DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO CA 95814-2922

FINDING OF NO SIGNIFICANT IMPACT
ISABELLA LAKE DAM SAFETY MODIFICATION PROJECT
DAMS AND SPILLWAY DESIGN REFINEMENTS, KERN COUNTY, CALIFORNIA

The U.S. Army Corps of Engineers, Sacramento District, has conducted an environmental analysis in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended. We determined that implementing the proposed Dams and Spillway Design Refinements would have no significant effects on the quality of the human environment. This Supplemental Environmental Analysis (SEA) is tiered to the Isabella Lake Dam Safety Modification (Isabella Lake DSM) Project Environmental Impact Statement (EIS). The SEA assesses refinements that have been made to engineering designs since the release of the Isabella DSM Project EIS in order to increase effectiveness and efficiency of the project and reduce environmental effects.

The preferred action as described in the Final SEA includes design refinements for material disposal at Engineers Point; construction of a permanent U.S. Army Corps of Engineers office and maintenance facility; realignment of Barlow and Ponderosa roads; realignment of the Auxiliary Dam left abutment, and installation of dam security features. These refinements would occur in the project area identified in the Isabella Lake DSM Project EIS.

The possible consequences of the work described in this SEA have been studied with consideration given to environmental, cultural, social, and engineering feasibility. The views of other interested agencies, organizations, and individuals have also been considered. Compensatory mitigation for habitat has been coordinated with the U.S. Fish and Wildlife Service, and coordination has occurred with the State Historic Preservation Officer.

In evaluating the effects of the proposed project, specific attention has been given to any environmental conditions that could potentially be affected. All construction would be implemented in compliance with applicable Federal, State, and local laws and regulations. Best management practices, avoidance protocols, and minimization and mitigation measures, as summarized within Appendix A of the document, would be used during construction to reduce effects related to air quality, climate change, cultural resources, sensitive biological resources, water quality, and recreation.

Based upon my review of the SEA, which is incorporated herein by reference, and all applicable laws, executive orders, regulations, and local government plans considered in the evaluation, it is my determination that the proposed project would have no significant, long-term effects on environmental, social, or cultural resources. Based on these considerations, it is my determination that the proposed project does not constitute a major Federal action that would significantly affect the human environment. Therefore, preparation of an Environmental Impact Statement is not required.

6 October 2016
Date

David G. Ray, P.E.
Colonel, U.S. Army
District Commander

Supplemental Environmental Assessment

Isabella Lake Dam Safety Modification Project

Dams and Spillway Design Refinements

Kern County, California

September 2016

U.S. Army Corps of Engineers
Sacramento District – Lead Agency

U.S. Department of Agriculture, Forest Service
Sequoia National Forest – Cooperating Agency

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LIST OF ACRONYMS AND ABBREVIATIONS

ADA	Americans with Disabilities Act
ANSI	American National Standards Institute
APE	Area of Potential Effect
APN	Assessor Parcel Number
BLM	United States Bureau of Land Management
BMPs	Best Management Practices
BPGPSP	Bob Powers Gateway Preserve Strategic Plan
CNEL	Community Noise Equivalent Level
Corps	United States Army Corps of Engineers
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO_2e	Carbon Dioxide Equivalent
CVRWQCB	Central Valley Regional Water Quality Control Board
cy	Cubic yard
dB	Decibel
DEIS	Draft Environmental Impact Statement
DSAC	Dam Safety Action Classification
DSM	Dam Safety Modification
DSS	Decent Safe and Sanitary
EPA	United States Environmental Protection Agency
EIS	Environmental Impact Statement
EKAPCD	Eastern Kern Air Pollution Control District
EO	Executive Order
ER	Engineering Regulation
ESA	Endangered Species Act
FEIS	Final EIS
FONSI	Finding Of No Significant Impact
GHG	Green House Gases
HTRW	Hazardous, Toxic, and Radiological Waste
Isabella Dams	Isabella Lake Main Dam, Spillway and Auxiliary Dam
KWC	Kernville Work Center
KRV	Kern River Valley
KRVHF	Kern River Valley Heritage Foundation
Ldn	Day-Night Level

LEED	Leadership Energy Environmental Design
LOS	Level of Service
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
NAVD	North American Vertical Datum
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act of 1966
NTU	Nephelometric Turbidity Unit
NOx	Mono-Nitrogen Oxides
NPDES	National Pollution Discharge Elimination System
NRHP	National Register of Historic Places
OM	Operations and Maintenance
OHWM	Ordinary High Water Mark
OSHA	Occupational Safety and Health Administration
PED	Preconstruction Engineering and Design
PM10	Particulate Matter
PMF	Probable Max Flow
RA	Recreation Area
RCRA	Resource Conservation and Recovery Act
ROD	Record of Decision
ROG	Reactive Organic Gases
RV	Recreational Vehicle
SCE	Southern California Edison
SEA	Supplemental Environmental Assessment
SHPO	State Historic Preservation Office
SOx	Oxides of Sulfur
USACE	United States Army Corps of Engineers
SWPPP	Storm Water Pollution Prevention Plan
µS/cm	micro-Siemens per centimeter (conductivity measurement)
USFS	United States Department of Agriculture Forest Service
USFWS	United States Department of Interior Fish and Wildlife Service
USGS	United States Department of Interior Geological Survey
VELB	Valley Elderberry Longhorn Beetle
VIC	Visitor Information Center

CHAPTER 1.0 PURPOSE AND NEED FOR THE ACTION

1.1 INTRODUCTION

Pursuant to the National Environmental Policy Act of 1969 (NEPA), as amended, this Dams and Spillway Design Refinements Supplemental Environmental Assessment (SEA) identifies and analyzes any additional beneficial or adverse potential effects that would result from the proposed design refinements to the Isabella Lake Dam Safety Modification (DSM) Project. The U.S. Army Corps of Engineers (USACE), Sacramento District, is the lead agency and the United States Department of Agriculture Forest Service, Sequoia National Forest (USFS) is a cooperating agency.

The Isabella Lake DSM Project was previously evaluated under NEPA in the Isabella Lake DSM Project Draft Environmental Impact Statement (DEIS) of March 2012, and a Final Environmental Impact Statement (FEIS) of the same title in October 2012. The DEIS described and assessed impacts of the Isabella Lake DSM Project. A Record of Decision (ROD) was issued by USACE on December 18, 2012. Several design elements were identified in the FEIS, as well as in subsequent tiered NEPA documents, that called for further refinement and clarification as additional project details were developed. This SEA provides an assessment of the proposed design refinements that were identified to best accomplish the Isabella DSM Project. Two alternatives are assessed within this document, the No Action Alternative and Alternative 2, the Proposed Action. The Proposed Action best fulfills the purpose and need of the Project.

1.2 LOCATION

Isabella Lake is situated approximately 35 miles northeast of Bakersfield along Highway 178 and one mile upstream of the town of Lake Isabella (Figure 1). Water from the Kern River is retained by Isabella Lake Dam and forms Isabella Lake in the southernmost part of the Sequoia National Forest, Kern County, California. As the most southerly of the rivers flowing into the San Joaquin Valley, the Kern River drains 2,100 square miles of the southern Sierra Nevada. The North and South Forks comprise the headwaters of the Kern River, and each fork flows approximately 90 miles from the High Sierra to their confluence, about one and one-quarter mile upstream of the dam site. Downstream of Isabella Dam, the Kern River flows through the Kern River Gorge, through the Kern Valley, and into the San Joaquin Valley.

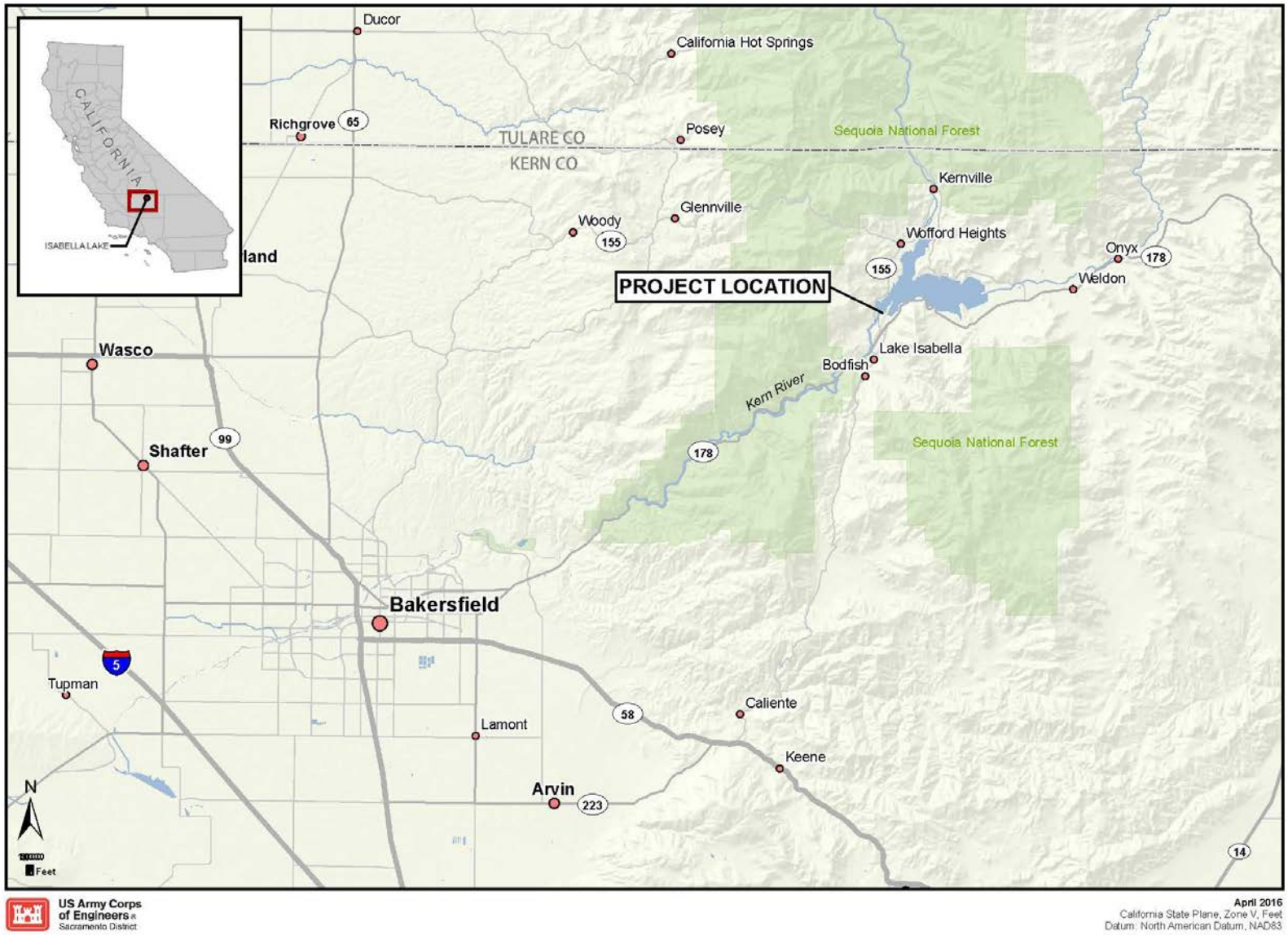

Figure 1. Project Location.

1.3 PROJECT AUTHORITY

1.3.1 Isabella Lake DSM Project Authority

The initial study for a flood reduction and water supply project on the Kern River was authorized by the Flood Control Act of June 22, 1936. Construction of Isabella Dam and Lake was authorized by the Flood Control Act of 1944, Public Law 78-534, Chapter 665, Section 10, Page 901. Additional Federal project authority is detailed in the DEIS and FEIS for the Isabella Lake DSM Project (USACE 2012a, b).

Engineering Regulation (ER) 1110-2-1156 (Final on March 31, 2014) describes the guiding principles, policies, organization, responsibilities, and procedures for implementing risk-informed dam safety program activities. This regulation also describes the dam safety portfolio risk management process that is used within USACE. The purposes of the dam safety program are to protect life, property, and the environment by ensuring that all dams are designed, constructed, operated, and maintained as safely and effectively as is reasonably practicable. When unusual circumstances threaten the integrity of a structure and the safety of the public, USACE has the provided authority to take expedient actions, such as require personnel to evaluate the threat, and design and construct a solution.

1.4 ISABELLA LAKE DSM PROJECT BACKGROUND

In 2005, USACE determined through an agency screening-level, risk assessment process that the Isabella Lake Main Dam, Spillway, and Auxiliary Dam (Isabella Dams) posed unacceptable risk to life and public safety. Based on the risk assessment, the dams received a risk classification described as “urgent and compelling (unsafe) and as “critically near failure” or “extremely high risk.” However, failure of Isabella Lake Dams is not believed to be imminent. USACE commenced a dam safety study and based on risk assessment, USACE classified the Isabella Dams as Dam Safety Action Classification (DSAC) 1 in 2008 because elements of the Isabella Dams have been determined to be unsafe under extreme loadings and could result in significant and catastrophic consequences downstream.

USACE completed a DSM Report in October 2012 (USACE 2012) that recommended remediation measures to reduce the public safety and property damage risks posed by floods, earthquakes, and seepage at the Isabella Dams. In October 2012, USACE published a FEIS for the proposed remediation of the Isabella Dams. The DEIS and FEIS described the direct and indirect impacts and cumulative effects expected to occur as a result of the remediation, including impacts to existing Federal, State, local, and privately owned infrastructure in the Isabella Dams vicinity.

The FEIS also addressed design changes to the DEIS, as follows:

- Main Dam full height filter and drain, with an approximate 16-foot crest raise;
- Retrofit of the Main Dam control tower for access with the raised dam;
- Improvements to the existing spillway;
- Construction of an approximate 300-foot wide emergency spillway;
- Auxiliary Dam modification, with an approximate 16-foot crest raise, and an approximate 80-foot wide downstream buttress, and shallow foundation treatment;
- Demolition and in-fill of the Borel Canal upstream and downstream of the Auxiliary Dam, and fill of conduit under the auxiliary dam; and
- Removal of the Auxiliary Dam control tower outside of the potentially liquefiable foundation zone; and removal of the auxiliary dam control tower.

Since the release of the 2012 FEIS, the approved plan has changed to eliminate the need for relocation of State Route 155, State Route 178, and Lake Isabella Blvd. Removal of the highway relocation from the Isabella DSM Project eliminates substantial construction activity planned in advance of the main DSM work. As a result, project costs have been reduced and environmental, economic, and human consequences have been further minimized. Structural highway changes were addressed in the SEA for the Phase II Real Estate Acquisition and Relocation, Kern County, California (USACE 2015).

In addition, the 2012 ROD for the FEIS described USACE's lack of authority to mitigate for any USFS administrative and recreation facilities adversely affected by the Project. Since that time, USACE concluded in conjunction with the Office of Management and Budget that sufficient authority exists to allow USACE to use its appropriated funds to mitigate and relocate USFS facilities impacted by the Isabella Lake DSM Project. Mitigation for USFS administrative and recreation facilities was assessed by a SEA for the USDA Forest Service Administration and Recreational Facilities Relocation (USACE 2016a). USACE previously proposed to acquire the existing easement for the Borel Canal from Southern California Edison (SCE); more recently, this has been proposed with payment of just compensation to SCE for the acquisition of its easement interest and the DSM Project's impact to ongoing SCE operations of the Borel Hydroelectric Plant (USACE 2016b).

1.5 PURPOSE AND NEED FOR THE PROPOSED ACTION

The purpose of the Proposed Action is to remediate current deficiencies at the Auxiliary Dam, Main Dam, and Spillway with design refinements applied to actions established within the 2012 FEIS. The Proposed Action is the integration of design refinements into the DSM Project. Unresolved issues were identified during the Preconstruction and Engineering Design (PED) phase of the Isabella Lake DSM Project requiring further analysis. At the time of project approval, the 2012 FEIS did not evaluate all design options of smaller magnitude. As a result, it was determined that a series of supplemental NEPA documents would be required for analysis of design refinements following the FEIS and ROD. Refinements to the designs of the DSM Project consist of developments and changes that optimize efficiency, reduce resource impacts, and lower project costs.

The need for the Proposed Action on the DSM pProject is to reduce the likelihood and associated consequences of dam failures. USACE has determined that the Isabella Dam Facilities require a suite of structural improvements in order to safely meet authorized project purposes and to reduce risk to the public and property from dam safety issues posed by floods, earthquakes, and seepage. Recent investigations determined that the Kern Canyon Fault, which passes under the right abutment of the Auxiliary Dam, is active. An offset of the fault could lead to a path for concentrated seepage, erosion, and potential dam failure. Portions of the Auxiliary Dam foundation were assessed to be potentially liquefiable in an earthquake, and seismic loading of sufficient magnitude could lead to deformations in the dam. The current spillway lacks capacity to handle major flood events, and such events have the capability to cause significant loss of life and environmental and economic impacts downstream. Remediation would reduce significant seismic, hydrologic, and seepage deficiencies at the Main and Auxiliary Dams to a level that satisfies tolerable risk guidelines, and also would fulfill the project design functions, including operation at authorized Lake capacity.

1.6 PURPOSE OF THIS SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

This SEA partially fulfills the commitment to continue NEPA assessment of the potential effects of the Isabella Lake DSM Project. Due to project complexity and unresolved design issues, the FEIS identified the need for supplemental NEPA assessments to address subsequent design refinements. As with other supplemental NEPA assessment needs identified in Section 1.9 of the DEIS and Section 1.4 of the FEIS, this SEA is tiered to the FEIS. Information and assessments that have not changed since the 2012 EIS analysis will not be restated in this SEA.

This SEA will assess design refinements of actions initially addressed within the 2012 FEIS. The design refinements evaluated here consist of: further design for Engineers Point as a material disposal site; the construction of a permanent USACE Office and Maintenance Facility; a

realignment of Barlow and Ponderosa Roads; installation of dam security features; and a realignment of the Auxiliary Dam left abutment (Figure 2). Chapter 2 of this SEA discusses the Alternatives for the proposed design refinements. Chapter 3 assesses the existing environment, affected environment, and consequences expected by implementing the proposed alternatives. Chapter 4 addresses cumulative and growth inducing effects created by proposed alternatives.

Figure 2. Isabella Lake DSM Project Area with Design Refinements.

1.7 PRIOR NEPA DOCUMENTS

Prior NEPA documents for the Isabella Lake DSM Project and supporting documents are available online at:

http://bit.ly/IsabellaDam

Hard copies of the Draft and Final Isabella Lake DSM EIS or any other prior NEPA document may also be obtained by contacting the Sacramento District Public Affairs Office, 1325 J Street, Sacramento, CA 95814; Phone (916) 557-5101; email: Isabella@usace.army.mil.

1.7.1 Draft and Final EIS Isabella Lake DSM Project

The Isabella Lake DSM Project FEIS was released for public review and comment in October 2012, and the ROD was signed on December 18, 2012. The 2012 DEIS is the primary source for detailed environmental assessment information for the Isabella Lake DSM Project, with the FEIS focusing on the preferred alternative and subsequent changes to DEIS analyses.

1.7.2 SEA Phase I and Phase II Real Estate Acquisition and Relocation

Subsequent NEPA documents, the SEA for Phase I and Phase II Real Estate Acquisition and Relocation Kern County, California, were finalized with Findings of No Significant Impact (FONSI) in August 2014 and July 2015 respectively. These documents also partially fulfilled the commitment to continue the NEPA analysis of implementing the Isabella Lake DSM Project.

- The Phase I Real Estate Acquisition and Relocation SEA (USACE 2014b) specifically evaluated the effects of acquiring affected, occupied lands and relocation of residents at the privately owned Lakeside Village Mobile Home Park. A FONSI for this action was signed August 2014. All residents with the potential to be significantly affected by the Isabella Lake DSM Project construction-related activities have been relocated.

- The Phase II Real Estate Acquisition and Relocation SEA (USACE 2015) evaluates the effects of structure demolition/disposal associated with the proposed Phase I actions, as well as the effects of acquiring additional unoccupied or unimproved lands and demolition/disposal of existing structures on all parcels affected by implementation of the Isabella Lake DSM Project. This Phase II Real Estate SEA also conducted an evaluation of the temporary relocation of the USACE Office and Maintenance Facility.

1.7.3 SEA USDA Forest Service Administration and Recreation Facilities Relocation

In January 2016, a SEA was completed to assess the proposed recreation mitigation and relocation of specific USFS administration and recreation facilities affected by the Isabella Lake DSM Project. A FONSI was signed February 16, 2016. Sites and structures assessed for mitigation of USFS facilities located in the construction footprint included a USFS administrative office, warehouse, fire station, and interim visitor center. Recreation Areas (RA) within the project footprint or which were otherwise affected, were assessed for relocation and/or new facilities construction. The SEA assessed the interim relocation of Boat Launch 19 along with permanent installation of restrooms and parking areas at the French Gulch RA; the reconfiguration of the Auxiliary Dam RA with construction of new permanent facilities to the north; construction of a new access road and additional permanent facilities in the Old Isabella Road RA; and the addition of permanent facilities to the South Fork RA. Public meetings, surveys, and a Draft Recreation Report (USACE 2016a) were utilized to obtain public and agency input on preferred facility locations and structures. The USFS approved the final sites and designs for permanent and interim structures and RAs.

1.7.4 SEA Phase III Real Estate Easement Acquisition of Borel Canal at Isabella Lake Auxiliary Dam without Replacement

A SEA (USACE 2016b) for the Real Estate Easement Acquisition of Borel Canal at Isabella Lake was finalized and a FONSI signed on April 22, 2016. This SEA assessed acquisition of the existing easement for the Borel Canal from Southern California Edison (SCE), and payment of just compensation to SCE for both the acquisition of its easement interest and the DSM Project's impact on ongoing SCE operations of the Borel Hydroelectric Plant.

1.8 DECISION TO BE MADE

The District Engineer, Commander of the Sacramento District, must decide whether or not the Proposed Action qualifies for a FONSI under NEPA, or whether a Supplemental EIS must be prepared. The Draft SEA was circulated for a 45-day public and agency review and comment period from July 5, 2016 to August 20, 2016. A mitigated Final FONSI will be circulated with this Final SEA. Mitigation cited in the FONSI is summarized in the SEA in Appendix A.

CHAPTER 2.0 ALTERNATIVES

2.1 INTRODUCTION

The following section describes the alternative development process. Other modifications and changes to the DSM Projects have been evaluated through prior NEPA documents as described in Section 1.7. The Proposed Action is also the single Preferred Alternative in this SEA, and it describes design refinements to the DSM Project. A "proposed action" may be, but is not necessarily, USACE's "preferred alternative", because a Proposed Action may be a proposal in its initial form before undergoing analysis in the NEPA process. Only two alternatives are address in this SEA due to prior assessments of proposed action in the FEIS and the narrow limitations in design parameters that could be successfully implemented.

In this SEA, the one action alternative referred to as the Proposed Action,will be assessed and compared to the No Action Alternative. The Proposed Action consists of design details that have been refined since the FEIS to best address engineering challenges with reduced effects on resources and a reduction of project costs. The design refinements were presented to USFS, a cooperative partner, for preliminary assessment in April 2016. A No Action Alternative, required by NEPA, is also evaluated and utilized as a baseline to illustrate the potential effects of not implementing the Proposed Action.

2.2 ALTERNATIVE 1: NO ACTION ALTERNATIVE

The No Action Alternative describes the future conditions that would reasonably be expected to exist in the absence of the Proposed Action, and serves as the environmental baseline against which the beneficial and adverse effects of the action alternatives are evaluated.

Under the No Action Alternative, there would be no Federal participation in remedial improvements to the Isabella Main Dam, Spillway, or Auxiliary Dam. The Operating Restriction at elevation 2,589.26 NAVD88 (356,700 acre-feet) would become permanent in order to lower the lake level to a safe elevation and capacity. Despite risk reduction measures, the Isabella Dams would still possess an unacceptable high risk of failure under the No Action Alternative. The potential environmental, economic, and human consequences of dam failure would be high at normal reservoir levels. The No Action Alternative would not fulfill the purpose and need of the proposed project as described in the 2012 DEIS and FEIS, and approved in the 2012 ROD. This alternative is further discussed in the 2012 DEIS and FEIS.

2.3 ALTERNATIVE 2: PROPOSED ACTION – DAM AND SPILLWAY DESIGN REFINEMENTS

Design refinements would be applied to structures described within the FEIS and include material disposal on Engineering Point; realignment of Barlow and Ponderosa Roads; construction of the permanent USACE Office and Maintenance Facilities; embankment realignment of the left abutment of Auxiliary Dam; and installation of dam security features. Table 1 summarizes design refinements assessed in this SEA.

Table 1. Summary of Design Refinements.

Project Action	FEIS - Isabella Lake Dam Safety Modification Project	Draft SEA -of Dams and Spillway Design Refinements
Material Disposal on Engineers Point	Material disposal was identified for 54 acres of Engineers Point.	Further definition was made for the Engineers Point disposal boundary and the quantity and composition of disposal material.
Barlow Road and Ponderosa Drive Realignment	A realignment of Barlow and Ponderosa Roads was identified as a necessity for the project.	A specific route and characteristics for the road realignment were defined.
Auxiliary Dam Left Abutment Embankment Realignment	Highway 178 realignment was identified as a necessity for the project.	A realignment to the Auxiliary Dam left abutment embankment was designed, thus eliminating the need for Highway 178 realignment.
Permanent USACE Office and Maintenance Facilities	The need for a permanent USACE Office and Maintenance Facility was identified to replace the facility affected by the project.	A site for the new facility and an alternative site were identified. Specific designs were defined.
Dam Security	The need for Dam security and force protection measures was identified.	Design refinements were made for dam security.

2.3.1 Material disposal on Engineers Point

Engineers Point was originally used as the primary source of borrow material for the Isabella Dams construction in the 1950s. Within the 2012 DEIS, Engineers Point was again identified as a source of construction material to build a temporary cofferdam upstream of the Auxiliary Dam. However, with the removal of a temporary cofferdam and the upstream berm construction at the Auxiliary Dam from project plans, the need for borrow material from Engineers Point was eliminated. The decision to remove the Auxiliary Dam upstream berm and establish a disposal area for rock waste and other soil material on Engineers Point was addressed in the 2012 FEIS (Section 2.2.5). USACE determined in the FEIS that approximately 54 acres would be established on Engineers Point to receive the unused rock material left over from the Emergency Spillway excavation. Design details and assessment to place disposal material on Engineers

Point were identified for a subsequent tiered NEPA document, which constitutes the purpose of this SEA.

Up to 1.8 million cubic yards (cy) of material (Table 2) is expected, primarily from spillway excavation, for permanent disposal over a maximum amount of 52 acres at Engineers Point (Figure 3).

Table 2. Engineering Point Material Disposal Quantities.

Site Name	Fill Volume (Cubic Yards)	Surface Area (acre)	Minimum Elevation (feet, NAVD 88)	Maximum Fill Elevation (feet NAVD 88)
South Site	1,652,000	39	2550	2715
North Site	162,000	13	2550	2635
TOTALS	1,814,000	52		

Estimated fill volume and surface area are approximate figures.

Approximately two-thirds of the disposal material would originate from the Emergency Spillway excavation and one-third is expected from the embankment and foundation excavation of the Dams. Embankment and foundation excavated material is expected to consist of approximately 25 percent fines, 70 percent sand, and 5 percent gravel and cobbles. The Spillway excavated material would consist primarily of excess blasted rock with little to no fines (less than 1 percent); 15 percent gravel and sand, and 85 percent cobbles and boulders. The average rock size deposited on Engineers Point would be approximately 12-inches in diameter, with a range of large rocks up to 36-inches in diameter and less than one percent of rock with a diameter of 48-inch to 60-inches.

