 1996.
- USFWS. 1998. *Recovery Plan for Upland Species of the San Joaquin Valley, California*. Portland, Oregon: USFWS, Region 1. September 30, 1998.
- USFWS. 1999. San Joaquin Kit Fox Survey Protocol for the Northern Range. Sacramento, California: USFWS. June 1999. [https://www.fws.gov/ventura/docs/species/protocols/sjkw/sfwo\\_kit-fox\\_protocol.pdf](https://www.fws.gov/ventura/docs/species/protocols/sjkw/sfwo_kit-fox_protocol.pdf)
- USFWS. 2002. *Recovery Plan for the California Red-legged Frog (Rana draytonii)*. Portland, Oregon: USFWS, Region 1. May 28, 2002.
- USFWS. 2010a. *San Joaquin Kit Fox (Vulpes macrotis mutica), 5-Year Review: Summary and Evaluation*. Sacramento, California: USFWS. February 2010.
- USFWS. 2010b. *Interim Golden Eagle Inventory and Monitoring Protocols; and Other Recommendations*. Carlsbad, California: USFWS, Ecological Services; Arlington, Virginia: USFWS, Division of Migratory Bird Management. February 2010.
- USFWS. 2011a. *Draft Eagle Conservation Plan Guidance*. January 2011.
- USFWS. 2011b. Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance. Sacramento, California: USFWS. January 2011. [https://www.fws.gov/sacramento/es/Survey-Protocols-Guidelines/Documents/kitfox\\_standard\\_rec\\_2011.pdf](https://www.fws.gov/sacramento/es/Survey-Protocols-Guidelines/Documents/kitfox_standard_rec_2011.pdf).
- USFWS. 2019. "Formal Consultation for the B.F. Sisk Dam Safety of Dams Modification Project, Merced County, California." Memorandum to Reclamation. Consultation Code 08ESMF00-2019-F-1572-2. August 29, 2019.
- USFWS. 2020. "IPaC Resource List Search for Merced County." USFWS, IPaC (Information for Planning and Consultation). Accessed June 22, 2020. <https://ecos.fws.gov/ipac/>.
- USGS (U.S. Geological Survey). 2020. "California Condor GPS Cellular Tracking Archives" [digital GIS data]. Accessed June 2020. <https://www.sciencebase.gov/catalog/item/53276178e4b00296c00bbbed5>.
- WBWG (Western Bat Working Group). 2017. "Western Bat Species." Accessed September 2020. <http://wbwg.org/western-bat-species>.
- Wilkerson, R. L., and R. B. Siegel. 2010. "Assessing changes in the distribution and abundance of burrowing owls in California, 1993–2007." *Bird Populations* 10:1–36.