Disposal material would be placed only upon the west side of Engineers Point, extending anywhere from a minimum elevation of 2,550 feet (below gross pool elevation of 2,605.5), to a maximum of 2,715 feet at the highest point. Actual material disposal quantities and placement may vary, but are not expected to exceed 1.8 million cy. Figure 4 illustrates a maximum placement of 1.8 million cubic yards. Disposal material would be placed primarily at a 3H to 1V slope (horizontal units to vertical units) with accommodation of some 2H to 1V slopes. Level topography may result at the highest elevations as indicated by tan shading in Figure 3 and 4. Two disposal sites would be utilized on Engineers Point, a north site and a south site. The south site is adjacent to Boat Launch 19, and the north site extends towards the lake center. Utilization of the two sites by the contractor is expected to provide needed flexibility for uncertain conditions due to lake level fluctuation, weather changes, and construction schedules.

Figure 3. Overhead View of Engineers Point with Projected Disposal Sites.

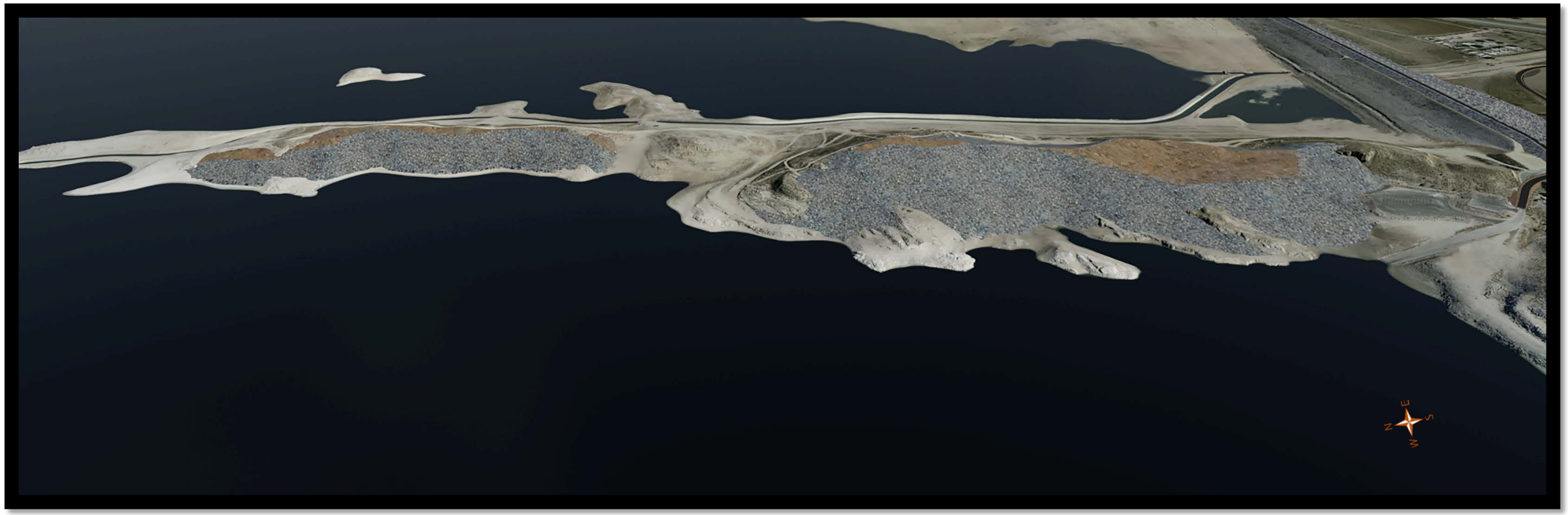

Figure 4. Engineers Point Westside Profile.

Engineers Point with a projected profile of a maximum quantity of 1.8 million cy of disposal material.
Superimposed gray area denotes deposited rock; tan area denotes level topography of deposited rock and fines.

Deposited material on lower elevations of Engineers Point would be raked to place larger rock along the shoreline to provide erosion protection and increase water oxygenation from wave action. Placement of material would create a new ridgeline, but the modified ridgeline would not exceed existing ridgeline peaks. The final slope profile would vary with material quantity and construction schedule and operation. Slope and valley contouring between the highest elevation points would again be determined by the total amount of material and the contractor's placement of that material. However, disposal material would not be placed on the unimproved road through the middle section of the peninsula between the north and south sections. Material would also not be deposited on the recreational road along the north shoreline of Engineers Point in order to provide for continued recreation passage to the western side of the point. Areas with sufficient soil substrate to support grasses would be seeded with native grasses to preclude erosion. Placement of an estimated 700,000 cy of disposal material under gross pool level would result in a water displacement of approximately 450 acre-feet from the reservoir. This amount constitutes less than one-tenth of one percent of the original storage capacity.

2.3.2 Barlow and Ponderosa Roads Realignment

Portions of Barlow and Ponderosa Roads would be realigned to provide construction access and post-construction recreational access (Figure 5) within the project area. Originally identified by the 2012 DEIS, design refinements for Barlow and Ponderosa Roads are described and assessed in this SEA. Figure 5 illustrates road alignment changes proposed for the purpose of providing appropriate access for large haul trucks and accommodation of the Auxiliary Dam abutment modifications. Approximately 1,500 feet of Ponderosa Drive would be shifted in alignment adjacent to the current intersection of Barlow Road, and over 2,500 feet of Barlow Road realignment would be graded from below the Auxiliary Dam to the new intersection with Ponderosa Drive. Approximately 26,000 cy of excavation would occur from the site, and a total of approximately 44,600 cy of fill would be placed for the road realignments. Approximately 2,200 tons of asphalt concrete would be used in road pavement. The remaining sections of Barlow and Ponderosa road not modified for the haul route would be removed, ripped, regraded, and reseeded with native grass species. Barlow Road at the toe of Auxiliary Dam would be removed with enlargement of the downstream abutment.

Permanent closure of Ponderosa Drive to public use would commence with DSM construction, beginning as early as late summer 2017 with the demolition of the Isabella Lake USFS office. A permanent gate with a vehicle turn-around would be installed on Ponderosa Drive, approximately one-quarter mile from the junction of Highway 155. Another gate would be placed at Barlow Road near the intersection of Eva Avenue. Temporary closure of Barlow Road would occur during the construction period, followed by a post-construction, permanent reopening for public vehicle access to Launch 19 and Engineers Point at the end of the DSM Project construction, which is currently estimated to be year-end in 2022.

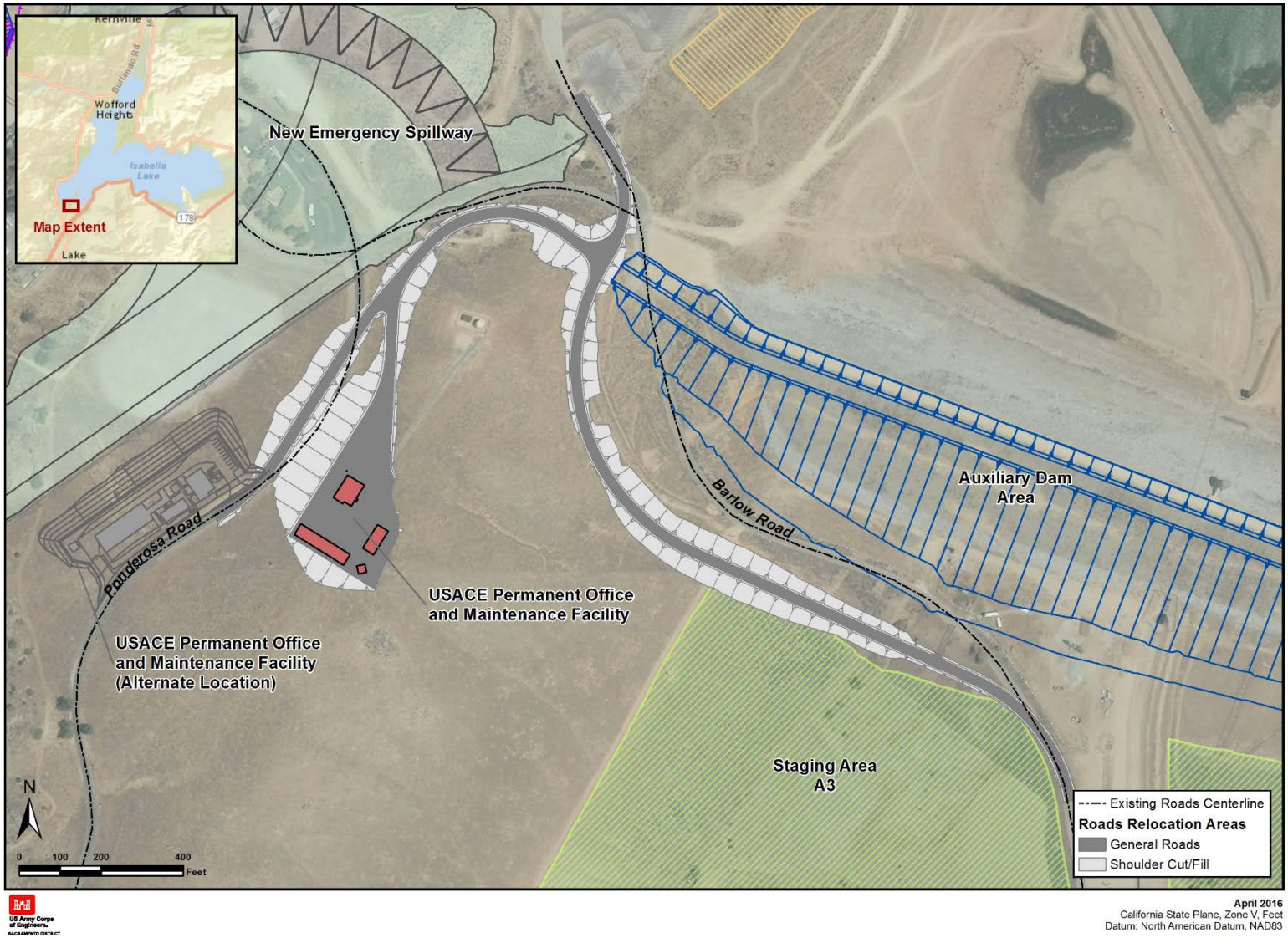

Figure 5. Proposed realignment of portions of Barlow and Ponderosa Roads.

2.3.3 Auxiliary Dam Left Abutment Embankment Realignment

The Auxiliary Dam left abutment embankment realignment (Figure 6) is a design refinement necessary to provide reservoir containment at high flood levels up to the Probable Maximum Flood (PMF). The refinement is an additional change to Auxiliary Dam modifications specified in the FEIS of 2012. Extending the left embankment of the Auxiliary Dam into the Auxiliary Dam Recreation Area (RA) eliminates the need to relocate Highway 178. As a result, this refinement enables substantial reductions in resource impacts, traffic concerns, and project costs.

Approximately 375,000 cy of piled rock material obtained from spillway excavation would be placed over a new left abutment footprint. A secondary access road upon the dam crest would be installed from the Auxiliary Dam RA entrance road for construction and maintenance access. The proposed embankment realignment ties into the existing Auxiliary Dam and then curves northward to parallel Highway 178, terminating at the entrance road to Auxiliary Dam RA and Highway 178. The height of the existing dam where realignment would tie into the current abutment is 31 feet. An additional 16 feet of rock fill is expected to be added for a total of 47 feet in height. Rock fill would extend from the left abutment and slope down to two vertical feet in height at Highway 178 and the RA entrance road. As a result, the left abutment realignment would extend 700 feet into the existing Auxiliary Dam RA facilities, including the restroom, kiosk, camp host site, and dump station. These displaced recreation facilities would be mitigated by constructing in-kind replacements further north. New facilities would be completed prior to demolition of the existing structures in order to maintain an availability of the Auxiliary Dam RA facilities for recreationists. (USACE 2016a).

The construction period for the left abutment embankment realignment is expected to extend over approximately six months, though the realignment adjacent to the RA entrance road is expected to require less than 2 months of construction time. Construction on the embankment would occur between fall of 2017 and December 2022. To reduce traffic congestion during the high summer use period from Memorial Day to Labor Day, construction directly adjacent to the RA entrance road would be limited to Monday through Thursday. Access to Staging Area A1 (Figure 6) by large construction vehicles and equipment would occur primarily via Haul Route 5 (USACE 2012b), or the upstream side of the Dam, in order to avoid recreational traffic at the Auxiliary Dam RA entrance and facilities. Staging Area A1 may be used for vehicle and equipment staging, sand processing, a sand borrow area, and/or for temporary rock storage for embankment realignment construction.

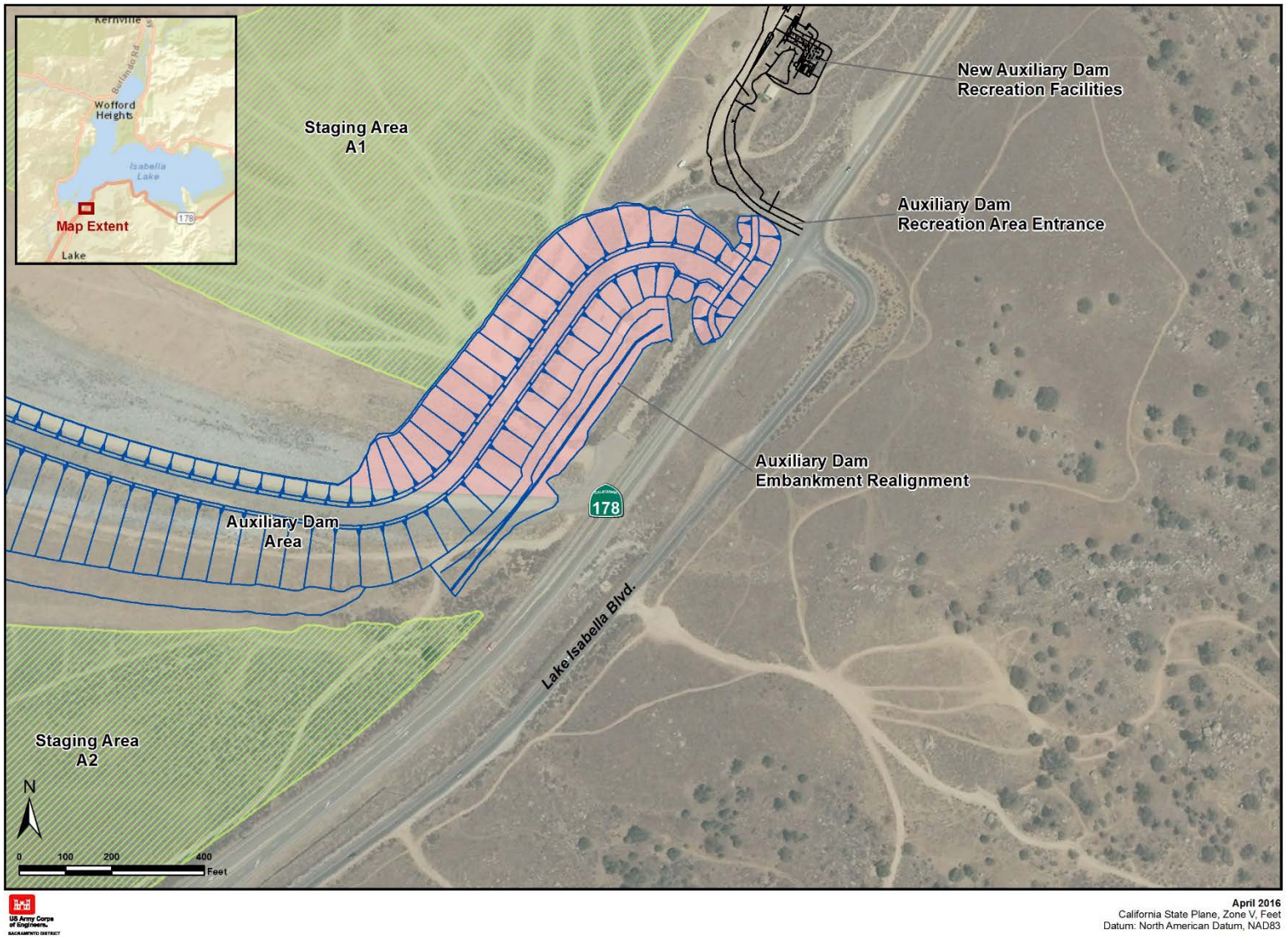

Figure 6. Auxiliary Dam Left Abutment Embankment Design Refinement.

2.3.4 Permanent USACE Office and Maintenance Facilities

A permanent USACE Office and Dam Maintenance Facility (Operations Center) would be constructed with an access off Ponderosa Drive (Figure 7) during the DSM construction, and prior to removal of the temporary USACE Operations Center. Grading would occur of an existing dirt access road with application of approximately 70,000 square feet of paving. In addition, a rectangular pad with an area of approximately 62,000 square feet would be graded and paved for the Operations Center. Four structures would be constructed at this site, including a one-story, wood frame administration building with fiber cement siding and a concrete tile roof (approximately 3,200 square feet and 17 feet in height); a three-sided metal walled and roofed storage shed (approximately 5,100 square feet and 15 feet in height); a maintenance shop (approximately 2,200 square feet) with roof top solar panels; and an enclosed flammables-storage building (400 square feet). Building surfaces would be painted earth tones to blend with landscape colors for the purpose of reducing visual contrast. Installation of an eight-foot tall fence is required for facility security. Native, drought-tolerant landscaping would be incorporated into the compound. Facility lighting would comply with the Kern County Dark Skies Ordinance. Installation of an antenna of approximately 30 feet in height would occur on the asphalt pad.

Upcoming field investigations may require that the Operations Center be relocated to an alternate site (Figure 7) for required offsets from the Kern Canyon Fault. The alternate site would be situated within 100 yards of the site described above, but on the left side of Ponderosa Drive at a lower elevation (Figure 7).

2.3.5 Dam Security

Homeland Security requires installment of Security and Force Protection Measures for the Isabella Dams. Previous security installations required for the Isabella DSM Project have been deferred as a result of the DSM Project, and design of security measures has yet to be finalized. In absence of specific plans, both the expected security measures and a projection of maximum measures that could be installed are provided below. Figure 8 illustrates an expected scenario for security installations. Security and Force Protection would be implemented for the Main Dam and Outlet Works, Auxiliary Dam, Service and Emergency Spillways, Permanent USACE Operations Office and Facilities, and RA access points to all dam structures.

Restricted public access to the Main Dam is expected, but access has not been determined for the Auxiliary Dam. To prevent vehicle access from the Main Dam Campground, two to three-foot diameter rock boulders would be placed at regular intervals to create a barrier approximately 150 feet downstream from the Main Dam toe. A similar, linear rock barrier would be installed at the downstream toe of the Auxiliary Dam and upstream of the Service Spillway and Emergency

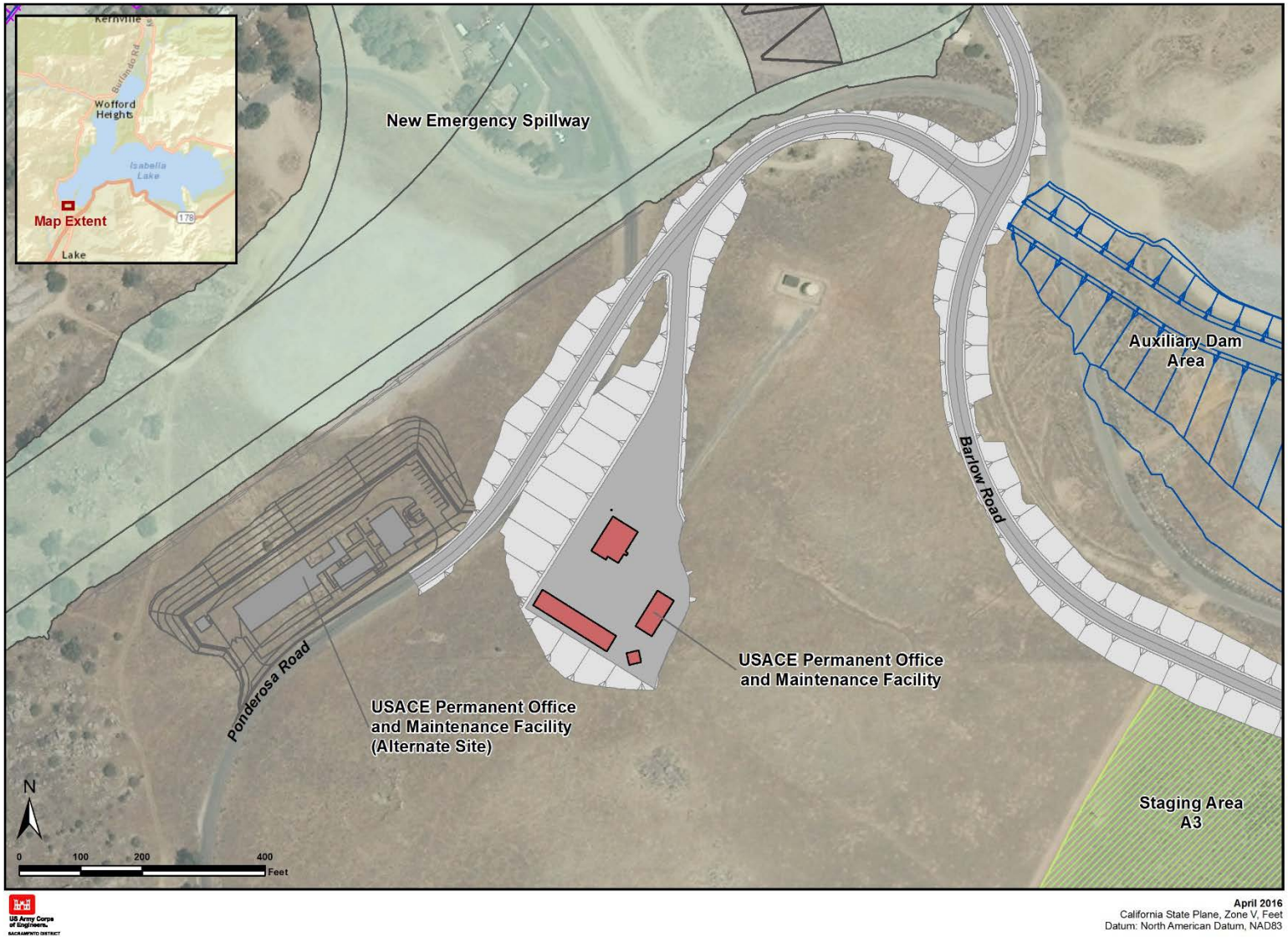

Figure 7. Permanent USACE Office and Maintenance Facility Site with Alternate Site.

Spillway. A maximum security scenario would result in installation of additional boulders around all structures, both upstream and downstream, to prevent vehicle trespass.

Security measures are expected to include ten-foot high chain link fences around the downstream perimeter of the Main Dam, erected between the rock barrier and dam structures. Fencing is intended to limit pedestrian access to the Main Dam from the Main Dam Campground. Installation of fencing would also occur around the downstream side of the Auxiliary Dam between the boulder barrier and the dam toe. Fencing is not expected but may be installed on the upstream side or crest of both Dams. Chain link fences would be placed around the perimeter of the Emergency Spillway to limit pedestrian access along steep slopes and around the permanent USACE Office and Maintenance Facilities. In a maximum protective scenario, chain link fences would extend completely around dam perimeters and pedestrian gates would remain closed.

Additional security measures that are proposed for installation include boundary signage, gates, and lighting. Gates would be installed at the Main Dam Campground, and the Auxiliary Dam to provide security or recreational access as required in response to threat levels. Gates to be installed at a future entrance to Auxiliary Dam from Barlow Road are expected to remain open for pedestrian foot access during normal operating hours, except for times of elevated threat level. Vehicle gates would be installed within a quarter mile of the lower end of Ponderosa Drive, and would remain permanently closed to public access during and after DSM Project construction. A Barlow Road entrance gate would remain open, post-construction, to the public for access to Boat Launch 19 and Engineers Point except during times of increased threat and/or high pool elevations in flood events. Additional gates may be installed for access to facilities. Security lighting would be placed on the crest of dam structures and around the USACE Office and Maintenance Facility. Illumination would be focused downward on structures to assist in meeting compliance with the Kern County Dark Skies Ordinance.

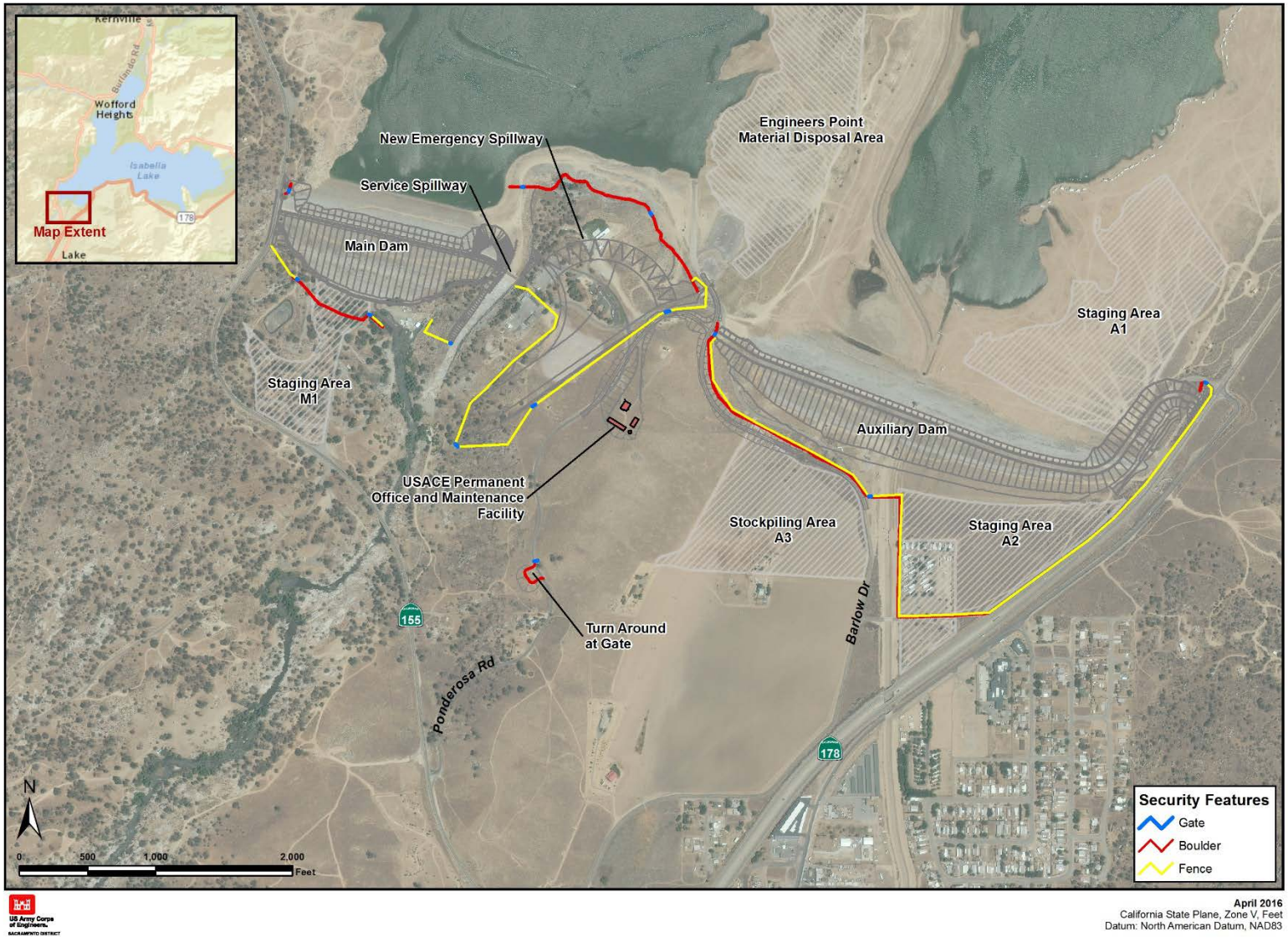

Figure 8. Potential Dam Security Features.

CHAPTER 3.0 AFFECTED ENVIRONMENT AND CONSEQUENCES

3.1 INTRODUCTION

This section describes the environmental resources in the construction footprint, as well as effects of the Proposed Action and a No Action Alternative on area resources. Each resource section presents the existing resource conditions and environmental effects. As needed, mitigation measures are proposed to avoid, reduce, minimize, or compensate for any significant effects. In determining the effects, the consequences of the Proposed Action are compared to the consequences of taking No Action. The majority of assessed effects are direct impacts and indirect impacts are additionally identified. Assessment of cumulative impacts are in Chapter 4. Effects are assessed for significance based on significance criteria, which have been established for each resource in the DEIS and FEIS.

3.2 ENVIRONMENTAL RESOURCES NOT EVALUATED IN DETAIL

Certain resources were eliminated from further analysis in this SEA because they were adequately addressed in the Isabella Lake DSM Project DEIS and FEIS, or they would not result in any new or substantially more severe significant direct and indirect effects than were initially evaluated in the Isabella Lake DSM Project EIS. A brief discussion of these resources follows.

3.2.1 Geology, Soils, and Seismicity

The Geology, Soils, and Seismicity section of the Isabella DSM Project EIS (DEIS Section 3.4 and FEIS Section 3.2) sufficiently characterizes the regulatory setting and affected environment for this resource. There have been no additional revisions, studies, or new data relevant to the discussion of the affected environment. Field explorations are in progress to determine seismic safety of the site proposed for the USACE Office and Maintenance Facilities. If the current proposed site is found to be situated directly over fault lines or has proximity to fault lines that could result in structure damage, an alternate location is available for use. Proposed structures would be constructed on terrain and in soils that lack contaminants, and are not prone to liquefaction seepage and piping. Mitigation measures specified in Section 3.4.4 of the DEIS are expected to reduce any potential geology, soils, and seismicity impacts to a level of not significant. The proposed design refinements do not present significant new circumstances or information regarding the nature and scope of effects to geology, soils, and seismicity associated with the DSM Project that would change the analysis present in the 2012 FEIS.

3.2.2 Socioeconomics and Environmental Justice

The Socioeconomics and Environmental Justice section of the Isabella Lake DSM Project EIS (DEIS Section 3.15 and FEIS Section 3.13) characterized the regulatory setting and affected environment for this resource. Criteria used to evaluate the intensity of impact on socioeconomic conditions and environmental justice were based on assessment of impacts on the demographic, economic, and social factors described within the section. A significant socioeconomic impact was defined as: 1) a long-term increase in population that could not be accommodated by regional infrastructure, reduction in the availability of affordable housing, long-term decreases in earnings, or employment affecting the regional economy; 2) long-term displacement of population or local business, or 3) loss in community facilities, events, population, or major industry. Based on these criteria, the design refinements of the Auxiliary Dam left abutment, USACE Operation buildings, realignment of Ponderosa Drive and Barlow Road, and Dam Security Facilities are not expected to cause significant effects on socioeconomics or environmental justice.

3.2.3 Hazardous, Toxic, and Radiological Waste

The hazardous, toxic, and radiological waste (HTRW) section of the DEIS (Section 3.9.1) sufficiently characterizes the regulatory setting for this resource.

An alternative would be considered to have a significant effect if it would involve substances identified as potentially hazardous by the Comprehensive Environmental Response, Compensation, and Liability Act; the Resource, Conservation and Recovery Act; and/or 40 Code of Federal Regulations (CFR) Parts 260 and 270. A significant effect would entail: 1) exposure of workers to hazardous substances in excess of Occupational Safety and Health Administration (OSHA) standards; or 2) contamination of the physical environment, thereby exposing a hazard to humans, animals, or plant populations by exceeding Federal exposure, threshold, or cleanup limits.

No HTRW is known to exist within the soil of the Proposed Action sites. Proper abatement, if necessary, in the removal of the existing restroom facilities and dumping station at Auxiliary Dam RA would be conducted by the demolition contractor prior to demolition according to County, State, and Federal regulations. The contractor would obtain all required permits and release forms prior to demolition work, from the Eastern Kern County Air Pollution Control District (EKAPCD), and from Kern County for proper disposal per Kern County Ordinance Code G-8057, which governs disposal of solid waste at Kern County waste facilities. USACE has an ongoing hazardous material safety project outlined in EM 385-1-1 Safety and Health Requirements dated November 15, 2008 which requires staff and contractors to follow Best Management Practices (BMPs). These BMPs would be implemented to prevent contamination

of the environment and provide protection of construction crews as further elaborated within the 2012 DEIS under Section 3.9.4. The proposed design refinements do not present significant new circumstances or information regarding the nature and scope of effects to HTRW associated with the DSM Project that would change the analysis present in the 2012 FEIS. With HTRW regulation compliance and integration of BMPs, no significant effects are anticipated with implementation of the Proposed Action.

3.2.4 Land Use

The Land Use Section of the DEIS (Section 3.11) sufficiently characterized the regulatory setting for this resource. An action would be considered to have a significant effect on land use if it would result in incompatible land uses with existing and planned land used in the area. An action would be inconsistent with land use designations or goals, policy or regulation, or produce a permanent conversion of prime and unique farmlands to other land uses.

The Proposed Action within the land use area of the DEIS and FEIS were determined to not result in significant permanent effects of land use. The design refinements proposed within this project are within the land area assessed by the EIS, and would not produce a permanent conversion of farmlands, nor contribute to significant effects. The Proposed Action is compatible with existing and planned land uses, and would not have a significant effect on land use. The proposed design refinements do not present significant new circumstances or information regarding the nature and scope of effects to land use associated with the DSM Project that would change the analysis present in the 2012 FEIS.

3.2.5 Noise and Vibration

The Noise and Vibration Section of the Isabella Lake DSM Project DEIS (Section 3.7) and FEIS (Section 3.6) and a Final Noise and Vibration Analysis (USACE 2012d) sufficiently characterizes the regulatory setting and the affected environment for this resource. Noise from the DSM Project was identified as a temporary significant effect within the DEIS and FEIS, and this was also acknowledged within the ROD (USACE 2012c). Mitigation measures were established for reduction of project noise and would be included within the design refinements. The Kern River Valley Specific Plan Noise Element establishes specific goals, policies, and implementation measures for noise within the Plan Area, which includes the Isabella Lake DSM Project area. The contractor would be responsible for obtaining any necessary permits or approvals from the County. USACE would require that construction activities cease on holidays and during special events. Construction upon the Auxiliary Dam left abutment realignment adjacent to the entrance road would be limited to Monday through Thursday during the summer high-use period, reducing noise impacts to recreationists and other sensitive resources. Limiting construction work to Monday through Thursday would reduce noise impacts from the levels

assessed within the DEIS and FEIS. Substitution of the Auxiliary Dam left abutment realignment for the Highway 178 realignment is expected to reduce overall noise and vibration. Removal of the Highway 178 realignment would also eliminate construction and traffic noise in the vicinity of the residential and commercial area south of Highway 178. The Proposed Action of design refinements is not expected to produce additional adverse noise to the DSM Project that would contribute to an increase of significant effects.

3.2.6 Biological Resources

The Biological Resources section of the Isabella Lake DSM Project DEIS (Section 3.10) and FEIS (Section 3.8) sufficiently characterizes the regulatory setting and the affected environment for vegetation, wildlife, wetlands, and special status species within the project area. Additional information and assessment is found in the SEA for the USFS Facilities Relocation (USACE 2016a). Construction activities associated with the design refinements would occur within the confines of the Auxiliary Dam and the DSM construction areas previously assessed for vegetation and wildlife within the DEIS (Section 3.10), FEIS (Section 3.8), and SEA for the USFS Facilities Relocation (USACE 2016a).

Since the 2012 FEIS, the United States Fish and Wildlife Service (USFWS) has designated revised critical habitat for the southwestern willow flycatcher (*Empidonax traillii extimus*) under the Endangered Species Act (ESA) (USFWS 2013b). No southwestern willow flycatcher habitat is included in the Proposed Action. On October 3, 2014, a proposed rule became effective for the USFWS determination for listing the western yellow-billed cuckoo (*Coccyzus americanus*) as a Federally threatened species protected under the ESA (USFWS 2013a). No proposed critical habitat for the western yellow-billed cuckoo is found in the Proposed Action area. On September 17, 2014, USFWS withdrew the rule to remove the valley elderberry longhorn beetle (*Democerus californicus*) (VELB). Though the VELB was not delisted, the range of the VELB was determined to be smaller than the extent proposed in the delisting rule. As a result, the counties of Kern, King, and Tulare are no longer considered within the range of the species and projects proposed in those counties no longer require consultation with USFWS for VELB conservation (USFWS 2016). Up to seven elderberry shrubs would be removed by the Barlow Road realignment. Elderberry plants are included in the riparian mitigation currently in process for the DSM Project.

USFWS also concurred (USFWS 2016) with USACE that vegetative mitigation conducted per recommendations of the Conservation Act Report (CAR) may affect, but would not likely adversely affect, Federally-listed species and critical habitat for the southwestern willow flycatcher, yellow-billed cuckoo, and least Bell's vireo. The may affect determination was due to the fact that the proposed vegetation mitigation project occurs within proposed critical habitat for the cuckoo and within designated critical habitat for the southwestern willow flycatcher; the

cuckoo, flycatcher, and vireo are known to occur within the proposed conservation areas and observations of the cuckoo, flycatcher, and vireo have occurred within the vicinity of the vegetation mitigation area. Because the vegetation mitigation project would not result in permanent impacts to riparian habitat, it is scheduled to avoid the nesting season and would result in an increase of riparian habitat, the USFWS believes that any potential affects to the cuckoo, flycatcher, and vireo would be discountable and would benefit these species due to a net increase of suitable riparian habitat.

Invasive and native grasses and shrubs would be removed for the realignment of Ponderosa Drive and Barlow Road. Vegetation in the amount of approximately 62,000 square feet would be removed for the USACE Office and Maintenance Facilities, and up to thirty-seven acres would be removed for the Auxiliary Dam abutment realignment. No additional special status wildlife or plants species were identified during an April 2016 survey conducted along the Barlow and Ponderosa Roads, and in the Auxiliary Dam embankment realignment site. No wetlands are present within the project area where design refinements would occur.

In compliance with the Migratory Bird Treaty Act, protections would be applied to project areas and adjacent habitat affected by construction activity, as detailed by the SEA for the USFS Facilities Relocation (USACE 2016a). Impacts upon biological resources would be reduced with the elimination of the Highway 178 realignment proposal and substitution of the Auxiliary Dam left embankment realignment to provide for flood containment. Soils disturbed by the project would be seeded with native grasses, and the contractor would be required to take measures to preclude the import of non-native plant material (USDA Forest Service 2005).

No substantial loss, degradation, or fragmentation of natural vegetative communities or wildlife habitat is expected from the Proposed Action, nor would interference occur with movement of resident or migratory wildlife species. Vegetation, wildlife, wetlands, and special status species would not incur adverse or significant impacts from the proposed design refinements. The proposed design refinements do not present significant new circumstances or information regarding the nature and scope of effects to biological resources associated with the DSM Project that would change the analysis presented in the 2012 DEIS and FEIS.

3.2.7 Air Quality

The Air Quality Section of the DEIS (Section 3.5), FEIS (Section 3.3) and the Regulatory Section in the Air Quality analysis (Appendix F of the FEIS) sufficiently characterize the general regulatory setting and the affected environment for this resource. Greenhouse gases (GHG) were assessed in the DEIS (Section 3.5.2) and within the FEIS (3.3.2). Substantial reductions in projected DSM Project emissions and GHG from the assessment in the DEIS have been afforded by the removal of several proposed high-emission producing actions including Highways 178

and 155 relocation, upstream Auxiliary Dam buttress fortification, and use of the South Fork Delta Area as a sand borrow source.

A change in Tier equipment requirements would be enacted for the purposes of DSM Project construction flexibility. Exceptions would be considered for use of lower Tier equipment, instead of Tier 4 equipment, for the DSM Project in extenuating circumstances. USACE would approve exceptions on an individual basis when Tier 4 equipment for the DSM Project cannot be purchased or leased by the contractor, and a written request from the Contractor fully documents the unavailability of Tier 4 equipment and the emissions output. This action could increase emissions, but the increase is expected to be negligible, temporary, and would not contribute towards exceedance of Federal or EKAPCD thresholds.

Since the release of the FEIS, the EKAPCD has adopted amendments to Rule 402 (Fugitive Dust) at the District's Regular Board of Directors Meeting held March 12, 2015. These amendment changes are through EKAPCD to the Environmental Protection Agency (EPA) for incorporation as part of the California State Implementation Plan, and would constitute a revision to the State Plan. Design refinements since the DEIS and FEIS have reduced the amount and duration of DSM Project construction actions, resulting in a reduction of fugitive dust production.

The Isabella Lake DSM Project has adopted the most recent amendments to EKCAPD's Rule 402 to reduce potential air quality impacts from fugitive dust. Rule 402 provides flexibility in applying rules, but the FEIS (Section 3.3.2) stated that a 15 mile per hour (mph) speed limit would be utilized to meet Rule 402. In addition, the FEIS stated that construction-related earth disturbing activities would discontinue with a 20 mph wind speed. However, neither a 15 mph speed limit nor a 20 mph wind limit is a prerequisite for compliance with the most recent amendments to Rule 402. Wind speed construction limits do not necessarily achieve Rule 402 thresholds, and a speed limit comprises only one available option to meet thresholds. To utilize the flexibility provided by Rule 402, 15 mph speed limits signs would not be posted, unless the contractor chooses to utilize this option to meet Rule 402. To comply with the Rule 402 threshold of visible dust emissions to 20% opacity with less than 50% porosity, physical measurement of opacity and porosity will be utilized. Appropriate Rule 402 options would be utilized on an individual basis by the contractor to meet threshold compliances. No additional effects are expected from the removal of a 15 mph speed limit or a 20 mph wind speed limit since the thresholds would be met by alternate and specified Rule 402 methods. Any dust palliatives used for the control of fugitive dust would be non-toxic, biodegradable, and approved by the USACE Contracting Officer.

The proposed design refinements do not present significant new circumstances or information regarding the nature and scope of effects to air quality and GHG associated with the

DSM Project that would change the analysis present in the 2012 FEIS. Compliance with EKAPCD rules and thresholds, and implementation of the applicable BMPs, would minimize air quality effects to a less-than-significant level.

3.3 RECREATION

3.3.1 Regulatory Setting

The recreation section of the DEIS (Section 3.12.2) characterizes the regulatory setting for this resource. The DEIS and FEIS assessed the potential effects of the Isabella Lake DSM Project on recreation facilities and opportunities as significant to recreational use on a temporary and permanent basis. Since the release of the EIS, USACE, in coordination with the Office of Management and Budget, concluded that sufficient authority from a 1964 Memorandum of Agreement (MOA) exists to allow USACE to use its appropriated funds to relocate in-kind services of USFS facilities impacted by the Isabella Lake DSM Project. With these mitigations, permanent and temporary loss of recreation facilities would not occur, though adverse effects may occur to recreation use during construction actions. The Proposed Action of the SEA for the USFS Administration and Recreational Facilities Relocation (USACE 2016a) assessed the relocation of the permanent recreational facilities. Construction of the Proposed Action would mitigate the loss of current Auxiliary Dam Recreation Area (RA) facilities and camping acreage.

3.3.2 Existing Conditions

The DEIS (Section 3.12.3) and the SEA of the USFS Facilities Relocation (USACE 2016a) sufficiently details the existing condition of Isabella Lake recreation.

3.3.3 Effects

Basis of Significance

An action would be considered to have a significant effect on recreation if it would:

- Result in a permanent loss of recreational opportunities or resources;
- Severely restrict or eliminate access to recreational opportunities and facilities;
- Cause a substantial disruption in a recreational use or activity; or
- Substantially diminish the quality of the recreational experience.

No Action

Under the No Action Alternative, there would be no Federal participation in remedial improvements to the Isabella Main Dam, Spillway, or Auxiliary Dam. The Operating Restriction at elevation 2,589.2 NAVD88 (356,700 acre-feet) would become permanent. Initiated by USACE in 2006, the Operation Restriction was intended as an emergency deviation from the Water Control Plan in order to lower the lake level to a safer elevation and capacity. It is possible that without dam safety modifications to reduce the risk of dam failure and life safety concerns, the Operating Restriction would be modified and further reduce the lake level. However, despite risk reduction measures, the Isabella Dams would still possess an unacceptably high risk of failure under the No Action Alternative. The potential environmental, economic, and human consequences of dam failure would be extremely high.

Under the No Action Alternative, USACE would not mitigate for impacts of the Isabella Lake DSM Project because construction would not be conducted, and project related impacts would not occur on USFS administration and recreation facilities. Reduced lake levels to maintain the Operating Restriction for dam safety purposes may have an adverse effect on recreation aesthetics and water-based recreation such as rafting and fishing. Fishing success has been related to high lake water levels (DEIS Section 3.12.2).

Proposed Action

The design refinements of this SEA propose to modify the Auxiliary Dam left abutment alignment by extending the abutment over the existing restroom, kiosk, and camp host site of the Auxiliary Dam RA. As mitigation for this action, new Auxiliary Dam RA facilities would be constructed north of the abutment realignment, and additional land area would be provided to compensate for temporary loss of camping acreage (USACE 2016a). Project construction is also expected to utilize Staging Area A1. As stated within the FEIS, Staging Area A1 could function as an equipment and vehicle staging area, a sand borrow area, and a possible sand processing plant for the DSM Project. Because Staging Area A1 would border the new Auxiliary Dam RA boundary and facilities, and the Auxiliary Dam realignment abuts the vehicle entrance to the RA, temporary and direct effects to recreationists could result.

Recreation-based congestion occurs at Auxiliary Dam RA throughout summer months during the highest public use of Isabella Lake Recreation Areas. Existing turn lanes on Highway 178 for the Auxiliary Dam RA entrance would provide the safest access to the new dump station to be located at the Old Isabella Road RA. However, public concern exists regarding potential congestion from combined recreation uses accessing this entrance road. Additional use of the RA entrance road and Staging Area A1 by construction vehicles and equipment may add to temporary direct and indirect recreation impacts at the new Auxiliary Dam RA facilities.

Auxiliary Dam realignment construction adjacent to the RA entrance road may require active traffic control. As necessary, traffic and safety management would be conducted by the DSM Project contractor while rock is placed adjacent to the RA access road for Auxiliary Dam embankment construction. Construction at this junction is not expected to exceed a month, but active work could generate temporary and direct impacts of noise, traffic congestion, and adverse visuals during recreationists' camping experience. Construction of the remainder of the abutment would be conducted at an increasing distance from the new Auxiliary Dam RA, but noise and the physical presence of the construction equipment may cause annoyance to recreationists. Noise generated during non-exempt hours could result in annoyance or sleep disruption to campers. The recreation experience could be further impacted by introducing new sources of construction lighting for safety and illumination. Construction may also generate dust from the movement of vehicles, soil excavation, and wind blowing across exposed soil, but dust control measures would be implemented.

Recreation could be indirectly impacted by the increased construction traffic in and around the lake. Noise and visual effects from construction operations could affect the new Auxiliary Dam RA facilities (camp host site, restrooms, kiosk and access road) due to its proximity to the construction boundary. The DEIS and FEIS assessed that the camping experience during construction could result in reduced visitation to this area of the lake over time as campers seek other areas for a higher quality camping experience. The Auxiliary Dam realignment construction could contribute to this indirect effect. Despite these temporary impacts, the Proposed Action enables removal of a prior proposal to relocate Highway 178, which would have generated substantially greater recreation impacts. The new design refinements are expected to result in reductions in noise, visual contrast, air quality, traffic congestion, and project longevity compared to prior DSM Project designs within the DEIS and FEIS.

To preclude conflict between construction work and recreational access, Auxiliary Dam realignment construction bordering the RA entrance road would be limited to Monday through Thursday for the high-use recreation period from Memorial Day to Labor Day. Construction would also not occur during holidays and the Fishing Derby weekend. Additional recommendations would be made to the contractor to focus construction during periods of low recreation use in the winter months, late fall, and early spring.

To avoid conflict between recreation and construction vehicles, large trucks and equipment would access the Auxiliary Dam abutment by the H5 haul route or alternate route instead of the RA entrance. Construction access through the Auxiliary Recreation entrance would be limited to small vehicles and trucks; other construction related vehicles and equipment would be permitted on an individual basis by the Contracting Officer. In order to reduce potential noise and visual conflict, the Staging Area boundary would be shifted approximately 100 feet further west from the Auxiliary Dam RA restrooms, kiosk, and camp host facility adjacent to the Staging Area A1

boundary. The contractor would install signing and solid or blanketed fencing adjacent to the new RA facilities to define construction boundaries and reduce potential impacts resulting from noise, construction visuals, and fugitive dust. Incorporating mitigations for the Auxiliary Dam realignment construction is expected to reduce effects to less-than-significant with mitigation.

Installation of Dam Security Features such as chain link fences and rock barriers is expected to reduce pedestrian and vehicle access to the Dams, and would reduce accessible acreage at the Main Dam Campground. Installation of a gated closure on Ponderosa Drive would not limit post-construction public access to the USFS Visitor Center or Boat Launch 19 as it would remain accessible by Barlow Road. Boat Launch 19 would become accessible to the public through Barlow Road after the DSM Project is completed. Barlow Road realignment would provide new asphalt surfaces and improved road safety for public vehicles towing boats to Boat Launch 19. The current USFS Visitor Information Center (VIC) would be demolished as part of the Emergency Spillway construction, and preceding demolition, an interim VIC would be constructed at the new USFS engine station located on Lake Isabella Blvd. Relocation of the USACE Office and Maintenance Facility off of Ponderosa Drive is not expected to cause significant effects to recreation users in addition to those specified by the FEIS. The effects of road realignments, the USACE Operations facility, and security installations would be less-than-significant with mitigations.

The DSM Project with the proposed design refinements would not result in a permanent loss of recreational opportunities or resources, or severely restrict or eliminate access to recreation opportunities and facilities. Temporary disruptions in recreational activity, and reductions of the quality of the recreational experience may result from the DSM Project as described in the DEIS and FEIS. The Design Refinements would serve to reduce project effects to recreation by reducing the period of construction traffic and noise, and would not create additional impacts to the DSM Project that are significant. The substitution of the Auxiliary Dam abutment realignment for the Highway 178 realignment is expected to reduce overall negative effects upon recreation. Incorporation of mitigation measures in this document, in addition to those specified in the DEIS and FEIS, would contribute to reduce construction impacts to less-than-significant.

3.3.4 Mitigation Measures

1. Construction access through the Auxiliary Recreation entrance would be limited to small vehicles and trucks; other construction related vehicles and equipment would be permitted on an individual basis by the Contracting Officer.

2. Construction of the Auxiliary Dam left abutment realignment adjacent to the RA entrance road would not be conducted Friday through Sunday during the high recreation use

periods of Memorial Day through Labor Day; on holidays, and during the Fishing Derby event.

3. Fencing, signage, and other appropriate methods of distinguishing construction boundaries for the public would be employed by the contractor to reduce recreation conflicts. Solid or blanketed fencing would be utilized at the Staging Area A1 boundary adjacent to the new Auxiliary Dam RA facilities.

4. Recommendations would be made to the contractor to schedule construction events outside the high recreation use periods, and to locate impacting construction actions away from the RA boundary. This mitigation measure is in addition to those specified in the FEIS and DEIS.

5. An increased buffer of approximately 100 feet would be created between Staging Area A1 and the new Auxiliary Dam RA road access, restroom facilities, kiosk, and camp host site. This mitigation measure is in addition to those specified in the FEIS and DEIS.

6. A Traffic Safety Management Plan in accordance with Caltrans California manual on Uniform Traffic Control Devices would be completed by the contractor prior to commencement of construction activities as specified in the DEIS and FEIS. The Plan would also address reduction of traffic conflicts at the Auxiliary Dam RA. This mitigation measure is in addition to those specified in the FEIS and DEIS.

3.4 AESTHETICS AND VISUAL RESOURCES

3.4.1 Regulatory Setting

There are no known Federal, State, or local regulation governing the visual resources associated with the many natural and scenic resources in the Kern River Valley and Isabella DSM Project area. The Sierra Nevada range is composed of prominent ridgelines, canyons, lakes, rivers, and extensive forests. These resources are valuable to the identity and economy of the valley by enhancing the visual character of local communities and providing distinguishing characteristics. The conservation element of the Kern River Valley Specific Plan includes goals, policies, and implementation actions for scenic resources and light pollution in order to preserve these visual resources in the Kern River Valley. Also, the open space and recreation element contains an open space/watershed goal to preserve open space as a visual and environmental resource and to maintain the rural atmosphere of the valley (Kern County 2011).

3.4.2 Existing Conditions

The Aesthetics and Visual Resources Section of the DEIS (Section 3.13), FEIS (Section 3.11), and the Final Aesthetic Resources Analysis of the Proposed Action sufficiently characterize the regulatory setting for this resource.

3.4.3 Effects

Basis of Significance

An action would be considered to have a significant effect on aesthetics and visual resources if it would:

- Result in a complete modification of scenic resources;
- Severely limit or fully screen existing scenic viewsheds, or;
- Substantially diminish the quality of the existing scenic attractiveness.

No Action Alternative

Under the No Action Alternative, there would be no Federal participation in remedial improvements to the Isabella Main Dam, Spillway, or Auxiliary Dam. The Operating Restriction at elevation 2,589.26 NAVD 88 (356,700 acre-feet) would become permanent. Initiated by USACE in 2006, the Operating Restriction was intended as an emergency deviation from the Water Control Plan in order to lower the lake level to a safe elevation and capacity. It is possible that without the DSM Project to reduce the risk of dam failure and life safety concerns, an Operating Restriction may further reduce the lake level. However, despite risk reduction measures, the Isabella Dams would still possess an unacceptable high risk of failure under the No Action Alternative.

The timing and nature of a potential dam failure cannot be specified, but the loss of one or both dams would likely flood areas between Isabella Lake and Bakersfield. The catastrophic loss of dams would cause a significant long-term alteration of the visual landscape for the Isabella Lake basin, as well as the San Joaquin Valley, due to flooding of the areas between Isabella Lake and Bakersfield. This would be considered a significant adverse impact on visual resources. Under the No Action Alternative, the Isabella Lake DSM Project would not occur and as a result, the proposed design refinement actions would not take place. Reduced lake levels to maintain the Operating Restriction for dam safety purposes could have an adverse effect on recreation-based aesthetics.

Proposed Action

Overall Design Refinement Project Area

Construction would disturb the ground surface by removing low-growing vegetation, changing topography, and by altering drainage patterns. These surface disturbances would temporarily affect visual resources by creating exposed soil across the landscape with a different texture and color. A border of vegetation would appear along roads and around work areas due to water run-off, providing a contrasting visual to adjacent roads and work areas lacking vegetation. Road lines would abruptly divide the landscape viewshed due to lack of vegetation and altered natural topography lines.