- Wilson, D.E., and D.M. Reeder, eds. 2005. *Mammal Species of the World: A Taxonomic and Geographic Reference*. 3rd ed. Baltimore, Maryland: Johns Hopkins University Press.
- Xerces Society for Invertebrate Conservation, Defenders of Wildlife, and Center for Food Safety. 2018. *A Petition to the State of California Fish and Game Commission to list the Crotch Bumble Bee (Bombus crotchii), Franklin's Bumble Bee (Bombus franklini), Suckley Cuckoo Bumble Bee (Bombus suckleyi), and Western Bumble Bee (Bombus occidentalis occidentalis) as Endangered under the California Endangered Species Act*. October 2018.
- Yosef, R. 2020. "Loggerhead Shrike (*Lanius ludovicianus*), version 1.0." In *Birds of the World*, edited by A.F. Poole and F.B. Gill. Ithaca, New York: Cornell Lab of Ornithology. Accessed September 10, 2020. <https://doi.org/10.2173/bow.logshr.01>.
- Zeiner, D.C., W.F. Laudenslayer Jr., K.E. Mayer, and M. White, eds. 1990a. *California's Wildlife, Volume 2: Birds*. California Statewide Wildlife Habitat Relationships System. Sacramento: CDFG. November 1990.
- Zeiner, D.C., W.F. Laudenslayer Jr., K.E. Mayer, and M. White, eds. 1990b. *California's Wildlife, Volume 3: Mammals*. California Statewide Wildlife Habitat Relationships System. Sacramento: CDFG. April 1990.
- Section 3.10: Land Use
- DOC (California Department of Conservation). 2015. "Merced County 2012–2014 Land Use Conversion Table" [Excel spreadsheet]. DOC, Division of Land Resource Protection. [http://www.conservation.ca.gov/dlrp/fmmp/Documents/fmmp/pubs/2012-2014/conversion\\_tables/mercon14.xls](http://www.conservation.ca.gov/dlrp/fmmp/Documents/fmmp/pubs/2012-2014/conversion_tables/mercon14.xls).
- Merced County. 2013. *2030 Merced County General Plan*. Prepared by Merced County, in consultation with Mintier Harnish, Environmental Planning Partners Inc., KD Anderson, Economic & Planning Systems, NV5, and Bollard Acoustical Consultants. Adopted December 10, 2013; Amended July 12, 2016. <https://www.co.merced.ca.us/DocumentCenter/View/6766/2030-General-Plan?bidId=>.
- Merced County. 2020. Merced County Code, Title 18, Zoning Code. June 2020. <http://www.qcode.us/codes/mercedcounty/index.php?topic=18>.
- PG&E (Pacific Gas and Electric Company). 2006. *Pacific Gas & Electric Company San Joaquin Valley Operations and Maintenance Habitat Conservation Plan*. Final. Updated December 2007. Prepared by Jones & Stokes. Sacramento, California: Jones & Stokes. December 2006.
- Reclamation (Bureau of Reclamation) and CDPR (California Department of Parks and Recreation). 2013. *San Luis Reservoir State Recreation Area Final Resource Management Plan/General Plan and Final Environmental Impact Statement/Environmental Impact Report*. U.S. Department of the Interior, Bureau of Reclamation and California Department of Parks and Recreation. June 2013.
- Reclamation and DWR (California Department of Water Resources). 2019. *B.F. Sisk Dam Safety of Dams Modification Project Final Environmental Impact Statement/Environmental Impact Report*. Final. SCH No. 2009091004. U.S. Department of the Interior, Bureau of Reclamation and California Department of Water Resources. August 2019.

## Section 3.11: Recreation

- CDPR (California Department of Parks and Recreation). 2017. San Luis Reservoir State Recreation Area Brochure. Sacramento, California: CDPR. Revised 2017. <https://www.parks.ca.gov/pages/558/files/SanLuisReservoirFinalWebLayout2017.pdf>.
- CPDR. 2020. “San Luis Reservoir State Recreation Area.” Accessed on October 27, 2020. [https://www.parks.ca.gov/?page\\_id=558](https://www.parks.ca.gov/?page_id=558).
- Merced County. 2013. *2030 Merced County General Plan*. Prepared by Merced County, in consultation with Mintier Harnish, Environmental Planning Partners Inc., KD Anderson, Economic & Planning Systems, NV5, and Bollard Acoustical Consultants. Adopted December 10, 2013; Amended July 12, 2016. <https://www.co.merced.ca.us/DocumentCenter/View/6766/2030-General-Plan?bidId=>.
- Reclamation (Bureau of Reclamation) and CDPR. 2013. *San Luis Reservoir State Recreation Area Final Resource Management Plan/General Plan and Final Environmental Impact Statement/Environmental Impact Report*. U.S. Department of the Interior, Bureau of Reclamation and California Department of Parks and Recreation. June 2013.