Construction would affect visual resources by adding a noticeable level of contrast and motion from construction equipment activities, vehicles and delivery of construction materials to areas that previously incurred low activity. Supplies and equipment could create visual clutter. Also, the color of construction equipment and vehicles could contrast with muted tans, greys, and greens of the terrain and vegetation. The regular and geometric forms of newly constructed structures could contrast with the rolling form of the terrain, natural rock strata, and the scattered vegetation. Rigid vertical elements could create various focal points on a mostly open landscape and would not mimic other landscape elements, which are mostly vegetation and large rock. However, the newly constructed features would maintain visual consistency with the existing dam structures.

Auxiliary Dam Left Abutment Embankment Realignment/Auxiliary Dam Recreation Area

Auxiliary Dam design refinements would extend the embankment of the left abutment into the Auxiliary Dam RA (Figure 6). The left abutment embankment realignment would not result in a total modification of the views from the Auxiliary Dam RA Campground or from the water between Engineers Point and the Auxiliary RA shore. The existing views to the hills and mountains south of the Auxiliary Dam would be retained; however, the observer's viewing experience from the water or at the campground could be minimally obstructed in the immediate background (up to four miles) when the viewer is in the immediate foreground (300 feet away). As the viewer moves into the middle ground (1/2 mile to 4 miles) from the Auxiliary Dam, the dam raise would be absorbed into the existing scenic viewshed due to the large scale of wide open views within the Isabella Basin.

The new left abutment footprint would include approximately 375,000 cy of rock fill, extending 700 feet into the existing Auxiliary Dam RA Campground. The height of the existing dam where realignment would tie into the current abutment is 31 feet. An additional 16 feet of

rock fill is expected to be added for a total of 47 feet in height, which would slope down to two vertical feet in height at Highway 178 and the Auxiliary Dam RA access road. A new visual feature would be created as a result, but the location and proximity of the new abutment realignment would not completely block views or dominate the landscape except at the entrance road. The new visual surface would match the existing Auxiliary Dam surface textures and colors. Views to the south and west from Highway 178 would be similar to views from the Auxiliary Dam RA.

Engineers Point

Engineers Point would receive up to 1.8 million cy of material over a maximum of 52 acres on the western side. The fill material could create saddles or level topography, but would not exceed the highest elevation of Engineers Point. The rock fill would be noticeable to the observer on the eastern side from the immediate foreground when viewed from the east at Auxiliary Dam RA and Highway 178 due to the contrasting textures and fill lines. The new fill lines would diminish as the observer travels further away from the eastern site of Engineers Point. The new feature would not obscure the existing viewshed perspectives within the Isabella Basin.

The rock disposal on the western side of Engineers Point, as viewed from the Lake surface in the immediate foreground or from the French Gulch foreground, would create a new contrasting visual feature in the landscape (Figure 9). When viewed from the water close to Engineers Point, the rock fill massing on Engineers Point could present an austere and monolithic appearance devoid of vegetation. The color, texture, and form of the rock material in the fill areas, however, would be consistent with the rock material used to armor the Main Dam with the exception of the occasional larger boulder. Though the disposal material would constitute a new feature, the materials would blend and retain austere muted colors and textures of the surrounding Isabella Basin. The new fill lines and textures would become less distinctive as the observer moves further away from Engineers Point into the background. The material disposal on Engineers Point would not obscure the existing viewshed perspectives within the Isabella Basin.

Permanent USACE Office and Maintenance Facilities

The office and maintenance building, fence, and antenna would be visually prominent to an observer in the immediate foreground, at the vantage point of Ponderosa Drive and Barlow Road. The use of native landscape plantings would contribute towards screening and blending the maintenance facilities into the surrounding landscape, though the planting would not completely hide all the contrasting features; the antenna would remain visible to observers in the immediate

foreground. The alternate site for the facility is situated at a lower elevation and visual prominence would be reduced.

The remaining observation points of the USACE Office and Maintenance Facility are located in the middle ground (1/2 to 4 miles away) or background (4 miles to horizon). At these distances, the perspective of the facilities would be absorbed into the existing scenic viewshed due to the large scale of wide open views within the Isabella Basin. Office and Maintenance Facilities would not be highly noticeable or apparent.

Road Realignments

The proposed construction features would require the realignment of sections of Ponderosa Drive and Barlow Road. The abandoned road sections (approximately 1100 linear feet) would not remain (Figure 8), but would be re-graded, ripped, and seeded with native grasses. The new road sections would be moved proportionally to accommodate the newly constructed features. The road cuts and associated grading would be visible in the immediate foreground following construction until the side cuts re-vegetate. The abandoned road sections would be visible to observers in the immediate foreground traveling on Barlow Road or Ponderosa Drive. The new road cuts and abandoned roads would not be apparent in the middle ground or background.

Dam Security Measures

Security and Force Protection would be implemented for the Main Dam and Outlet Works, Auxiliary Dam, Service and Emergency Spillways, Permanent USACE Operations Office and Facilities, and Recreation area access points to all Dam structures (Figure 8).

The fencing and boulder security measures at the dam facilities would be evident to observers in the immediate foreground (0 to 300 feet). The fencing is chain link and would not create a continuous visual barrier to the elements beyond the fencing. The view of the proposed security fencing would be absorbed into the landscape as the observer moves into the distance at the foreground, middle ground, and background observation perspectives.

The DSM Project with proposed design refinements would create new visual features in the landscape. However, the surfaces of the project components would be consistent with the appearance of existing structures with a uniform and consistent material, which would blend into the existing Isabella Basin landscape. Importantly, while the project may create temporary visual alterations and introduce new visual features into a highly disturbed area, the long-term benefits of the project would help to reduce the likelihood of visual disaster from a possible dam failure. The project would not result in a complete scenic resource modification, severely limit

Figure 9. Projected Southeast View to Engineers Point from French Gulch Recreation Area showing maximum disposal amount of 1.8 million cy.

or fully screen existing scenic viewsheds, or substantially diminish the quality of the existing scenic attractiveness. Therefore, the DSM Project with proposed design refinements does not present a significant visual and aesthetic effect to the Isabella Basin.

3.4.4 Mitigation Measures in Addition to the EIS

The following mitigation measures would be incorporated into the project:

1. On-site natural materials would be used to armor the dams and provide security boulders.

2. Fill on Engineers Point would not exceed the existing highpoints.

3. New building surfaces would be painted with local earths tones to blend with the surrounding landscape. Native, drought-tolerant landscaping would be incorporated to provide screening and blending into the surrounding landscape.

3.5 WATER QUALITY

3.5.1 Regulatory Setting

The Water Resources Section of the Isabella Lake DSM Project DEIS (Section 3.6.1) sufficiently characterizes the regulatory setting for this resource.

3.5.2 Existing Conditions

The Water Resources Section of the Isabella Lake DSM Project DEIS (Section 3.6.2) sufficiently characterizes the affected environment for this resource. There have been no additional revisions, studies, or new data relevant to the discussion of the affected environment.

3.5.3 Effects

Basis of Significance

A significant adverse effect on water quality would result if water quality were substantially degraded; a public water supply was contaminated; ground water resources were substantially degraded or depleted; interference occurred with ground water recharge; or special status species or humans were exposed to substantial pollutant concentrations.

No Action

In accordance with ER 1110-2-1156 (Safety of Dams – Policy and Procedure), the Interim Risk Reduction Measure elevation of 2,589.26 feet NAVD 88 would become the permanent operating level. However, based on USACE studies, one or both dams have unacceptably high risk. The timing and nature of a potential dam failure cannot be specified, but the loss of one or both dams would likely flood areas between Isabella Lake and Bakersfield and beyond. This would substantially degrade water quality, contaminate water supply, and expose humans or special status species to substantial pollutant concentrations. The No Action Alternative would have a significant, long-term adverse effect to water quality.

Proposed Action

The material excavated for the emergency spillway would be tested for suitability of placement at Engineers Point. Placement of material on Engineers Point would reduce the potential for adverse effect. Placement above or below the Ordinary High Water Mark (OHWM) would be permitted differently through the Central Valley Regional Water Quality Control Board (CVRWQCB). Special considerations would be made based on the behavior and characteristics of the material placed on Engineers Point. The duration of in-water work would be minimized to reduce adverse impacts to water quality. Rainfall prior to slope stabilization could lead to increased sediment runoff into the lake. Turbidity and dissolved oxygen (DO) levels could be temporarily impacted by sediment-laden runoff from Engineers Point. Any adverse effects during construction from the placement of material at Engineers Point would be reduced to less-than-significant through the use of BMPs. Post-construction stabilization BMPs would minimize adverse effects from this action.

The realignment of the Auxiliary Dam left abutment would consist of approximately 375,000 cy of piled rock material obtained from spillway excavation. Design refinements to the Auxiliary Dam left embankment abutment would have similar water quality impacts as the design detailed in the DEIS and FEIS. The embankment construction would result in an increase to the amount of sediment susceptible to erosion due to an increased embankment footprint. Rainfall prior to slope stabilization could lead to increased sediment runoff into the lake. However, the use of BMPs and compliance with CVRWQCB Section 401 thresholds would reduce impacts to less-than-significant levels during construction. Long-term slope stabilization measures would prevent adverse impacts to water quality post-construction. The USACE Section 404(b)(1) evaluation has been updated to address the design refinements (Appendix C).

Mitigation required for the design changes outlined in this SEA would be the same as those proposed in the DEIS and FEIS (Table 3-125 and Sections 3.4 and 3.6.4 respectively). Long-term BMPs would reduce impacts to less-than-significant by attempting to retain storm water on site. The water quality management plan would also contain a contingency plan in the event that

water quality thresholds are unable to be met during in water work activities. If the current level of mitigation does not provide for protection of aquatic resources, affected work would be discontinued until measures are applied to ensure protection. Also, project work affecting any exceedance of CVRWQCB Section 401 thresholds would cease until resolution is conducted to ensure that the project can meet Section 401 Certification thresholds. During construction, USACE would continuously provide quality assurance monitoring of DO, pH, conductivity, temperature, and turbidity at a compliance point located in the reservoir. The contractor would be responsible for monitoring of temperature, pH, conductivity, turbidity, DO, total dissolved arsenic, total dissolved uranium, and settleable material, at a frequency determined in the Section 401 certification. BMPs including, but not limited to, silt curtains, silt fences, as well as other BMPs and construction methods approved by the CVRWQCB to control sediment would be used to ensure compliance with water quality standards.

The proposed design modifications would result in the disturbance of more than one acre; therefore, the contactor would be required to obtain a National Pollution Discharge Elimination System (NPDES) storm water permit (Section 402 of the Clean Water Act (CWA)) from the CVRWCB. The Construction Storm Water Permit covers storm water discharges from construction sites discharging to waters of the United States. A Storm Water Pollution Prevention Plan (SWPPP) is typically required under this permit and would be the responsibility of the contractor. The SWPPP would be designed prior to groundbreaking and include necessary BMPs to prevent potential pollutants from leaving the construction site during a storm event. Fugitive dust control measures are also included as part of the SWPPP. The contractor would be responsible for implementing, maintaining, and monitoring BMPs during material placement and stabilization. In addition, the contractor would monitor storm water runoff discharge from representative areas. All storm water discharge would be subject to numeric action levels for pH and turbidity. The numeric action level for turbidity is 250 NTU, and for pH it is less than 6.5 or greater than 8.5 per the NPDES standards for stormwater runoff.

The design refinements to relocate Barlow and Ponderosa Roads could result in temporary adverse effects to storm water runoff quality during construction; however, BMPs would reduce these impacts to less-than-significant. No post-construction impacts to water quality are anticipated to result from these realignments. The construction of the Permanent USACE Office and Maintenance Facilities would result in impacts during construction from soil surface disturbance. Similar to Engineers Point material disposal and the Auxiliary Dam left embankment realignment, mitigation for roads and the Operations Center would consist of temporary storm water BMPs and long-term BMPs. The effects resulting from this action would be less-than-significant with the inclusion of BMPs. The increase in impervious area resulting from the buildings and parking lots could increase the amount of run-off at the site. The proposed dam security measures are not expected to have adverse effects to water quality with the mitigations listed and would not be significant with mitigation.

3.5.4 Mitigation

- As stated within the DEIS and FEIS, USACE would comply with project specific CVRWQCB Section 401 certification during all in-water work activities. As required by the Section 401 certification, the contractor would be required to submit a water quality management plan that identifies mitigation control measures related to management of in-water BMPs to meet the State water quality thresholds. This plan would include a project specific SWPPP that would identify specific BMPs that would be used during construction.

- During construction, USACE water quality specialists would continuously provide quality assurance monitoring of DO, pH, conductivity, temperature, and turbidity at a compliance point located in the reservoir. The contractor would be responsible for monitoring temperature, pH, conductivity, turbidity, DO, total dissolved arsenic, total dissolved uranium, and settleable material at a frequency determined in the Section 401 certification. BMPs including but not limited to silt curtains, silt fences, as well as other BMPs and construction methods approved by the CVRWQCB to control sediment would be used to ensure compliance with water quality standards.

- The contractor would also prepare a Rock Material Disposal Management Plan as discussed within the DEIS for rock placement below the Isabella Lake OHWM at Engineers Point. The plan would include BMPs for avoiding and minimizing impacts on water quality around the perimeter of Engineers Point by the placement of larger rocks and boulders as an irregular revetment.

- The water quality management plan referenced in the DEIS would include a narrative and map of all BMPs to be used during in-water work to comply with the water quality limits in the Section 401 Certification. The proposed compliance locations and parameters were developed from baseline water quality data and the State of California's Tulare Basin Plan. The water quality standards proposed for in water work activities include the following:

    - *Dissolved Oxygen*: Baseline data for DO at the surface indicates that the lake is naturally oxygen deficient. Due to the natural low levels of DO at the surface, activities would be monitored under the Warm Freshwater Habitat (WARM) interstate guidelines of 5.0 mg/L for both the Kern River and Isabella Lake from the Tulare Lake Basin Plan. For instances when DO is below the WARM threshold, four-hour compliance point data would be screened within 2 standard

deviations of data from one background station from the previous 48 hours or within 2 standard deviations of the long-term mean.

- *Settleable Material*: Monitoring would occur for settleable matter not to exceed 0.1 mL/L in surface waters as measured in proposed compliance points.

- *pH*: The proposed monitoring points would be monitored for pH levels to ensure that they are not depressed below 6.5, raised above 8.3, or changed at any time more than 0.3 units from normal ambient pH per the Tulare Lake Basin Plan thresholds for surface water. An averaging period of the previous 48-hours would be used.

- *Salinity/Conductivity*: The compliance points in Lake Isabella would be monitored for conductivity levels not to exceed 300 µS/cm. For instances outside of these thresholds, four-hour compliance point data would be screened within 2 standard deviations of data from one background station from the previous 48 hours or within 2 standard deviations of the mean.

- *Temperature:* Discharged material shall not cause the temperature of waters designated COLD or WARM to increase by more than 5°F above natural receiving water temperature.

- *Turbidity*: Due to the natural mixing effects occurring in the lake, natural turbidity is typically between 5 and 50 NTUs. Increases would not be allowed to exceed 20 percent when this is the case. For instances where background turbidity is between 50 NTU and 100 NTU, increases would not be allowed in excess of 10 NTU.

In addition to measures required in the FEIS, the water quality management plan would also contain a contingency plan in the event that water quality thresholds are unable to be met during in water work activities. The use of additional BMPs would be required if the current level of mitigation does not provide for protection of aquatic resources. All project work resulting in any exceedance of thresholds would cease until measures are enacted to ensure that the project can meet CVRWQCB Section 401 Certification thresholds.

3.6 CULTURAL

3.6.1 Regulatory Setting

The Cultural Resources section of the FEIS (Section 3.14) sufficiently characterizes the regulatory setting for this resource. For further discussion of Traditional Cultural Properties, as well as the regulatory setting for compliance with the Archaeological Resources Protection Act and the Native American Graves Protection and Repatriation Act, refer to pages 3-319 through 3-323 of the DEIS. USACE project activities are in compliance with Section 106 of the National Historic Preservation Act of 1966 so long as they are undertaken pursuant to the procedures described in the Programmatic Agreement (PA) among USACE, the Sequoia National Forest, the

California State Historic Preservation Officer (SHPO), and the Advisory Council on Historic Preservation (USACE 2012).

3.6.2 Existing Conditions

Record Search

The areas discussed in this document are covered by a record search conducted at the Sequoia National Forest and Southern San Joaquin Valley Information Center. In addition, archaeological surveys of the areas were performed in late 2015 by archaeologists with USACE (Kraus, 2016, Perry 2013, Polson and Montag 2015). These surveys resulted in the identification of two archaeological sites and three isolated artifacts in close proximity to the proposed activity areas for Dams and Spillway SEA. One previously recorded site was not encountered by the USACE team. All three archaeological sites have been classified as avoidance areas during construction work and would not be affected.

Known Cultural Resources

- **Borel-06** is a prehistoric site comprising multiple milling features and several flaked stone and groundstone artifacts, all located on a hill on the northwest tip of Engineers Point. An exposed sediment profile at the current Lake Isabella waterline suggests intact subsurface deposits may exist. A user-created road and campsite are located on the same hill but no other contemporary disturbance was evident. It should be noted that CA-KER-8 is located to the west across the old bed of the Kern River (now inundated) according to its original 1947 site record. While Borel-06 is in close proximity to CA-KER-8, it should not be considered a realignment of that site.

- **Borel 7** is a single mining adit on a steep exposed rock face on the northeast side of Engineer Point. No other features or artifacts were observed that could provide diagnostic information.

- **CA-KER-1683** was recorded in 1984 as a single grinding slick on a boulder, located 25m north of highway mile marker 46/50. In the original recording, archaeologists speculated that it may have been an outlier of another nearby site. This site was not relocated by USACE archaeologists Nikki Polson and William Welsh during the September 2015 survey effort.

- **Borel Isolate 1** is a single piece of groundstone located on a wave-cut terrace just west of the Borel Canal on the southwest side of Engineer Point. It is a bifacial handstone, heat oxidized on one face.

- **Launch Area Isolate 1** comprises four fragments of sun-colored amethyst glass.

- **Launch Area Isolate 2** is a possible flake tool of heavily patinated obsidian.

Consultation

State Historic Preservation Officer. USACE has completed consultation and obtained concurrence from the SHPO concerning the eligibility and/or effects to resources within the areas covered under this EA.

Native American Consultation. Native American consultation for the Isabella DSM Project is ongoing, both through a series of ongoing meetings but also written communication. Tribes with interest in the area have been with information concerning the survey work covered by this EA. If cultural resources beyond those discussed here are disclosed by tribes during this consultation process, USACE would ensure that they are either avoided or treated in accordance with the PA.

Assessment Methods

Analysis of the potential impacts was based on evaluation of changes to historic properties within the study area that may result from implementation of the project. The term "historic property" refers to any cultural resource that has been found eligible for listing, or is listed, in the National Register of Historic Places (NRHP). Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA), outlines the process in which Federal agencies are required to determine the effects of their undertakings on historic properties. In making a determination of the effects to historic properties, consideration was given to:

- Specific changes in the characteristics of historic properties in the study area.

- The temporary or permanent nature of changes to historic properties and the visual study area around the historic properties.

- The existing integrity considerations of historic properties in the study area and how the integrity was related to the specific criterion that makes a historic property eligible for listing in the NRHP.

3.6.3 Effects

Basis of Significance

Any adverse effects on cultural resources that are listed or eligible for listing in the NRHP (i.e. historic properties) are considered to be significant. Effects are considered to be adverse if they alter, directly or indirectly, any of the characteristics of a cultural resource that qualify that resource for the NRHP so that the integrity of the resource's location, design, setting, materials, workmanship, feeling, or association is diminished.

No Action

This alternative would have no effect on existing cultural resources in the project area because current conditions would remain unaltered.

Proposed Action

Effects to cultural resources could result from four types of construction related actions: (1) effects to the integrity of the visual and physical setting of historic properties; (2) effects to the structural integrity of historic buildings and structures from demolition; (3) effects from earth moving activities; and (4) effects from clearing, grubbing, and follow-on planting. Any cultural resources found during construction would be evaluated and consulted on as stipulated in the PA.

All three sites located in the vicinity of the Proposed Action would be avoided by project work. The sites are located outside the footprints of proposed project work and would be placed in avoidance areas to ensure that no unintended effects occur.

3.6.4 Mitigation

Pursuant to the PA, USACE is in the process of drafting and implementing a Historic Property Treatment Plan to guide procedures to avoid or mitigate effects to historic properties for the Isabella Lake Project as a whole.

None of the archaeological sites described within this SEA would be impacted by the Proposed Action. If any previously unknown resources are discovered during on-going tribal consultation processes or during construction, USACE would take steps to either avoid those resources or mitigate adverse effects to a less-than-significant level. Should construction plans change, USACE would reopen consultation with the SHPO and Native American Tribes as stipulated in the PA.

3.7 TRAFFIC

3.7.1 Regulatory Setting

The Traffic and Circulation section of the DEIS (Section 3.7) and FEIS (Section 3.6), and the Final Traffic and Circulation Analysis: Preferred Alternative Report (USACE 2012c) sufficiently characterizes the regulatory setting for this resource.

3.7.2 Existing Conditions

The Traffic and Circulation section of the DEIS (Section 3.7) and the Final Traffic and Circulation Analysis: Preferred Alternative Report (USACE 2012e) characterizes the affected environment for this resource. No additional studies or new data has been generated to date that are relevant to the discussion of the affected environment. Public concern was expressed regarding potential traffic congestion at the entrance to the new Auxiliary Dam RA.

3.7.3 Effects

Basis of Significance

An action would be considered to have a significant effect on transportation if it would: cause an increase in traffic that is substantial in relation to the existing load and capacity of a roadway; cause an increase in safety hazards on area roadways; or cause substantial deterioration of the physical condition of area roadways.

No Action

Under the No Action Alternative, there would be no Federal participation in remedial improvements to the Isabella Main Dam, Spillway, or Auxiliary Dam. The Operating Restriction at elevation 2,589.26 NAVD (356,700 acre-feet) would become permanent. Initiated by USACE in 2006, the Operating Restriction was intended as an emergency deviation from the Water Control Plan in order to lower the lake level to a safe elevation and capacity. The Operation Restriction could be further modified to reduce the lake level if dam safety modifications are not conducted to reduce the risk of dam failure. However, despite risk reduction measures, the Isabella Dams would still possess an unacceptably high risk of failure under the No Action Alternative. The potential environmental, economic and human consequences of dam failure could be extremely high.

Under the No Action Alternative, USACE would not mitigate for impacts of the Isabella Lake DSM Project because construction would not be conducted, and project related impacts

would not occur. Changes in traffic levels or circulation would not occur and as a result, no construction related traffic effects would occur.

Proposed Action

Design refinements that occurred after the DEIS release include the elimination of traffic associated with the South Delta Sand borrow site and the modification of the Auxiliary Dam abutment that would have used the Auxiliary Dam RA entrance. Additional design refinements since release of the FEIS include the elimination of the Highway 178 realignment, which is expected to substantially reduce construction traffic volume, delays, and other associated impacts.

Assessment of current and project use level was conducted at the intersection of Lake Isabella Blvd with Highway 178, directly across from the Auxiliary Dam RA entry (USACE 2012a; USACE 2012e). Traffic analyses assessed typical daily use during peak AM and PM travel times. The most recent Level of Service (LOS) measured at the Isabella Blvd intersection resulted in low traffic delay values projected for current intersection use and the highest anticipated use period (year 2019) during project construction. Traffic studies did not measure recreation traffic for summer use or holiday periods, or for traffic entering the RA entrance road.

The Auxiliary Dam RA entrance would provide access to the new Auxiliary Dam RA, the Isabella Old Road RA with dump station, the A1 Staging Area and the Auxiliary Dam realignment construction. Though existing left and right hand turn lanes at the four-way intersection provides for a higher margin of safety, construction related traffic congestion at the Lake Isabella Road and Highway 178 intersection could occur during periods of high recreational use while construction occurs at the Auxiliary Dam left abutment.

Congestion of recreational traffic at the Auxiliary Dam RA and Highway 178 intersection during the summer high-use period was expressed as a public concern. The Auxiliary Dam RA entry is considered a safer entry for recreational vehicles (RV) to access the new mitigated dump station due to existing turn lanes which are lacking at the Old Isabella RA. RVs are the most frequently used method of camping at the RAs around the lake, and the dump station receives frequent use during the summer season. Indirect effects could also result if perception of traffic congestion at the Auxiliary Dam RA forestalls recreationists from using the site. These concerns have resulted in mitigations to reduce potential project traffic conflicts at the new Auxiliary Dam RA entrance and facilities site.

In order to reduce direct effects of potential traffic at the RA entrance and Isabella Lake Blvd and Highway 178 intersection, Auxiliary Dam realignment construction work would not take place adjacent to the roadway from Friday through Sunday during the summer period of

Memorial Day to Labor Day. This schedule would alleviate the need for the contractor's traffic safety personnel to stop or hold traffic in place during the summer high-use weekends, thereby eliminating potential construction-caused congestion. Contractors would utilize Haul Route 5 or an Auxiliary Dam upstream road as the primary route for large trucks and equipment to access construction work on the Auxiliary Dam left abutment. Haul Route 5 and a potential Auxiliary Dam upstream route do not coincide with public roads, and would not contribute to traffic at the intersection of Highway 178 and the Auxiliary Dam RA entrance. Construction access through the Auxiliary Recreation entrance would be limited to small vehicles and trucks; other construction related vehicles and equipment would be permitted on an individual basis by the Contracting Officer. A Traffic Safety Management Plan in accordance with the Caltrans California manual on Uniform Traffic Control Devices would be completed by the contractor prior to commencement of construction activities. Additional mitigation is specified below.

Other design refinements within the Proposed Project are not expected to provide additional direct adverse effects to public traffic and circulation. Projected construction traffic would decrease from EIS projections due to removal of the Highway 178 realignment. Still, indirect effects could result from reduced visitation due to perceptions of traffic congestion at the Auxiliary Dam. Engineers Point's unimproved roads would be closed to the public during the construction period as defined in the EIS, but would be opened to the public after DSM Project completion. The unimproved, eastside road on Engineers Point would be closed to public access during the construction period but may be available for special events and the Fourth of July 4 holiday. If the contractor uses this unimproved road during construction, the physical characteristics of the road would be returned to pre-project condition. Two unimproved routes that provide east-to-west access on Engineers Point would be maintained and re-opened to the public after the DSM Project construction is completed. Dam security enhancements, the realignment of Ponderosa Drive and Barlow Road, and installation of the permanent USACE Office and Maintenance Facility would be conducted within the project construction area that is not accessed by public vehicles; adverse effects are not expected from these design refinements.

Temporary deterioration of roadways upon Engineers Point could occur before subsequent repairs are made to pre-project conditions. By adopting the mitigations below, an increase in traffic that is substantial in relation to the existing load and capacity of a roadway, or would cause safety hazards on area roadways, is not expected and would not result in significant impacts.

3.7.4 Mitigation

The following mitigation measures would be incorporated into the project:

1. A Construction Traffic Management Plan, as referenced in the EIS, would be produced by the contractor prior to project commencement, and would require approval by USACE. The plan would include placement of appropriate signs, flaggers, barricades, and traffic delineation to minimize disruption and ensure public safety.

2. In addition to mitigation specified within the EIS, heavy trucks and equipment would access the Auxiliary Dam left abutment construction primarily by the Haul Route H5 or an alternate route that does not coincide with public roads.

3. In addition to EIS mitigation, construction access through the Auxiliary Recreation entrance would be limited to small vehicles and trucks; other construction related vehicles and equipment would be permitted on an individual basis by the Contracting Officer.

4. In addition to EIS mitigation, construction work on the Auxiliary Dam left abutment adjacent to the RA entry road would not be conducted during the high recreational use period of Memorial Day to Labor Day on Friday through Sunday; on holidays, or during the Trout Derby event.

5. In addition to EIS mitigation, the contractor would be encouraged to avoid Auxiliary Dam embankment realignment construction during periods of high recreation use.

CHAPTER 4.0 CUMULATIVE AND GROWTH-INDUCING EFFECTS

The Council on Environmental Quality's (CEQ) regulations (40 CFR 1500-1508) implement the procedural provisions of the NEPA, as amended (42 U.S. C. 4321 *et seq.),* define cumulative effects as *"the impact on the environment which results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative Impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR 1508.7).*

This section briefly discusses other major local, State, and Federal projects near the project area for which evaluation is required. Additional information on cumulative effects relative to these design refinements can be found in the Isabella Lake DSM Project EIS (USACE 2012a, USACE 2012 b). In addition, mitigation or compensation measures must be developed to avoid or reduce any adverse effects to less-than-significant based on Federal and local agency criteria. Effects that cannot be avoided or reduced to less-than-significant are more likely to contribute to cumulative effects in the area. The exact construction timing and sequencing of these projects are not yet determined or may depend on uncertain funding sources.

Mitigation of any significant cumulative effects could be accomplished by rescheduling actions of proposed projects and adopting different technologies to meet compliance. Significance of cumulative effects is determined based upon compliance with Federal mandates and specified criteria identified in this document for affected resources. The effects of the proposed Dam and Spillway Design Refinements would result in minor additional effects. Proposed design refinements would not contribute to additional adverse cumulative effects on geology, soils and seismicity, socioeconomics, aesthetics, cultural resources, or special-status species. Short-term cumulative effects on traffic and recreation may occur as a result of the Auxiliary Dam embankment modifications and Engineers Point modifications.

4.1 LOCAL PROJECTS

4.1.1 Additional Projected Cumulative Actions

The actions on the following list were assessed as to their relevance for inclusion in this cumulative impact analysis based on their geographic area of influence and proximity to Isabella Lake, and time period as a viable action and/or planning period involved. Detailed descriptions of these projects can be found in Section 4.3 of the 2012 Isabella Lake DSM Project DEIS.

- USFS Motorized Travel Management EIS (USFS October 2009)

- USFS Giant Sequoia Monument Management Plan for the Keyesville Special Recreation Management Area (ongoing)

- Kern River Valley Specific Plan (Kern County July 2011)

- Kern River Preserve Vegetation Restoration Projects (ongoing)

- Isabella Partners Hydroelectric Project (ongoing)

4.2 ANALYSIS OF POTENTIAL CUMULATIVE EFFECTS

4.2.1 Recreation

The DEIS (Section 3.12. 3) details the potential impacts of the Isabella Lake DSM Project on recreation. These recreation impacts were identified to be significant, and the Proposed Action of this SEA would contribute to temporary direct and indirect effects. Projects with the potential to cause additional recreation effects in the project vicinity include various portions of the Isabella Lake DSM Project, the Borel Hydroelectric Project, and the Isabella Partner Hydroelectric Project. These impacts would be directly cumulative when projects are in simultaneous construction mode, but if not conducted simultaneously could extend the indirect effect of recreation avoidance over a longer construction period. However, other recreational areas can be accessed within a ten-mile area to avoid construction impacts associated with the RAs for recreationists that seek solitude. Mitigation to limit construction work hours and days during the high-use season have been adopted for this Proposed Action and other construction actions within the immediate Auxiliary Dam RA vicinity. Restrictions on RA access by construction vehicles and equipment would also be implemented to reduce effects on recreation traffic and noise. Because recreation effects are temporary and mitigation measures would be implemented to reduce effects on recreation, the Proposed Action is not expected to contribute to a significant cumulative recreation impact. This Proposed Action further reduces cumulative recreation impacts that would have occurred with a prior design to realign Highway 178.

4.2.2 Visual

Because construction activities associated with implementing any of the proposed Isabella DSM Project Action Alternatives would be visible from several viewing points in the vicinity of Isabella Lake, adverse temporary visual impacts would result. This would be due to the visible presence of construction equipment, vehicles, materials, traffic, personnel, and nighttime light. These visual impacts would be temporary, lasting only the duration of the construction period. Some of the proposed construction activities such as material disposal at Engineers Point, the larger Auxiliary Dam footprint, and the USACE Office and Maintenance Facilities, would

increase the viewable proportion of artificial structures upon the natural landscape features. Some of these visual impacts would be long-term but are not significant as they are sufficiently consistent with existing visuals. In regard to potential cumulative impacts, the Proposed Action in this SEA does assess the same view and observation perspectives of previously analyzed resources and actions, but the Proposed Action would be visually consistent with them. Implementation of the proposed design refinements from the Proposed Action would not contribute to cumulative impacts on Aesthetic Resources.

4.2.3 Water Quality

Anticipated cumulative effects to water quality from proposed plan are similar to those detailed for cumulative impacts within the DEIS. Surface disturbance can lead to increased runoff and erosion, which would lead to the potential of increased sediment and contaminants in surface waters adjacent to the project. Construction methods would be used that limit the duration and quantity of soil disturbance and loss of vegetation, which would have the least amount of adverse cumulative impacts on water resources and the environment and mitigate effects to a less-than-significant level.

4.2.4 Cultural

Pursuant to the PA, USACE is in the process of drafting and implementing a Historic Property Treatment Plan to guide procedures to avoid or mitigate effects to historic properties for the Isabella Lake Project as a whole.

None of the archaeological sites described here would be impacted by the Proposed Action. If any previously unknown resources are discovered during our on-going tribal consultation processes, or during construction, USACE would take steps to either avoid those resources or mitigate adverse effects to a less-than-significant level. Should construction plans change, USACE would reopen consultation with the SHPO and Native American Tribes as stipulated in the PA.

4.2.5 Traffic

Cumulative traffic levels were assessed as not significant by the Isabella Lake DSM Project DEIS (Sections 3.7and 4.4) and FEIS (Section 3.5) for DSM Project traffic levels. These traffic levels would be reduced by the Proposed Action. Design refinements of the Proposed Action do not provide changes to these assessments with the exception of the construction of the Auxiliary Dam left abutment realignment. Traffic congestion could be expected with the combined use of the Auxiliary Dam RA entrance road by both DSM Project traffic and summer high-use recreational traffic. However, mitigations would limit construction traffic during this period to

less-than-significant. The proposed Auxiliary Dam abutment realignment would also reduce cumulative adverse effects by providing an alternative to traffic effects that would have resulted from Highway 178 realignment for flood containment. Other design refinements of the Proposed Action occur within the construction boundaries, and are not expected to contribute additional adverse cumulative traffic effects on intersections or roadways. The Proposed Action is not expected to contribute significant cumulative effects.

4.3 GROWTH-INDUCING EFFECTS

The Proposed Action would not directly or indirectly induce growth in or near the project area. New development must be consistent with existing Kern County General Plan policies and zoning ordinances regarding land use, open space, conservation, flood protection, and public health and safety. Local population growth and development would be consistent with the Land Use Element of the Kern River Valley Specific Plan. Construction activities associated with Design refinements would not result in a substantial increase in the number of permanent workers or employees, or a need for additional permanent housing and local services.

CHAPTER 5.0 COMPLIANCE WITH ENVIRONMENTAL LAWS AND REGULATIONS

5.1 FEDERAL LAWS AND REGULATIONS

This chapter addresses Federal statutes, implementing regulations, and Executive Orders potentially applicable to the proposed Dams and Spillway Design Refinements project. Prior to initiation of construction, the project would be in compliance with all applicable laws, regulations and Executive Orders. Additional description of environmental laws and regulations is found in the 2012 DEIS.

5.1.1 Federal Laws and Regulations

Clean Air Act, as amended and recodified (42 U.S.C. 7401 et seq.). *Compliance*. The primary objective of the Clean Air Act is to establish Federal standards for various pollutants from both stationary and mobile sources and to provide for the regulation of polluting emissions via State implementation plans. Based on the available data, the project would not exceed or contribute towards the exceedance of any Federal or State thresholds for emissions. As a result, the project would remain in compliance with Federal air quality standards and would not hinder the attainment of air quality objectives in the local air basin. The proposed design refinements to the DSM Project would benefit the compliance status of the DSM Project as analyzed in the EIS. This benefit would be achieved with removal of the Highway 178 realignment action, and subsequent substitution with the Auxiliary Dam left abutment realignment, which would reduce project emissions.

Clean Water Act (33 U.S.C. 1251 et seq.). *Compliance*. The Clean Water Act establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. A Section 404(b)(1) assessment for the Isabella DSM Project and a Section 401 water quality certification application is required because the project would involve the placement of fill below the high water line in jurisdictional waters of the United States. Because the project would result in more than one acre of construction-related land disturbance, the Contractor would be required to pursue a General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit, 99-08-DWQ). Compliance would be achieved with the Section 401 certification by adopting all specified requirements, mitigations and thresholds. The Section 401 certification is expected to be obtained in fall of 2016 from the RWQCB. The Section 404(b)(1) has been updated to address the design refinements assessed in this SEA and is attached in Appendix C. The proposed design refinements to the DSM Project have not affected the compliance status of the DSM Project as analyzed in the EIS.

Endangered Species Act (16 U.S.C. 1531 et seq.). *Compliance*. There are known threatened and endangered species that could potentially occur within the vicinity of the project, but presence is not documented within the area of the Dams and Spillway Design Refinements (USFWS Biological Opinion of October 2012 and the USFS Biological Evaluation found in USACE 2016a). With the removal of the valley elderberry longhorn beetle in the Project Area from Federal listing, no Federal endangered or threatened species or habitat for these species is currently documented in the project footprint. Additional coordination was conducted with the USFS regarding special status and sensitive species. Proposed Actions are not expected to affect these species. No proposed or designated critical habitat exists in or near the Proposed Action area. No protected or candidate species are expected to be affected by the implementation of the Proposed Action. The proposed design refinements to the DSM Project have not affected the compliance status of the DSM Project as analyzed in the EIS.

Fish and Wildlife Coordination Act (16 U.S.C. 661, et seq.) *Compliance*. This act requires Federal agencies to consult with the USFWS and the California Department of Fish and Wildlife before undertaking projects that control or modify surface water. Concurrence was provided by the USFWS regarding the project's potential to control or modify surface water and the discharge of fill material below the OHWM. The USFWS Coordination Act Report and USFWS Section 7 consultation with concurrence is included in the 2012 FEIS Appendices. The CAR recommended vegetation mitigation to compensate for project effects on pine-oak woodland, sagebrush-scrub upland, valley grassland and emergent wetland habitat. A site visit was conducted with the USFWS on April 7, 2016 to view and discuss the vegetation mitigation projects now in progress. Additional concurrence with USACE was provided from the USFWS (USACE 2016) regarding the CAR vegetation mitigation in the vicinity of critical habitat of the southwestern willow flycatcher, proposed critical habitat of the yellow-billed cuckoo, and least Bell's vireo. The USFWS was provided a copy of the Draft SEA and vegetation mitigation plans for review. The proposed design refinements to the DSM Project have not affected the compliance status of the DSM Project.

Farmland Protection Policy Act (7 U.S.C. 4201 et seq.) *Compliance*. This Act requires a Federal agency to consider the effects of its actions and programs on the Nation's farmlands. The Proposed Action would not result in any effects on areas of potential prime or statewide important farmland. The proposed design refinements to the DSM Project have not affected the compliance status of the DSM Project as analyzed in the EIS.

Migratory Bird Treaty Act, as amended (16 U.S.C 703 et seq.) *Compliance*. This Act implements various treaties and conventions between the United States, Canada, Japan, Mexico, and Russia, providing protection for migratory birds as defined in 16 U.S.C. 715j. The construction could temporarily disturb existing habitat in the project area for migratory birds, however, additional mitigation measures cited by this SEA would minimize or negate these

effects. An avian monitor would be onsite during construction actions to survey for breeding activities and nests, and ensure protections and actions are conducted to comply with the MBTA. The implementation of the Proposed Action would have no significant effect on habitat or bird populations. The proposed design refinements to the DSM Project have not affected the compliance status of the DSM Project as analyzed in the EIS.

National Environmental Policy Act (42 U.S.C. 4321 et seq.). *Partial Compliance*. NEPA applies to all Federal agencies, and to most of the activities the agencies manage, regulate or fund that affect the environment. This act requires disclosure of the environmental effects, alternatives, potential mitigation and procedure of environmental compliance for the Proposed Action. NEPA requires the preparation of an appropriate document to ensure that Federal agencies accomplish the law's purposes. Full compliance will be achieved once the SEA is finalized and a decision is made to either sign a Finding of No Significant Impact (FONSI), or an Supplemental EIS is produced. The proposed design refinements to the DSM Project have not affected the compliance status of the DSM Project as analyzed in the EIS.

National Historic Preservation Act of 1966, as amended (16 U.S.C. 470 et seq.). *Compliance*. Section 106 of the NHPA requires a Federal agency to consider the effects of Federal undertakings on historic properties, i.e., cultural resources that are listed in, or are eligible for listing in, the National Register of Historic Places. Per the FEIS, the implementing regulation for Section 106 is 36 CFR Part 800 (revised 2004), "Protection of Historic Properties," which requires Federal agencies to initiate Section 106 consultation with the California SHPO. USACE is consulting under a PA with the SHPO for this project which satisfies compliance with Section 106 of the NRHP.

Wild and Scenic Rivers Act (16 U.S.C. 1217, et seq.). *Compliance*. This act was enacted to preserve selected rivers or sections of rivers in their free-flowing condition in order to protect the quality of river water and to fulfill other national conservation purposes. The Kern River was designated as Wild and Scenic by Congress in 1987. This project does not affect the Kern River or its Wild and Scenic River status. The proposed design refinements to the DSM Project have not affected the compliance status of the DSM Project as analyzed in the EIS.

Resource Conservation and Recovery Act. (42 U.S.C. §6901 et seq.). *Compliance*. The Resource Conservation and Recovery Act (RCRA) gives EPA the authority to control hazardous waste from start to finish. 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 EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. USACE would be in compliance with transport of any hazardous materials from the

cradle to the grave. The proposed design refinements to the DSM Project have not affected the compliance status of the DSM Project as analyzed in the EIS.

5.1.2 Executive Orders

Executive Order 11990, Protection of Wetlands. *Compliance*. This order directs USACE to provide leadership and take action to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands in implementing Civil Works projects. Wetlands were assessed for project actions in the 2012 FEIS and wetland mitigation has been coordinated with the USFWS and will be implemented in 2017 within the Kern Valley. No additional wetlands would be affected as a result of the design refinements addressed in this SEA. The proposed design refinements to the DSM Project have not affected the compliance status of the DSM Project as analyzed in the EIS.

Executive Order 13693, Planning for Federal Sustainability in the Next Decade. *Compliance*. Signed by the President in March 15, 2015, Federal agencies are directed to promote building energy conservation, efficiency and management, and reduce energy use by vehicle fleets. Federal agencies shall also reduce greenhouse gas emissions, and increase water efficiency in industrial, landscape, agricultural and potable water uses. Specific percentage goals by year are established for reductions of greenhouse gas emissions, water, and energy use. Compliance with this direction would be achieved by incorporating LEED silver standards and incorporating solar cells for a portion of the building energy system as specified by USACE directives for compliance with the Executive Order. The proposed design refinements to the DSM Project have not affected the compliance status of the DSM Project as analyzed in the EIS.

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. *Compliance*. The order directs all Federal agencies to identify and address adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations. There are no effects on minority or low-income populations as a result of the DSM Project as analyzed in the EIS. The proposed design refinements to the DSM Project have not affected the compliance status of the DSM Project as analyzed in the EIS.

Executive Order 11988, Floodplain Management. *Compliance*. The direction of this Executive Order is the avoidance, to the extent possible, of long-term and short-term adverse effects associated with the occupancy and modification of the base floodplain and the avoidance of direct and indirect support of development in the base floodplain wherever there is a practicable alternative. Construction of the Auxiliary Dam abutment is consistent with appropriate development in the floodplain. No long-term or short-term indirect or direct adverse

effects would occur with occupancy. The proposed design refinements to the DSM Project have not affected the compliance status of the DSM Project as analyzed in the EIS.

Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds. *Compliance*. This Executive Order provides direction to Federal Agencies taking actions that have, or are likely to have, a measureable negative effect on migratory bird populations and requires protocols for implementation of a Memorandum of Understanding and for reporting accomplishments. Each agency shall support the conservation intent of the migratory bird conventions by integrating bird conservation principles, measure and practices into agency activities and by avoiding or minimizing to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions. USACE supports the conservation intent of migratory bird conventions by incorporating protective mitigations and professional personnel into the project to ensure compliance with the MBTA. The implementation of the Proposed Action would have no significant effect on habitat or bird populations. The proposed design refinements to the DSM Project have not affected the compliance status of the DSM Project as analyzed in the EIS.

5.2 COORDINATION AND REVIEW OF THE SEA

The Draft SEA was previously circulated for 45 calendar days to interested Federal, State and local agencies, organization and the public. Comments were received and can be viewed with responses in Appendix B.

5.3 FINDINGS

Based on the information in this SEA, the Proposed Action is not expected to result in significant adverse effects on the environmental resources in the project area or vicinity. A determination has been made that a Finding of No Significant Impact with adoption of the listed mitigations within this document is the appropriate decision document, and preparation of an EIS is not necessary.

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Appendix A
Mitigation Measures Summary

SEA Mitigation Summary

The following mitigation and minimization measures are in addition to, or reiterate, those measures adopted by the 2012 FEIS and Record of Decision.

Air Quality

1. Compliance with Rule 402 BMPs would be utilized to reduce air quality impacts from fugitive dust, and meet threshold requirements. Measures that may be utilized include application of water or non-toxic, organic soil stabilizers; grading during lower wind intensity, lowering of off-road vehicle speed and application of water or non-toxic, organic soil stabilizer to unpaved surface roadways and material piles.

2. Any dust palliatives used for control of fugitive dust would be non-toxic, biodegradable, and would be approved by the USACE Contracting Officer.

3. Tier 4 equipment off-road equipment would be utilized on construction projects except for extenuating circumstances where Tier 4 equipment cannot be acquired and appropriate documentation is provided and approved by USACE on an individual basis.

4. GHG mitigation: Mitigation measures specified within the 2012 DEIS Section would be applied.

Noise and Vibration

The contractor would be responsible for obtaining any necessary permits or approvals from Kern County for project related noise, and for following mitigation and minimization measures established within the DEIS and FEIS, including:

1. Designate a noise coordinator and post a 24-hour contact number for adjacent residents. The noise coordinator would receive all public inquiries and determine the cause of the issues and implementation of any feasible measures to alleviate the problem.

2. Provide written notice of construction-related activities to nearby sensitive receptors identifying the type, duration and frequency of activities. Post these notices at the recreation areas and make available to nearby residences.

Traffic and Circulation

1. Contractor would prepare a Construction Traffic Management Plan to minimize traffic disruption and ensure public safety.

2. Contractor must obtain all necessary traffic permits prior to initiation of construction.

3. Construction upon the Auxiliary Dam left abutment realignment adjacent to the entrance road would be limited to Monday through Thursday during the summer high-use period of Memorial Day through Labor Day weekend.

4. Construction access through the Auxiliary Recreation entrance would be limited to small vehicles and trucks; other construction related vehicles and equipment would be permitted on an individual basis by USACE.

Recreation

1. Construction of the Auxiliary Dam left abutment realignment adjacent to the RA entrance road would not be conducted from Friday through Sunday during the high recreation use periods of Memorial Day through Labor Day; on holidays, and during the Fishing Derby event.

2. Fencing, signage, and other appropriate methods of distinguishing construction boundaries for the public would be employed by the contractor to reduce recreation conflicts. Solid or blanketed fencing would be utilized at the Staging Area A1 boundary adjacent to the new Auxiliary Dam RA facilities.

3. Recommendations would be made to the contractor to schedule construction events outside the high recreation use periods, and to locate construction actions that contribute loud noise or dust away from the RA boundary.

4. An increased buffer of approximately 100 feet would be created between Staging Area A1 and the new Auxiliary Dam RA road access, restroom facilities, kiosk, and camp host site. This mitigation measure is in addition to those specified in the FEIS and DEIS.

5. The contractor would provide construction schedules and advise the USFS on RA construction activity at least 48 hours in advance.

Water Quality

1. A NPDES storm water Permit (Section 402 of the CWA) from the CVRWQCB would be obtained and specified mitigations would be followed.

2. The SWPPP would be obtained by the contractor and included BMPs would be followed to prevent potential pollutants from leaving the construction site during a storm event.

3. Clean Water Act Section 404 (b)(1) documentation would be updated to include parameters of this project. Compliance with mitigations specified by the State CWA Section 401 Certification would be conducted.

4. Monitoring of water quality would be conducted by USACE and the construction contractor in compliance with Section 401 Certification.

Aesthetics

1. Locations and alignments for earthwork would be selected to align with landforms as feasible.

2. Existing native vegetation would be retained where possible.

3. Materials and treatments on surfaces would be used that blend into the landscape where possible to reduce color contrast. Where function is not impaired by application, muted colors would be used to reduce visual contrast. Surfaces of project structures would be treated where possible so that colors minimize visual contrast by blending with the characteristic landscape colors and colors and finishes do not create excessive glare.

4. Lighting would be constructed to reduce reflected glare and comply with the Kern County Dark Sky ordinance.

5. Cross-country vehicle and equipment traffic would be prohibited outside designated work areas.

Vegetation and Wildlife

1. Boundaries would be delineated for vehicles and construction activities with flagging, fencing, or other markers.

2. Vegetation areas and trees would be delineated for protection from construction activities with flagging, fencing, or other markers.

3. Excavated holes that are to remain overnight would be covered with plywood and sealed to prevent wildlife entrapment.

4. To avoid adverse effects to migratory birds, the following actions would be conducted:

    a. A qualified avian biologist would survey the project area within one-half mile of the project area prior to initiation of construction. If the survey finds a pair of nesting raptors present, USACE would coordinate with California Department of Fish and Wildlife and USFS for proper avoidance and minimization measures. Monitoring may be required for raptor nests.

    b. A qualified avian biologist would survey the project area for nests at least one week prior to and within one week of construction to determine the presence of any nests that are occupied with eggs or chicks. Surveys must be conducted throughout the nesting season to identify new nests. Nests with eggs or chicks are protected by the MBTA and must be protected in place. Relocation of occupied nests under USFWS permit would be conducted only in extenuating circumstances.

    c. Removal of identified trees would be conducted outside of the avian nesting season, March to September where feasible, otherwise an avian biologist must certify no active nests are present. Under guidance of an avian biologist, passerine nests without any young or eggs, would be removed.

    d. Effective avoidance measures, such as barrier netting, would be employed to prevent nesting on equipment and construction structures as necessary.

5. BMPs would be implement to inhibit the establishment of weed species (USDA 2001: USDA 2005).

6. Where construction activities result in the removal or disturbance of vegetation or disturbance of soils is not replaced in the landscaping, seeding would be conducted with native grass seed, mulch and tackifier per USFS application specifications.

Cultural Resources

1. USACE is in the process of preparing a Historic Property Treatment Plan to guide efforts to include procedures to avoid or mitigate effects to historic properties (those assumed to be eligible properties as outlined below) during construction, in compliance with Stipulation VIII of the Programmatic Agreement (USACE 2012f).

2. None of the archaeological sites described within this SEA would be impacted by the Proposed Action. If any previously unknown resources are discovered during our on-going tribal consultation processes, or during construction, USACE would take steps to either avoid those resources, or mitigate adverse effects to a less-than-significant level

3. Should construction plans change, USACE would reopen consultation with the SHPO and Native American Tribes as stipulated in the PA.

Appendix B
Draft SEA Public Comments Summary and Response

DRAFT SEA Public Comments Summary and Responses

Comment number	Commenter and date of receipt	Method of Submission	Comment	Response
1	Ben Singer, Hydrodynamics Inc. July 8, 2016	Email	Concerns regarding powerhouse access.	USACE recognizes the need for access. A meeting to resolve access questions with the Isabella Partners Hydropower Operations was held in September 2016.
2	Lisa Belenky, Center for Biological Diversity; Ara Marderosian, Kern-Kaweah Chapter of the Sierra Club; Alison Sheehey, Sequoia ForestKeeper August 2016	Email	a.The proposed height of the Spillways must be clarified; assurance on height is requested from USACE engineers. Many resource impacts could result from raising spillway heights.	USACE engineers assure that the Main Dam Spillway would be retained at 2,609.26 feet in height, and that the new Emergency Spillway would be constructed to 2,637.26 feet in height as stated in the FEIS. The Alternative 4 Plan was the selected Alternative for the project in the 2012 Record of Decision. When assessing project effects, it is recommended that only spillway heights from the Alternative 4 Plan be used in order to avoid confusion.
			b. The project could produce fine materials that could cause sediment flows that can lead to increased runoff, erosion and eutrophication. The Draft SEA does not state that there is sediment.	As stated in the Draft and Final SEA, Section 2.3, embankment and foundation excavation material is expected to consist of approximately 25 percent fines, 70 percent sand, and 5 percent gravel and cobbles. "Fines" is considered to be sediment material. In addition, spillway excavated material is expected to consist primarily of excess blasted

Comment number	Commenter and date of receipt	Method of Submission	Comment	Response
				rock; composed of little (zero corrected in sentence) to no fines (under 1 percent), 15 percent gravel and sand, and 85 percent cobbles and boulders. Construction projects create opportunity for erosion. Mitigation measures and BMPs for sediment and erosion control and maintenance of water quality, however, are required of the contractor to ensure that substantial local, State and Federal water and air thresholds are not exceeded (see DEIS Sections 3.6 and 3.6; FEIS Sections 3.3 and 3.4). Compliance with the Clean Air Act and Clean Water Act through Section 401 certification would occur by not exceeding permitted thresholds. Both USACE and the project contractor would conduct monitoring to ensure compliance. If any threshold should be exceeded, construction work contributing to the exceedance would cease immediately.
			c. Concern that disposal material deposited on Engineers Point would slide during a seismic tremor to cause a tsunami that would overtop the dam.	A sudden large water wave (a seiche) in Isabella Lake is highly unlikely due to the following factors: the slope would be stable at a 3:1 slope and is not sufficiently steep for a mass wasting; the angularity of the rock

Comment number	Commenter and date of receipt	Method of Submission	Comment	Response
				material precludes a fast and massive slide; the lake is relatively flat and shallow and would not produce a high wave that would overtop the dam; the high velocity of material movement needed to produce a slide and high wave would not occur with the combination of the factors listed above.
			d. How will grass germinate without irrigation?	Disturbed soil surfaces would be restored with biodegradable mulch and native grass seed which responds to natural seasonal precipitation. Grass seed would be planted at a seasonally beneficial time and watered until plant growth is successful (see FEIS, Section).
			e. Permanent PM 2.5 monitors should be placed around the reservoir.	Short-term construction-related air quality impacts were assessed in accordance with the Eastern Kern Air Pollution Control District recommended methods, discussed in the DEIS and FEIS in Sections 3.5 and 3.3 respectively. Short-term diesel PM emissions produced as a result of construction activities were found to be significant and unavoidable in and in the immediate vicinity of the construction area. As a result, residences adjacent to the project

Comment number	Commenter and date of receipt	Method of Submission	Comment	Response
				that could be affected by PM 2.5 have since been relocated. Contractors are required to measure and monitor fugitive dust per Eastern Kern County Air Pollution Control District Rule 402. VDE must be limited to 20 percent opacity (FEIS Section 3.3).
			Monitors should be placed in areas with high arsenic levels.	High or above-normal arsenic levels, have not been identified in the project area. Arsenic occurs naturally in local soils. Above-normal arsenic levels in Isabella Lake last occurred in 2005 (see DEIS Section 3.6). Measured arsenic concentrations of soil and water in the project area is currently within normal background levels. Water quality would continue to be monitored before and during construction.
			f. Removal of dam seepage below the Auxiliary Dam may dry up marshes along Barlow Road.	Reduction of the majority of dam seepage is necessary to ensure dam safety, however, a small amount of seepage would remain. Nonpersistent and shrub emergent wetland of .33 acres in size that could be impacted by the project on upper Barlow has been mitigated per recommendations of the USFWS (see

Comment number	Commenter and date of receipt	Method of Submission	Comment	Response
				DEIS Section 3.10 and FEIS Section 3.8). Hydrogeology assessments do not show that dam seepage is responsible for wetlands further down the valley (USACE engineers, Henri Muldar and Mike Ruthford, P.E.). Drainage from surrounding topography and existing soil characteristics contribute and retain moisture in these wetlands.
			g. This DSEA does not address concerns about impacts to avian species from the overall dam modification project.	The 2012 DEIS and FEIS (see DEIS Section 3.10 and FEIS Section 3.8) address impacts to avian species from the overall dam modification project. This SEA addresses impacts specific to design modifications
			h. Greenhouse gas (GHG) analysis is required to comply with NEPA.	GHG emissions were assessed in the DEIS (Section 3.5) and FEIS (Section 3.3). As stated in the SEA, GHG emissions would be reduced due to improvements provided by the design refinements. Additional GHG analysis in the SEA is not required by NEPA.