## Section 3.12: Cultural Resources

- 14 CCR 15000–15387 and Appendices A–N. Guidelines for Implementation of the California Environmental Quality Act, as amended.
- California Public Resources Code, Sections 21000–21189. California Environmental Quality Act (CEQA), as amended.
- Giacinto, A., W. Burns, R. Owen, and M. Hale. 2020. *Supplemental Cultural Resources Inventory for the B.F. Sisk Dam Safety of Dams Modification Project*. Draft. Prepared by Dudek for California Department of Water Resources. November 2020.
- Holm, L., and J. Holson. 2019. *Cultural Resources Report for the B.F. Sisk Dam Safety of Dams Modification Project, Merced County, California*. Prepared for CDM Smith by Pacific Legacy Inc. Berkeley, California: Pacific Legacy Inc. September 2018; Revised May 2019.
- Merced County. 2013. *2030 Merced County General Plan*. Prepared by Merced County, in consultation with Mintier Harnish, Environmental Planning Partners Inc., KD Anderson, Economic & Planning Systems, NV5, and Bollard Acoustical Consultants. Adopted December 10, 2013; Amended July 12, 2016. <https://www.co.merced.ca.us/DocumentCenter/View/6766/2030-General-Plan?bidId=>.
- NPS (National Park Service). 2009. *Archeology and Historic Preservation: Secretary of the Interior’s Standards and Guidelines* [As Amended and Annotated]. Electronic document. Accessed March 19, 2009. [http://www.nps.gov/history/local-law/arch\\_stnds\\_0.htm](http://www.nps.gov/history/local-law/arch_stnds_0.htm).
- OHP (Office of Historic Preservation). 2018. “Section 106 Consultation for the B.F. Sisk Dam Corrective Action Study Geotechnical Investigations, Merced County, CA (Project #18-SCAO-002.001).” Letter from J. Polanco (State Historic Preservation Officer, Office of Historic Preservation, California Department of Parks and Recreation) to A. Leigh (Regional Environmental Officer, Bureau of Reclamation). January 19, 2018.

- Reclamation (Bureau of Reclamation). 2017. *Cultural Resources Inventory and Section 106 Finding of Effect for the B.F. Sisk Dam Corrective Action Study Geotechnical Investigations* (Project Tracking No. 18-SCAO-002.001) Merced County, California: Reclamation, Mid-Pacific Region.
- Reclamation and CDPR (California Department of Parks and Recreation). 2013. *San Luis Reservoir State Recreation Area Final Resource Management Plan/General Plan and Final Environmental Impact Statement/Environmental Impact Report*. U.S. Department of the Interior, Bureau of Reclamation and California Department of Parks and Recreation. June 2013.
- Reclamation and SHPO (State Historic Preservation Officer). 2019. Programmatic Agreement Among The Bureau of Reclamation, Interior Region 10 California-Great Basin; and The California State Historic Preservation Officer Regarding Compliance with Section 106 of the National Historic Preservation Act Pertaining to the Implementation of the Safety of Dams B.F. Sisk Dam Project.
- Webb, T., and C.D. McMorris. 2019. *Historic Resources Inventory and Evaluation Report for the B.F. Sisk Dam Corrective Action Study, Merced County, California*. Final. Prepared for the Bureau of Reclamation and California Department of Water Resources. Davis, California: JRP Historical Consulting LLC. July 2018; Revised May 2019.

### Section 3.13: Geology, Seismicity, and Soils

- CalGEM (California Geologic Energy Management Division). 2020. "Well Finder online oil and gas well mapping system – API: 0404700082." Accessed September 9, 2020. <https://maps.conservation.ca.gov/doggr/wellfinder/Index.html?api=04700082#close/-120.91081/37.07249/12>.
- CDMG (California Division of Mines and Geology). 1986. "San Luis Dam Quadrangle – California, Merced Co." [map]. Scale 1:24,000. 7.5-Minute Series (topographic), Special Study Zones. California Department of Conservation, CDMG. Effective July 1, 1986. <https://maps.conservation.ca.gov/cgs/informationwarehouse/regulatorymaps/>.
- CDMG. 1998. "Map of California Historic Gold Mines" [map]. Scale 1:1,500,000. The California Gold Discovery to Statehood Sesquicentennial (1998–2000) Edition. California Department of Conservation, CDMG. [https://www.conservation.ca.gov/cgs/Documents/Melange/Big\\_AUMap.pdf](https://www.conservation.ca.gov/cgs/Documents/Melange/Big_AUMap.pdf).
- CDPR (California Department of Parks and Recreation). 2010. *California State Parks Planning Handbook*. Sacramento, California: CDPR. April 2010. [https://www.parks.ca.gov/pages/21299/files/planning\\_handbook\\_april\\_2010.pdf](https://www.parks.ca.gov/pages/21299/files/planning_handbook_april_2010.pdf).
- CGS (California Geological Survey). 2002a. California Geomorphic Provinces. Note 36. Sacramento, California: California Department of Conservation, CGS. Revised December 2002.
- CGS. 2002b. "California Active Gold Mines, 2000–2001" [map]. Scale not given. California Department of Conservation, CGS. <https://www.conservation.ca.gov/cgs/Documents/Minerals/Map-Active-Gold-Mines-2000-2001.pdf>.
- CGS. 2012. *Map Sheet 52 (Updated 2012), Aggregate Sustainability in California*. Sacramento, California: California Department of Conservation, CGS. <https://www.countyofnapa.org/DocumentCenter/View/761/2012-Report-Aggregate-Sustainability-in-California-PDF>.

- CGS. 2016. “Earthquake Zones of Required Investigation – San Luis Reservoir” [map]. Scale not given. California Department of Conservation, CGS. Accessed September 9, 2020. <https://maps.conservation.ca.gov/cgs/EQZApp/>.
- CGS. 2018a. *Earthquake Fault Zones: A Guide for Government Agencies, Property Owners/Developers, and Geoscience Practitioners for Assessing Fault Rupture Hazards in California*. Special Publication 42. Sacramento, California: California Department of Conservation, CGS. Revised 2018. [https://www.conservation.ca.gov/cgs/Documents/Publications/Special-Publications/SP\\_042.pdf](https://www.conservation.ca.gov/cgs/Documents/Publications/Special-Publications/SP_042.pdf).
- CGS. 2018b. “Aggregate Sustainability in California, Fifty-Year Aggregate Demand Compared to Permitted Aggregate Reserves” [map]. Scale 1:1,100,000. Map Sheet 52. Sacramento, California: California Department of Conservation, CGS. [https://www.calcima.org/files/MS52\\_California\\_Aggregates\\_Map\\_201807.pdf](https://www.calcima.org/files/MS52_California_Aggregates_Map_201807.pdf).
- CGS. 2020. “Fault Activity Map of California – San Luis Reservoir” [map]. Scale not given. California Department of Conservation, CGS. Accessed September 11, 2020. <https://maps.conservation.ca.gov/cgs/fam/>.
- CGS and CDPR (California Department of Parks and Recreation). 2015. *Geological Gems of California State Parks*. Special Report 230. Sacramento, California: California Department of Conservation, CGS and CDPR. [https://www.parks.ca.gov/pages/734/files/CGS\\_SR230\\_GeoGems.pdf](https://www.parks.ca.gov/pages/734/files/CGS_SR230_GeoGems.pdf).
- California Water Research. 2017. “Full San Luis Dam Endangers Over 200,000 People”. March 12, 2017. <https://cah2oresearch.com/2017/03/12/full-san-luis-dam-endangers-over-200000-people/#:~:text=In%20September%201981%2C%20a%201%2C100,native%20soil%20under%20the%20dam.>
- Caltrans (California Department of Transportation). 2001. *Geologic Hazards Study, Merced Campus Parkway*. Prepared by URS for Caltrans and Merced County. Oakland, California: URS. June 2001.
- DMR (Division of Mine Reclamation). 2016. “Mines Online – San Luis Reservoir” [map]. Scale not given. California Department of Conservation, DMR. Accessed September 10, 2020. <https://maps.conservation.ca.gov/mol/index.html>.
- DOC (California Department of Conservation). 2000. A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos. Open-File Report 2000-19. Sacramento, California: DOC. August 2000. [https://ww2.arb.ca.gov/sites/default/files/classic/toxics/asbestos/ofr\\_2000-019.pdf](https://ww2.arb.ca.gov/sites/default/files/classic/toxics/asbestos/ofr_2000-019.pdf).
- Dibblee, T.W., Jr. 2007. “Geologic Map of the San Luis Dam and Volta Quadrangles, Merced County, California” [map]. Scale 1:24000. Dibblee Geology Center Map No. DF-335. July 2007.
- Herd, D.G. 1979. Geologic Map of O’Neill Forebay, Western Merced County, California. U.S. Geological Survey Open File Report 79-359. U.S. Department of the Interior, U.S. Geological Survey.
- Johnson, K.M. 2013. “Is Stress Accumulating on the Creeping Section of the San Andreas Fault?” *Geophysical Research Letters* 40(23):6101–6105.