Appendix C
Section 404(b)(1) Evaluation Update

Isabella Lake Dam Safety Modification Project

Clean Water Act Section 404(b)(1) Water Quality Evaluation Update

June 2016

Prepared for:

US Army Corps of Engineers
Sacramento District

US Army Corps of Engineers

Original 2012 Document Prepared by:

Tetra Tech, Inc.

TETRA TECH

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FIGURES

CHAPTER 1 INTRODUCTION

This document constitutes the Statement of Findings, and review and compliance determination according to the Clean Water Act (CWA) Section 404(b)(1) guidelines (33 USC §1344(b)(1)) for the proposed work described in the Isabella Lake Sam Safety Modification Project Draft Environmental Impact Statement (DEIS; released March 2012), and Final EIS (FEIS; released October 2012), prepared by the US Army Corps of Engineers (Corps), Sacramento District, in cooperation with the US Forest Service (USFS), Sequoia National Forest, Kern River Ranger District. The FEIS identified the future need for supplemental NEPA documents to assess Preferred Alternative elements that were not resolved at the time of the FEIS issuance. Since issuance of the 2012 FEIS, four Supplemental Environmental Assessment (SEA) documents have been completed.

Section 404 of the CWA regulates discharge of dredged material and placement of fill within waters of the United States. Section 404(b)(1) of the CWA requires that proposed actions be designed to avoid or minimize adverse impacts to aquatic resources and waters of the United States. This analysis is intended to demonstrate compliance with the CWA Section 404(b)(1) and has been prepared in accordance with 40 CFR Part 230-Section 404(b)(1) guidelines and USACE Planning Guidance Notebook, Engineering Regulation (ER) 1105-2-100.

1.1 PROJECT PURPOSE AND NEED

The Corps has determined that the Isabella Dam facilities require structural improvements in order to safely meet authorized project purposes and to reduce risk to the public and property from dam safety issues posed by floods, earthquakes, and seepage. The Corps is proposing risk reduction measures to minimize the potential for and consequences of a catastrophic downstream flooding event by remediating the significant seismic, hydrologic, and seepage deficiencies at the Isabella Main and Auxiliary Dams and spillway for safe and effective functioning at authorized capacity, while reducing the risk to the downstream public to tolerable levels. This would support the ultimate goal of having a safe facility that meets Corps risk reduction guidelines for existing dams and allows the project to provide the benefits for which it was authorized.

In 2005, the Corps determined through a screening-level risk assessment process that the Isabella Dams posed unacceptable risk. Subsequently, the project received a risk classification that is described “urgent and compelling (unsafe)” and as “critically near failure”, or “extremely high risk.” It should be noted that the project received this classification due to the “extremely high risk,” and that the project is not believed to be “critically near failure.” Failure is not believed to be imminent. However, the large population downstream of Isabella Lake as well as significant dam safety issues at the dam, urgent action is needed to address deficiencies and reduce risk. These facilities are among the Corps’ highest priorities for risk reduction, and the

project does not meet Corps tolerable risk guidelines, thus remedial actions are necessary. The Corps' need for action is to reduce the likelihood and consequences of dam failure and to restore the authorized project benefits.

1.2 PROJECT LOCATION AND PRIMARY FEATURES

Isabella Lake is on the Kern River in the Sierra Nevada, in the southernmost part of the Sequoia National Forest, Kern County, California (Figure 1). It is located approximately 35 miles (50 river miles) northeast of Bakersfield, along Highway 178 and one mile upstream of the town of Lake Isabella. Isabella Lake is formed by a Main Dam on the Kern River and an Auxiliary Dam to the east in the adjacent Hot Springs Valley. The construction of the Isabella Lake dams began in March 1948, and the dams were placed in full operation in early 1953.

The project provides flood risk management benefits to the residents and business owners of the town of Lake Isabella, the Kern Valley, and Bakersfield. A private hydroelectric project owned and operated by Isabella Partners is on the downstream toe of the Main Dam. The Borel Canal passes through the Auxiliary Dam and supplies water directly to a hydroelectric plant operated by Southern California Edison (SCE) on the Kern River, six miles south of the Auxiliary Dam.

The major physical features of the Isabella Dam Project include embankments, outlet works, and a Spillway (Figure 2). The Isabella Lake dams provide for flood risk management, municipal and industrial water conservation, and recreation. More information on the location and description of the Isabella Dam Projects is located in Section 1.4 and 1.5 of the DEIS, and in Section 2.3 of the FEIS.

1.3 PROJECT AUTHORITY

The initial study for a project on the Kern River was authorized by the Flood Control Act of 1936, Pub. L. 74-738, § 6,49 Stat. 1579 (1936). Construction of Isabella Dam and Lake was authorized by the Rivers and Harbors Act of 1944, Pub. L. 78-534, § 10,58 Stat. 887,901 (1944). The project is primarily authorized for flood control, with secondary benefits from water conservation.

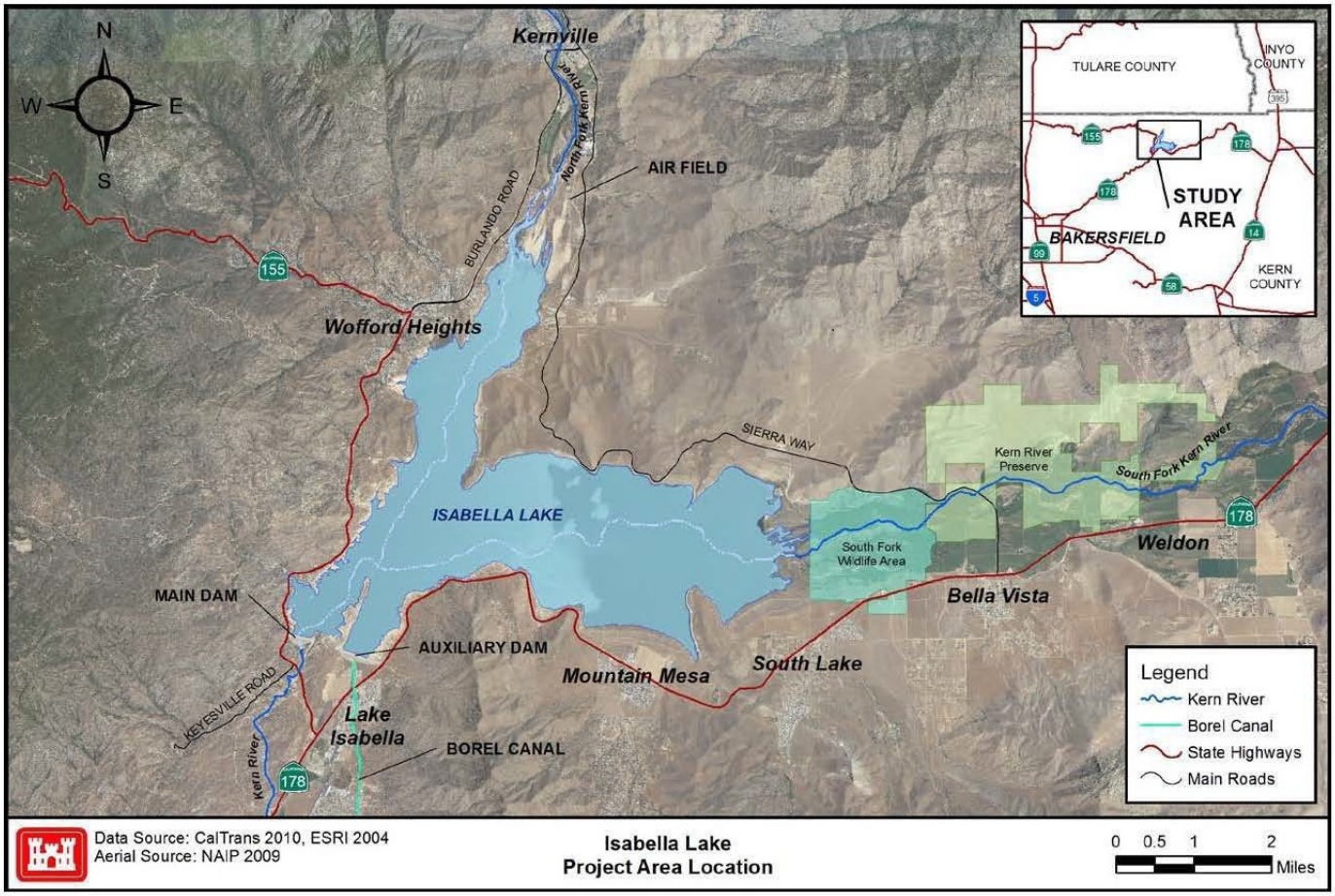

Figure 1. Project Area Location.

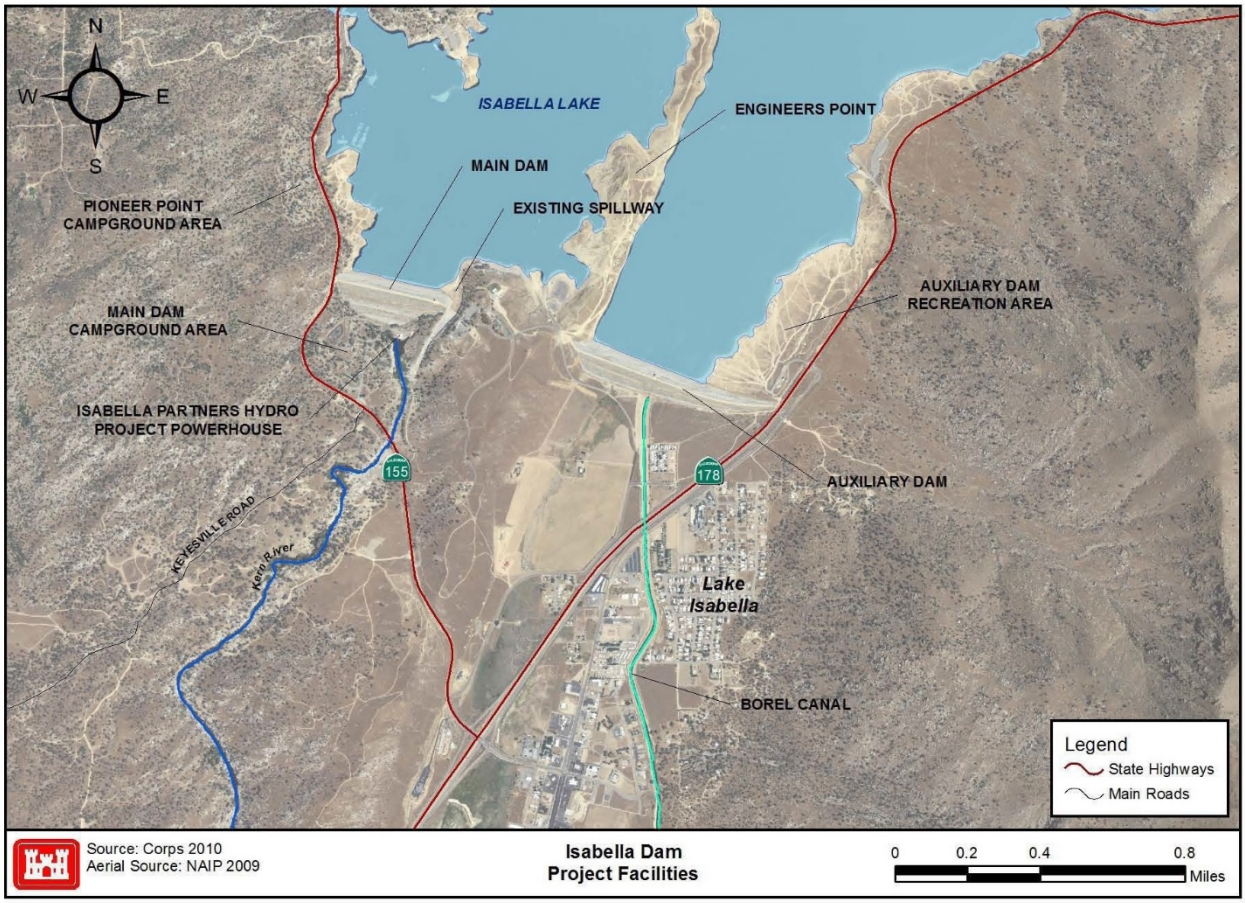

Figure 2. Isabella Dam Project Facilities.

The National Dam Inspection Act of 1972 (Pub. L. 92-367, §3, 86 Stat 506 (1972)) requires the Secretary of the Army to carry out a national dam inspection program. The ER 1110-2-1156 (final 28 October 2011) prescribes the guiding principles, policy, organization, responsibilities, and procedures for implementation of risk-informed dam safety program activities and a dam safety portfolio risk management process within the Corps. The purposes of the dam safety program are to protect life, property, and the environment by ensuring that all dams are designed, constructed, operated, and maintained as safely and effectively as is reasonably practicable. Prudent stewardship of available resources is essential to preserve the existing infrastructure. When unusual circumstances threaten the integrity of a structure and the safety of the public, the Corps has the authority to take expedient actions, require personnel to evaluate the threat, and design and construct a solution.

CHAPTER 2 PROJECT DESCRIPTION

2.1 SELECTION OF A PREFERRED ALTERNATIVE

In Chapter 2 of the DEIS, a description was provided of the alternative formulation process by which the Corps had derived the No Action Alternative and eight Action Alternatives initially considered in the DEIS, and had eliminated three of the Action Alternatives from further detailed consideration in the DEIS. The No Action Alternative and the five Action Alternatives analyzed in detail in the DEIS are summarized as follows:

- No Action Alternative. The No Action Alternative would implement none of the proposed risk reduction measures, remove the Interim Risk Reduction Measures (IRRM) currently in place, and operate Isabella Lake up to the authorized gross pool elevation of 2,609.26 feet NAVD 88 (568,075 acre-feet). The No Action Alternative would have no impacts to wetlands or other waters of the U.S., however, this would not achieve the dam safety and flood damage reduction improvements and enhanced public safety would not be realized. This alternative is not practicable, as it would not meet the purpose and need of the proposed project.

- Alternative Base Plan. The Alternative Base Plan would remediate the deficiencies identified for the Main Dam, Spillway, and Auxiliary Dam that if not remediated, would have an unacceptably high likelihood and large consequences for a catastrophic failure of one or both of the dams from seepage, seismic activity, or an extreme storm event.

- Alternative Plan 1. Alternative Plan 1 includes the remediation of the deficiencies covered in the Alternative Base Plan, plus additional deficiencies identified for the Main Dam.

- Alternative Plan 2. Alternative Plan 2 includes the remediation of the deficiencies covered in Alternative Plan 1, plus additional deficiencies identified for the Auxiliary Dam.

- Alternative Plan 3. Alternative Plan 3 includes the remediation of the deficiencies covered in Alternative Plan 2, plus additional deficiencies identified for the Main Dam, ensuring that both dams achieve the best rating regarding dam safety.

- Alternative Plan 4. Alternative Plan 4 includes the remediation of all of the seismic, hydrologic, and seepage deficiencies remediated under the Alternative Base Plan, plus additional remediation measures identified for the Existing and Emergency Spillways, Main Dam, and Auxiliary Dam, to accommodate up to a 16-foot crest raise for the

hydrologic overtopping deficiency. In addition, both State Highways 155 and 178 would need to be modified to accommodate a 16-foot crest raise.

The formulation process was greatly augmented by public and agency comments received during the 60-day public review period of the DEIS. Through consideration of public and agency comments received, coupled with the ongoing rigorous and comprehensive evaluation and review procedures established by the Corps for this project, the Corps selected Alternative Plan 4 as the Preferred Alternative in the FEIS and signed Record of Decision. The FEIS also identified the need for supplemental NEPA documents to assess Preferred Alternative elements that were not resolved at the time of the FEIS issuance. In addition, as the project design approached completion, there may be a need to evaluate any changes. Since issuance of the 2012 FEIS, four Supplemental Environmental Assessment (SEA) documents have been completed.

The Proposed Action is to implement the Preferred Alternative, which would remediate all of the dam safety deficiencies that are significant contributors to risk. On this basis, the discussion of the evaluation of the impacts throughout the remainder of this document will focus on the Preferred Alternative and the No Action Alternative. The Preferred Alternative will be discussed throughout this document in order to determine if it is the least environmentally damaging practicable alternative (LEDPA).

2.2 FEATURES OF THE PREFERRED ALTERNATIVE

The remediation measures planned for each structure under the Preferred Alternative are described below and illustrated in Figure 3. The Action Area that is considered for the purpose of the 404(b)(1) analysis includes the majority of the construction work activities and support actions comprising the risk reduction measures. These actions would take place at and in the proximity of the Main Dam, spillway, Auxiliary Dam, and French Gulch.

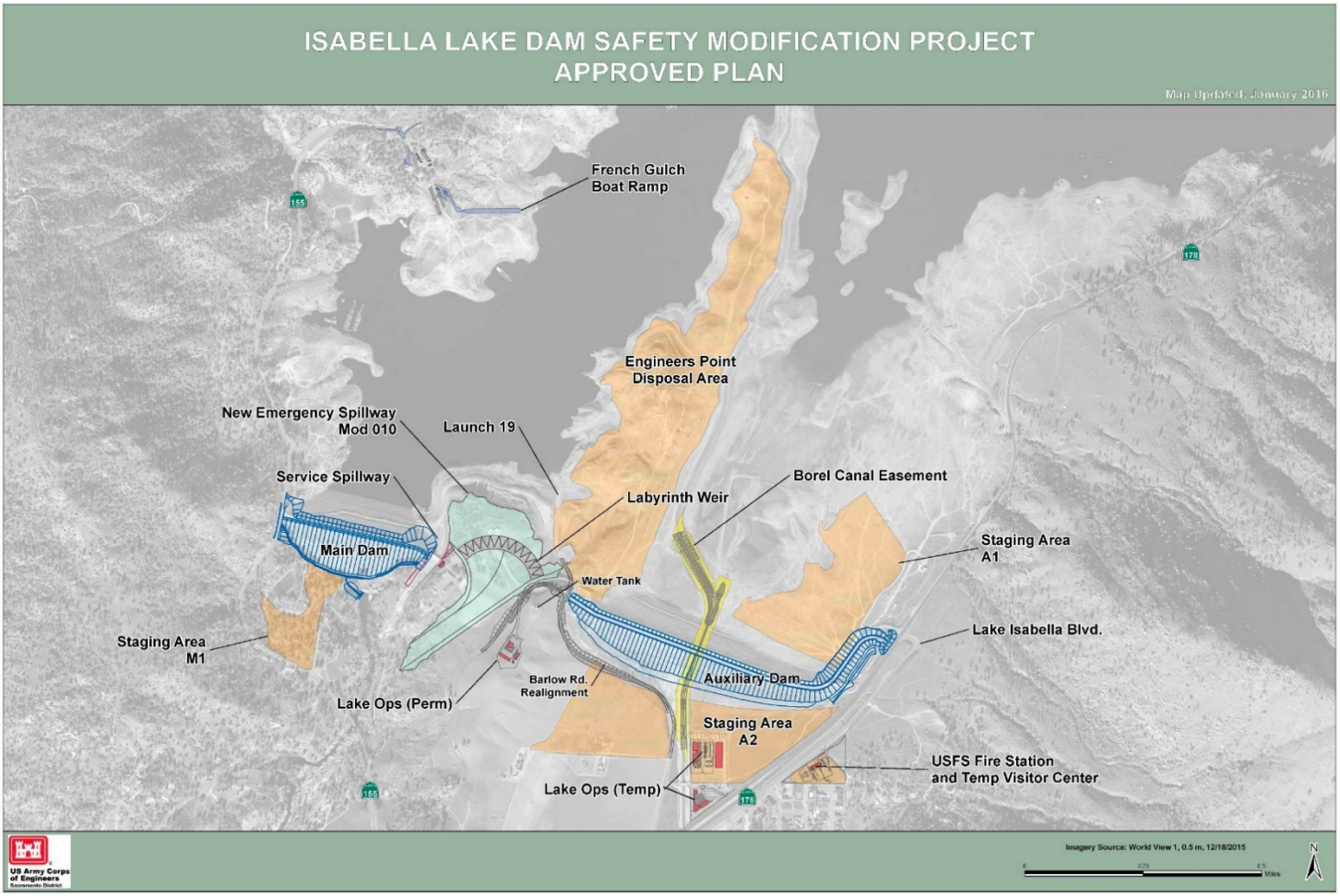

Figure 3. Preferred Alternative Site Plan.

2.2.1 Main Dam

The Corps has determined that the deficiencies associated with the Main Dam could lead to potential differential settlement and seepage following a seismic event and/or overtopping during an extreme storm event (such as the Probable Maximum Flood [PMF]). Under the Preferred Alternative the project would be remediated so that it could safely pass flows of an extreme storm event and so that it could withstand an anticipated seismic event without leading to a failure (loss of reservoir). The following remediation measures would be included:

- A full height filter and drain on the downstream slope of the dam to accommodate a crest raise (expected to be approximately 16-foot) and to further protect the structure from transverse cracking and potential settlement cracking during a seismic event.

- A toe filter/drain system to capture and collect seepage.

- A crest raise (expected to be approximately 16-foot) to be able to safely pass an extreme flood event without overtopping.

- Raising the Main Dam control tower and access to the existing facility by 16 feet to match the increased dam crest elevation.

- Main dam right abutment requires additional material. Approximately 7,000 CY of fill material will be placed at this location below the OHWM.

The majority of the various rock materials needed for the Main Dam remediation would come from the excavation of the proposed Emergency Spillway discussed below. The sand material required for the full height filter and drain of the Main Dam would come from crushing and processing of the waste rock material excavated for the proposed Emergency Spillway. The Auxiliary Dam Recreation Area would serve as a sand stockpile/staging area and backup source of project sand, if necessary (See Figures 2 and 3).

2.2.2 Existing Spillway

The Preferred Alternative would remediate the deficiencies identified for the existing spillway. The remediation includes (a) select concrete placement and surface treatment of the existing spillway chute to guard against erosion undermining of the right wall; (b) addition of anchors along the existing spillway wall and ogee crest for additional head during operation and to increase seismic stability; (c) construction of an approximate 16-foot high retaining wall added to the crest along the right and left walls (closest to the Main Dam) to protect against potential erosion of the Main Dam during high outflows and to accommodate the crest raise; (d) a new spur dike, which allows a free even flow of water to enter the existing service spillway will be constructed.; and (e) removal of an existing upstream bench. The spur dike and bench removal work will require approximately 13,000 CY of fill material below the OHWM. The concrete needed for all remediation measures on the existing spillway would be supplied by the ready-mix plant located in the South Lake area along Hwy 178 or from an on-site batch plant to be constructed by the Contractor.

2.2.3 Emergency Spillway

The Corps has determined that the existing spillway along the east side of the Main Dam cannot safely pass an extreme storm event (such as the PMF). It is a requirement that all Corps dams be able to safely pass the PMF, with freeboard for wind and wave run-up. Therefore, the Preferred Alternative includes the construction of a new “Emergency Spillway”, approximately 300-feet-wide, that would be located approximately one-hundred feet east of the existing spillway (See Figure 3). The additional spillway would be required to remediate the hydrologic

deficiency (undersized capacity of the existing spillway) that could lead to overtopping of both dams, with failure of one or both dams which would cause extreme consequences downstream. This Emergency Spillway would function independently from the existing spillway, and would begin to function around elevation 2,637.26 feet NAVD 88 (900,000 acre-feet) current elevation of the top of dam), which is 28.0 feet higher than existing spillway. The new emergency spillway would have a labyrinth type weir with v-shaped concrete baffles and a concrete apron. It would be designed to dissipate energy and control the rate of outflow through the spillway channel.

The crest elevation of the Main and Auxiliary Dam would be raised approximately 16 feet in order to provide for passage of the PMF without overtopping and minimize the increased incremental downstream consequences from passing additional flows. The 16-foot raise will also provide approximately 4-feet of freeboard under the PMF event. Only in extreme storms would the reservoir rise to an elevation at which the Emergency Spillway would operate, with the annual probability of reaching this elevation being approximately 1 in 4,700. Outflows associated with pool elevations up to the 1 in 4,700 annual exceedance probability would be handled solely by the existing spillway. The emergency spillway would operate for frequencies at or near the current frequency of overtopping the dams in order to minimize downstream consequences. It is noted that routing of the PMF with the dams as currently constructed results in an overtopping of both dams by approximately 10 feet (non-fail condition), or a reservoir pool elevation of approximately 2,647 (NAVD 88). Under this alternative the PMF pool is estimated to be approximately 2,649 (NAVD 88), or an increased maximum pool elevation of 2 feet. This would only occur under the PMF flood event, which is estimated as having a 1 in 10,000 probability of occurrence in any given year.

The Corps has determined that construction of the Emergency Spillway would require controlled blasting during excavation to break up the rock-outcrops located in the proposed channel. It is anticipated that excavated materials from the proposed Emergency Spillway would be used as the primary borrow material source for construction of the modification features. The excavated materials likely would be crushed, screened and washed as needed to generate the various sands, gravels and rock required and either temporarily stockpiled or placed directly into permanent construction. The processing operation would likely be located at an onsite location likely in vicinity of the proposed Emergency Spillway and adjacent to the Auxiliary Dam. The materials (various sized rocks) produced in the crushing operation would be stockpiled on-site in this staging area and delivered to the appropriate construction areas as needed. Any excess material will be disposed of on Engineers Point.

The concrete needed to construct the baffles and apron of the Labyrinth Weir would be produced by the Batch Plant set up on site in the vicinity of the Emergency Spillway. Cement and fly ash would come from an off-site source.

2.2.4 Auxiliary Dam

The Corps has determined that the seismic, seepage, and hydrologic deficiencies associated with the Auxiliary Dam pose an unacceptably high probability of failure of the dam. Under the Preferred Alternative the Auxiliary Dam would be remediated to withstand anticipated seismic events (including fault rupture), manage expected seepage, and survive extreme flood events. These remediation measures would include the following activities:

- Adding an 80-foot wide downstream buttress to the dam with a more gradual downstream slope (5:1) to increase stability of the dam, and a moderate-sized sand filter and drain rock system built into the downstream slope to better manage seepage and potential fault rupture.

- Removing the upper 25 to 30 feet of the liquefiable alluvial layer under the downstream slope of the dam and replace it with recompacted soil to reduce the potential for liquefaction during a seismic event.

- Constructing a crest raise to be able to safely pass an extreme storm event without overtopping. The height of the raise is expected to be up to 16-foot high but may vary depending on final design.

- Remove an existing upstream bench and re-contour to match final grades after the dam raise.

- Construct a new left abutment, which will require approximately 4,000 CY of fill material below the OHWM.

The majority of the rock materials needed to complete the downstream buttress on the Auxiliary Dam would come from the excavation of the proposed Emergency Spillway. The sand material required to construct the filter on the downstream slope of the Auxiliary Dam is expected to come from the spillway excavation (crushed to size) but if necessary, it could come from the Auxiliary Dam Recreation Area. The concrete needed for Auxiliary Dam remediation measures would be supplied from the ready-mix plant on Hwy 178.

2.2.5 Borel Canal

The Corps has determined that some of the problems associated with the Auxiliary Dam can be attributed to the existing Borel Canal conduit that passes perpendicular through the embankment of the Auxiliary Dam. The Borel Canal existed, in its present alignment from the North Fork Kern River, before the Auxiliary Dam was constructed. The Auxiliary Dam was

built on top of the Borel Canal which has the first water rights to the flows out of the North Fork of the Kern River. Since the early 1900s, the canal has been supplying water via the canal to the Southern California Edison (SCE) power plant approximately six miles downstream of the Auxiliary Dam. The SCE has a water right to receive the first 605 cubic feet per second (cfs) of the North Fork Kern River flows into Isabella Lake through the Borel Canal.

Under the Preferred Alternative assessed in the FEIS and a Supplemental Environmental Assessment (SEA #4), the existing Borel Canal conduit through the Auxiliary Dam and control tower would be taken out of operation and abandoned. Unlike the FEIS, SEA #4 Preferred Alternative does not include a replacement Borel Canal alignment through the right abutment. In addition, the FEIS Coffer Dam required for safe construction of the bypass conduit is no longer required, so the reservoir would not need to be held to 2,543 feet for a four to six month construction period. Lake levels could rise to 2,589.26 ft during construction should there be sufficient precipitation in the upper water shed, except for a three to four month period where the lake level could be lowered to 2,543 feet to abandon the Borel Canal and conduit section adjacent to the Auxiliary Dam.

The Borel Canal will be filled in from the Auxiliary Dam to approximately 1,000 feet upstream. In addition to the Borel Canal a depression exists upstream of the Auxiliary Dam and West of the Borel Canal. This area has been identified as a placement site for fill. Excavated material will primarily consist of soil and rock excavated as part of the emergency spillway excavation. Additional material sources may include silt, sand and clay from embankment and foundation excavation as well as excess material generated during rock crushing/material processing operations. Approximately 275,000 CY of material may be placed at this site below OHWM.

The concrete needed for the tunnel lining would be supplied from the ready-mix plant on Hwy 178 or from an on-site batch plant.

2.2.6 Rock Material Disposal Area on Engineers Point

The Corps has determined since the release of the DEIS that an unused rock material disposal area (approximately 54 acres) would be established on Engineers Point, to receive the unused rock material from the Emergency Spillway excavation. This disposal area would be served by an additional haul road spur connection from haul road H1, which would include the coffer dam crest. This refinement of disposing of the unused rock material from the Emergency Spillway on Engineers Point allows the Corps to forego constructing an Upstream Berm on the Auxiliary Dam, as was proposed in the DEIS, as a means of disposing of unused rock. This refinement would reduce potential impacts on the waters of the U.S., as well as impacts on recreation, water quality, and fisheries described in the DEIS.

Excavated material will primarily consist of soil and rock excavated as part of the emergency spillway excavation. Additional material sources may include silt, sand and clay from embankment and foundation excavation as well as excess material generated during rock crushing/material processing operations. Engineers Point has been identified as the primary placement site and will include approximately 875,000 CY of material placed below the OHWM and 925,000 CY placed above the OHWM. The finished surface will be raked to bring larger, rip rap like material to the outer layer of fill from material ranging from 12 inches to 36 inches.

2.2.7 USFS Administrative and Recreation Facilities

The FEIS identified the need for supplemental analysis of relocating and mitigating impacts to USFS administrative and recreation facilities. A SEA (#3) was circulated for public review in December 2015 and a Finding of No Significant Impact (FONSI) was signed in February 2016. The SEA #3 addressed:

USFS Administrative Office and Warehouse – Kernville Work Center

A USFS single story administrative office of approximately 9,791 sq. ft. would be constructed by the Corps at the USFS Kernville Work Center located off Kernville Rd, in the town of Kernville. A 2,700 sq. ft. two-bay warehouse would be constructed by the Corps to mitigate for storage facilities directly impacted by construction of the new dam emergency spillway.

Fire Station Complex and Interim Visitor Information Center at Lake Isabella Blvd.

A USFS fire station and interim visitor center will be constructed on an undeveloped 4.1 acre of National Forest land directly off of Lake Isabella Blvd., in the vicinity of the Kern County Government offices. The facilities would include a 4,000 sq. ft. two-bay fire station, administrative office space, an Incident Response Center, associated support facilities (eg. water tender fill station, radio tower, fire hose drying tower, renewable energy, etc), a 480 sq. ft. modular building.

Launch 19 (Main Dam Boat Launch).

The existing recreation facilities at Boat Launch 19, also referred to as the Main Dam Boat Launch, are expected to be closed for safety reasons during the DSM construction period for the greater part of years 2018 to 2022. Following Isabella Lake DSM project completion, the recreation facilities at Launch 19 would be reconstructed as needed.

French Gulch Recreation Area

A concrete boat ramp at the French Gulch Recreation Area will be constructed to mitigate recreation impacts at Launch 19. Launch ramp construction at French Gulch would require earthwork and fill above the gross pool water line and below the water line during periods of low water levels. It is expected that the launch ramp construction would be conducted in dry conditions at low lake levels expected in early winter months. Approximately 35,000 CY of fill material will be placed for construction of these facilities. Slopes created as part of this project will be rip rapped below the OHWM.

Auxiliary Dam Recreation Area

An access road from the Auxiliary Dam Recreation Area to the Old Isabella Road Recreation Area and restroom facilities will be constructed to mitigate for impacts to recreation areas during construction. The access road and foundations for the restroom will require approximately 38,000 CY of fill material below OHWM. Rip Rap will be placed along the outer slopes of the access road fill.

Old Isabella Road Recreation Area.

The Auxiliary Dam left abutment extension will impact 7.2 acres of upland area and result in removal of the visitor kiosk, camp host site, and three existing restroom facilities currently in the southern portion of the site. The recreation facilities removed will be relocated to serve the northern portion of the Auxiliary Dam Recreation Area.

South Fork Recreation Area

South Fork Recreation Area, located east of Old Isabella Recreation Area, would be supplemented with improvements to accommodate increased visitor use. Existing camping, day use and launch facilities would be maintained.

Main Dam Campground

The Main Dam Campground has been closed to the public since the year of 2006, and would remain closed to the public during the Isabella Dam DSM construction period in order to complete repairs to the Main Dam. The proposed DSM project would utilize a portion of Main Dam Campground as a construction staging area. Following Isabella Lake DSM construction, the portion of campground area affected by the Isabella DSM staging area would be re-contoured and access roads would be reconstructed to new campsites. This campground area is also

identified as a site for vegetation mitigation, and would be re-planted with larger containerized native tree and shrub species that are established from nursery cultivation.

CHAPTER 3 GENERAL DESCRIPTION OF DREDGED OR FILL MATERIAL

3.1 GENERAL CHARACTERISTICS OF MATERIAL

With the exception of the French Gulch Recreation Area boat launch, it is anticipated that excavated materials from the proposed Emergency Spillway would be used as the primary borrow material source for construction of the modification features for the Preferred Alternative. Excavated material would be processed for project feature use as graded aggregate and sand for drains and filters, aggregate surface course rip rap, and random fills. Any excess material would be disposed of on Engineers Point, of which a portion of this would be placed below the OHWM. Fill substrate would be composed mostly of coarse granitic material of various size (See Figure 3). Fill material for the French Gulch Recreation Area boat launch will be imported granular material.

The OHWM for Isabella Lake was determined during a 2011 field survey in accordance with guidance provided by the Corps Regulatory Guidance Letter: Ordinary High Water Mark Identification No. 05-05. Specific guidance used for the determination included physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, and the characteristics of the surrounding area (Corps 2005). The locations of the OHWM indicators around the lake were recorded using a Trimble 3000 GeoXH global positioning system (GPS). These data aligned well with the gross pool elevation (2,609.26 feet NAVD 88; 568,075 acre-feet) established for Isabella Lake.

The No Action Alternative would result in no changes.

3.2 QUANTITY OF MATERIAL

The total excess waste material not utilized in project feature construction and proposed for placement at other project locations is estimated to be 1,800,000 CY. Approximately 1,300,000 CY would be placed below the OHWM, of which 875,000 CY would be placed on Engineers Point, and 425,000 CY would be placed at other project facilities identified in Section 2.

3.3 SOURCE OF MATERIAL

Materials disposed below OHWM would be excess material excavated onsite from the Emergency Spillway. Additional material sources may include silt, sand and clay from embankment and foundation excavation as well as excess material generated during rock crushing/material processing operations or imported granular fill from off-site borrow sources for the French Gulch Recreation Area boat launch.

CHAPTER 4 DESCRIPTION OF THE PROPOSED DISCHARGE SITES AND DISPOSAL METHOD

4.1 LOCATION

The discharge location site for the unused rock excavated from the emergency spillway is Engineers Point. The Borel canal will be filled in from the Auxiliary Dam to approximately 1,000 feet upstream. In addition to the Borel Canal a depression exists upstream of the Auxiliary Dam and West of the Borel Canal. This area has been identified as a placement site for fill. Excavated material will primarily consist of soil and rock excavated as part of the emergency spillway excavation. Additional material sources may include silt, sand and clay from embankment and foundation excavation as well as excess material generated during rock crushing/material processing operations. Approximately 190,000 CY of material may be placed at this site below OHWM (Area S1, Figure 4).

4.2 SIZE

An area of approximately 54 acres would be utilized for disposal of up to 1,800,000 CY of material (See Figure 4). This would include approximately 36.5 acres below OHWM and approximately 17.5 acres above OHWM (See Figure 4).

4.3 TYPE OF SITE

The discharge-disposal sites include the lake bed of Isabella Lake, a previously disturbed upland borrow site for construction of the Main Dam, Engineers Point, French Gulch, Main and Auxiliary Dams, and the Auxiliary Dam recreation area.

4.4 TYPE OF HABITAT

The following habitat types were identified at and around the project area:

4.4.1 Open Water

Approximately 568,000 maximum acre feet of open water habitat is located within the project area (when Isabella Lake is at full pool elevation [2,609.26 feet NAVD 88; 568,075 acre-feet]). Open water habitat in the study area is largely unvegetated. Open water habitat provides foraging habitat for waterfowl and other wetland species.

4.4.2 Wetlands

Three wetland types were found within the project area: freshwater emergent, forested/shrub, and emergent non-persistent. Emergent wetlands are characterized by erect, rooted, herbaceous hydrophytes that are present for most of the growing season in most years (Cowardin et al. 1979). Representative plants found in emergent wetlands typically include bulrushes, cattails, and rushes. There is approximately 0.12 acre of emergent wetland in the study area. Forested/Shrub wetland is characterized by woody vegetation that is more (forest-dominant) or less (shrub-dominant) than 20 feet tall (Cowardin et al. 1979). Plants found in the forested/shrub wetland include red willow, soft rush, curly dock, sturdy sedge, and Baltic rush. There is approximately 0.13 acre of freshwater forested/shrub wetland in the study area. Emergent non-persistent wetlands are dominated by plants which die back to the surface of the substrate or below the surface of the water at the end of the growing season so that, at other seasons of the year there are no obvious signs of emergent vegetation. Surface water is seasonal, usually in the growing season (Cowardin et al. 1979). Wetland plants in this area were characterized by cocklebur, soft rush, and rabbit's foot grass. There is approximately 0.078 acre of emergent non-persistent wetland in the study area.

4.4.3 Non-native Grassland

Non-native grasslands generally match the description in Holland (1986). Also referred to as California annual grasslands, these areas are dominated by vegetation consisting of dense to sparse cover of annual grasses and forbs between 0.5 to 1.5 feet tall. Germination occurs at the start of the late fall rains and growth, flowering, and seed-set occur from winter through spring. Senescence occurs in early summer. This habitat occurs on fine-textured, usually clay, soils that are moist or water-logged in the winter and very dry during the summer. Dominant species include grass and forb species, such as red brome (*Bromus madritensis* ssp. *rubens*), ripgut brome (*Bromus diandrus*), cheatgrass (*Bromus tectorum*), slender wild oats (*Avena barbata*), goosegrass (*Elusine indica*), short-pod mustard (*Hirschfeldia incana*), red-stemmed filaree (*Erodium cicutarium*), yellow star-thistle (*Centaurea solstitialis*), California poppy (*Eschscholtzia californica*), miniature lupine (*Lupinus bicolor*), and doveweed (*Croton [=Eremocarpus] setigerus*).

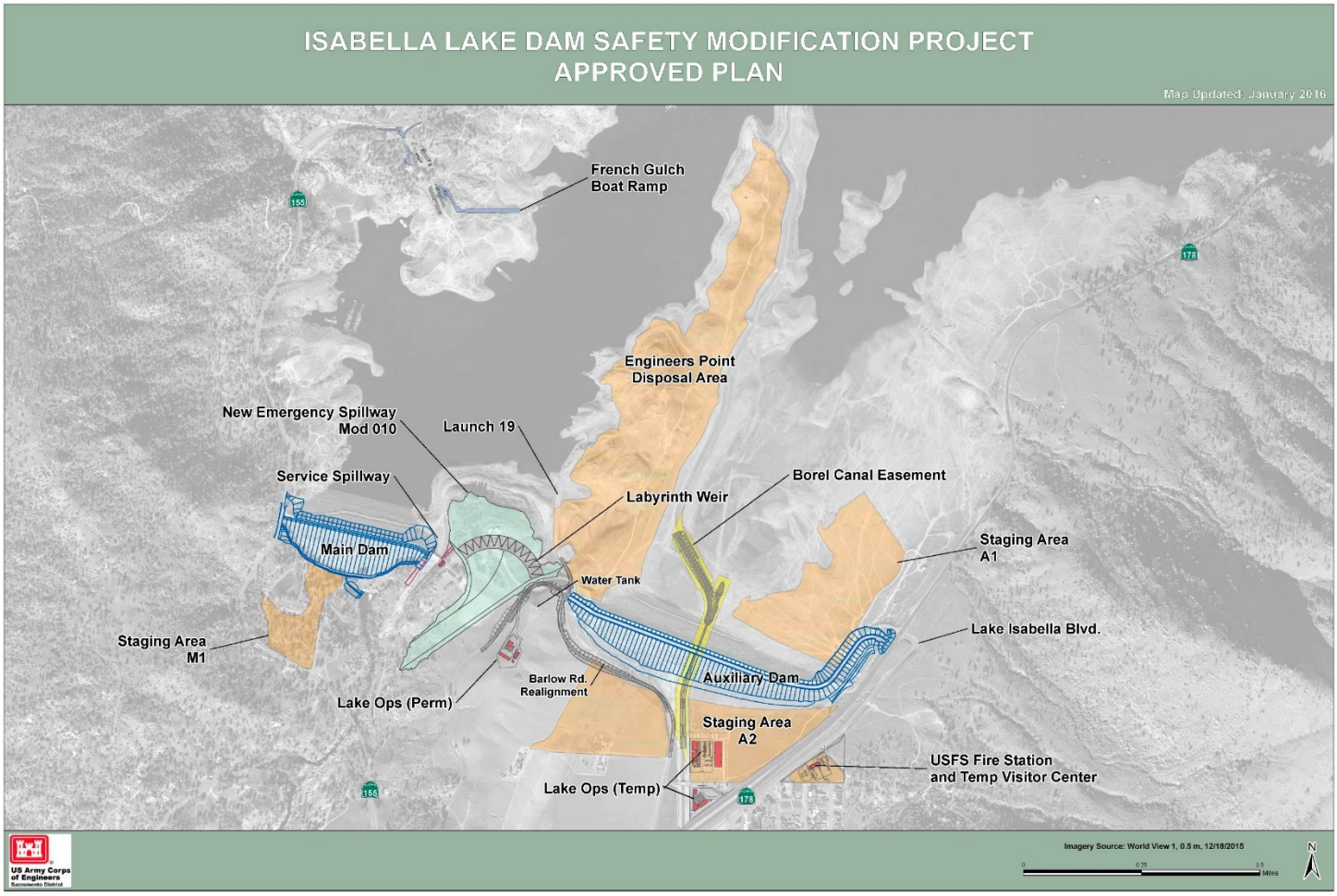

Figure 4. Location of Discharged Sites: Preferred Alternative.

4.4.4 Agricultural Lands

Agricultural lands include areas that are farmed for the production of food plants or animal fodder at some point during the growing season. Locally, agricultural lands are dominated by alfalfa (*Medicago sativa*), barley (*Hordeum spp.)*, slender wild oats (*Avena barbata*), black oats (*Avena fatua*), and other annual plants including those found in nonnative grasslands.

4.5 TIMING AND DURATION OF DISCHARGE

The construction activities that would affect the waters of the U.S. would be conducted over five-plus years, beginning in late fall 2016 and continuing into February 2022. Unforeseen construction delays could result in a longer time period. In addition, mitigation maintenance and monitoring is anticipated to last up to three years post-construction. Timing of construction would occur in the winter months when lake levels are low, when feasible, to minimize impacts to water quality. When lake levels are low, more material would be disposed and/or constructed

in dry conditions. In addition, in the winter months the migratory bird populations in the South Fork area are absent and recreation is off-season.

4.6 DESCRIPTION OF DISPOSAL METHOD

Material disposal and would occur on Engineers Point, French Gulch, Main and Auxiliary Dams, and the Auxiliary Dam recreation Area A1 below the OHWM, and would be timed to occur during the fall and winter months, when lake levels are low. The material would be disposed following a Corps approved Rock Material Disposal Management Plan.

The No Action Alternative would not require the disposal of materials.

CHAPTER 5 FACTUAL DETERMINATIONS

5.1 PHYSICAL SUBSTRATE DETERMINATIONS (SECTIONS 230.11 (A) AND 230.20)

5.1.1 Comparison of Existing Substrate and Fill

The description of the current substrate within the proposed project area is taken from Section 3.4 of the DEIS.

The soils surrounding Isabella Lake are characteristic of the Kernville-Hogeye-Rock outcrop complex, composed of 50 percent Kernville soils, 20 percent Hogeye soils, 15 percent rocks, and 15 percent minor material. These soils are typically shallow at 15 to 30 inches deep to bedrock, moderately steep slope at 15 to 30 percent, and excessively drained. The soil ranges from rock outcrops to gravely coarse sandy loam. Drainage consists of coarse soils developed in alluvium weathered from igneous and metamorphic rocks. Soils in the vicinity of the project site generally show slight or slight-to- moderate potential for erosion.

Large areas of the project area have been graded and altered during the original construction of the Lake Isabella Dam and its supporting infrastructure, with further modifications performed as part of routine maintenance activities.

Fill material used during project construction would come from existing on-site native substrate excavated as part of construction of the new Emergency Spillway and would be placed at locations both above and below OHWM of Lake Isabella. Additional material sources may include silt, sand and clay from embankment and foundation excavation as well as excess material generated during rock crushing/material processing operations. Imported fill would be used for French Gulch boat ramp construction. Fill material placed above OHWM would be placed on Federal property.

Fill material would be various unused granitic rock material excavated from the Emergency Spillway (See Figure 4).

5.1.2 Changes to Disposal Area Elevation

The lake level at the boundary of the disposal area on Engineers Point as depicted in Figure 4 is approximately 2,560 feet NAVD 88 (146,172 acre-feet). At this elevation the lake has a total waterline length of approximately 181,740 lineal feet. The waterline length of the disposal area boundary shown in Figure 4 is approximately 6,626 lineal feet. On this basis, the disposal of rock material at Engineers Point would alter approximately 3.6 percent of Isabella Lake's shoreline (at the disposal boundary lake level). The area of the disposal site would locally alter

substrate elevation and reduce the surface area of Isabella Lake, depending on the fill depth. However, the overall circulation, depth, current patterns, and water fluctuation of Isabella Lake would not change from the deposition of rock material.

The disposal materials deposited on land would permanently alter the natural landscape after the completion of construction.

The changes to the disposal area elevation at the location of the coffer dam may be temporary, but would likely be permanent, since the coffer dam may be retained for access to Engineers Point.

The No Action Alternative would not modify the substrate elevation or bottom contours.

5.1.3 Migration of Fill

The Preferred Alternative would involve the permanent addition of approximately 1,800,000 CY of material to Engineers Point, French Gulch, Main and Auxiliary Dams, and the Auxiliary Dam recreation Area A1. Because the lake is well regulated and because the fill material would consist of native granitic material, as long as the contractor utilizes BMPs to prevent erosion during construction activities, the proposed project would have minimal effects on erosion and accretion patterns. Mitigation measures, including BMPs are in Table 3-125 of the DEIS.

The No Action Alternative would not result in any change to erosion and accretion patterns.

5.1.4 Duration and Extent of Substrate Change

The Preferred Alternative would result in the removal of some native substrate as well as cause the soils at the site to become compacted and could reduce the water storage capacity of the soils. However, because the project is to provide for flood damage reduction and dam safety modifications, this impact to the soil would not reduce the flood storage capacity of the Lake Isabella.

The No Action Alternative would not modify the substrate.

5.1.5 Changes to Environmental Quality and Value

Isabella Lake is a regulated facility and the in-water disposal site is devoid of vegetation. The proposed project would not adversely change the environmental value of the lake. Upland disposal sites include previously disturbed areas that were used as borrow sources for the Main Dam construction. Placement of material at these locations would be consistent with current

land use. Small areas of freshwater emergent, forested/shrub, and emergent non-persistent wetlands are found within the study area. Approximately 0.22 acres of wetlands would be impacted or filled due to construction and staging activities. Additional information on vegetation and wildlife is in Section 3.9 of the DEIS and the USFWS Fish and Wildlife Coordination Act Report (See Figure 4).

The No Action Alternative would not modify the environmental quality and value.

5.1.6 Actions to Minimize Impacts

Standard erosion prevention practices would be employed such as silt fences and silt curtains to contain turbidity during rock disposal placement and other construction activities affecting Waters of the U.S. downstream of the Auxiliary Dam. These BMPs would minimize erosion and transport of soils and substrate. Additional information on mitigation measures, including BMPS is presented in Table 3-125 of the DEIS.

With the mitigation measures proposed to avoid and minimize impacts, the impacts of the proposed project on the physical substrate characteristics of the site would be minor.

The No Action Alternative would have no effect on the physical substrate characteristics of the site.

5.2 WATER CIRCULATION, FLUCTUATION, AND SALINITY DETERMINATIONS

5.2.1 Alteration of Current Patterns and Water Circulation

Isabella Lake is in the Kern River Valley basin, which is in the southern Sierra Nevada, at elevations ranging from 2,500 to 4,500 feet. The drainage area of the Kern River at Isabella Dam is 2,074 square miles (Corps 2009a). The Lake Isabella project regulates runoff for an area of 2,074 square miles, which consists of mountains and timbered areas. The authorized maximum storage capacity is 586,100 acre-feet at gross pool elevation (2,609.26 feet NAVD 88). The lake is fed by the North Fork and South Fork Kern River and the water is released on a regulated basis into the Kern River.

Because the Lake Isabella Dam and Isabella Lake is an already regulated system designed for flood protection, the impacts of the proposed project would have minimal impact to current circulation and drainage patterns. Surface disturbance can alter natural drainage patterns. Runoff critical to existing wetlands may be redirected elsewhere. As a result, these sensitive areas can be dewatered, compromising vegetative health and vigor. It is anticipated that changes

in surface water drainage pathways would result in the potential development of new wetland areas along those new pathways.

The No Action Alternative assumes no action would be taken. Therefore, the currents, circulation and drainage patterns of Isabella Lake would remain the same.

5.2.2 Interference with Water Level Fluctuation

The maximum lake level would be lowered to a construction pool elevation of approximately 2,543 feet NAVD 88 (72,237 acre-feet), which represents over 45 feet in difference from the existing restricted pool elevation (2,589.26 feet NAVD 88; 360,000 acre-feet), for a period of three-to-four months from October 2020 through March 2021. The chosen schedule takes advantage of seasonal low reservoir elevations during the fall and winter. Otherwise, because Isabella Lake is regulated to allow a specific amount of water to be released into the Kern River, the proposed project and the No Action Alternative would not change water level fluctuation patterns.

5.2.3 Salinity Gradients Alteration

Salinity gradients would not be affected.

5.2.4 Effects on Water Quality

A description of the current water quality conditions at Isabella Lake is presented in Section 3.6 of the DEIS.

Water quality standards in the Tulare Basin Plan are not always met under existing reservoir operations. The water of Isabella Lake is utilized for: municipal and domestic water supply; irrigation; industrial power; water contact and non-contact recreation; warm and cold freshwater habitat, warm freshwater spawning habitat; and wildlife habitat. The Lake itself is not used for drinking water, but the Kern River downstream is a source.

Water Chemistry

Water quality standards in the Tulare Basin Plan are not always met under existing reservoir operations. Construction activities may cause additional problems in meeting the basin plan standards for DO, temperature, and pH. Additionally, a lowered pool level combined with high winds would likely result in resuspension of bedload sediments (i.e. turbidity). Algal blooms in the lake may occur during the summer months when temperature, nutrients, and turbidity levels are the highest . The consequences of these exceedances could result in blooms of potentially

toxic cyanobacteria that could adversely affect fish and birds. Modeling and monitoring of water quality may be needed to manage potential adverse impacts.

Construction activities include use, storage, and transport of hazardous materials, including the use of aboveground fuel storage tanks. Also, heavy equipment and vehicles would be maintained at the construction sites, staging areas, and borrow areas. These activities have the potential for hazardous, toxic and radiological waste (HTRW) to be inadvertently released during fueling and maintenance operations, material hauling, and cement production. However, with appropriate measures such as BMPs, a Spill Prevention, Control and Countermeasures Plan (SPCC), and the SWPPP which includes designs and narratives for spill control measures, adverse impacts from inadvertent spills or releases of hazardous substances would be low, and less than significant.

Salinity

The project would not change salinity levels.

Clarity

Placement of material in the disposal area and construction/removal of the coffer dam would temporarily reduce clarity due to an increase in total suspended solids. However, the reduction of clarity caused by construction activities would be short in duration and would return to pre-construction levels upon project completion.

Color

Placement of material in the disposal area and construction/removal of the coffer dam would temporarily induce a color change due to an increase in turbidity. However, conditions would return to pre-construction levels upon completion of the project.

Odor

The project would not affect odor.

Taste

The project would not affect taste.

Temperature

A lowered pool level may lead to warmer temperatures in the lake as a result of the shallower waters. Construction scheduling strategies would be employed to minimize the duration of time that the pool level is reduced. The disposal and coffer dam construction/removal activities conducted in-the-wet have the potential to create turbidity, thus affecting water temperature. Proposed mitigation measures, specifically, a silt curtain placed around the perimeter of the excavation would be required to control turbidity.