- Merced County. 2012. *2030 Merced County General Plan Update, Draft Program Environmental Impact Report*. SCH No. 2011041067. November 2012. [http://web2.co.merced.ca.us/pdfs/planning/generalplan/DraftGP/DEIR/merced\\_county\\_deir\\_2012\\_11\\_30.pdf](http://web2.co.merced.ca.us/pdfs/planning/generalplan/DraftGP/DEIR/merced_county_deir_2012_11_30.pdf).
- Merced County. 2013a. *2030 Merced County General Plan Background Report*. Prepared by Mintier Harnish, Environmental Planning Partners Inc., KD Anderson, EPS, and NOLTE. December 2013. <https://www.co.merced.ca.us/DocumentCenter/View/6768/GP-Background-Report?bidId=>.
- Merced County. 2013b. *2030 Merced County General Plan*. Prepared by Merced County, in consultation with Mintier Harnish, Environmental Planning Partners Inc., KD Anderson, Economic & Planning Systems, NV5, and Bollard Acoustical Consultants. Adopted December 10, 2013; Amended July 12, 2016. <https://www.co.merced.ca.us/DocumentCenter/View/6766/2030-General-Plan?bidId=>.
- Reclamation (Bureau of Reclamation). 2003. *Resource Management Plan Guidebook – Planning for the Future*. U.S. Department of the Interior, Bureau of Reclamation. February 2003.
- Reclamation and CDPR. 2013. *San Luis Reservoir State Recreation Area Final Resource Management Plan/General Plan and Final Environmental Impact Statement/Environmental Impact Report*. U.S. Department of the Interior, Bureau of Reclamation and California Department of Parks and Recreation. June 2013.
- Scheirer, A.H., and L.B. Magoon. 2007. "Age, Distribution, and Stratigraphic Relationship of Rock Units in the San Joaquin Basin Province, California." Chapter 5 in *Petroleum Systems and Geologic Assessment of Oil and Gas in the San Joaquin Basin Province, California*, edited by A.H. Scheirer. U.S. Geological Survey Professional Paper 1713. U.S. Department of the Interior, U.S. Geological Survey. <https://pubs.usgs.gov/pp/pp1713/>.
- Schuster, R.L. 2006. *Interaction of Dams and Landslides—Case Studies and Mitigation*. U.S. Geological Survey Professional Paper 1723. U.S. Department of the Interior, U.S. Geological Survey.
- USDA (U.S. Department of Agriculture). 2020. Web Soil Survey. USDA Natural Resources Conservation Service, Soil Survey Staff. Accessed October 19, 2020. <https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>.
- USGS (U.S. Geological Survey). 2016. "The San Andreas Fault." Last modified November 30, 2016. Accessed September 11, 2020. <https://pubs.usgs.gov/gip/earthq3/safaultgip.html>.
- USGS. 2020a. "Quaternary Fault and Fold Database of the United States." Accessed June 8, 2020. [https://earthquake.usgs.gov/cfusion/quakefault/query\\_main\\_AB.cfm?CFID=1742746&CFTOKEN=dee354710f2a5fde-35A74A81-917D-E201-84A11035BF9F264E](https://earthquake.usgs.gov/cfusion/quakefault/query_main_AB.cfm?CFID=1742746&CFTOKEN=dee354710f2a5fde-35A74A81-917D-E201-84A11035BF9F264E).
- USGS. 2020b. Areas of Land Subsidence in California. Accessed September 9, 2020. [https://ca.water.usgs.gov/land\\_subsidence/california-subsidence-areas.html](https://ca.water.usgs.gov/land_subsidence/california-subsidence-areas.html).
- USGS and CGS. 2011. *Reported Historic Asbestos Mines, Historic Asbestos Prospects, and Other Natural Occurrences of Asbestos in California*. Open-File Report 2011–1188. CGS Map Sheet 59. Reston, Virginia: U.S. Department of the Interior, USGS. <https://pubs.usgs.gov/of/2011/1188/>.

- WGCEP (Working Group on California Earthquake Probabilities). 2003. *Earthquake Probabilities in the San Francisco Bay Region: 2002–2031*. USGS Open-File Report 2003-214. CGS Special Report 203. U.S. Department of the Interior, USGS. [https://pubs.usgs.gov/of/2003/of03-214/OFR-03-214\\_FullText.pdf](https://pubs.usgs.gov/of/2003/of03-214/OFR-03-214_FullText.pdf).
- WGCEP. 2008. *The Uniform California Earthquake Rupture Forecast, Version 2 (UCERF 2)*. U.S. Department of the Interior, USGS, and California Department of Conservation: CGS. [https://pubs.usgs.gov/of/2007/1437/of2007-1437\\_text.pdf](https://pubs.usgs.gov/of/2007/1437/of2007-1437_text.pdf).

## Section 3.14: Tribal Cultural Resources

- Holm, L., and J. Holson. 2019. *Cultural Resources Report for the B.F. Sisk Dam Safety of Dams Modification Project, Merced County, California*. Prepared for CDM Smith by Pacific Legacy Inc. Berkeley, California: Pacific Legacy Inc. September 2018; Revised May 2019.
- Merced County. 2013. *2030 Merced County General Plan*. Prepared by Merced County, in consultation with Mintier Harnish, Environmental Planning Partners Inc., KD Anderson, Economic & Planning Systems, NV5, and Bollard Acoustical Consultants. Adopted December 10, 2013; Amended July 12, 2016. <https://www.co.merced.ca.us/DocumentCenter/View/6766/2030-General-Plan?bidId=>.
- Reclamation (Bureau of Reclamation) and SHPO (State Historic Preservation Officer). 2019. Programmatic Agreement Among The Bureau of Reclamation, Interior Region 10 California-Great Basin; and The California State Historic Preservation Officer Regarding Compliance with Section 106 of the National Historic Preservation Act Pertaining to the Implementation of the Safety of Dams B.F. Sisk Dam Project.
- Reclamation and CDPR (California Department of Parks and Recreation). 2013. *San Luis Reservoir State Recreation Area Final Resource Management Plan/General Plan and Final Environmental Impact Statement/Environmental Impact Report*. U.S. Department of the Interior, Bureau of Reclamation and California Department of Parks and Recreation. June 2013.

## Chapter 4: Other CEQA Considerations

- CalRecycle (California Department of Resources Recycling and Recovery). 2020. “SWIS Facility/Site Activity Details: Billy Wright Disposal Site (24-AA-0002).” Accessed October 14, 2020. <https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/2909?siteID=1864>.
- DOC (California Department of Conservation). 2020. “California Important Farmland Finder” [online mapping tool]. Accessed October 13, 2020. <https://maps.conservation.ca.gov/DLRP/CIFF/>.
- Merced County. 2009. “Williamson Act Lands” [map]. Scale not given. Merced County, Merced County Planning and Community Development Department. October 14, 2009. <https://www.co.merced.ca.us/DocumentCenter/View/2339/Williamson-Act?bidId=>.
- Reclamation (Bureau of Reclamation) and CDPR (California Department of Parks and Recreation). 2013. *San Luis Reservoir State Recreation Area Final Resource Management Plan/General Plan and Final Environmental Impact Statement/Environmental Impact Report*. U.S. Department of the Interior, Bureau of Reclamation and California Department of Parks and Recreation. June 2013.