Dissolved Gas Levels

Construction activities may temporarily increase turbidity levels, which could exacerbate increases in water temperature and affect DO concentrations. Nevertheless, conditions would return to or improve upon pre-construction levels once the project reaches completion.

Nutrients

Release of suspended sediments from project activities could potentially cause turbidity thresholds to be exceeded. Turbidity would be controlled outside the working area using a combination of BMPs, turbidity curtains, and active treatment as appropriate. An approved active treatment systems plan would also include an assessment of the total residual TDS load in treated water in comparison to receiving water volumes to assure that TDS thresholds are not exceeded.

Development and implementation of an approved Storm Water Pollution Prevention Plan (SWPPP), along with following BMPs would also prevent release of excess nutrients into the Lake.

Eutrophication

The project would not input excess nutrients into the lake or promote excessive plant growth. The project would not contribute to eutrophication.

5.2.5 Changes to Environmental Quality and Value

The proposed project could impact the water quality of Isabella Lake during construction from the rock material disposal, construction of the coffer dam and other structures, earth moving operations, storage and handling of construction materials on site and the operation and maintenance of construction equipment on-site. Construction and associated materials, including solvents, waste materials and oil and gas associated with operation and maintenance of

construction equipment present on-site could introduce hazardous or toxic materials and silt and debris into surrounding waters and could cause degradation of the water quality within Isabella Lake. Although there may be impacts to water quality during project construction, these impacts would be short term. The operation of the newly constructed project features would not affect the water quality of Isabella Lake.

5.2.6 Actions to Minimize Impacts

Construction and excavation would be timed with low water levels to minimize impacts. The impacts to water quality due to construction activities would be minimized by the special conditions required by the Section 401 Water Quality Certification, issued by the Central Valley Regional Water Quality Control Board (CVRWQCB).

In addition, proposed mitigation measures would reduce the potential impacts of the proposed project on water quality. These mitigation measures are presented in Section 3.6 and Table 3-125 of the DEIS. The contractor would be required to implement the proposed mitigation measures during project construction. Therefore, impacts to the water quality within Isabella Lake from project construction would be minimal.

The No Action Alternative would have no impacts on water resources related to construction. The water quality of the lake would be variable depending on inflows and operations and likely similar to current and historical data.

5.3 SUSPENDED PARTICULATE/TURBIDITY DETERMINATIONS

5.3.1 Alteration of Suspended Particulate Type and Concentration

Turbidity has only been consistently monitored at Isabella Lake since April 2009. The Auxiliary Dam portion of the lake exhibits the highest turbidity values with an average over the last two years of 8.3 NTU at the surface and 63.3 near the bottom. The Main Dam portion averages 5.7 NTU at the surface and 16.7 NTU at the bottom. At the outflows of the Main and Auxiliary Dams, the values of turbidity averaged 3 NTU and 6.3 NTU respectively over the last two years of monthly monitoring. The Tulare Basin Plan does not specify specific limits of turbidity for natural conditions, but does set limits for how much the turbidity can be increased from background conditions. These limits range from a low of 1 NTU for background turbidity of 1-5 NTU, to a high of 10% for background turbidity above 100 NTU.

During construction, there could be increased levels of turbidity as soils are exposed and during rain events, which may erode these soils into the lake. In addition, the placement of fill materials could cause a release of suspended sediments and increased turbidity into the lake.

This exposed material could be eroded by wave action or storm runoff. The use of BMP's such as utilizing erosion control devices (silt fencing, silt curtains) within the project area, and stabilizing the side slopes of all exposed fills until they can be revegetated would minimize any increases in suspended sediments or turbidity associated with the proposed project. Additional information on water quality is presented in Section 3.6 of the DEIS.

5.3.2 Particulate Plumes Associated with Discharge

Temporary and local particulate plumes may occur during construction activities but the use of best management practices in association with the project SWPPP would mitigate any potential negative impacts.

5.3.3 Changes to Environmental Quality and Value

Particulate plumes resulting from any construction activity are not expected to persist after project completion. Particulates suspended within the disposal area are not expected to differ in type from particulates currently within the project area.

5.3.4 Actions to Minimize Impacts

Effects would be minimized by performing work during low lake level periods. The duration of construction would be limited to the shortest timeframe practicable. As a result of mitigation measures listed in Section 3.6.4 and Table 3-125 of the DEIS, increases in sedimentation and turbidity would be minimized and temporary.

The No Action Alternative would result in the project not being completed, which would result in no impacts to suspended sediment and turbidity.

5.4 CONTAMINANT DETERMINATIONS

The description of the current contamination condition of Isabella Lake is found in Section 3.6 of the DEIS. There is no evidence of serious contamination in Isabella Lake for organic and metal constituents. Historically, dissolved iron, manganese and arsenic have exceeded fish habitat and drinking water standards.

Construction activities include use, storage, and transport of hazardous materials, including the use of aboveground fuel storage tanks. Also, heavy equipment and vehicles would be maintained at the construction sites, staging areas, and borrow areas. These activities have the potential for HTRW to be inadvertently released during fueling and maintenance operations, material hauling, and cement production. However, with appropriate measures such as BMPs

and SPCC, adverse impacts from inadvertent spills or releases of hazardous substances would be low, and less than significant. In order to ensure that there are no contaminants within the proposed fill material (including imported fill for the French Gulch Recreation Area boat launch), BMPs listed in the Water Quality Section (Section 3.6) and Table 3-125 of the DEIS would be implemented. Provided these mitigation measures are implemented by the contractor, there would be minimal impacts to aquatic resources from contaminants.

Since no construction would occur under the No Action Alternative, there would be no HTRW impacts anticipated in the project area. However, under the No Action Alternative, one or both dams are almost certain to fail under normal operations, especially if subjected to a strong seismic event. Potential consequences due to dam failure and catastrophic floodwater release would be adverse and significant in the downstream area affected by inundation of floodwaters including the municipality of Bakersfield, California where a number of potential HTRW sources that would be affected is substantial.

5.5 AQUATIC ECOSYSTEM AND ORGANISM DETERMINATIONS

Information on aquatic ecosystem and organisms at Isabella Lake was taken from Section 3.10 of the DEIS.

5.5.1 Effects on Plankton

Plankton are drifting organisms that inhabit the pelagic zone of oceans, seas, or bodies of fresh water. Construction of the project would be temporary and short termed. Effects to plankton would be temporary and not significant.

5.5.2 Effects on Benthos

Benthic organisms are found in the benthic zone which is the ecological region at the lowest level of a body of water such as an ocean or a lake, including the sediment surface and some sub-surface layers. Benthic organisms could be smothered by the discharge of excavated material below the OHWM and construction of the coffer dam depending on lake level. However, benthic organisms from adjacent habitat would recolonize substrate material in the disposal areas.

5.5.3 Effects on Fish

Isabella Lake has been managed as both a coldwater and warmwater fishery since the 1950s (CDFG et al. 1999). Natural fish habitat in Isabella Lake is extremely limited due to little recruitment of large wood, lack of submersed aquatic vegetation and lack of coarse substrate.

Native species found in Isabella Lake and its vicinity include: Sacramento sucker (*Catostomus occidentalis*), Sacramento hitch (*Lavinia exilicauda*), San Joaquin roach (*Lavinia symmetricus*), hardhead (*Mylopharodon conocephalus*), Kern River rainbow trout (*Oncorhynchus mykiss gilberti*), Little Kern golden trout (*Oncorhynchus mykiss whitei*), and Sacramento pikeminnow (*Ptychocheilus grandis*).

Non-native species found in Lake Isabella include: brown bullhead (*Ameiurus nebulosus*), carp (*Cyprinus carpio*), threadfin shad (*Dorosoma pretenense*), mosquitofish (*Gambusia affinis*), white catfish (*Ictalurus catus*), and channel catfish (*Ictalurus punctatus*), bluegill (*Lepomis macrochirus*), redear sunfish (*Lepomis microlophus*), green sunfish (*Lepomis cyanellus*), smallmouth bass (*Micropterus dolomieui*), spotted bass (*Micropterus punctulatus*), largemouth bass (*Micropterus salmoides*), coho (*Oncorhynchus kisutch*), rainbow trout (*Oncorhynchus mykiss*), kokanee salmon (*Oncorhynchus nerka*), Chinook salmon (*Oncorhynchus tsawytcha*), white crappie (*Promoxis annularis*), black crappie (*Promoxis nigromaculatus*), and brown trout (*Salmo trutta*).

Natural fish habitat is extremely limited in Isabella Lake due to high fluctuations in water levels on an annual basis and the flat nature of the basins morphology. Engineers Point may have limited nesting area fish habitat. However, the Preferred Alternative could result in the temporary loss of approximately 36.5 acres of potential fish habitat on Engineers Point and the area near the Auxiliary Dam. The Corps' intent is that the Rock Material Disposal Management Plan contains opportunity to actually enhance fish habitat around the perimeter of Engineers Point by judicious placement of larger rocks and boulders as an irregular revetment. In addition, construction activities could result in adverse impacts to habitat from an increase in suspended sediments and turbidity associated with the proposed project. Impacts to habitat would be minimized through the use of BMPs and other mitigation measures proposed which are described in Section 3.10.4 and Table 3-125. Provided the proposed mitigation measures and compensatory mitigation are conducted, the proposed project would have minimal impacts on fish and aquatic wildlife habitat.

The No Action Alternative would result in no losses of habitat for fish and other aquatic organisms.

5.5.4 Effects on Aquatic Food Web

Description of ecological effects is taken from Section 3.10 of the DEIS.

Excessive turbidity in aquatic systems can lead to light altered regimes that can directly affect primary productivity, species distribution, behavior, foraging, reproduction and survival of aquatic biota. Aquatic system productivity can also be reduced. As an indirect effect, the

suppression of aquatic productivity is not as apparent as direct effects on larger organisms. Sustained turbidity can cause the shading of primary phytoplankton, zooplankton and invertebrates which serve as food for smaller fish, and larval fish upon which game fish forage. An increase of resuspended dissolved or particulate organic carbon from the sediment may decrease dissolved oxygen (DO) concentrations. Reduction in DO availability for aquatic species causes reduced oxygen uptake. Turbidity can clog fish and amphibian gills and cause physical abrasion to the level of sub-lethal or lethal effect. Settling of suspended sediment can coat fish and amphibian eggs, reducing or eliminating DO uptake required for development or survival.

Implementation of BMPs and other mitigation measures proposed (Section 3.10 and Table 3-125 in the DEIS) would result in minimal impacts on fish and aquatic wildlife habitat.

The No Action Alternative would result in no construction related effects on fish and other aquatic organisms. The No Action Alternative would not reduce the likelihood of dam failure that could result in catastrophic impacts on lake and downstream biological resources and habitats. These impacts are considered adverse and significant.

5.5.5 Effects on Special Aquatic Sites

Sanctuaries and Refuges

No sanctuaries and refuges are within the project area.

Wetlands

Wetlands were identified and delineated south of the Isabella Auxiliary Dam and west of the Borel Canal within Staging Area A3 (See Figure 4). Small areas of freshwater emergent, forested/shrub, and emergent non-persistent wetlands were found within the study area.

The Preferred Alternative would impact these wetlands in Staging Area A3. This site would serve as a location to stockpile rock material (See Figure 4). This area would also serve as a location for storage and staging of construction equipment and components needed for the tunnel excavation-construction and portal construction. The results of this impact would cause the loss of up to 0.22 acres of wetlands. Mitigation measures are proposed to offset these impacts and are outlined in Section 5 of the *Isabella Lake Dam Safety Modification Wetland Delineation Report* (Tetra Tech 2012).

Mud Flats

No mud flats are within the project area.

Vegetated Shallows

No vegetated shallows are within the project area.

Coral Reefs

No coral reefs are within the project area.

Riffle and Pool Complexes

No riffle and pool complexes are within the project area.

5.5.6 Threatened and Endangered Species

No known ESA-listed plant or animal species are known to occur within the action area of the proposed project. However, there are known ESA-listed plant and animal species within the vicinity. Southwestern willow flycatcher, Western yellow-billed cuckoo, and Least Bell's vireo habitats are located in the South Fork Kern River Wildlife area (See Figure 1). These habitats would not be affected by construction activities or disposal into the Waters of the U.S. The Corps will comply with the Biological Opinion from the USFWS. Therefore, any potential adverse impacts to any of these species are not anticipated, or would be minimal.

The No Action Alternative would not result in direct impacts to endangered and/or threatened species. However, the no-action alternative would not reduce the likelihood of dam failure that could result in catastrophic impacts on lake and downstream biological resources and habitats for endangered and/or threatened species. These impacts are considered adverse and significant.

5.5.7 Other Wildlife

The diversity of habitats around Isabella Lake attracts a variety of wildlife species, including many residents and abundant migrants. It is estimated that over 300 species of birds use this area, with most being neotropical migrants (Audubon 2011). Common birds include passerines such as flycatchers, warblers, kinglets, chickadees, thrushes, jays, blackbirds, sparrows, finches, towhees, wrens, nuthatches, and swallows. Other common birds are hummingbirds, woodpeckers, water birds, waders, and various raptors such as owls, buteos, and smaller

accipiters (Audubon 2011). Isabella Lake and the Kern River host a variety of waterfowl, including migratory and resident waterfowl such as American coot, grebes, cormorants, gulls, and waders (Audubon 2011). Wildlife species common in this area include mammals such as foxes, coyote, bobcat, striped skunk, spotted skunk, raccoon, Virginia opossum, bats, and woodrats. Reptiles and amphibians that are relatively common include the Pacific chorus frog, western toad, bullfrog, and valley garter snake (Audubon 2011). Many invertebrates are also common in this area and provide the dietary basis for the high densities seen in some wildlife species.

The project could have short-term effects on resident mammals, birds, reptiles, and amphibians. Noise from construction equipment and increased human presence could temporarily displace some wildlife, and temporary alteration of riparian and aquatic habitat would occur.

Water quality standards in the Tulare Basin Plan are not always met under existing reservoir operations. Construction activities may cause additional problems in meeting the basin plan standards for DO, temperature, and pH. Additionally, a lowered pool level combined with high winds would likely result in resuspension of bedload sediments (i.e. turbidity). Algal blooms in the lake commonly occur during the summer months when temperature, nutrients, and turbidity levels are the highest. The consequences of these exceedances could result in blooms of potentially toxic cyanobacteria that could adversely affect fish and birds. Additionally, direct effects of decreased DO levels and increased water temperatures could be fatal to USFS sensitive hardhead, rainbow trout and possibly largemouth bass and other sport fish if suitable cold water habitat is not available. Modeling and monitoring of water quality may be needed to manage potential adverse impacts. Based on refinements made by the Corps to the duration and timing of the construction pool, potential adverse impacts on fisheries are now considered less than significant, and therefore would not require that a Fisheries Management Plan be prepared.

The No Action Alternative would result in no direct impacts to other wildlife species.

5.5.8 Actions to Minimize Impacts

Many mitigation measures to avoid and minimize impacts to the aquatic environment, as well as, compensatory mitigation measures in order to compensate for unavoidable impacts are proposed. Mitigation measures are listed in Section 3.10.4 and Table 3-125 of the DEIS.

Adverse short-term impacts on non-listed fish and wildlife are possible due to water level drawdown during project construction, material disposal, and during coffer dam installation/removal and operation. Impacts to fish and wildlife could result from water quality effects such as increased temperature, turbidity, and pH, and reduced DO. Synergistic effects of

water quality degradation could result in blooms of cyanobacteria that may become harmful to fish, other wildlife and pets. With mitigation measures such as close monitoring and corrective actions, impacts are expected to be less than significant.

Waste granitic material placed on Engineers Point would be under water and suitable for fish habitat between approximately 1% and 75% of the time, with the majority of the waste material being suitable for fish habitat more than 50% of the time. In addition, the proposed fill material placed below OHWM would consist of larger granitic rock material except for French Gulch, and would have only minor short-term adverse impacts and potential long-term benefits to fisheries as shelter and oxygen generation from wave action. Therefore, a mitigation ratio of less than 1:1 for compensatory mitigation is appropriate to mitigate for losses to fish habitat function of the Isabella Reservoir. Because the areas to be filled would provide suitable fish habitat for at least 50% of the time, compensation for the loss of functions of the Isabella Reservoir related to the fish habitat is not required.

In order to mitigate for the anticipated permanent loss of 0.22 acres of wetlands resulting from project feature construction, the Corps would purchase appropriate acreage compensation off-site at a wetland mitigation bank approved by the USFWS before completion of project. 33 C.F.R. Part 332, Compensatory Mitigation for Losses of Aquatic Resources (Mitigation Rule) gives preference to the use of mitigation banks. Currently, there is one mitigation bank that has seasonal wetland credits available to compensate for the impacts associated with the anticipated loss of the 0.22 acres of wetland habitat.

Under the No Action Alternative there would be no construction-related loss, degradation, or fragmentation of aquatic ecosystem habitat function and related impacts on aquatic organisms. Ongoing impacts on biological resources associated with normal operations would continue. The No Action Alternative would not reduce the likelihood of dam failure that could result in catastrophic impacts on lake and downstream aquatic resources and habitats. These impacts are considered adverse and significant.

5.6 PROPOSED DISPOSAL SITE DETERMINATIONS

5.6.1 Mixing Zone Size Determination

The proposed project would involve placement of fill material below the OHWM of Isabella Lake, which would be comprised of rock material from the excavation of the Emergency Spillway. Some placement may be conducted within open waters of Lake Isabella.

Because the fill material would be native, and appropriate BMPs, including silt fencing and/or silt curtains would be implemented the impacts to the mixing zone size would be minimal.

The No Action Alternative would result in no impacts to the mixing zone.

5.6.2 Determination of Compliance with Applicable Water Quality Standards

The fill and rock disposal material would not violate Environmental Protection Agency or State water quality standards or violate the primary drinking water standards of the Safe Drinking Water Act (42 USC 300f -300j). Project design, standard construction and erosion practices would preclude the introduction of substances into surrounding waters.

The Preferred Alternative would not affect existing or potential drinking water supplies, nor would the No Action Alternative.

5.6.3 Potential Effects on Human Use Characteristics

Municipal and Private Water Supplies

The fill and rock disposal material would not violate Environmental Protection Agency or State water quality standards or violate the primary drinking water standards of the Safe Drinking Water Act (42 USC 300f – 300j).

Project design, standard construction, and erosion practices would preclude the introduction of substances into surrounding waters. Any materials removed for disposal off-site would be disposed of in an appropriate landfill or other upland area.

The Preferred Alternative would not affect existing or potential municipal and private water supplies, nor would the No Action Alternative.

Recreation

Information on recreation at Isabella Lake was taken from Section 3.12 of the DEIS.

Twenty-six areas in the immediate vicinity of the proposed project are developed for recreation. Developed facilities at these areas are provided by the USFS, BLM, Kern County Parks and Recreation, the California Department of Boating and Waterways, and the California Wildlife Conservation Board. These areas provide opportunities for picnicking, camping, boat-launching, swimming, marina concessions, a visitor's center, public access, parking and hiking, cycling, and horseback riding. Currently, private concessionaires include a camping concessionaire for USFS, three marinas, and five outfitter guides.

Recreation at Isabella Lake includes a variety of water- and land-based activities, including picnicking, camping, lake boating and whitewater boating, swimming, fishing, hiking, off-road motorcycling, hunting, sightseeing, mountain biking, road cycling and horseback riding. Most water-oriented visitor use originates at permanent and portable facilities developed along the western shore of the North Fork area and the southern shore of the South Fork area, where the water surface is relatively accessible at all lake stages due to the ability of the marine docks to adjust to the lake level. These areas have been developed to respond to the large annual fluctuations in lake level elevation, which cause extensive drawdown areas to be exposed at the upstream portions of the South Fork and North Fork arms. Recreation along the remainder of the lakeshore takes place primarily at high lake stages. Portable restroom facilities are provided at several sites along lakeshore, and several unimproved areas are frequently used. Windsurfing, kite boarding, and parasailing take place in the open areas on the South Fork, such as Auxiliary Dam and Old Isabella.

Implementation of the Preferred Alternative would require closing of the popular Auxiliary Dam Recreation Area and Launch 19, and substantially limiting access to Engineers Point for the duration of the multi-year construction period. Measures to mitigate for these closures have been addressed in SEA #3 for the USFS administrative and recreation facilities.

Under the No Action Alternative, there would be no changes in water-related recreation or recreation opportunities around the dams related to construction. The No Action Alternative would not reduce the risk of dam failure that could result in significant impacts on recreation upstream and downstream of Isabella Lake. Without dam remediation, both dams have a high risk of failure under normal conditions and in the event of a disturbance such as an earthquake or large flood. This would result in significant adverse impacts.

Aesthetics

Implementing the Preferred Alternative requires the construction of remediation structures and associated support actions that would create noticeable changes to visual features in the project area. Most of these aesthetic impacts would be temporary, and would mainly affect only those that live adjacent to the reservoir and visitors. Because these impacts would be temporary and the site already consists of man-made structures, and with implementation of the BMPs and recommended mitigation measures summarized in Section 3.13.4 of the DEIS, short-term visual impacts would be considered moderate, and less-than significant.

Use of Engineers Point as a material disposal area would permanently alter the existing contours and visual character of this feature. In the long-term, material placed on Engineers Point would be configured to enhance recreational uses and be aesthetically pleasing. In addition, placement of fill on Engineers Point would be intended to return to original contours before it

was used as a borrow site for the Main Dam construction. Therefore, long-term aesthetic impacts resulting from changes in visual features to Engineers Point are anticipated to be beneficial and less than significant. The No Action Alternative would not alter the aesthetics and therefore would have no impacts. No new construction of facilities would occur. However, the likelihood of dam failure would not be reduced and the potential catastrophic loss of one or both dams would significantly alter the visual landscape of the Isabella Lake basin, as well as the San Joaquin Valley due to major downstream flooding of the areas between Isabella Lake and Bakersfield.

5.7 DETERMINATION OF CUMULATIVE EFFECTS ON THE AQUATIC ECOSYSTEM

The potential cumulative impacts from implementation of the Preferred Alternative, when considered with other relevant actions in the general vicinity of Isabella Lake, have been assessed and are discussed in Chapter 4 of the DEIS.

Because some of the other planned actions in the Isabella Lake area described in Section 4.3 of the DEIS would involve construction, minor adverse cumulative aquatic resources impacts in the region could occur. Construction would cause surface disturbances by removing vegetation cover, displacing and compacting soils, and altering soil structure and chemistry. The result is exposed and denuded surfaces that increase runoff rates and erosion and deliver sediment and contaminants to nearby waterways. Sedimentation in waterways can cause changes in water chemistry, as well as geomorphic adjustments that could have negative impacts on stream function. The expectation is that the cumulative actions would not violate water quality standards and that the Corps would obtain the necessary permits and licenses and would prepare and implement the necessary management plans, BMPs, and stipulations intended to minimize adverse construction impacts on water resources. Consequently, adverse impacts on aquatic resources are anticipated to be minor and would be limited to the construction periods.

It can be expected that there would continue to be an expansion of local and regional communities, which could increase the domestic or agricultural demand for water. The expansion of developed land would result in the loss of vegetation and the altering of soil and ground surface properties. Corresponding impacts on aquatic resources are similar to those described above for construction. However, these impacts would be more permanent, because areas would be developed and would not be temporarily altered by construction. Also, an increase in the domestic or agricultural demand for water could reduce surface or groundwater supplies.

Because the potential impacts on vegetation, soil, and water supplies from implementing the Preferred Alternative would be temporary, the Preferred Alternative is expected to make a minor contribution to long-term cumulative adverse impacts on water quality and quantity.

5.8 DETERMINATION OF SECONDARY EFFECTS ON THE AQUATIC ECOSYSTEM

Secondary effects (or impacts) are "effects on an aquatic ecosystem that are associated with a discharge of dredged or fill materials, but do not result from the actual placement of the dredged or fill material" (40 CFR 230.11(h)(1)). Therefore, secondary effects are limited to other actions in the aquatic environment that are indirectly related to implementation of the action, such as erosion or downstream sedimentation, or compensatory mitigation.

Implementation of the Preferred Alternative could result in the potential secondary impacts such as the unintentional placement of fill material outside of the proposed project area, and an increase in contaminants from construction vehicles and equipment. These actions could result in additional adverse impacts to water quality, erosion and accretion patterns, aquatic and other wildlife habitat, recreation, aesthetics and air quality. To help minimize impacts associated with the placement of fill material outside the proposed project area, the Corps could add a special contract condition requiring that the contractor mark the project boundaries, and that all work be conducted either when the project area is dewatered or that the contractor install erosion control (i.e. silt fencing, silt curtains) within any standing waters.

CHAPTER 6 FINDINGS OF COMPLIANCE OR NON-COMPLIANCE WITH THE RESTRICTIONS ON DISCHARGE

6.1 ADAPTATION OF THE SECTION 404(B)(1) GUIDANCE TO THIS EVALUATION

No significant adaptations of the guidelines were made relative to this evaluation.

6.2 EVALUATION OF AVAILABILITY OF PRACTICABLE ALTERNATIVES TO THE PROPOSED DISCHARGE SITE WHICH WOULD HAVE LESS IMPACT ON THE AQUATIC ECOSYSTEM

No practicable alternative exists which meets the study objectives that does not involve discharge of fill and rock materials into waters of the U.S. On the basis of this evaluation, Alternative Plan 4 (Preferred Alternative) has been identified as the LEPDA as described in this document, the Isabella Lake Dam Safety Modification Project DEIS (released March 2012), and FEIS (released October 2012), and four SEA's.

6.3 COMPLIANCE WITH APPLICABLE STATE WATER QUALITY STANDARDS AND COMPLIANCE WITH APPLICABLE TOXIC EFFLUENT STANDARD OR PROHIBITION UNDER SECTION 307 OF THE CLEAN WATER ACT

The discharges of fill and rock materials would not cause or contribute to, after consideration of disposal site dilution and dispersion, violation of any applicable State water quality standards for waters. The discharge operations would not violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.

6.4 COMPLIANCE WITH ENDANGERED SPECIES ACT (ESA) OF 1973

The placement of fill and rock materials in the project area would not jeopardize the continued existence of any species listed as threatened or endangered or result in the likelihood of destruction or adverse modification of any critical habitat as specified by the Endangered Species Act of 1973.

6.5 EVALUATION OF EXTENT OF DEGRADATION OF THE WATERS OF THE UNITED STATES – SIGNIFICANT ADVERSE EFFECTS ON HUMAN HEALTH AND WELFARE

The placement of fill and rock materials would not result in significant adverse effects on human health and welfare, including municipal and private water supplies, recreational and commercial fishing, fish, shellfish, wildlife, and special aquatic sites. The life stages of aquatic

species and other wildlife would not be adversely affected. No significant adverse effects on aquatic ecosystem diversity, productivity and stability, and recreational, aesthetic, and economic values would occur.

6.6 APPROPRIATE AND PRACTICABLE STEPS TAKEN TO MINIMIZE POTENTIAL ADVERSE IMPACTS OF EXCAVATION AND DISCHARGE ON THE AQUATIC SYSTEM

Appropriate steps to minimize potential adverse impacts of the discharge on aquatic systems would be implemented.

On the basis of the guidelines, the proposed disposal site for the discharge of fill and rock materials is specified as complying with the requirements of the guidelines with the inclusion of appropriate and practicable conditions to minimize pollution or adverse effects to the aquatic ecosystem.

CHAPTER 7 REFERENCES

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